

## Rulison and Rio Blanco

...Colorado Offsites

### Site Overviews

Rulison and Rio Blanco were joint industry/government experiments that took place some thirty years ago in Colorado as part the Plowshare Program – an effort by the U.S. Government to develop peaceful uses for nuclear detonations. Rulison (conducted in 1969) and Rio Blanco (conducted in 1973) were designed to study the economic and technical feasibility of using underground nuclear explosions to stimulate the production of natural gas from underground reservoirs. Both sites were officially deactivated by 1976 when gas production testing ceased.

### Site Cleanup

Since deactivation, the U.S. Department of Energy (DOE) has conducted various environmental assessment activities at both Rulison and Rio Blanco to determine the impact of previous testing. These activities include: aerial radiological surveys, cultural resources surveys, floodplains and wetlands surveys, sensitive species surveys, and surface and subsurface characterizations. The DOE's Nevada Site Office (NSO) is responsible for site characterization and cleanup.

#### *Rulison*

Following a rigorous sampling effort at Rulison, NSO remediated an industrial waste pond in 1995. Remediation activities involved removing mud from the pond's basement (the mud had been contaminated from drilling activities with chemicals called hydrocarbons) and resloping the pond. Then for three years, the NSO conducted shallow groundwater monitoring of temporary wells adjacent to the pond to ensure that contaminants were successfully removed. Results were favorable, and in 1998 the state of Colorado agreed that no further action was necessary for the Rulison surface.



*Rulison pond following cleanup.*



*Present day surface at Rio Blanco.*

#### *Rio Blanco*

At Rio Blanco, scientists determined that limited amounts of hydrocarbons were present in a series of three mud pits that were used in conjunction with drilling activities. These contaminants were found to be isolated, however, under soil covers that had been constructed years earlier directly following the test. In 2000, the NSO installed temporary wells at Rio Blanco to monitor possible migration of contaminants to the shallow groundwater. The state of Colorado agreed with NSO findings that contaminants were sufficiently isolated from the surface at Rio Blanco and granted NSO "no further action" in 2001.

## Current Activities

Work continues on the subsurface environments at both Rulison and Rio Blanco. Materials associated with the nuclear tests (i.e., radionuclides) are considered to be the contaminants of concern. A groundwater and natural gas transport analysis is currently underway at Rulison and Rio Blanco to assess the risks associated with the possible migration of these contaminants. In addition, the U.S. Environmental Protection Agency (EPA) performs annual sampling of deep monitoring wells and other water sources such as creeks, tanks, artesian wells, etc. These water sources are currently part of the EPA's Long-Term Monitoring Program.

Once NSO's modeling is complete, the state of Colorado will review the results and negotiate future actions based on a human health and ecological risk assessment. Future actions will more than likely include the continuation of a rigorous monitoring program for all domestic, public, and government water sources and the design of a contaminant boundary that designates where water is considered *safe* and *not safe* for public use.

## More About Colorado Offsites:

The **Rulison** site is located on private land approximately six miles southeast of Grand Valley, Colorado. **Rio Blanco**, which is located 37 miles northwest of Rifle, Colorado, is owned by the U.S. Department of the Interior – Bureau of Land Management and a private owner.

**Rulison and Rio Blanco** are two of nine Offsites managed by the Nevada Site Office's Environmental Management Program. Offsites are located off of the Nevada Test Site (two in Nevada, two in Colorado, two in New Mexico, one in Alaska, and one in Mississippi).

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