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environmental services

Experience You Can Trust.

LLRW Forum

OCTOBER 2026

Perma-Fix Environmental Services, Inc.

nuclear technical waste

- Founded as a hazardous waste management company in 1991, Perma-Fix offers 30+ years of experience in nuclear and industrial service operation and has performed over $2 billion worth of nuclear, hazardous, and radioactive waste treatment services
- Publicly traded (NASDAQ: PESI), headquartered in Atlanta, Georgia
- Own/operate four licensed and permitted waste treatment facilities (LLW, MLLW, hazardous, industrial) serving Department of Energy, Department of Defense, Environmental Protection Agency, and other federal and commercial generators worldwide
- Unique offering of capital investments to solve some of the most complex waste challenges worldwide
- Direct recognition by DOE-HQ, community, and Congressional Delegations as critical solution provider

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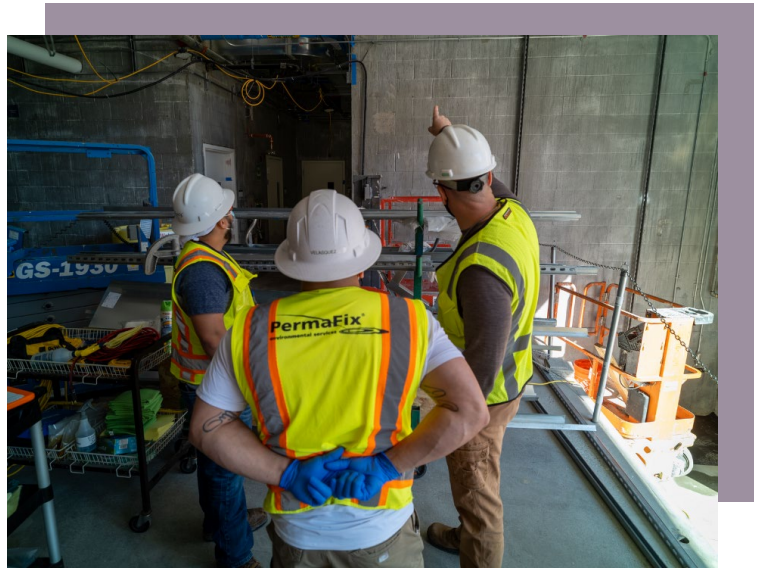
Business Divisions

Waste Services

- Providing solutions for hazardous and radiological waste treatment challenges across federal, commercial nuclear, and medical industries
- Four fully licensed and permitted waste treatment facilities
- Classified waste treatment services
- Managing wastes destined for all major federal and commercial radioactive disposal cells in the United States, including NNSS
- Perma-Fix offers the only mixed waste and TSCA combustion unit in the U.S. (DSSI)
- Perma-Fix is one of the only approved commercial NNSS waste certification programs



Nuclear Services

- Prime contractor for the Department of Energy, NNSA, US Army Corps of Engineers, and US Navy (NAVFAC)
- Providing radiological support for complex environmental safety challenges at every stage: soil screening, licensing, construction, permitting, operations, and D&D
- Health physics expertise and instrumentation for long-term radiological needs, fast mobilization for rapid response services, and NORM consulting

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Comprehensive Solutions for the Nuclear Industry

CHARACTERIZATION & SAMPLING

- Radiological and chemical sampling
- Field screening and on-site lab analysis
- Data-driven decision support
- Radiological, chemical, and isotopic analysis
- Fast turnaround with quality results

WASTE MANAGEMENT & DISPOSITION

- LLW, MLLW, and TRU waste treatment
- Waste minimization & segregation
- Grouting, microencapsulation, VTD, and stabilization
- Licensed TSDFs with nationwide disposal access

DEACTIVATION, DEMOLITION, AND REMEDIATION (D&D)

- Facility deactivation, decommissioning, and demolition
- Hazardous, radiological, and mixed waste handling
- Soil remediation and PFAS solutions
- Perma-Sort soil sorting and volume reduction

RADIATION PROTECTION AND HEALTH PHYSICS

- RSO & CHP services
- ALARA and MARSSIM program support
- Monitoring and dosimetry
- Instrumentation lab for purchase and rentals
- Training and compliance support

LOGISTICS AND TRANSPORTATION

- DOT-compliant packaging, shipping and tracking
- Rail, highway, and intermodal solutions
- Nationwide network of disposal and treatment facilities

REGULATORY & COMPLIANCE SUPPORT

- Permit support and regulatory interface
- RCRA, NRC, DOE and State compliance
- QA programs aligned with NQA-1 and ISO 9001:2015 standards

ENVIRONMENTAL, HEALTH, SAFETY & QUALITY (ESH&Q)

- Safety-first culture
- OSHA VPP Star Site Recognition
- USACE Safety Award Recognition
- National Safety Council Award Recognition
- Continuous improvement and ISMS

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Waste Treatment Capabilities (Oak Ridge)

Diversified Scientific Services, Inc. (DSSI)

- Located in Kingston, Tennessee, close to Oak Ridge
- Offers classified waste management, including a vault-type room
- Combustion in DSSI's direct-fired boiler industrial furnace meets 40 CFR 266 and is applicable for destruction of many liquid and solid waste streams
- Has thermally treated nearly 4M gallons/30M pounds of liquid since receiving initial RCRA Part B permit in 1989
- Thermally destroys 100,000 gallons of waste per year
- Acceptable waste streams include:
  - Radioactive PCBs, oils, and sludges
  - Solvents (halogenated and non-halogenated)
  - Organics-bearing aqueous wastes
  - Ignitable, corrosive liquids
  - Reactive waste

Environmental Waste Operations Center (EWOC)

- Located in Oak Ridge, Tennessee, supporting DOE/NNSA operations for Y-12, Paducah, and UCOR
- 17,360 sq. ft. of indoor processing space and three outdoor licensed radioactive materials storage areas
- Offers bulk survey for free release (BSFR) and segregation of dry active waste, metal, and debris
- 220 ft. of rail spur for waste shipments
- Acceptable waste streams include:
  - Large components and equipment
  - Containers that require decontamination
  - Scrap metal and debris

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DSSI Site Layout

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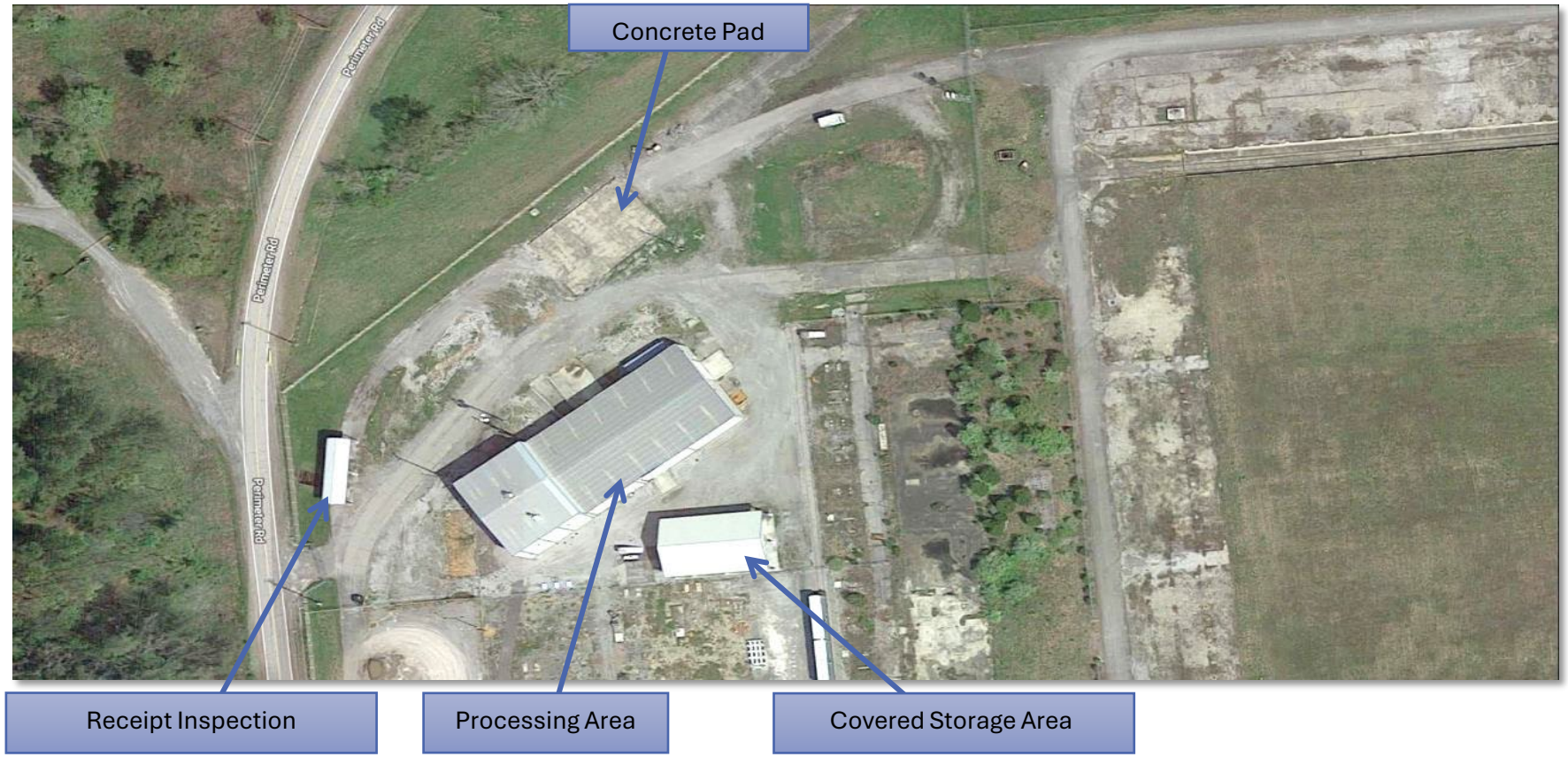
EWOC Site Layout



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Waste Treatment Capabilities (Nationwide)

Perma-Fix Northwest

- Located adjacent to the Hanford reservation in Richland, Washington
- Routinely manages LANL gloveboxes for NNSS disposal
- Offers thermal and non-thermal LLW and MLLW treatment capabilities—includes TRU waste
- Houses two bulk processing units (BPUs) for thermal treatment of liquids and solids with a typical volume reduction ratio of 30:1-100:1
- BPU enables complete separation of customer wastes
- Acceptable waste streams include:
  - LLW and MLLW waters, oils, and sludges
  - Corrosive liquids
  - PCB liquids and semi-solids
  - Debris and soils
  - Macroencapsulation

Perma-Fix of Florida

- R&D hub that houses the Perma-FAS PFAS treatment system and Therma-Fix Gen^3 VTD unit
- Licensed and permitted to treat various characteristic and listed waste soils, liquids, sludge, and debris to meet land disposal restriction (LDR)
- Permitted in-house transportation and full-scale laboratory capabilities for chemical and radiological wastes
- Acceptable waste streams include:
  - LLW and MLLW including all RCRA D codes and limited F, P, and U codes
  - Liquid scintillation vials
  - Industrial (non-nuclear) hazardous, non-hazardous and universal wastes
  - Chemotherapy and pharmaceutical wastes
  - PCB sludges (permit expected in 2025)

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Waste Management & Disposition

We partner with our clients to establish solutions for their technical challenges in highly regulated space.

Our broad existing permits and licenses at these four facilities, combined with a trained and experienced workforce, allow us to offer a unique blend of waste management expertise based on 30+ years of in-field experience, especially during planning phases.

Our combined waste characterization and engineering capabilities enable our clients to characterize and treat radiological and hazwaste at our commercial facilities that includes the following:

- LLW (solid and liquid)
- Mixed LLW
- Sodium
- TRU

Our partnership early in the waste management planning process results in long-term cost savings by carving a waste disposition pathway to ensure no orphan or expensive waste streams are generated that can be avoided.

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TRU Waste Program

Perma-Fix maintains industry-leading capabilities to process TRU wastes to include characterization, TRU waste minimization, processing and packaging for WIPP certification.

Perma-Fix offers unique TRU waste experience and capabilities.

- Perma-Fix Northwest (PFNW) has been processing and packaging TRU waste for the DOE Hanford Reservation and Pacific Northwest National Laboratory for the past 15 years (more than 4,000 m^3 since 2010)
- All TRU waste processing and packaging activities are conducted in accordance with the DOE National TRU Program (NTP) utilizing program elements developed by the Central Characterization Project (CCP) with all packaging activities being performed in the presence of visual examination (VE) personnel.
- DOE relies upon Perma-Fix in its legacy waste disposition strategy for TRU due to our understanding of the complex regulatory environment and ability to bring cost-savings through our approach. In 2023, we were recognized by DOE as having the most qualified approach to TRU waste management under our EMCBC contract for mixed waste treatment, as compared to other contract holders including WCS, EnergySolutions, and Veolia.
- Extensive experience with the packaging and shipping of higher activity radioactive waste including fissile material shipments utilizing 10 CFR 71.22 criteria and greater than A2 quantity shipments shipped as LSA/SCO Exclusive Use consigned shipments.

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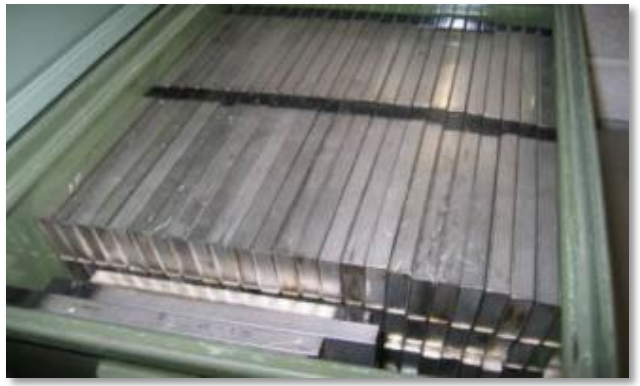
Sodium & Reactive Metals Processing Capabilities

- Perma-Fix has processed over 20,000 pounds of various reactive metals including sodium (Na), potassium (K) and lithium (Li) in various forms including hydride shields.
- We offer immediate treatment capabilities with the following benefits:
  - Ability to leverage our understanding of DOT's permitting process to transport materials to DSSI, then to Perma-Fix Northwest for final processing prior to disposal.
  - Lowered transportation risk and easy oversight, as DSSI facility is located within 5 miles of the Oak Ridge Reservation
  - Low risk approach with experienced team, as DSSI has already processed 13,768 lbs of Na and 2,561 lbs of Li since 2015, and Perma-Fix Northwest has processed 934 drums with residual sodium through its GeoMelt Vitrification process
  - Access to world-class waste management expertise, as Perma-Fix is permitted and licensed to store and treat Class A, B, C, and greater than Class C waste streams
  - Performance assurance in that all facilities are certified by the DOE Consolidated Audit Program (DOECAP)
- Smaller reactive components such as the Idaho National Laboratory Zero Power Physics Reactor plates have also been processed at DSSI. These plates were processed using gloveboxes in an inert environment. The treatment required heating the stainless-steel cladding and immersing the entire plate in hot oil baths to remove liquefied sodium. Once the liquefied sodium was removed, it was reacted with a carbonate solution to produce the final safe end product, sodium carbonate.



ZPPR plates (Na)

Lithium Hydride Shields

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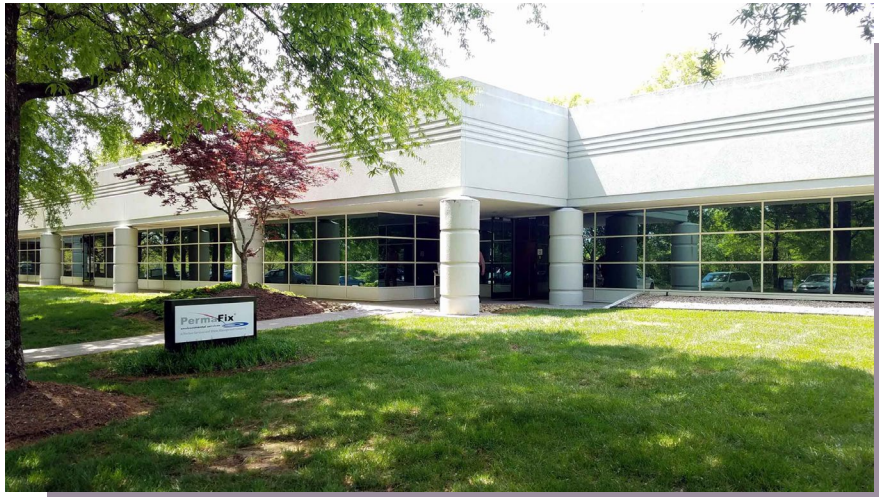
Facility Start-Up Support

- Perma-Fix is already partnered with companies across the nuclear sector who are collaborating with DOE to build facilities on leased or transferred land.
- We provide radiological surveying, training, protection services, and RML consulting services with our team of Certified Health Physicists.
- We offer waste management planning during the design and construction phases for start-up facilities, ensuring that hazwaste (including sodium) and TRU waste streams are managed cost-efficiently.
- Ability to tap into local, trained emergency support teams for radiological incident or contamination response in Oak Ridge
- Knoxville-based Radiation Instrumentation Laboratory with 2,000+ instruments available for rental or purchase
- Equipment training and calibration services available



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Customized Soil Characterization Technology

Drawing on our staff of project managers, nuclear engineers, and CHPs with more than 50 years of material sorting experience, Perma-Fix built a customized conveyor-based radiological assay system, **Perma-Sort®**, which is designed to provide 100% characterization of material efficiently and with industry-leading measurement quality.

Our system offers management **reduction of end-point uncertainty** regarding the characterization of both material exceeding the site acceptance criteria for transportation and disposal offsite and also material meeting the site unrestricted release criteria.

This allows our clients to make real-time decisions for clean soil re-use, transportation and disposal based on accurate characterization data in the field.

We partner with A/E firms across the nation in support of environmental assessments, sampling and analysis, radiological surveys, and facility/soil remediation.

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Committed to Quality and Safety Across All Operations

- Achieved Occupational Safety Health Association (OSHA) Voluntary Protection Programs Star status for our Perma-Fix Northwest waste treatment facility in Richland, Washington, and currently seeking the same for all facilities
- Maintains an executive safety committee to strengthen operational culture at all levels
- ISO 9001: 2015 Compliant Quality Management System
- Operates to Nuclear Quality Assurance (NQA-1) Program standards and processes
- DOE Audited Facilities (DOECAP)

Perma-Fix Project Team recognized in April 2024 with US Army Corps Safety Excellence Award

***Safety First* culture is imperative to our success!**

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DELIVERING ENVIRONMENTAL SOLUTIONS WITH INNOVATION AND INTEGRITY

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