

Underground Test Area (UGTA) Sub-Project at the Nevada Test Site



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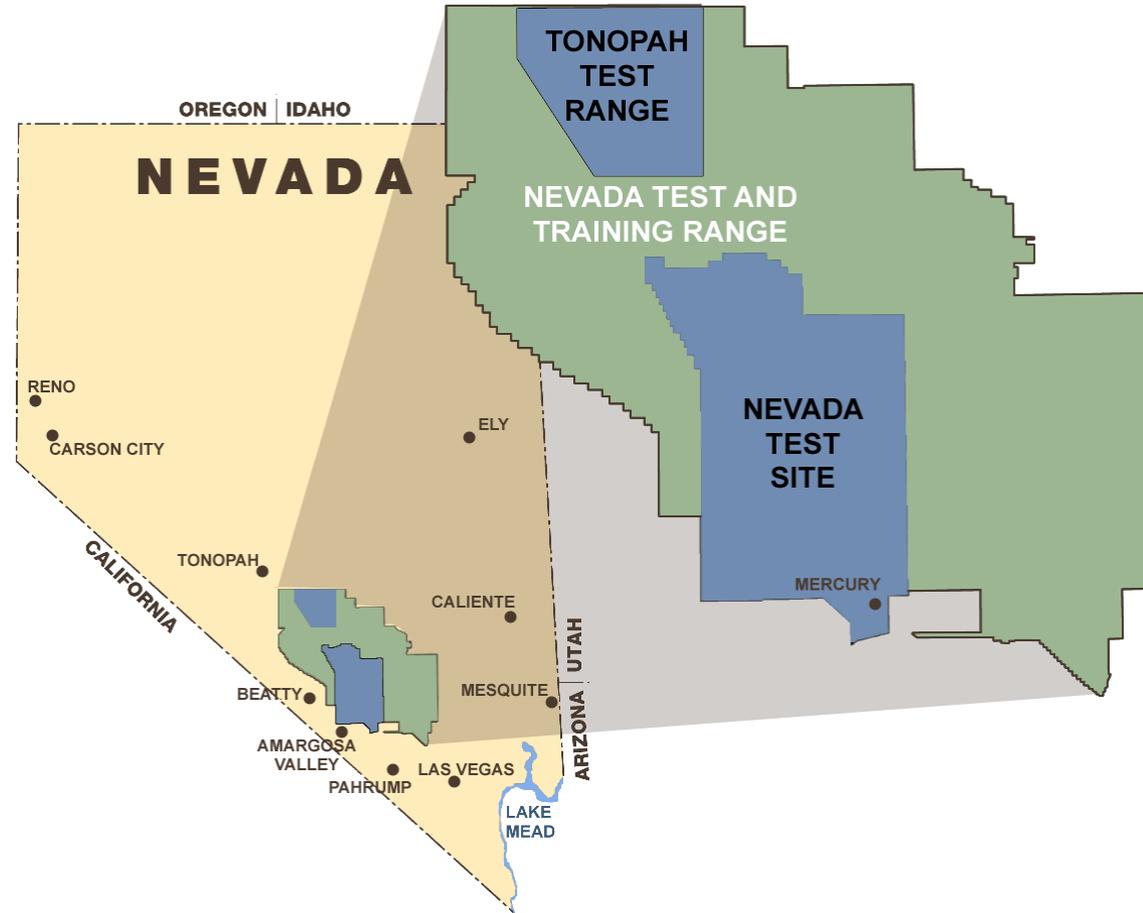
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Nevada Test Site (NTS)

- Approximately 1,375 square miles of federally owned and controlled land – surrounded by approximately 4,500 square miles of federally owned and controlled land
- Located approximately 65 miles northwest of Las Vegas



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UGTA Sub-Project Background

- 828 underground nuclear tests released 132 million curies directly into the subsurface environment, including the aquifers, at the NTS



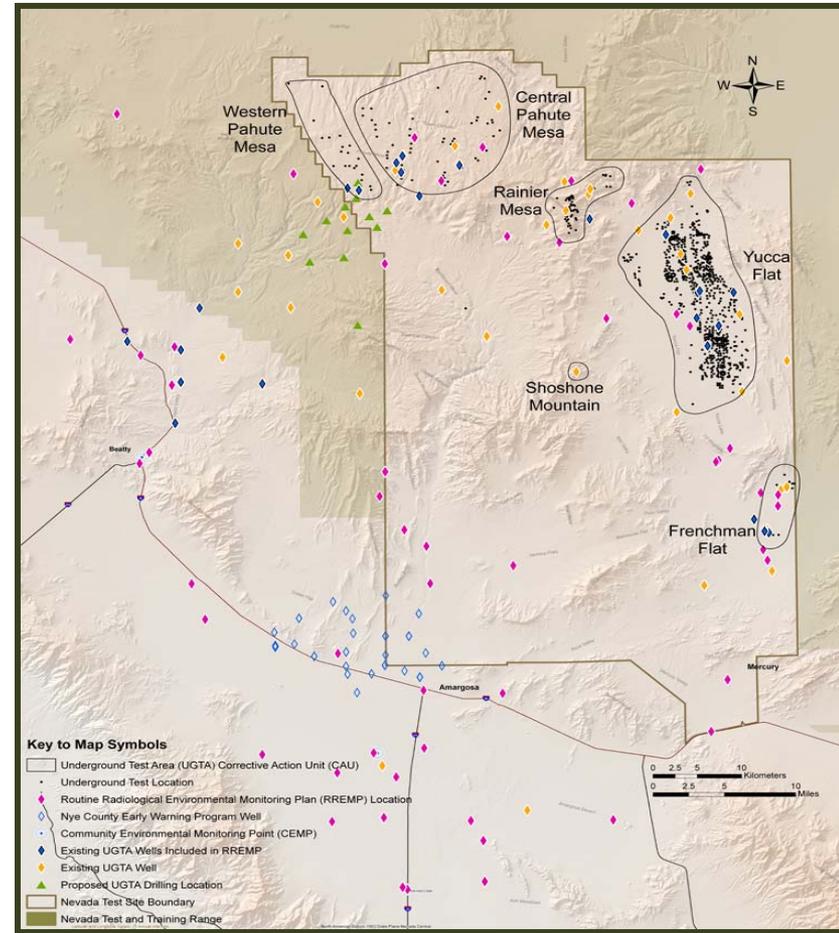
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UGTA Sub-Project Mission

- Objectives: Define corrective action unit-specific contaminant boundaries to assess the present and future migration of radionuclides from underground testing on the NTS and potential risk to the public
- Regulations: Federal Facility Agreement and Consent Order with the State of Nevada Division of Environmental Protection (NDEP)
 - Protection Basis: protection of the public under the Safe Drinking Water Act (SDWA)



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Major Steps in the UGTA Strategy

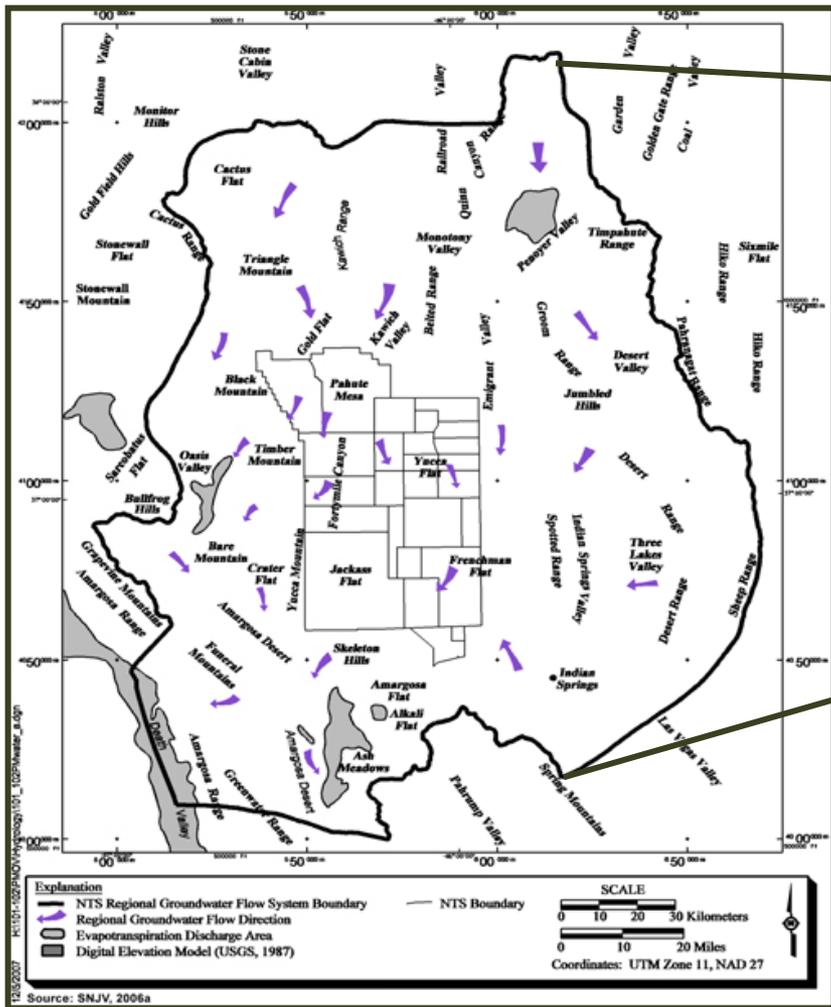
- Develop regional models of groundwater flow
 - Death Valley Regional Groundwater Flow system
- Identify Corrective Action Units for characterizing areas grouped by geography and hydrogeological setting
 - Remediation is cost-prohibitive
- Develop flow and transport models for each corrective action unit
 - Used to forecast contaminant boundaries for the next 1,000 years
- Monitoring to test modeling forecasts
 - Build confidence in models results for regulatory decisions
- Negotiate compliance boundaries with NDEP
 - Define area for long-term monitoring program and protection of public



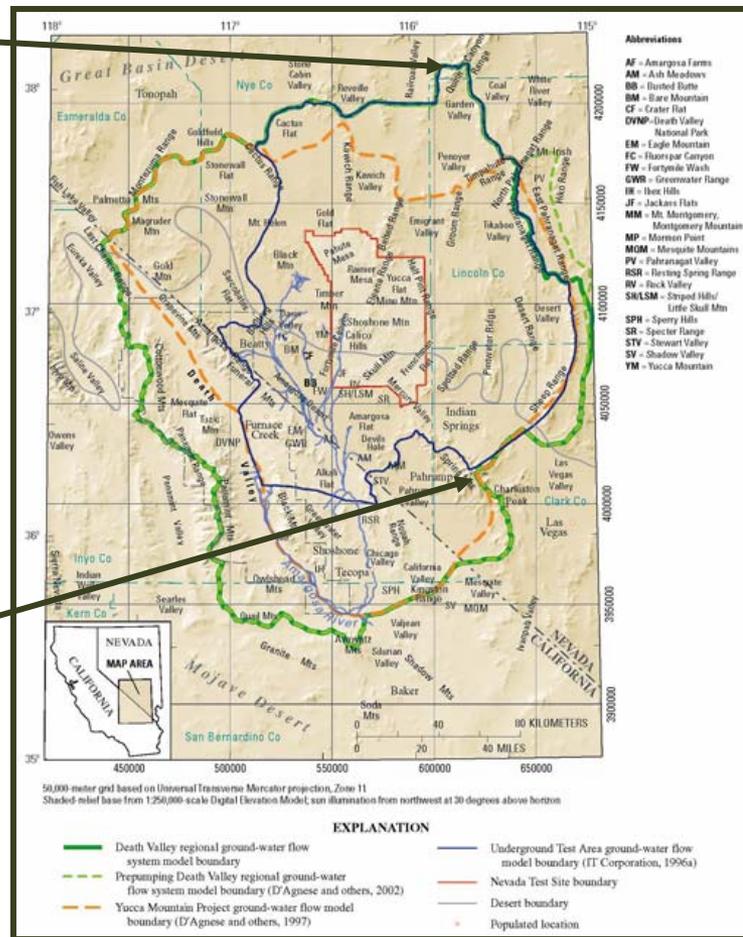
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UGTA Regional Model (1997)



USGS Death Valley Regional Groundwater Flow System (2006)



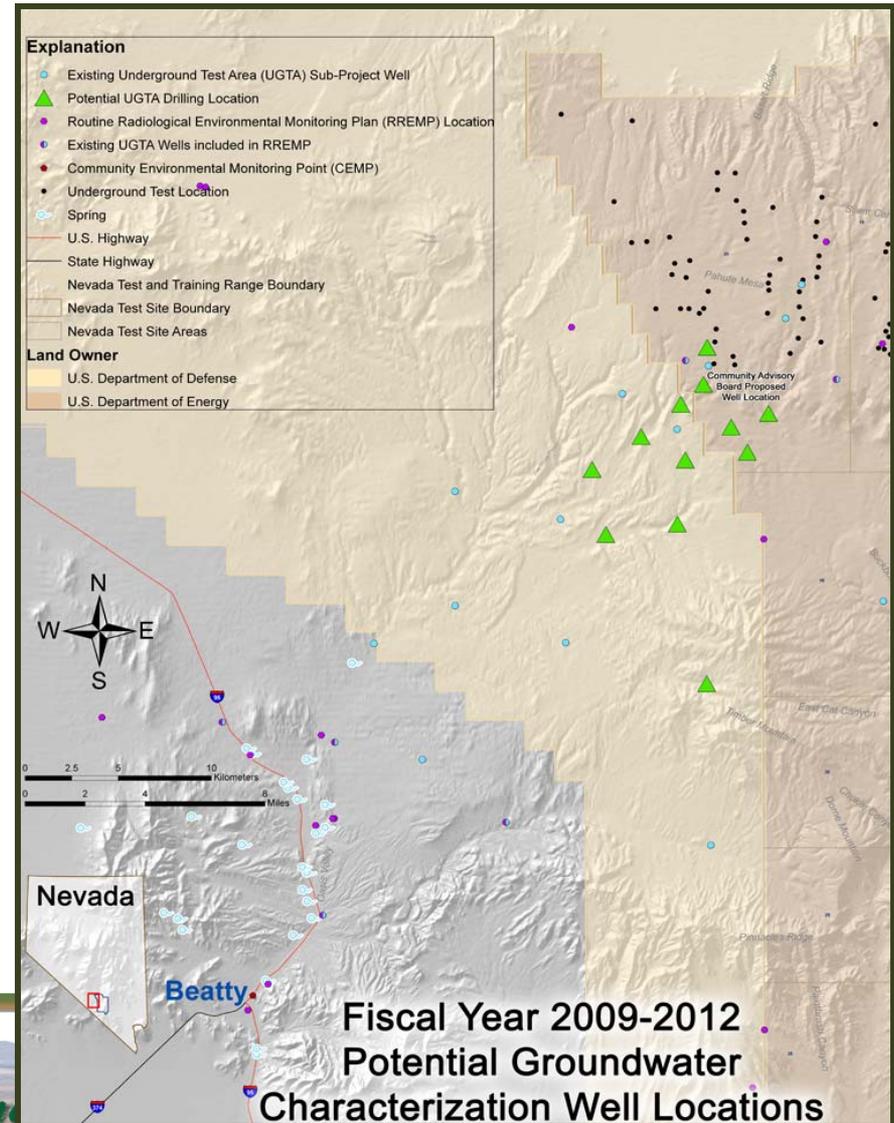
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Western and Central Pahute Mesa

- 75 Corrective Action Sites (CASs)
- Approximately 61% of underground inventory
- Nine (9) new wells to be drilled between FY 2009 and FY 2011
 - Computer models predict radionuclide transport off the NTS
 - Phase II data collection will help refine model output



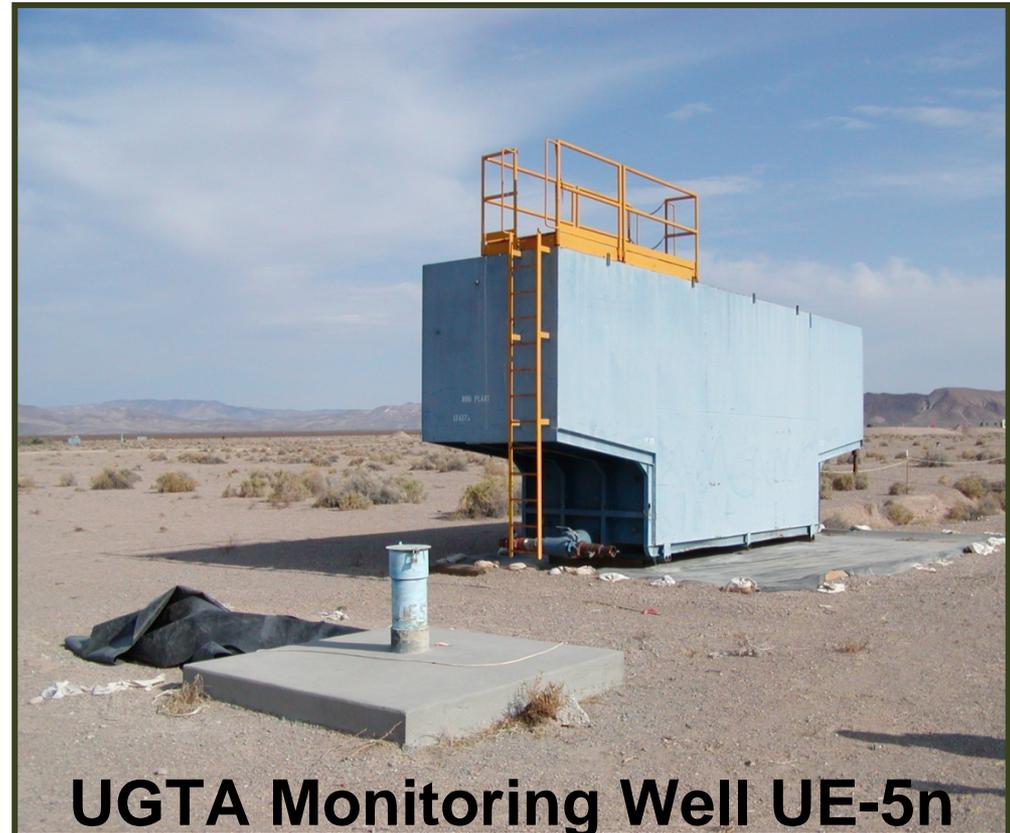
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Frenchman Flat

- 11 CASs
- Less than 1% of the underground inventory
- Phase II transport model to NDEP for review in September
- Begin preparing for independent peer review in FY 2010



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Yucca Flat (Climax Mine and Yucca Flat)

- 717 CASs
- Approximately 39% of underground inventory
- Completed the unclassified Source Term Data Document in June 2009



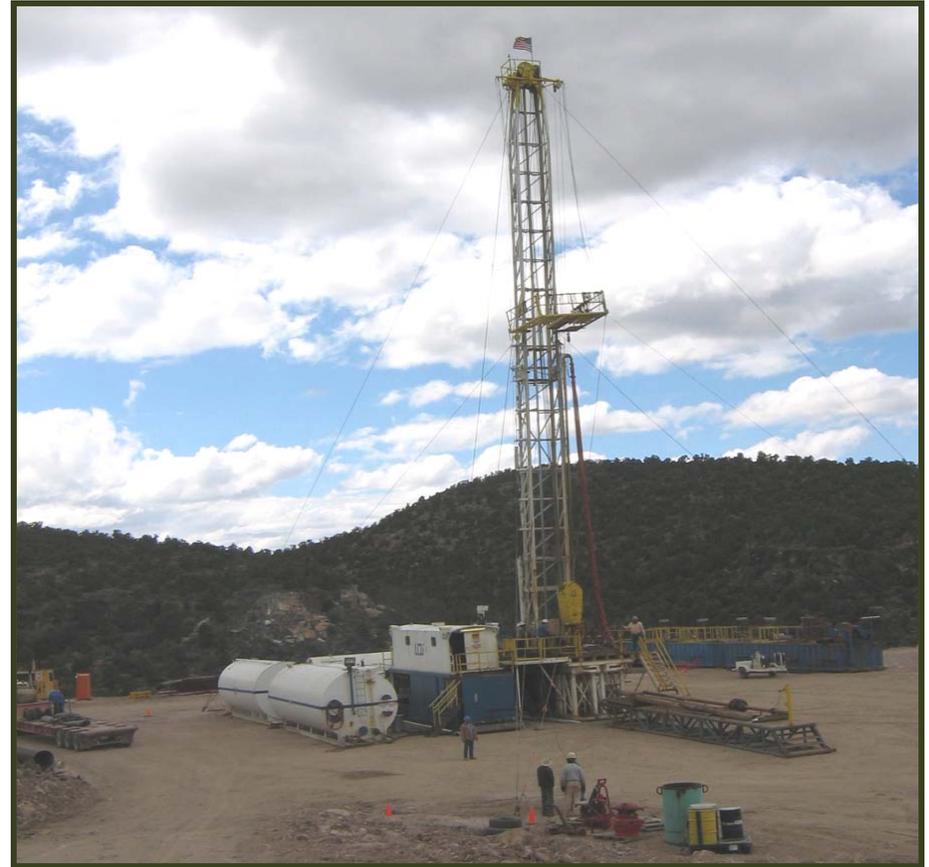
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Rainier Mesa / Shoshone Mountain

- 60 CASs on Rainier
- Six (6) CASs on Shoshone Mountain
- Less than 1% of the underground inventory



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Risk Perspectives / Public Protection

- **UGTA Risk:** Public exposure to contaminated groundwater
- Standard risk equation, **Risk = $H_p \times C_h$** , where H_p is the probability of a hazard and C_h is the consequences of a hazard
- Risk equation translated to the UGTA decision problem
 - H_p is probability of contaminated groundwater (greater than the Safe Drinking Water Act of 1974)
 - C_h is consequences of exposure to contaminated groundwater (dose exposure scenario)



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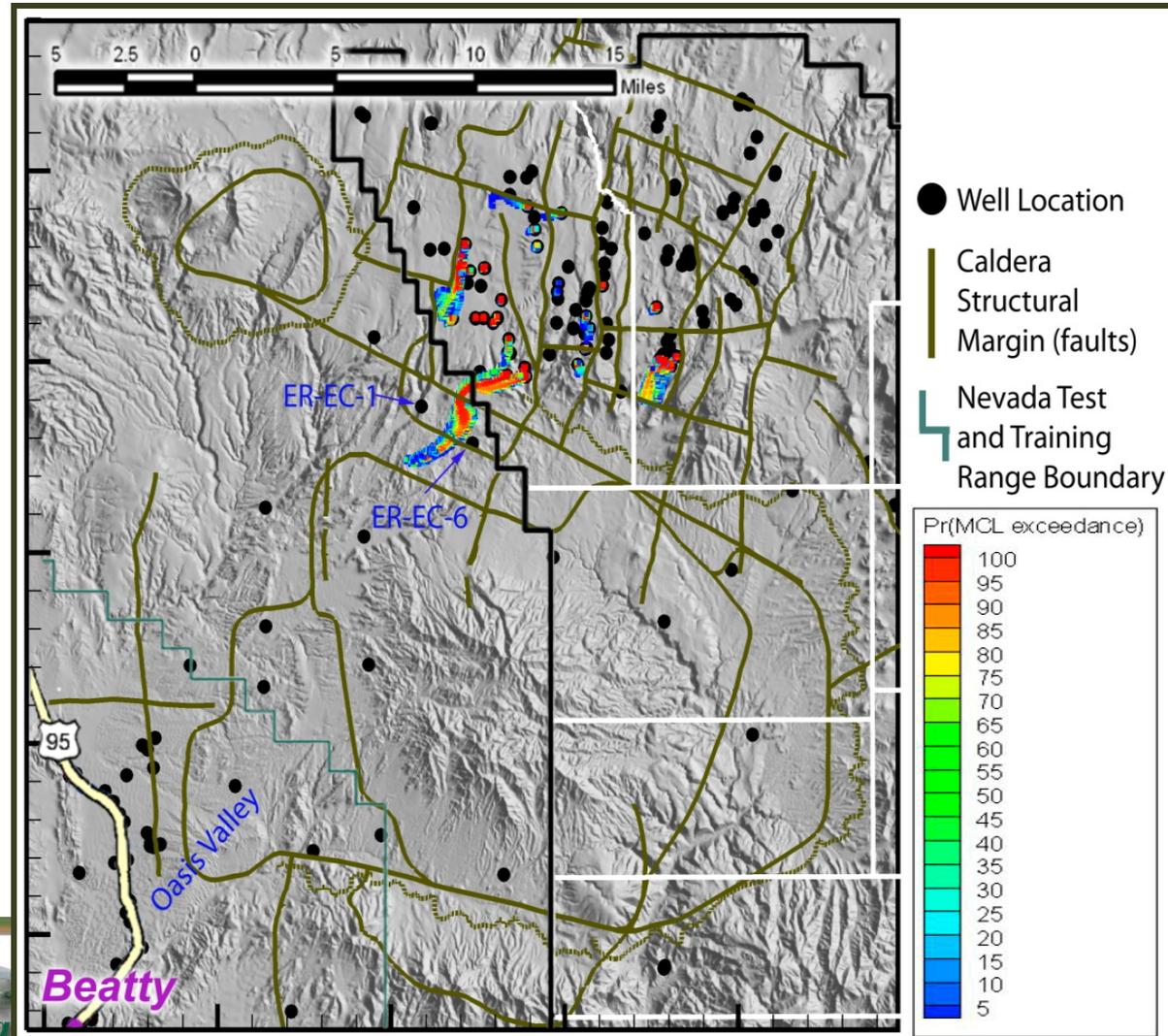
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Risk Perspectives

(continued)

- H_p is established by model forecasts which define the contaminate boundary
- C_h can be controlled by land-use restrictions that limit public access to groundwater (reduced probability that the exposure scenario occurs; SDWA assumes $P = 1$ that exposure occurs)



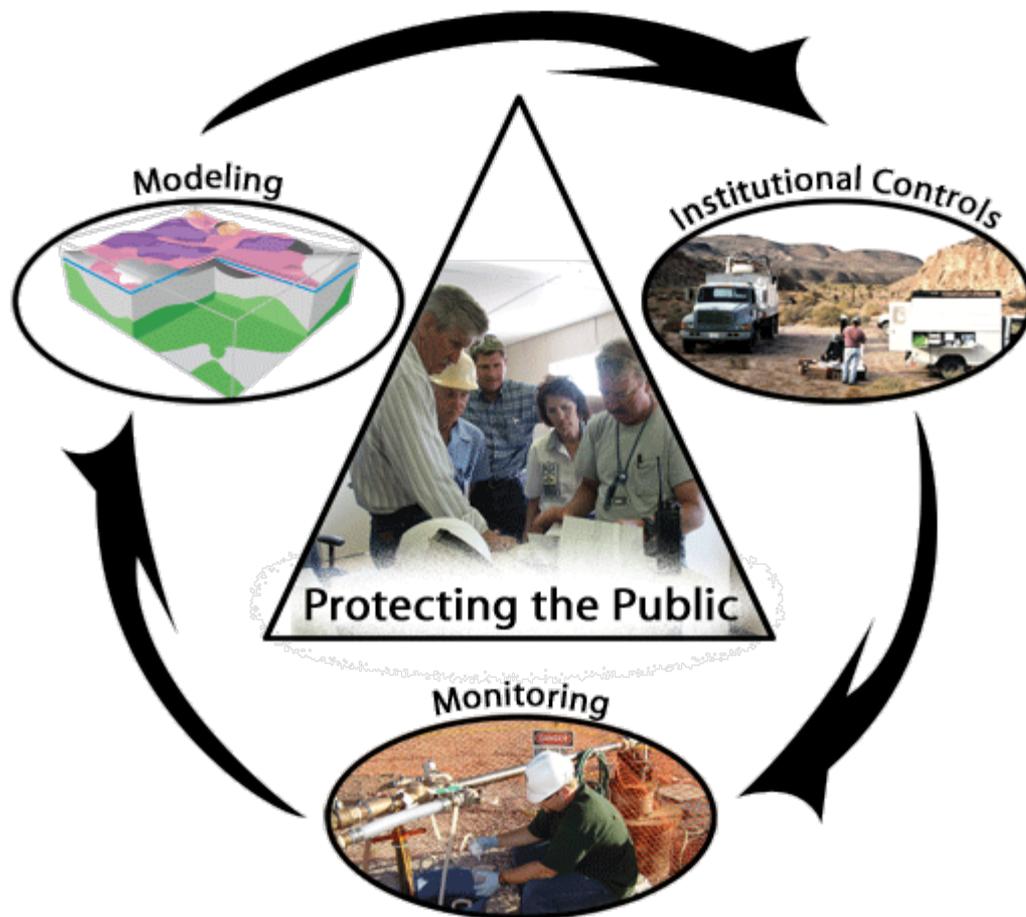
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Tripartite Closure Strategy

Risk-Informed Strategy



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UGTA Summary



- UGTA is aggressively moving forward in all CAUs
- UGTA continues to work closely with all stakeholders; Citizens Environmental Monitoring Program; Community Advisory Board and NDEP



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