CHPRC-00215-VA
Revision 0

# Waste Disposition on the Hanford Plateau Remediation Contract

Prepared for the U.S. Department of Energy
Assistant Secretary for Environmental Management

Contractor for the U.S. Department of Energy
under Contract DE-AC06-08RL14788

**CH2MHILL**
**Plateau Remediation Company**

**P.O. Box 1600**
**Richland, Washington 99352**

**Approved for Public Release;**
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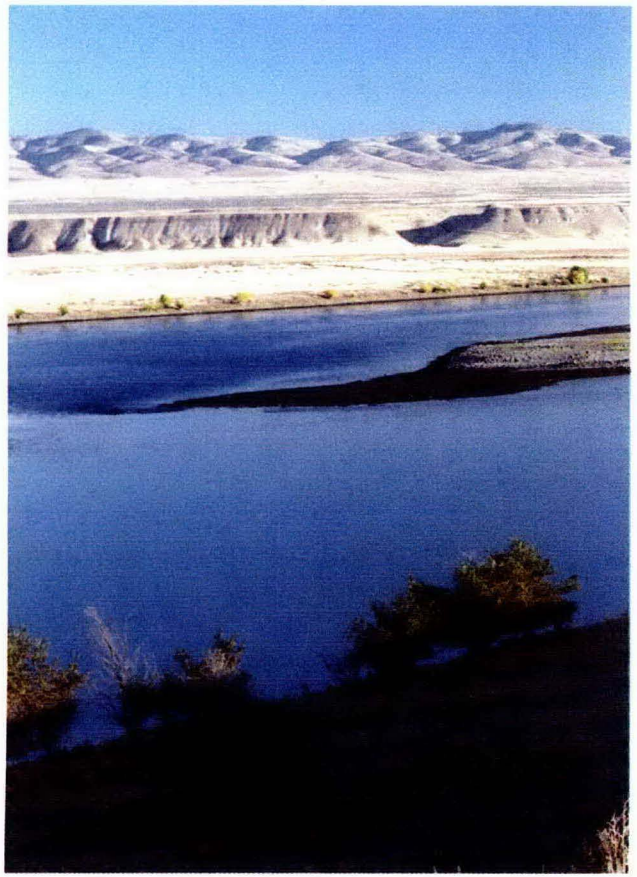

# Waste Disposition on the Hanford Plateau Remediation Contract

Presented to: Contractors Transportation Management Association 2009 Workshop

Presented by: Don Moak, M&EC/PF
Glen Triner, M&EC/PF
Mike Waters, Cavanagh's Services Group

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*One Culture. One Team.*

# The 2015 Vision

## Hanford Site Cleanup

## Safe and Effective Cleanup that Protects the Columbia River

- *Reduces the Active Site Footprint of Cleanup to 75 Square Miles (586 to 75)*
- *Significantly Reduces Long-Term Mortgage Costs*
- *At Completion, Shifts Emphasis and Resources to Full Scale Cleanup of the Central Plateau (75 square miles)*
- *Reduces Costs by "Right Sizing" Hanford's Infrastructure via a Mission Support Contract*
- *Minimizes Injury to Natural Resources*

**Richland Operations Office**

### N Area

- ✓ Interim Safe Storage of N Reactor Complete
- ✓ All N Area Final ROD Remedial Actions Complete and TSD Units Closed
- ✓ All N Area Groundwater Remedies Implemented
- ✓ 108 Facilities Demolished
- ✓ 61 Waste Sites Remediated
- ✓ ~157,000 Tons of Soil Removed

### B & C Area

- ✓ Interim Safe Storage of C Reactor Complete
- ✓ B Reactor Designated as a Museum or Interim Safe Storage Complete
- ✓ All B & C Area Final ROD Remedial Actions Complete
- ✓ All B & C Area Groundwater Remedies Implemented
- ✓ 6 Facilities Demolished
- ✓ 40 Waste Sites Remediated
- ✓ ~381,000 Tons of Soil Removed

### D & H Area

- ✓ Interim Safe Storage of D, DR, and H Reactors Complete
- ✓ All D & H Area Final ROD Remedial Actions Complete
- ✓ All D & H Area Groundwater Remedies Implemented
- ✓ 16 Facilities Demolished
- ✓ 56 Waste Sites Remediated
- ✓ ~1,700,000 Tons of Soil Removed

### IU2 & IU6 Area

- ✓ Interim Safe Storage of F Reactor Complete
- ✓ All IU2 & IU6 Area Final ROD Remedial Actions Complete
- ✓ All IU2 & IU6 Area Final ROD Groundwater Remedial Actions Complete
- ✓ 1 Facility Demolished
- ✓ 50 Waste Sites Remediated
- ✓ ~962,000 tons of Soil Removed

### K Area

- ✓ K East Basin Demolished
- ✓ Interim Safe Storage of K East Reactor Complete
- ✓ K West Sludge Removed from the River Corridor
- ✓ Interim Safe Storage of K West Reactor Initiated
- ✓ All K Area Final ROD Remedial Actions Complete and TSD Units Closed with the exception of those associated with K West
- ✓ All K Area Groundwater Remedies Implemented
- ✓ 2300 Tons of Scrap Nuclear Fuel Removed
- ✓ 109 Facilities Demolished
- ✓ 2 Waste Sites Remediated
- ✓ ~361,000 Tons of Soil Removed

### Central Plateau Cleanup

- ✓ All 200 West Carbon Tetrachloride, Uranium and Technetium-99 Groundwater Remedies Implemented
- ✓ Conduct Additional Cleanup as Funds Become Available

### 300 Area

- ✓ All 300 Area Final ROD Remedial Actions Complete and TSD Units Closed
- ✓ All 300 Area Groundwater Remedies Implemented
- ✓ 186 Facilities Demolished
- ✓ 96 Waste Sites Remediated
- ✓ ~923,000 Tons of Soil Removed
- ✓ Final Remediation of 618-10 & 618-11 Burial Grounds Complete

### Plutonium Finishing Plant Complex

- ✓ All Special Nuclear Material Shipped Offsite
- ✓ Slightly Irradiated Fuel Shipped to the Canister Storage Building for Safe Guarding
- ✓ PFP Complex Reduced to Slab on Grade
- ✓ 18 Facilities Demolished

### 400 Area

- ✓ Fast Flux Test Facility in Surveillance and Maintenance


* Does not reflect all work

IU = Isolated Unit
ROD = Record of Decision
TSD = Treatment, Storage, Disposal



September 2008

# CHPRC Waste Management Team

M&EC
Materials & Energy Corporation
A Subsidiary of Perma-Fix Environmental Services

- CHPRC — Waste & Fuels Management
- Cavanagh Services — Transportation/Shippers
- M&EC — Waste Support Services, Burial Grounds, Central Waste Complex, T Plant, Nuclear Facility Operations

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Plateau Remediation Company

# CHPRC Waste Management Staffing Issues

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- Total ARRA Scope will require over 400 professionals and 150 bargaining unit personnel to support the CHPRC.
- Normal attrition and work-scope already strains resource capacity of Waste Management professionals.
- Shippers, Waste Management representatives, Engineers and support functions are in high demand.
- Issues include salaries, relocation expenses, "retreads", experience.

# Waste Specific Staff Needs Support ARRA

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- Total ≈ 100
  - 50 Engineers, Waste Specialists, Field Supervisors, and Craft.
  - 12 Radcon
  - 12 Program Support
  - 8 Shipping Support
  - 7 Safety/QA
  - 15 Infrastructure Support

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# Life Cycle Work Scope

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## *Waste and Fuels Management Project Work Scope*

*Treatment, Storage, Disposal, and Transportation Services*

**Waste and Fuels Generators**

***Transuranic Waste***
- 5,300 $m^3$ of RSW
- 17,800 $m^3$ of CH-TRU
- 4,100 $m^3$ of RH-TRU

***Low-Level and Mixed Low-Level Waste***
- 12,000,000 tons of LLW
- 13,700 $m^3$ of CH-MLLW
- 1,200 $m^3$ of RH-MLLW

***Liquid Waste***
- 270 mGal of waste water/yr
- 240 mGal of non-radioactive waste/yr
- 30 mGal LLW/MLLW

***Capsules and Fuel***
- Cs/Sr capsules
- K Basin spent fuel
- KOP sludge
- Found fuel
- Slightly irradiated fuel

***Non-Radioactive Debris and Hazardous waste***
- 90 tons of debris
- 1,200 drums of hazardous waste

**Waste and Fuels Disposal**

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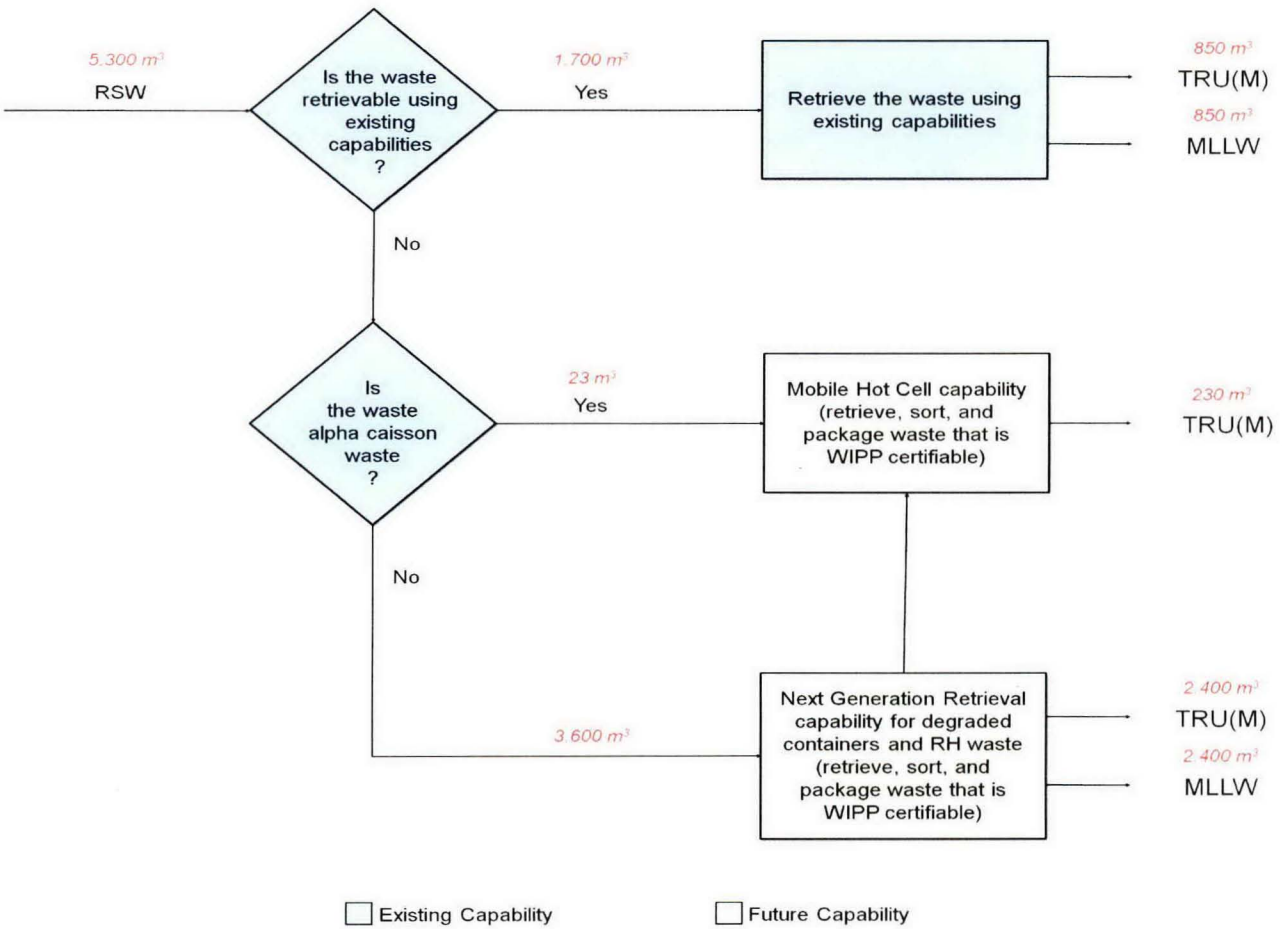
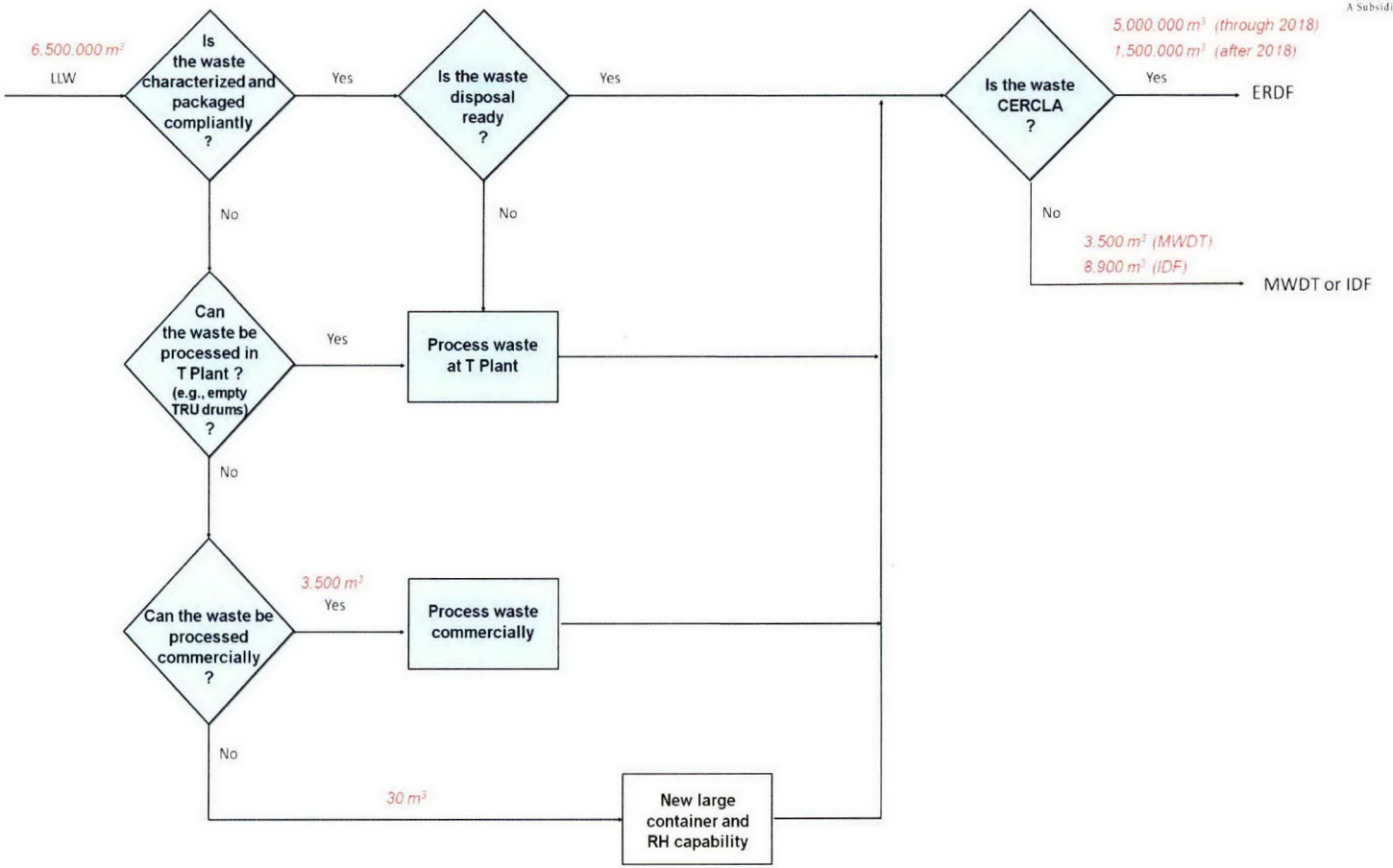
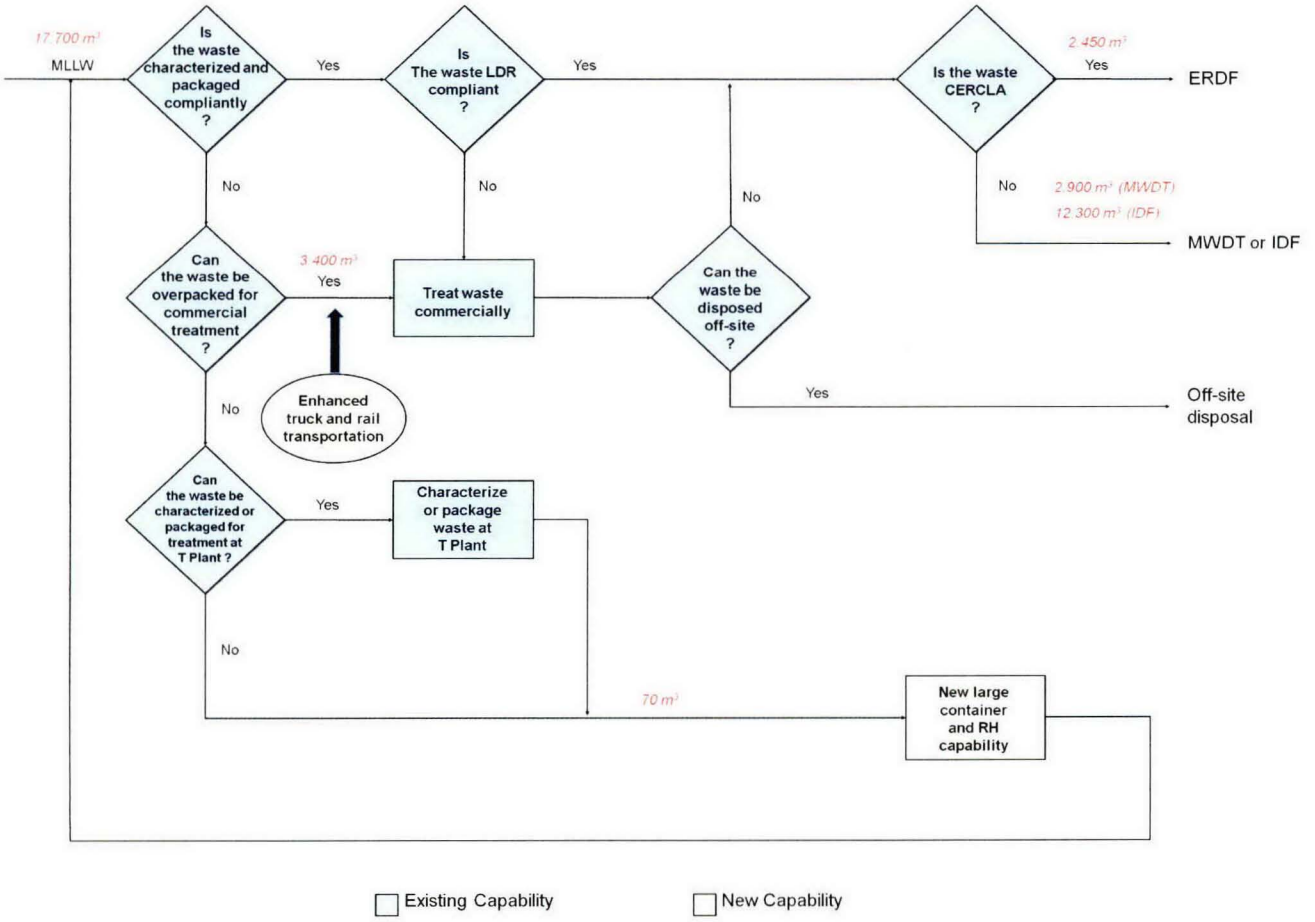
# Retrievably Stored Waste Management Logic



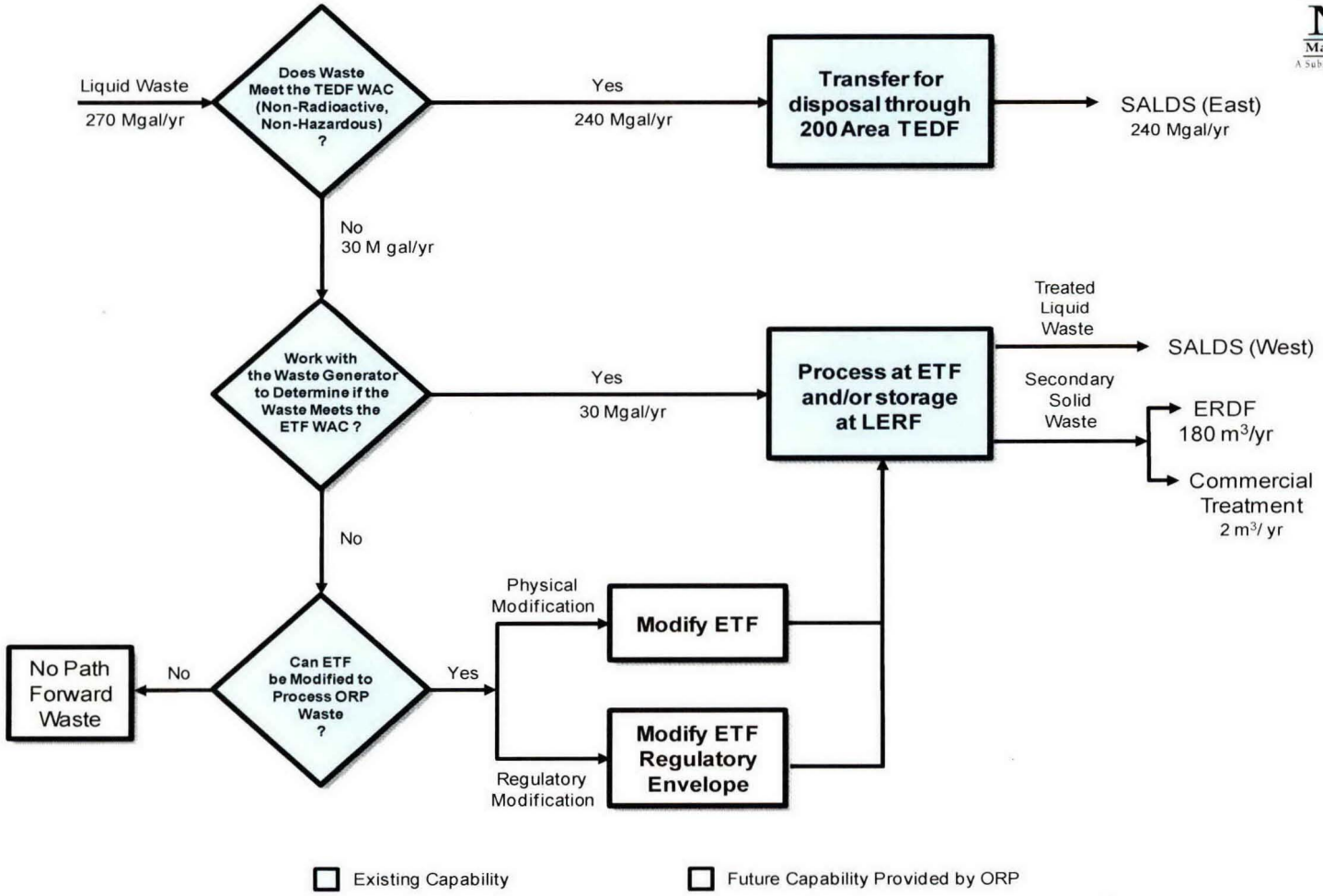
# Low Level Waste Management Logic



# Mixed Low Level Waste Management Logic



# Liquid Waste Processing and Disposal Logic

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# Container Shipments (to Date)

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- 223 Box Shipments
- 446 Drum Shipments
- 24 Unique Shipments
  - 3 DSWC Shipments (FFTF).
  - 233S SWB (T Plant)
  - 66 $m^3$ Box (CWC)
  - 2 IP2 Glovebox (PFP)
  - Transformer (FFTF)
  - Large box Rail Shipment (CWC)
  - IXC & Sand Filter Monoliths (KBC)

# Offsite TSDs Shipped To

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- **PESI (DSSI) –** Oak Ridge, TN., Incinerator for destroying organic (liquids) hazardous constituents. Recently permitted to treat TSCA wastes.
- **M&EC -** Oak Ridge, TN., Vacuum thermal absorption for destroying organic (solids) hazardous constituents.
- ***EnergySolutions* -** Clive, UT., Non-thermal treatment including macroencapsulation. Limited to NRC Class A Waste.
- **PFNW -** Richland, WA., Macro, Volume Reduction, Stabilization and Neutralization of MLLW and LLW.

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# CASE EXAMPLES

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# 66m$^3$ Box

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- Waste Generated on 9/25/95
- Contains two (complete) portable air exhauster units used to ventilate underground storage tanks.
- Stored from 9/29/95 to 2/24/09 due to a lack of a readily identifiable treatment path for oversize containers and limited funding.
- Disposition Options
  - Offsite cut, segregate, grout, and return to Hanford for onsite disposal.
    - Limitations: Physical acceptance and cost.
  - In-Trench Macroencapsulation at MW Trench or ERDF.
    - Limitation: Disposition of potential non conforming items (if any were noted).
  - Offsite shipment for bulk macroencapsulation & disposal (process utilized).
    - Advantage: Meets Off-site acceptance criteria and most cost effective process.

# 66m$^3$ Box Photos

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66 m3 Box Movement
(Lifting Limitations Due to Lighting)

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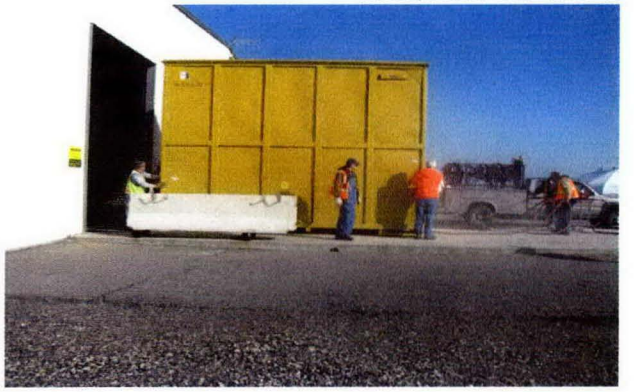
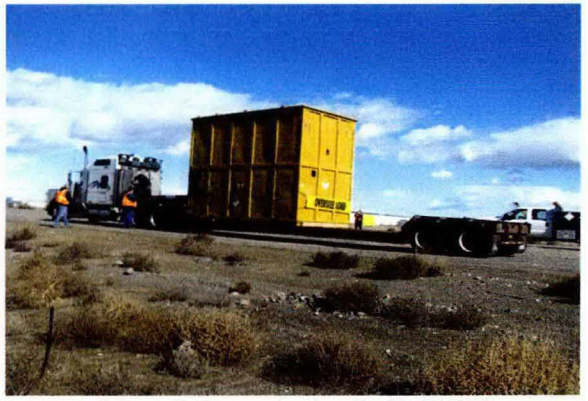
(Lifting Limitations Due to Lighting)



66 m3 Box Staged for Loading



66 m3 Box Arrival @ TSD

66 m3 Box Placement

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# K-Basin Clarifier

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- 100KW basin water clarifier
- "Overpacked" into IP-1 steel box (2.9 m x 3.2 m x 6.2 m)
- Gross weight - 6600 kg
- Internally shielded to meet Hanford Site dose rate limits
- Shipped via Hanford Risk-Based Transportation Safety Document as package not DOT compliant
- Transported from 100KW to Hanford Site Central Waste Complex; awaiting identification of a disposition path.

# K-Basin Clarifier Box Photos


Loaded Clarifier Box

Off-Loading and Receipt inspection

Shielding Used to Control Dose

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# Disposition of Additional Wastes


KBC Sand Filter and IXC Monoliths (KBC to ERDF)

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# Concrete TRU Box From 4C Burial Grounds to CWC

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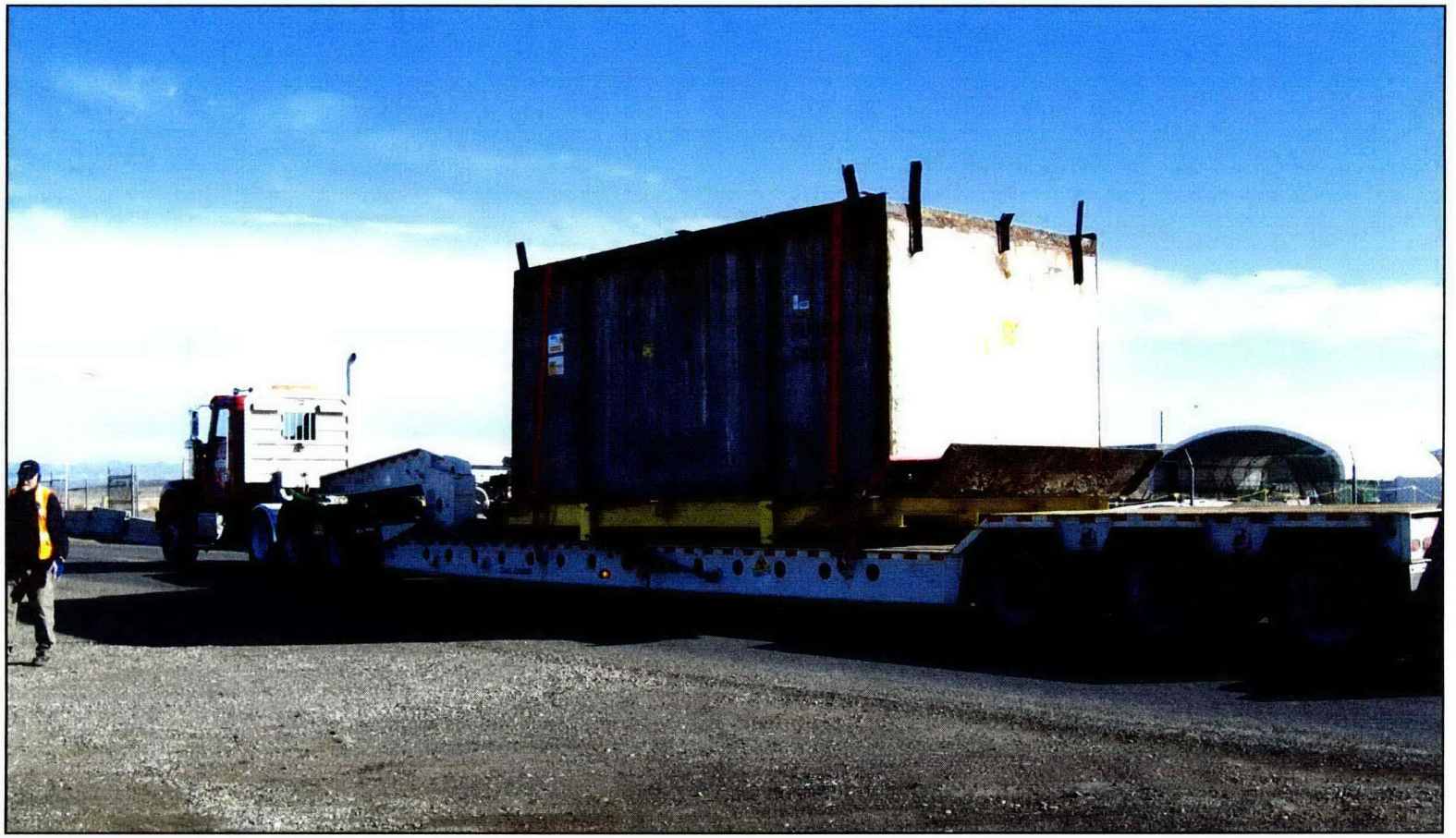

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# Low Level Legacy Waste Shipment From W5 to PFNW

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# Activated Metals Shipped From FFTF TO ERDF (Within Disposal Solid Waste Cask)

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# Backlog Soil Drums Staged Shipment to ERDF

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