



## Fact Sheet

*The U.S. Department of Energy Office of Legacy Management is responsible for site management and for ensuring that the selected groundwater compliance strategy at the Tuba City, Arizona, Disposal Site continues to be protective of human health and the environment.*

### Tuba City Site Background

The Tuba City uranium mill operated between 1956 and 1966. Milling operations resulted in large volumes of contaminated process water draining into the underlying aquifer, which contaminated the groundwater. The U.S. Department of Energy (DOE) remediated the materials from the former milling operation in 1988. In 1990, mill tailings were placed in a disposal cell and covered with material that prevents radon gas from escaping, and reduces the amount of water drainage through the disposal cell.

Initial groundwater monitoring began in 1976 and DOE began the current groundwater monitoring program in 1997. The Water Treatment Plant began operating in 2002 to process contaminated groundwater into clean water (distillate) and a brine waste. Approximately 90 percent of the groundwater is converted to distillate that is returned to the aquifer. The brine is sent to a lined evaporation pond.

The treatment plant was put in an operational standby mode in October 2014, because of safety issues, unreliable operation, and concern about its effectiveness. The treatment plant is currently drained and in a safe standby condition; therefore, it would be possible to restart the plant.

### What We Have Learned About the Groundwater

Most of the current contamination occurred during operation of the mill. After the mill stopped operating and the mill tailings were stabilized, drainage of contaminated water was significantly reduced.

The groundwater extraction and treatment system effectively captured the bulk of the groundwater contaminant plume and met design expectations. However, despite effectively capturing contaminated groundwater, there has been no obvious reduction in contaminant concentrations, which have remained relatively stable since remediation began.

Numerical groundwater modeling and monitoring data indicates that the groundwater in the geologic formation moves very slowly and the levels of contamination in the groundwater are diluted and reduced by natural processes in the aquifer with time and distance (see Figure 1 on page 2). The contaminant concentrations, size, and shape of the plume have not changed significantly in the time period since groundwater data collection began. Modeling results indicate that groundwater moves very slowly. However, contaminants may be moving even slower due to groundwater and aquifer formation characteristics.



Southwesterly View of Tuba City Mill in Operation (Circa 1966)



Tuba City Site (2010)

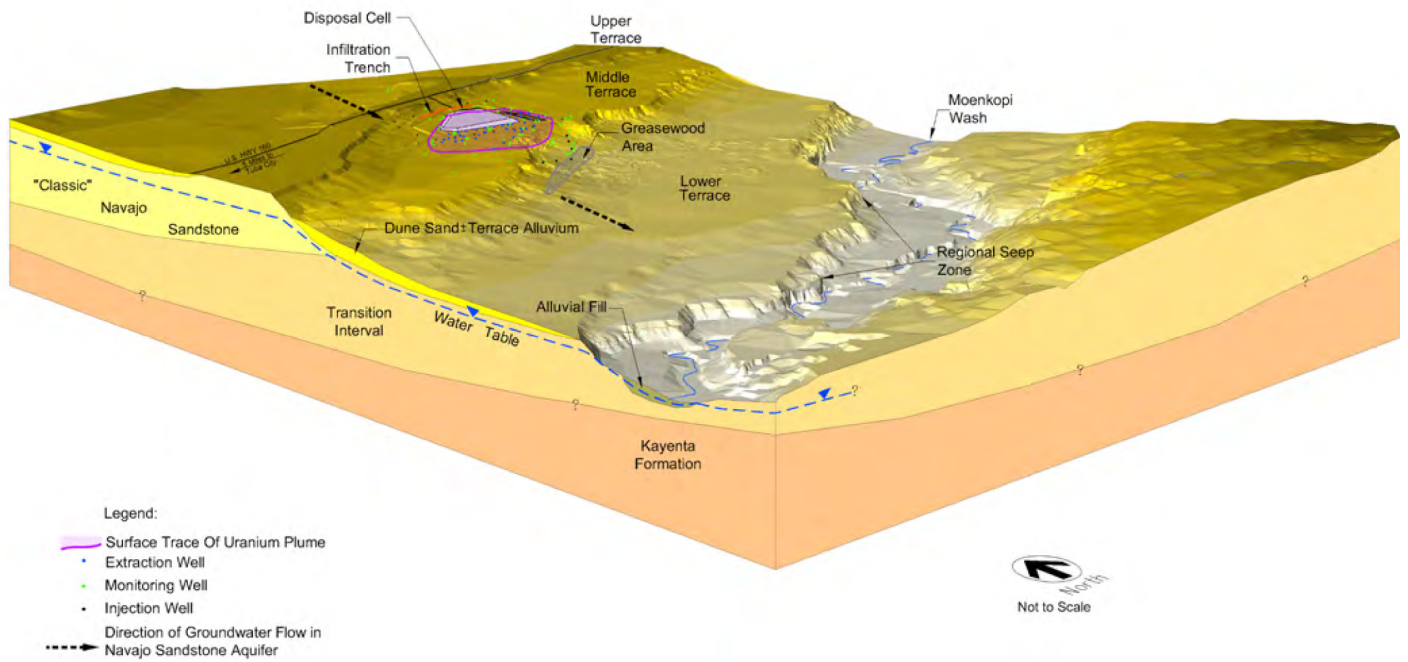


Figure 1: The conceptual model of Tuba City disposal site hydrology shows the extent of uranium contamination in groundwater is well defined in a relatively small area around the disposal cell.

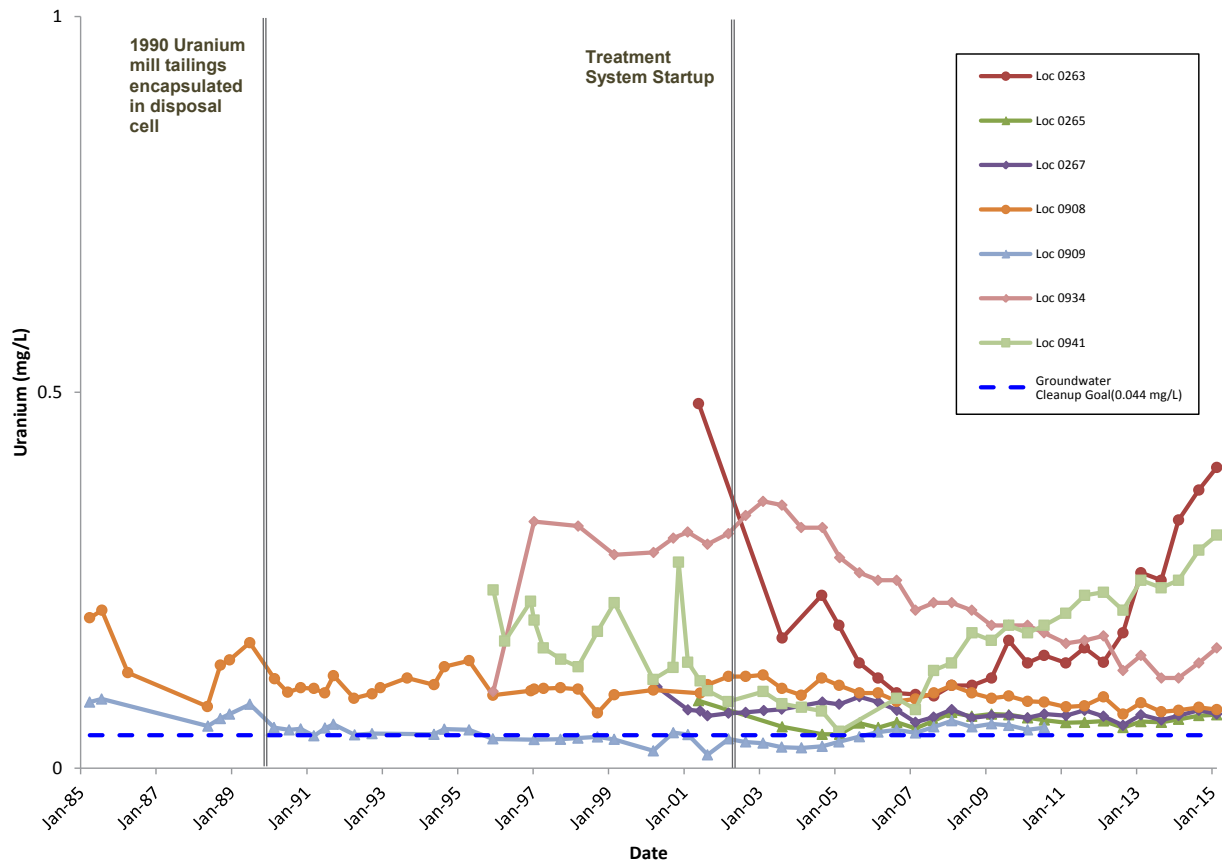


Figure 2: Time trending of uranium concentrations in groundwater indicates no significant statistical change to uranium concentrations before and after the start of remediation.

## Compliance Path Forward

The site is regulated under the Uranium Mill Tailings Radiation Control Act (UMTRCA). The UMTRCA Programmatic Environmental Impact Statement (PEIS) provides the general compliance strategy selection framework for groundwater, and identifies three basic compliance approaches for attaining groundwater standards: no remediation, natural flushing, and active remediation. The PEIS says the strategy will be reevaluated if conditions change or if monitoring indicates that the U.S. Environmental Protection Agency (EPA) standards will not be met. After years of gathering data, DOE believes a re-evaluation is warranted. An updated compliance strategy decision will be based on stakeholder input and a technical evaluation.

The regulatory document that describes the compliance approach for the site is a Groundwater Compliance Action Plan (GCAP). The EPA established standards for UMTRCA remedial action, cell performance, and groundwater quality. The Nuclear Regulatory Commission (NRC), an independent federal agency, regulates DOE management of the site.

The GCAP was completed in 1999, and it identifies the compliance approach as active treatment. Any change to the current treatment operation will require a change to the GCAP and acceptance by NRC.

## Contacts

DOE is actively seeking stakeholder input about the Tuba City site groundwater compliance approach. Stakeholders may submit their comments by mail, email, fax, or telephone.

U.S. Department of Energy  
Office of Legacy Management  
Tuba City Groundwater Compliance Comments  
2597 Legacy Way  
Grand Junction, CO 81503

Email: [TubaCityComments@lm.doe.gov](mailto:TubaCityComments@lm.doe.gov)

(970) 248-6070 (monitored continuously), or  
(866) 559-8316 (toll-free)

More information about the Tuba City site is available on the DOE Office of Legacy Management website at <http://www.lm.doe.gov/tuba/Sites.aspx>.

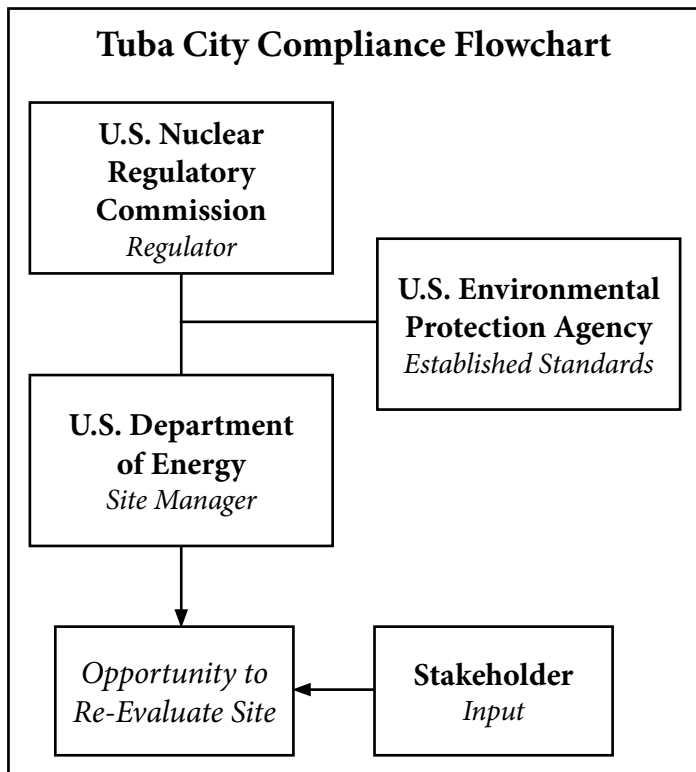


Figure 3.