

Navajo Abandoned Uranium Mines: Using Geospatial Technologies

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**August 16, 2016 – Tribal Lands & Environment
Forum: A National Conversation on Tribal Land and
Water Resources**

Mohegan Sun – Uncasville, Connecticut



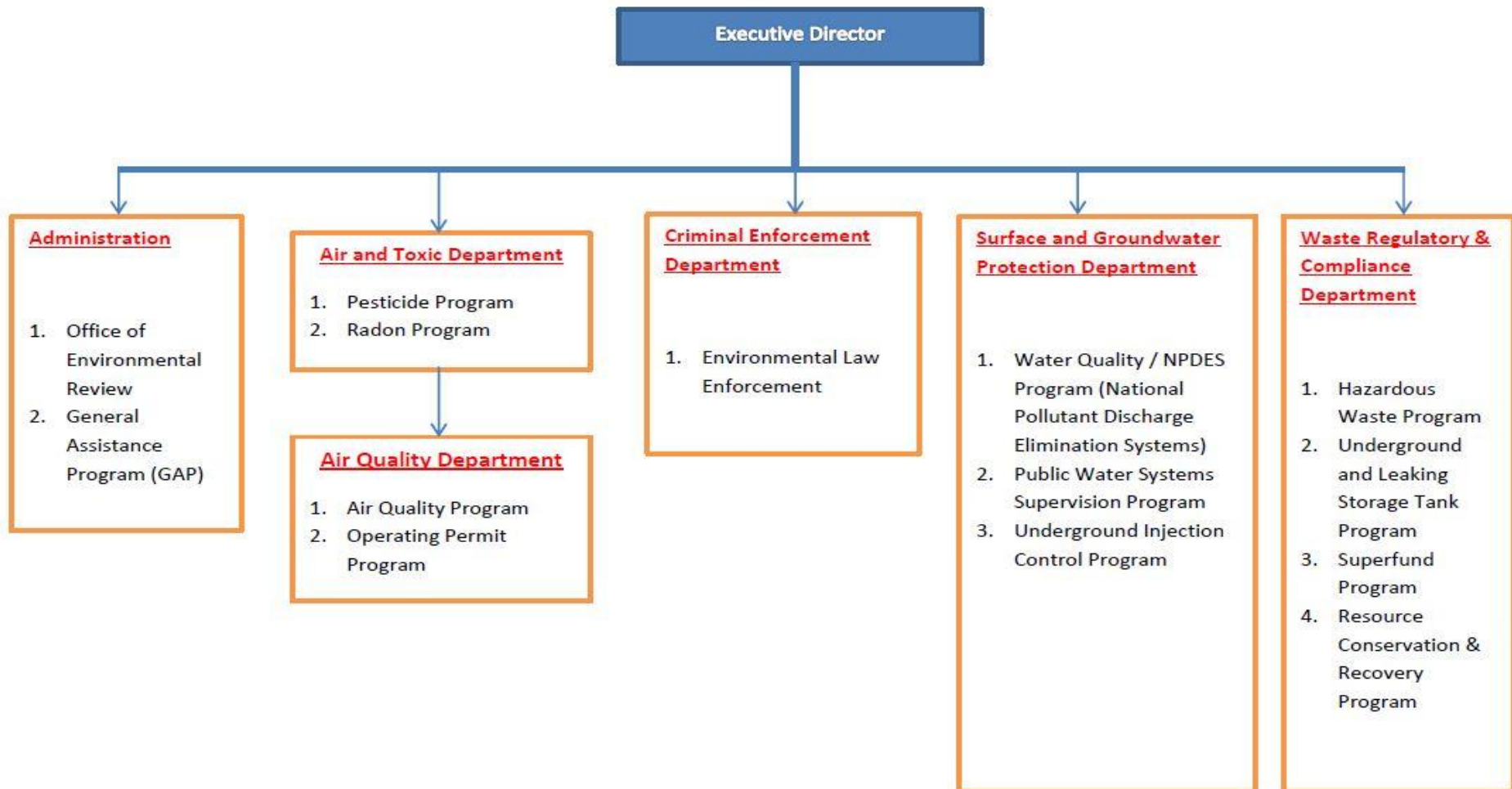
**Navajo Nation
Environmental Protection Agency**

Presentation Outline

- Background Info
- Geospatial Technologies
- Other Equipment
- Program Application
- Conclusion

Background

Navajo Nation Environmental Protection Agency Organizational Chart



Background

- Office location [35.661378, -109.100423](#)
 - Saint Michaels, Arizona
- MISSION STATEMENT - The Navajo Nation Environmental Protection Agency is committed to protecting Mother Earth and Father Sky and all living beings through environmental laws and regulations by honoring traditional Dine' teachings and culture.
- Superfund Program Staff: Sr. Environmental Program Supervisor, Freida White; Sr. Environmental Specialist, Vivian Craig; GIS Analyst, Darlene Jenkins; Sr. Environmental Engineer, Binod C.; vacant positions Chemist, Sr. PIO, Sr. Accountant & Office Assistant, Sr. Reclamation Specialist, health Physicist; USEPA IPA
- <http://navajonationepa.org/main/index.php>



NSP Office

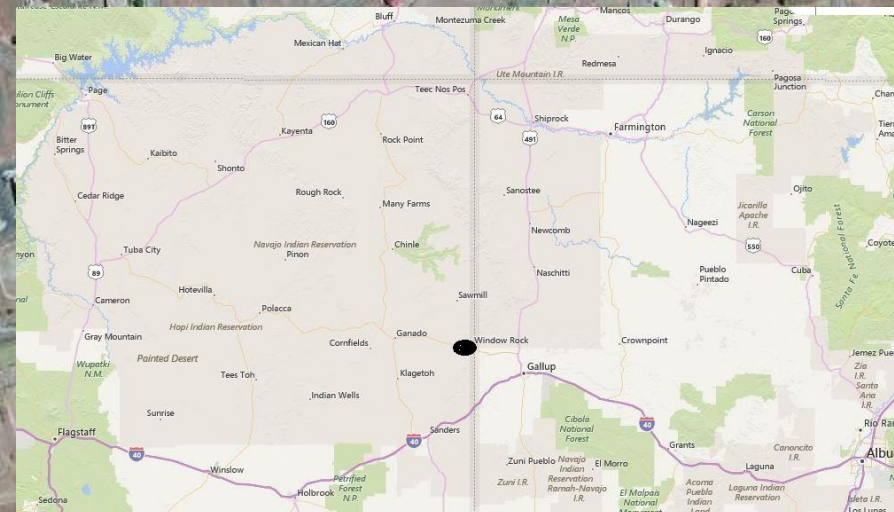
112

Kolob

Honora Rd

264

264



Map showing towns including Big Water, Mexican Hat, Bluff, Montezuma Creek, Mesa Verde N.P., Mancos, Durango, Pagu Springs, Red Mesa, Ignacio, Shiprock, Fairmington, Navajo Indian Reservation, Canyon National Forest, Tuba City, Cameron, Hotevilla, Polacca, Cornfields, Ganado, Sawmill, Window Rock, Crownpoint, Gallup, Sander, Grants, Laguna, and Albuquerque. Major roads like 64, 491, 66, 67, 68, 69, 70, 163, and 166 are also shown.

Background

- Navajo Superfund Program
- NNSP is responsible for implementing the Navajo Nation CERCLA, 4 N.N.C. §§ 2101-2805, a statute enacted by the Navajo Nation Council in 2008
- NSP also implement the federal Comprehensive Environmental Response, Compensation, and Liability Act (“CERCLA”)
- Superfund Sites
- Brownfields Sites
- Voluntary Cleanup
- Emergency Response



Geospatial Technologies

- BIA Branch of Geospatial Support (BOGS) formerly BIA Office of Trust Services Geospatial Support (OTSGS) offers
- ESRI Enterprise License Enterprise (ELA) participant...offered to federal recognized tribes for no fee, web & instructor training. *The current ELA between ESRI and the DOI is valid through January 31, 2019
- Desktop ArcGIS 10.4 (ArcInfo) & extensions and X-Tools
- Desktop Trimble GPS Pathfinder Office software
- GPS unit – older Trimble GeoExplorer 2008 with Trimble TerraSync software
- Google Earth Pro – no fee nwo



GPS – Trimble GeoExplorer 2008 with Trimble TerraSync software



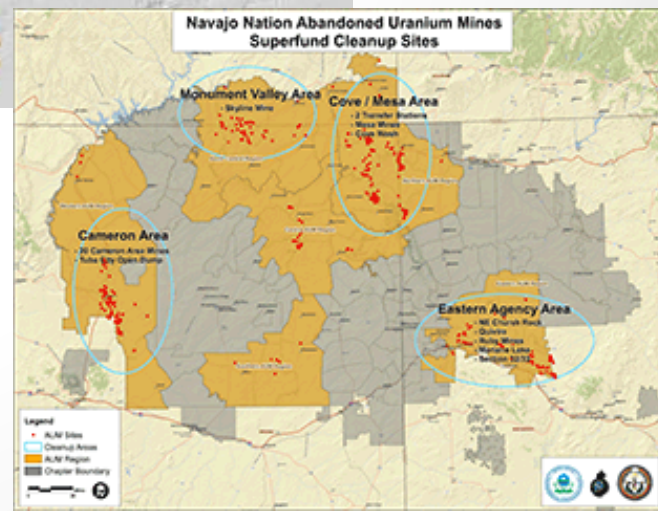
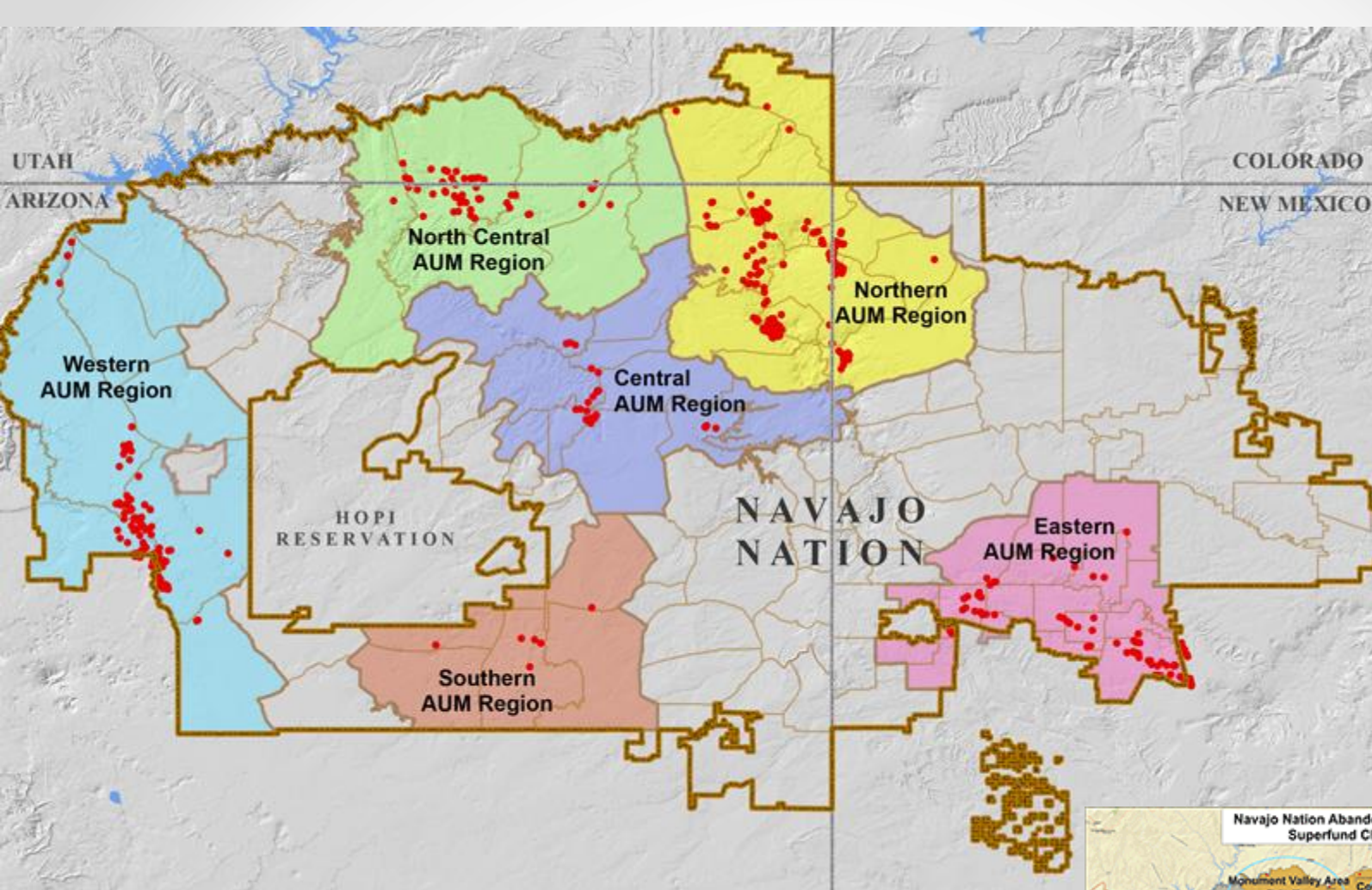
Other equipment

- Ludlum:
- Model 2221 is a general purpose ratemeter and scaler
- Model 19 is a highly sensitive gamma μ R/meter



NS Program Application

- Inventories for Superfund & Brownfield sites
 - Abandoned Uranium Mine sites
 - Sheep Dip Vat sites
 - Contaminated Structures Project (CSP) –
 - spatial analysis conducted to target structures on or near AUM
 - preliminary home and yard radiation screens location
 - Other XY locations for AUM project fieldwork

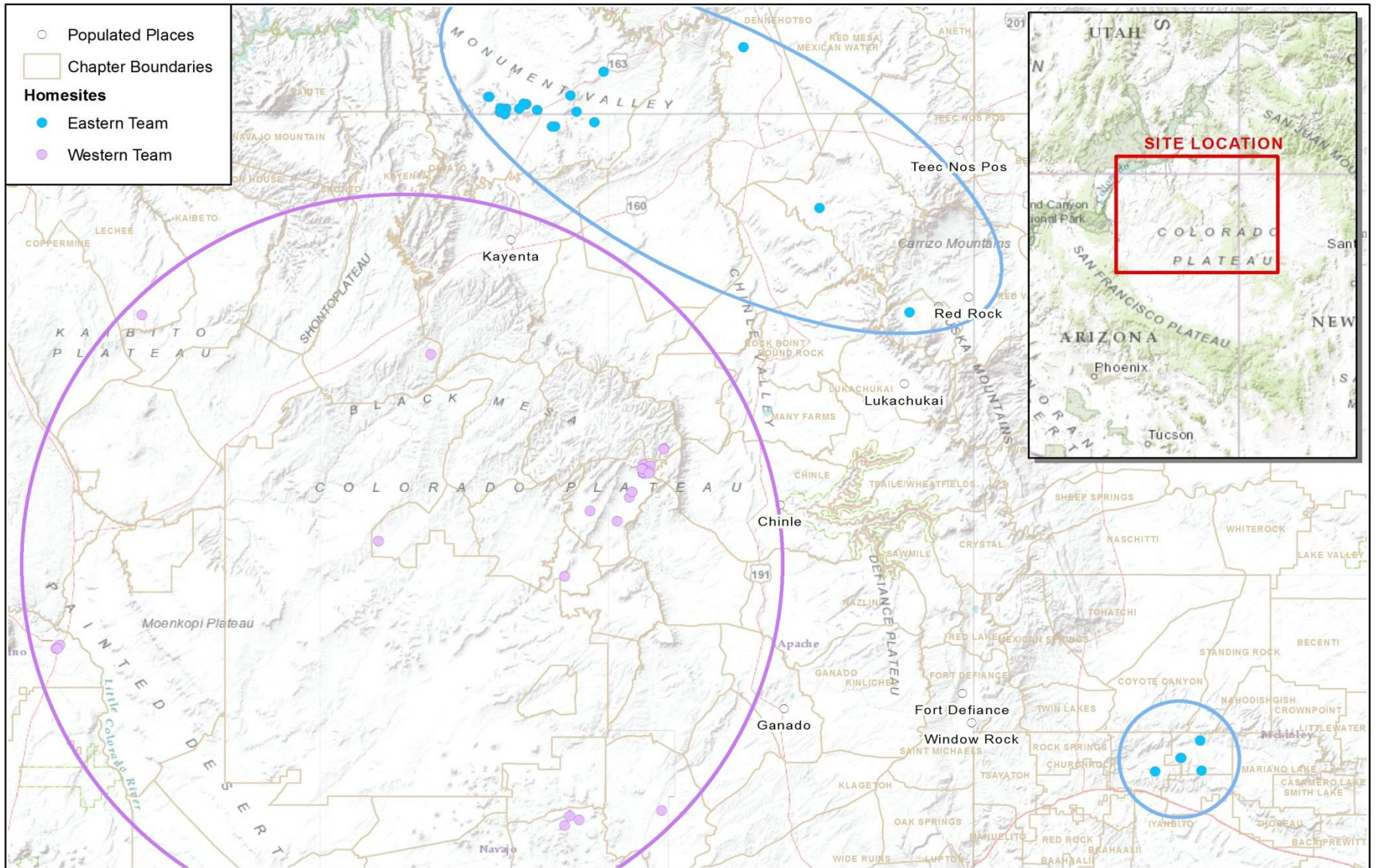


- Environmental Review
 - 164 Review Process
 - Now streamlined in the Navajo Land Title Data System (NLTDS) new
 - Homesite Leases for Tribal members
 - 2000 ft buffer
 - Navajo Housing Authority , Navajo DOT & Consultants
- Former Bennett Freeze Area (FBFA)
 - NLD gathering department data for their DB
 - Integrated Resource Management Plan (IRMP)
 - Development & improvement of infrastructures
- USEPA Tribal Land Clean-up Portal (TLC) development
 - Alpha release July 2016
 - Centralized DB location for all data for all partners
 - Weston Solutions, partners

e.g. CSP Preliminary Workflow

- NSP preliminary assessment
- Community member signed access agreement
- Outdoor – GPS, photo of structure, note taking, scan with Ludlum with both 2221 & 19 at the foundation base, @10 ft., @30 ft. of structure
- Indoor – scan with both models in every room
- Office – download data, create maps for reports, determine non-concerned & concerned structure - to forward to USEPA for full assessment
- USEPA makes their determination to do a full assessment

- ...USEPA makes their determination to do a full assessment
- 2 weeks CSP Deployment fieldwork
 - Recently in June 2016 –Split in to 2 Teams, about 20 people (cause 27,425 square miles)
 - West = 28 Structures and 28 yards, REFERRED 40 Homesites REFERRED
 - East = 45 Structures REFERRED, 39 Homesites REFERRED
 - Team West did finished in nine days



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PREPARED FOR:
 EPA Region 9
 Pacific
 Southwest



FIGURE 1
HOMESITE LOCATION MAP
 Central Agency Radiation Assessment
 Navajo Nation



Conclusion

- AUM site clean up will continue
- Geospatial technologies will expand
 - drone usage
 - mobile phone & custom apps
 - Light Detection and Ranging LiDAR data mapping
 - continue to update hardware & software
- NSP will get a new building

THANK YOU!

