

# A Nuclear Services and Waste Management Company

## HOT TOPICS IN COMMERCIAL LLW MANAGEMENT

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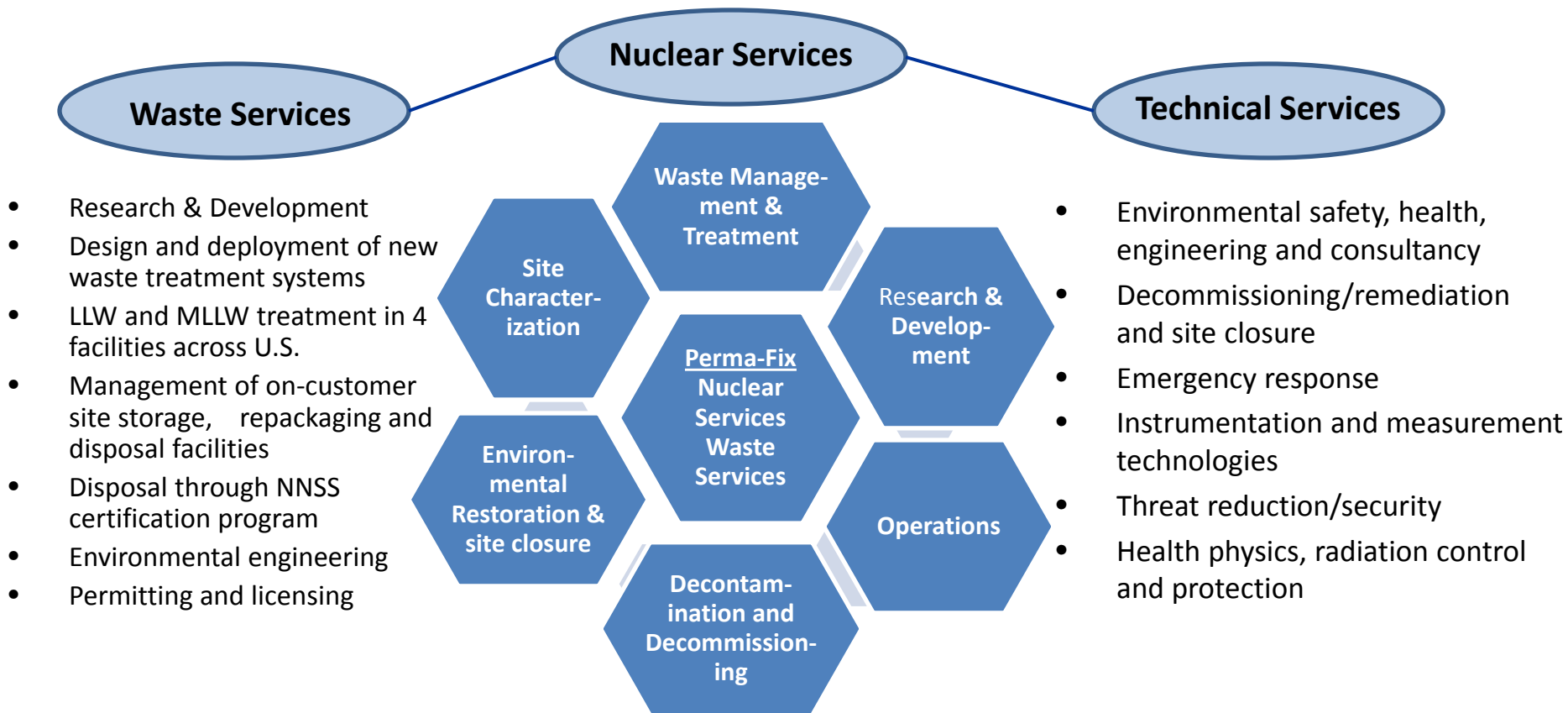


## Hot Topics for Commercial Generators

- Main issues and decisions revolve around risk and/or cost reduction:
  - Working with companies that have appropriate capabilities and experience;
  - Waste minimization and proper use of characterization;
  - Long term storage versus decommissioning of licensed facilities;
  - Disposition/disposal options;
  - Programmatic Costs.



# Perma-Fix Nuclear Capabilities



# Locations



Perma-Fix Business Center  
 Knoxville, TN



DSSI - Kingston, TN



M&EC - Oak Ridge, TN



Perma-Fix Florida - Gainesville, FL

Perma-Fix Headquarters  
 Atlanta, Georgia



Perma-Fix North West - Richland, WA



Perma-Fix United Kingdom



Perma-Fix Canada

Perma-Fix  
 South Georgia



Nuclear



Waste



Technical

# Perma-Fix Waste Treatment Facilities



**M&EC Oak Ridge, TN**



**DSSI Kingston, TN**



**PFF Gainesville, FL**



**PFNW Richland, WA**



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- EDTA solutions
- Debris and dry active waste (paper, plastics, trash)
- Blast media from paint removal
- Chromium and cadmium plating sludge
- Hazardous and non-hazardous wastewater
- TSCA regulated PCBs for storage and treatment
- Listed Waste Codes including F, P, and U
- **Mercury (soluble form) contaminated wastes <260 ppm**
- **Elemental mercury and mercury contaminated wastes >260 ppm**
- Characteristic Waste Codes:
  - D001 ignitability
  - D002 corrosivity
  - D003 reactivity
  - D004 through D043 toxic metals and organic compounds
- High organic wastes such as spent activated carbon, oily sludge, still bottoms, etc...
  - Radioactive aqueous wastes corrosives, reactives, oxidizers, and metal bearing waste
  - Caustic cleaners
  - Solvents
  - Chlorinated and nitrated wastes
  - Water insoluble oils and greases
  - Incinerator chars and graphite
  - Spent acid sludge
  - Lead bearing wastes
  - Beryllium waste
  - Freon
  - Liquid scintillation vials
  - Radioactive oils and sludges



# Major Treatment Processes



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# Major Treatment Processes



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- Perma-Fix has developed innovative characterization techniques that minimize D&D costs.
  - Advanced radiation detection equipment, and measurement systems;
  - Automated data collection;
  - Global Positioning Systems;
  - Laser beacons for in-door coordinate determination.



# Complex Characterization



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## Automated Alpha/Beta Surface Contamination System



**Figure 4.3-4 Building 252 1<sup>st</sup> Level Floor Survey Units; Final Status Survey (Post Decontamination)**



# Metal Decontamination

- Used to decontaminate condenser tubes
- Tubes were cleaned on a sanding machine
- Each tube was scanned for contamination to verify material could be free released
- 10 % were cut open for Secondary Survey and QC Verification



## Open Land Area Gross Gamma Automated System



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# Open Land Surveys and GPS



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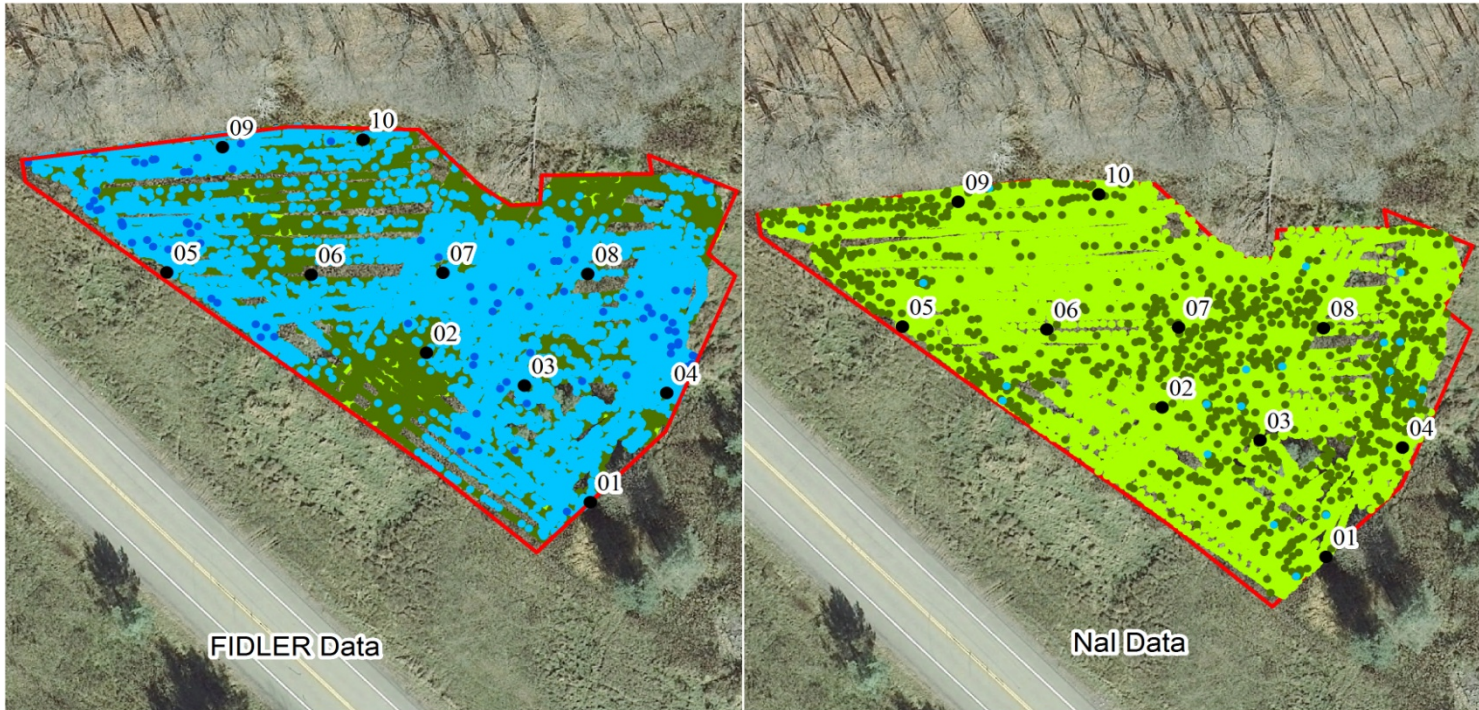


Waste



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# Characterization Technologies

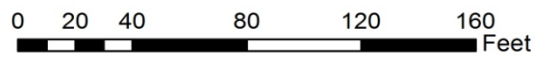


Reference Background 1  
 Sand and Gravel Study Area  
 FIDLER Data Versus Nal Data  
 August 2012

Legend

- < 8,000 cpm
- 8,001 - 10,000 cpm
- 10,001 - 12,000 cpm
- 12,001 - 14,000 cpm
- 14,001 - 16,000 cpm

- Sample Locations
- ⚡ Boundary of Study Area 1
- ⚡ 100 Sq. Meter Reference Area



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# Segregation Technologies

## Automated Soil Segregation System



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# Summary

- Utilizing experienced and capable companies to manage LLW and MLLW reduces generator risk;
- Proper upfront characterization of wastes, facilities, equipment, etc. provides significant cost savings for waste disposition;
- Price does matter, but low price does not always equate to low risk...if the price seems to good to be true...it probably is.

