Abandoned Uranium Mines
Navajo Nation

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USEPA Airplane Survey in the Eastern Abandoned Uranium (AUM) Mine Region

In the summer of 2018, the U.S. Environmental Protection Agency (USEPA) flew the Airborne Spectral Photometric Environmental Collection Technology (ASPECT) airplane over abandoned uranium mines in Eastern and Western Navajo Nation. This low-flying, radiation-detecting plane collects data that shows radiation levels on the ground. The data will help USEPA's efforts to characterize the level and extent of radiation at and around abandoned uranium mines (AUM). This fact sheet presents results and example figures from the ASPECT survey in the Eastern AUM Region which included Smith Lake, Coyote Canyon, Church Rock, Standing Rock, Mariano Lake, Baca/Prewitt, Pinedale, Nahodishgish, and Casamero Lake Chapters.

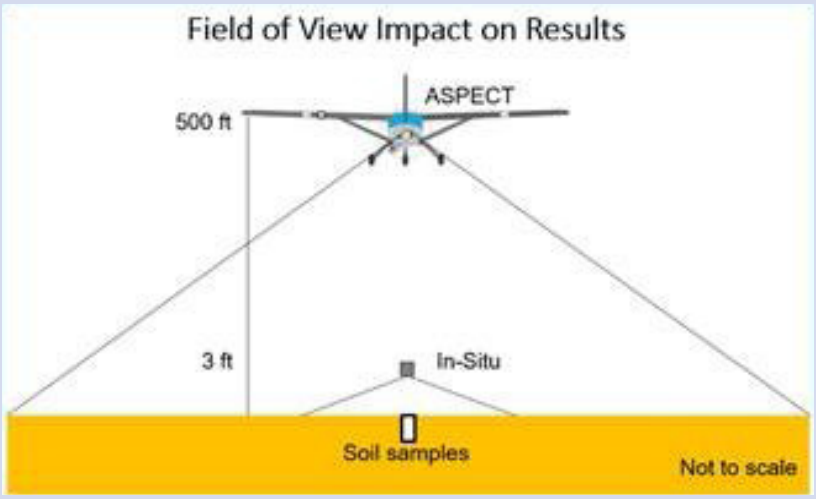
Why Use ASPECT?

The ASPECT airplane is a cost-effective way to collect radiation data for large areas using state-of-the-art sensors to measure radiation levels on the ground.

The data collected by the ASPECT airplane is useful to understand the general location and size of areas that may have radiation at levels of concern.

Data helps USEPA determine if mining-impacted areas were missed during the ground investigation phase of the Eastern Agency mines.

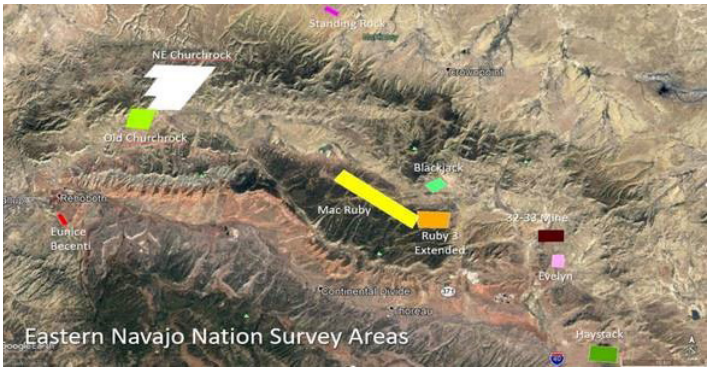
Understanding ASPECT Airplane Findings



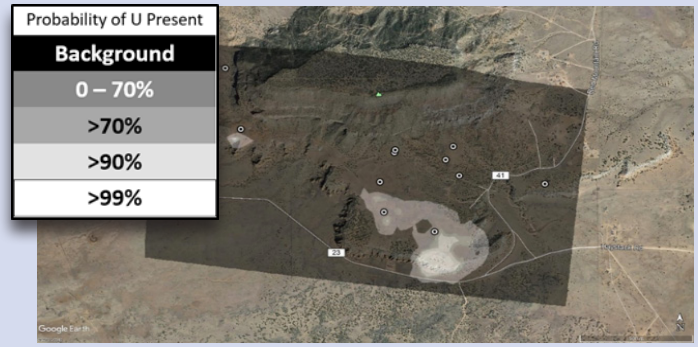
The ASPECT plane flies at around 300 feet above the ground, which gives it a field of view of approximately 6.5 acres. The data collected provides a general trend of areas containing elevated uranium or thorium levels. The exact area of contamination is further defined by ground surveys.

Where did the ASPECT Plane Survey?

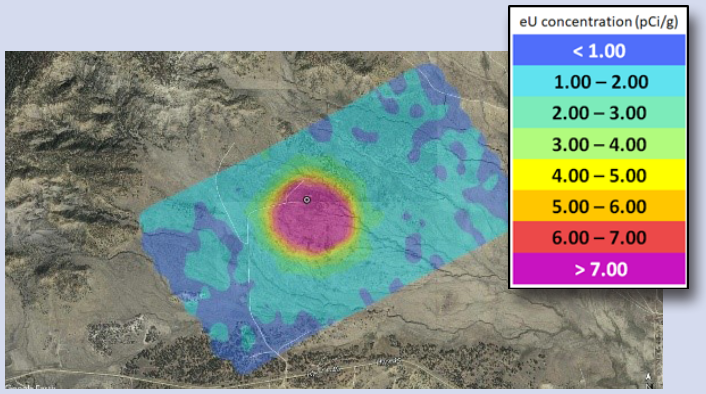
- The ASPECT airplane completed four flights in the Eastern AUM Region that covered more than 30 square miles of land.
- The surveys included 16 abandoned uranium mine sites and one mill site that have been previously investigated and results have been publicly published. (For more information on the Eastern Agency sites please visit: **https://www.epa.gov/navajo-nation-uranium-cleanup/eastern-abandoned-uranium-mine-region)**
- Approximately 13,000 data points were collected.



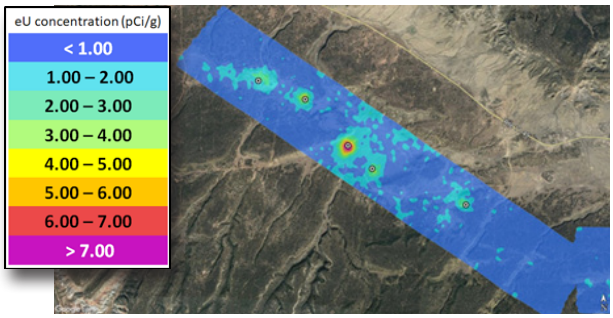
Example Results



Haystack Mine. Probability of Uranium Present (PUP) product shows areas where natural uranium is out of balance (white) with the natural background (black). White areas indicate where uranium spectral signatures are statistically significantly present for uranium and its decay products. ***This product is not correlated to concentration and should only be used to identify areas where further ground-based characterization efforts may be warranted.***



Equivalent Uranium concentration (pCi/g) contour of the Black Jack 1 mine. This product was derived from 453 data points covering 1.2 square miles. The dot represents the mine location. Much of the red area generally exceeds 7.0 pCi/g surrounded by background concentrations ranging between <1 pCi/g to 2 pCi/g. This image should not be used to independently assess potential health risks. Additional information is necessary to make appropriate health-related or cleanup decisions.



This map shows results from the 2018 ASPECT survey of radiation levels over an area of about 7.8 square miles in Smith Lake and Mariano Lake Chapters including four mines (Mariano Lake, Mac 1 &2, Black Jack 2 and Ruby 1 mines). The blue and green colors represent the lower levels of gamma radiation and the yellow, orange and red colors represent the higher levels of gamma radiation.

Results, Next Steps and More Information

- The survey results did not show contamination outside the mining areas that have previously been identified through site investigations.
- USEPA will continue to work with the community and the Navajo Nation to complete any additional ground assessments necessary at the mines flown in the Eastern Agency and work towards selecting a final cleanup plan for each of the sites.

For More Information:

Sara Jacobs
Remedial Project Manager
USEPA Region 9
(415) 972 – 3564
jacobs.sara@epa.gov

Priscilla Tom
Community Involvement Coordinator
USEPA Region 9
(505) 240 – 0093
tom.priscilla@epa.gov

Dariel Yazzie
Environmental Program Supervisor
NNEPA Superfund
(928) 871 – 7601
darielyazzie@navajo-nsn.gov

ASPECT information website: **www.epa.gov/emergency-response/aspect**
USEPA Navajo Abandoned Uranium Mine Region website: **www.epa.gov/navajo-nation-uranium-cleanup**