

# Nevada National Security Site Area 5 Radioactive Waste Management Site – Safe, Secure and Responsible Disposal



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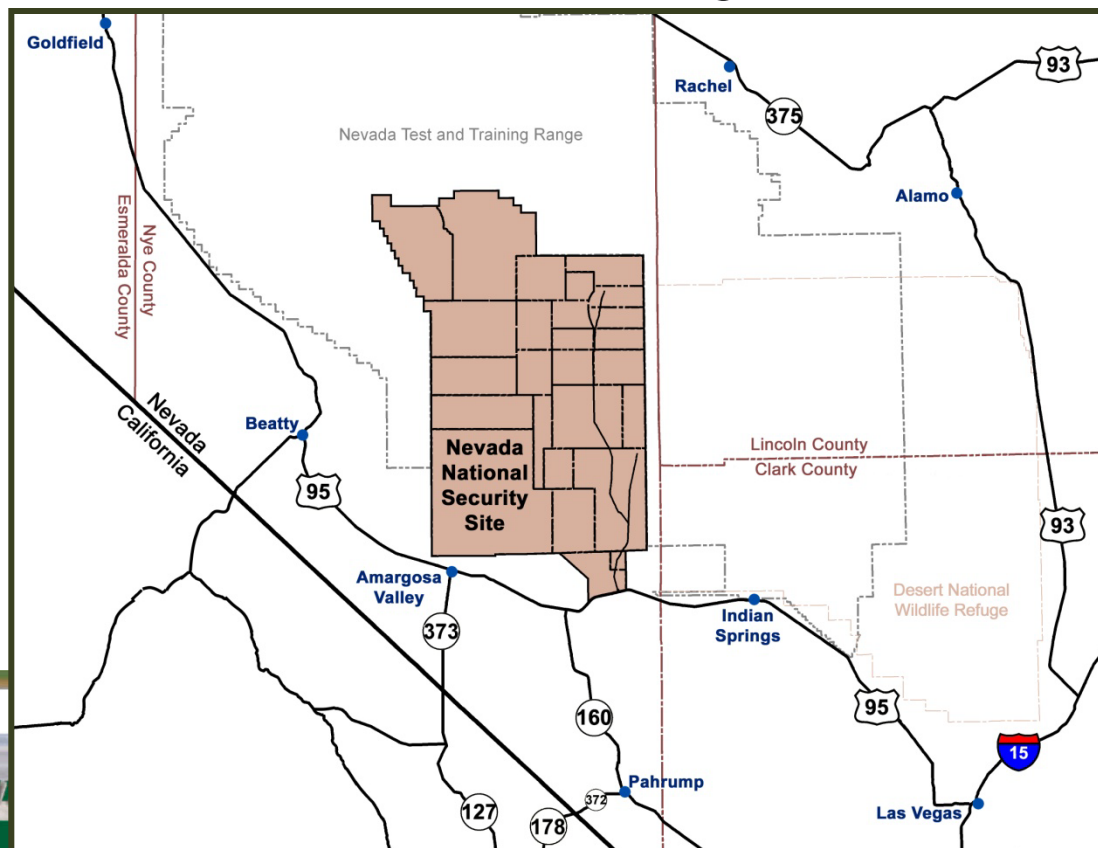
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# NNSS Attributes

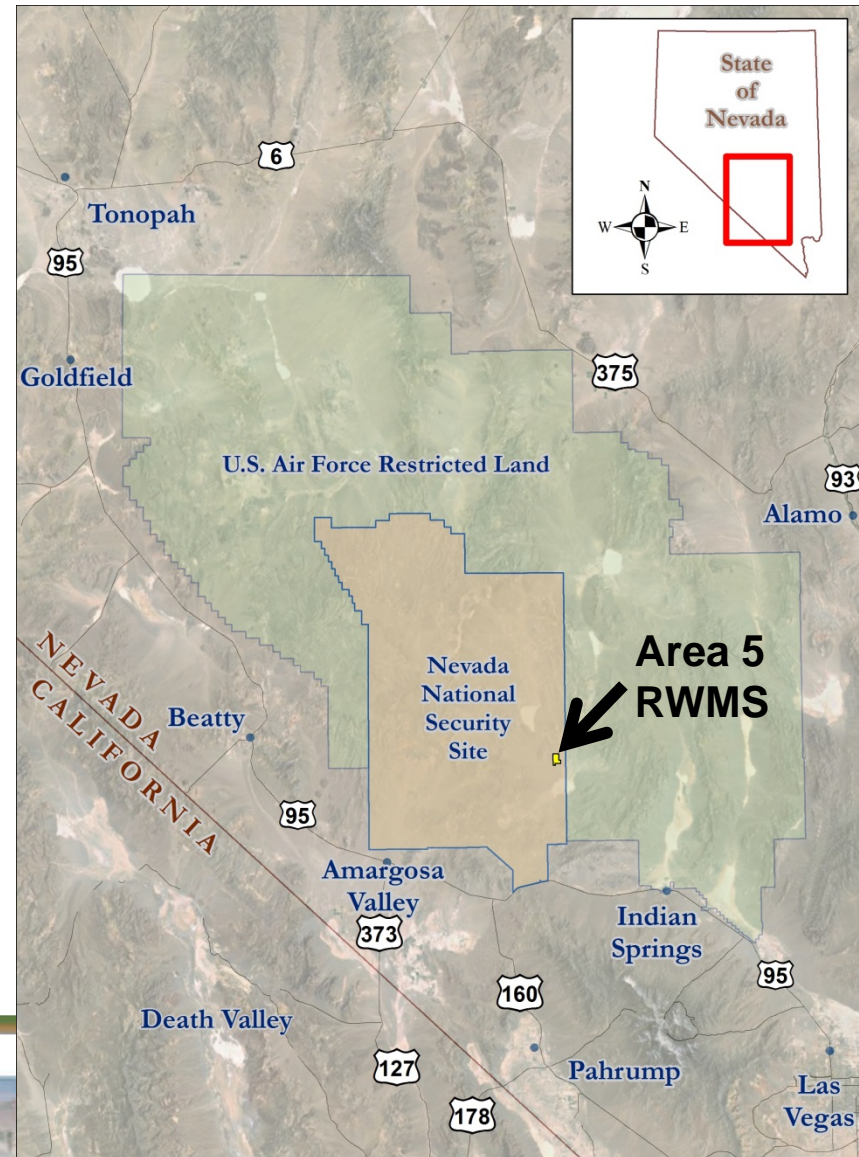
- Approximately 1,360 square miles of U.S. Department of Energy (DOE)-controlled and secured land surrounded by approximately 4,500 square miles of U.S. Air Force-restricted land
  - Located approximately 65 miles northwest of Las Vegas, Nevada
- Will remain secured and withdrawn from public use for the foreseeable future
- Environmental Management activities address effects of historic nuclear testing



# Low-Level Waste Disposal Facility

*DOE is committed to the safe shipment and disposal of waste at the NNSS to ensure the protection of the workers, public, and environment*

- Area 5 Radioactive Waste Management Site (RWMS)
  - National asset that supports NNSS and other U.S. sites current missions, and legacy cleanup efforts



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# Area 5 RWMS

- Permanent disposal of low-level (LLW) and mixed low-level radioactive waste (MLLW) from national security missions and cleanup of legacy nuclear research, development and testing
  - Non-rad/non-haz classified components and parts also disposed
  - Engineered and excavated disposal cells
  - Total disposed volume more than 26 million cubic feet
  - Annually receives less than 5% of LLW and MLLW produced by the entire DOE complex

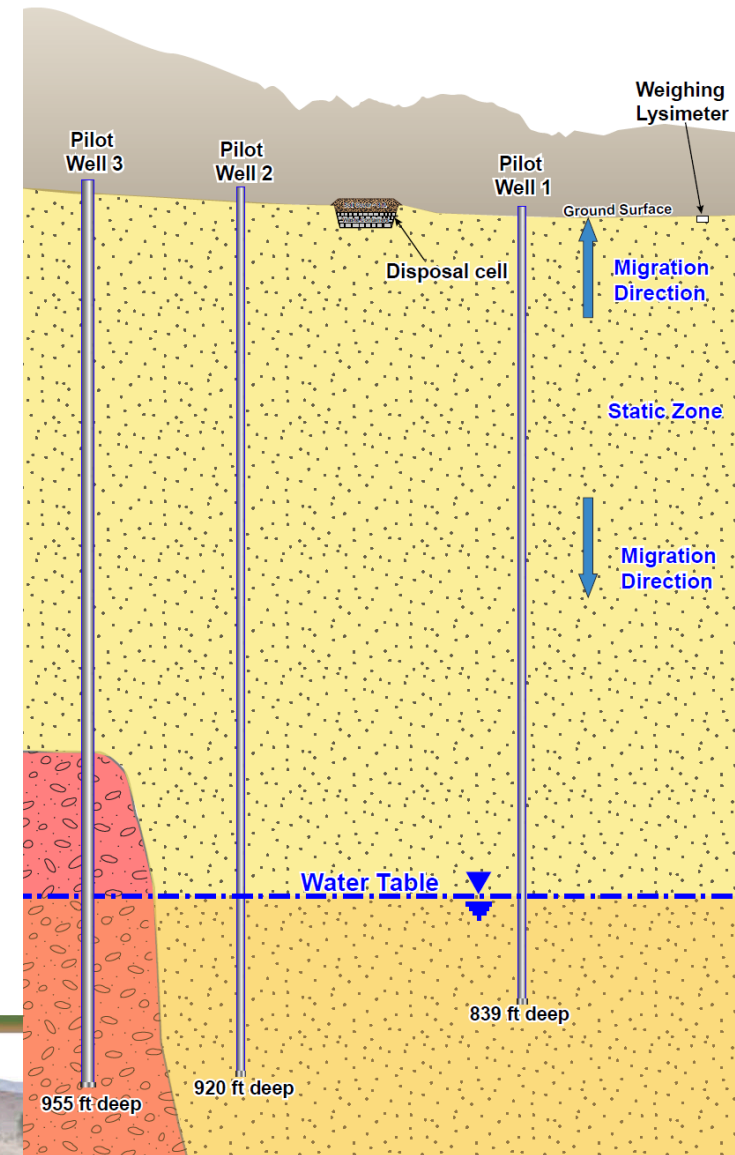


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# Area 5 RWMS (continued)

- Arid and isolated with deep groundwater (~235 meters) and no groundwater pathway
  - No surface water or shallow groundwater
- Less than 12 cm of rainfall per year – potential evapotranspiration (ET) 12 times precipitation
- Thick, dry vadose zone of alluvial sediments
  - No evidence for percolation below plant root zone in last 10,000-15,000 years



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# Ongoing Monitoring to Ensure the Safe Performance of the Disposal Facility

- 30 monitoring locations within RWMC sample for air, groundwater, meteorology, radon flux, soil moisture and temperature, evapotranspiration, and direct radiation exposure
  - Long-term vadose zone monitoring data indicate no drainage through bottoms of vegetated lysimeters (more than 6 feet deep)
  - More than 20 years of groundwater sampling results indicate hydrologic conditions remain stable and there is no contamination in the aquifer from disposal activities



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# NNSS Waste Acceptance Process

- Structured process with stringent requirements must be met by all on-site and off-site waste generators before approval to ship is granted
  - Rigorous reviews, inspections and certification processes conducted for waste characterization, packaging and transportation
  - Proposed waste streams detail radionuclide action levels to ensure there is no compromise to the safety of the disposal facility
  - Audits at generator sites to confirm all policies and procedures meet or exceed NNSS waste disposal requirements
  - Disposal operations and monitoring activities are factored into the review process including verification activities at NNSS and generator site
- State of Nevada participates directly in the waste acceptance review

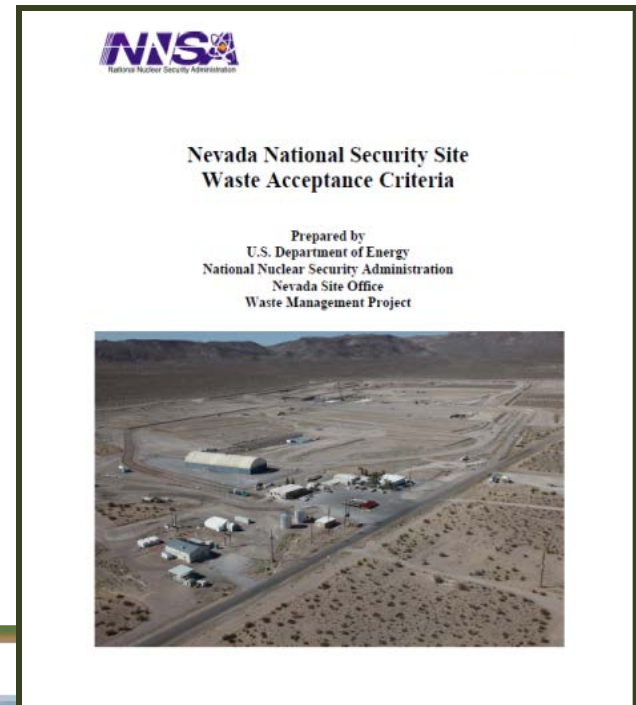


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# NNSS Waste Acceptance Criteria

- All waste must be certified for disposal in accordance with the NNSS Waste Acceptance Criteria
  - Waste generator must demonstrate waste is responsibility of DOE
  - Waste generator must have approved Waste Certification Program
  - Waste must be characterized and profiled
  - Waste must be generated and packaged in accordance with the Certified Program including Quality Assurance Requirements
  - Waste must be packaged in accordance with U.S. Department of Transportation (DOT) regulations





# Waste Profile Review and Approval Process

- Waste Profile prepared to identify
  - Components for disposal (such as soil, personal protective equipment, tools)
  - Characterization basis: site characterization sampling data; Acceptable Knowledge (AK) for process generating waste; and/or data collected during waste generation
  - Packaging
- Waste Profile reviewed by the Waste Acceptance Review Panel (WARP) comprised of federal and contractor representatives from NNSS, and State of Nevada Division of Environmental Protection (regulator)



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# Preparing for Shipments to NNSS

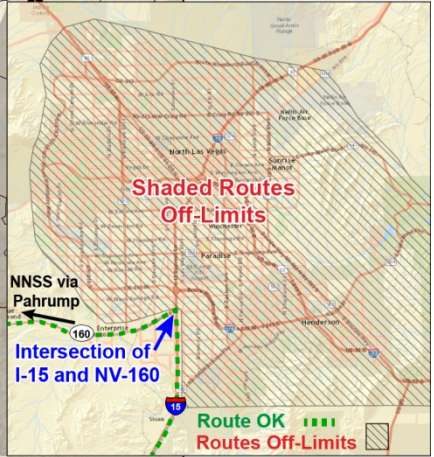
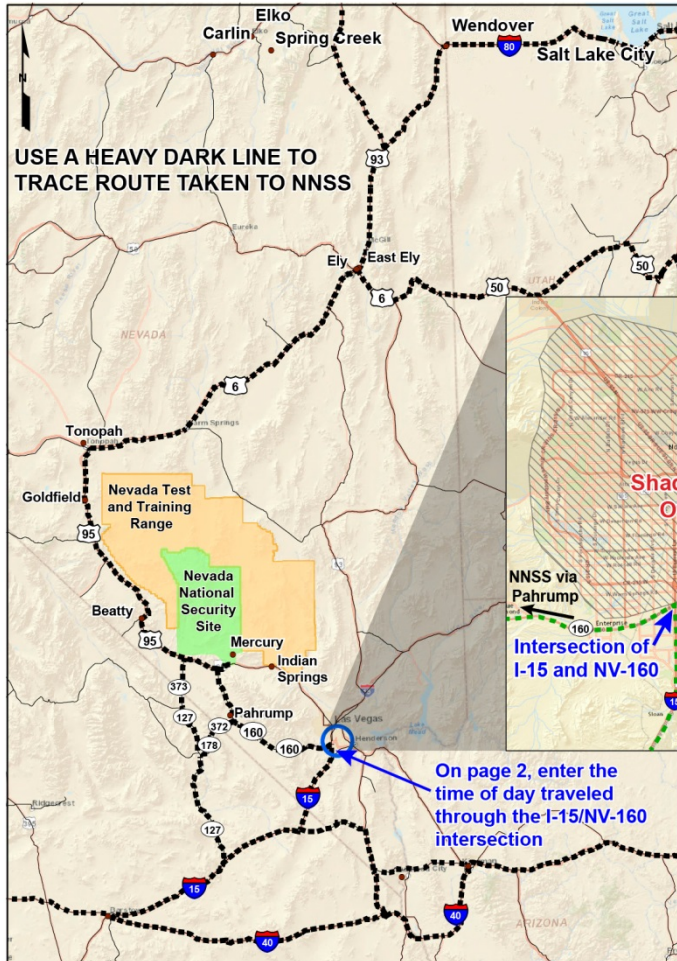
- DOT, Hazardous Materials Regulations, apply to both shippers and motor carriers
  - Hazardous materials shipping rules for Class 7 materials acknowledge package integrity as a fundamental control
- Data concerning the contents drives shipping name and packaging selection
- Shipper must consider “activity”, dose rate, and contamination
- Not everything that is radioactive is “radioactive for the purposes of transportation” (i.e., non-regulated, Class 7)
- Motor carriers selected by the waste generator (most, if not all generators select motor carriers approved through the Motor Carrier Evaluation Program)



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# Transportation



On page 2, enter the time of day traveled through the I-15/NV-160 intersection

- Routing within Nevada region
  - All highway, no direct rail access – surrounded by U.S. Air Force land
  - Routes through Las Vegas off-limits (includes I-15/US-95)
  - Preferences established for summer and winter months
  - CA-127 blackout dates during specific holidays and special events
- All LLW/MLLW shipments to/from NNSS reported quarterly ([www.nv.energy.gov/radwastetrans](http://www.nv.energy.gov/radwastetrans))



# NNSS Disposal: Receipt Process



- Area 5 RWMS staff meet shipment upon arrival
  - Shipping documentation compared with containers on the truck
  - Each truck/trailer/container surveyed (radiological)



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# NNSS Disposal Facility Activities



# NNSS Disposal Facility Activities (continued)



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# NNSS Disposal: Permanent Burial Process

- After surveys are performed, containers are positioned within the disposal cell
  - Each container's barcode is scanned to identify its position within the grid system of the cell
- Four (4) feet (~1.2 meter) of operational cover is placed on top of the waste
- When full, additional four (4) feet of compacted cover is placed on the cell as the final closure cap
- Empty trucks/trailers surveyed to ensure stringent release requirements are met
  - NNSS requirements more conservative than DOT regulations



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# Emergency Management Grant Funding

- Radioactive waste disposal program contributed more than \$11.6M (2000 to September 2014) to fund enhancement of emergency response capabilities in Nevada counties (Clark, Elko, Esmeralda, Lincoln, Nye and White Pine)

Total Amount Provided To Counties For Emergency Preparedness  
(As of September 30, 2014)



- Nevada Division of Emergency Management administers the funding, which is needs based and distributed according to applications submitted by the counties



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# Emergency Preparedness Partnerships

- Ongoing interactions with Local Emergency Planning Committee including NNSS exercises
- Waste shipment specific tabletop exercises conducted with urban and rural local emergency responders
- Multiple briefings to various urban and rural local emergency responders



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# Stakeholder Involvement

- Nevada Division of Environmental Protection (NDEP) provides regulatory and oversight per the Agreement in Principle
- Nevada Site Specific Advisory Board (NSSAB) participation in surveillances to validate compliance of generator processes with NNSS WAC
- State and county liaison participation in national emergency response exercises
- State, county, and local government representatives, NSSAB and numerous Nye County residents participation in NNSS tours with extended discussions/briefings at Area 5 RWMS



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# In Summary...

- Waste acceptance, transportation and disposal at the NNSS is conducted responsibly and safely to protect workers, the public and environment
- NNSS infrastructure provides long-term protection of disposed waste
- DOE is committed to providing stakeholders as much unclassified information about the disposal of waste at the NNSS as possible



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