Smith Ranch - Highland Uranium Recovery Facility

Site Location and Facility Description

The Smith Ranch-Highland uranium project is located approximately 23 miles northwest of the City of Douglas in Converse County, Wyoming (Figure 1). The site is owned by Power Resources Inc. (PRI), which is doing business as Cameco Resources. The site includes approximately 10 operating wellfields (Figure 2). PRI has completed groundwater restoration activities in one wellfield.

Facility Licensing and Operating History

Commercial scale operations were first authorized at the Highland portion of the facility in July 1987 and at Smith Ranch in March 1992. In August 2003, these facilities were combined into one license. Currently, the facility includes Smith Ranch, Highland, Reynolds Ranch sites (Figure 1). The central processing plant is located on the Smith Ranch site (Figure 2). Also, the facility includes satellite sites at Ruth, North Butte, and Gas Hills; these satellite facilities are approximately 45 miles north, 50 miles north, and 90 miles west of the central processing plant, respectively (Figure 1).

PRI uses a combination of deep well injection and land application to dispose of various process waste streams, including process wash down waters, eluate solutions, sandfilter backwash water, wash water from yellowcake decant, brine concentrate from reverse osmosis, and ion exchange screening wash waters. For disposal by deep well injection, these process wastes are injected at an average of 150 gpm, from an injection well drilled to a total depth of 10,100 feet below surface. The wastes are injected into permeable portions of three Cretaceous-aged formations: the Parkman, Teapot, and Teckla sandstones, at depths below surface ranging from 8700 to 9600 feet.

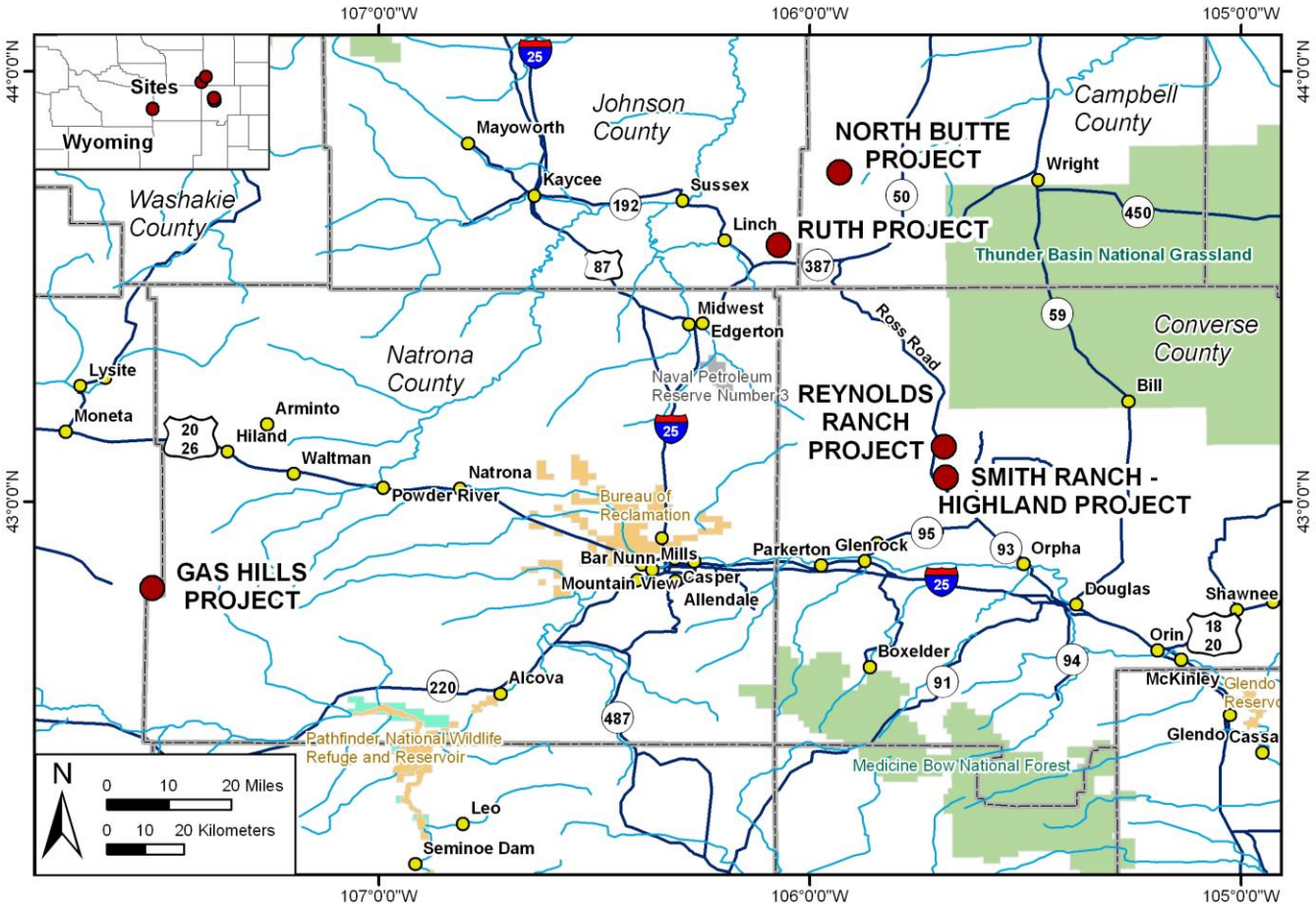

Figure 1. Smith Ranch Uranium Recovery Site Location Map

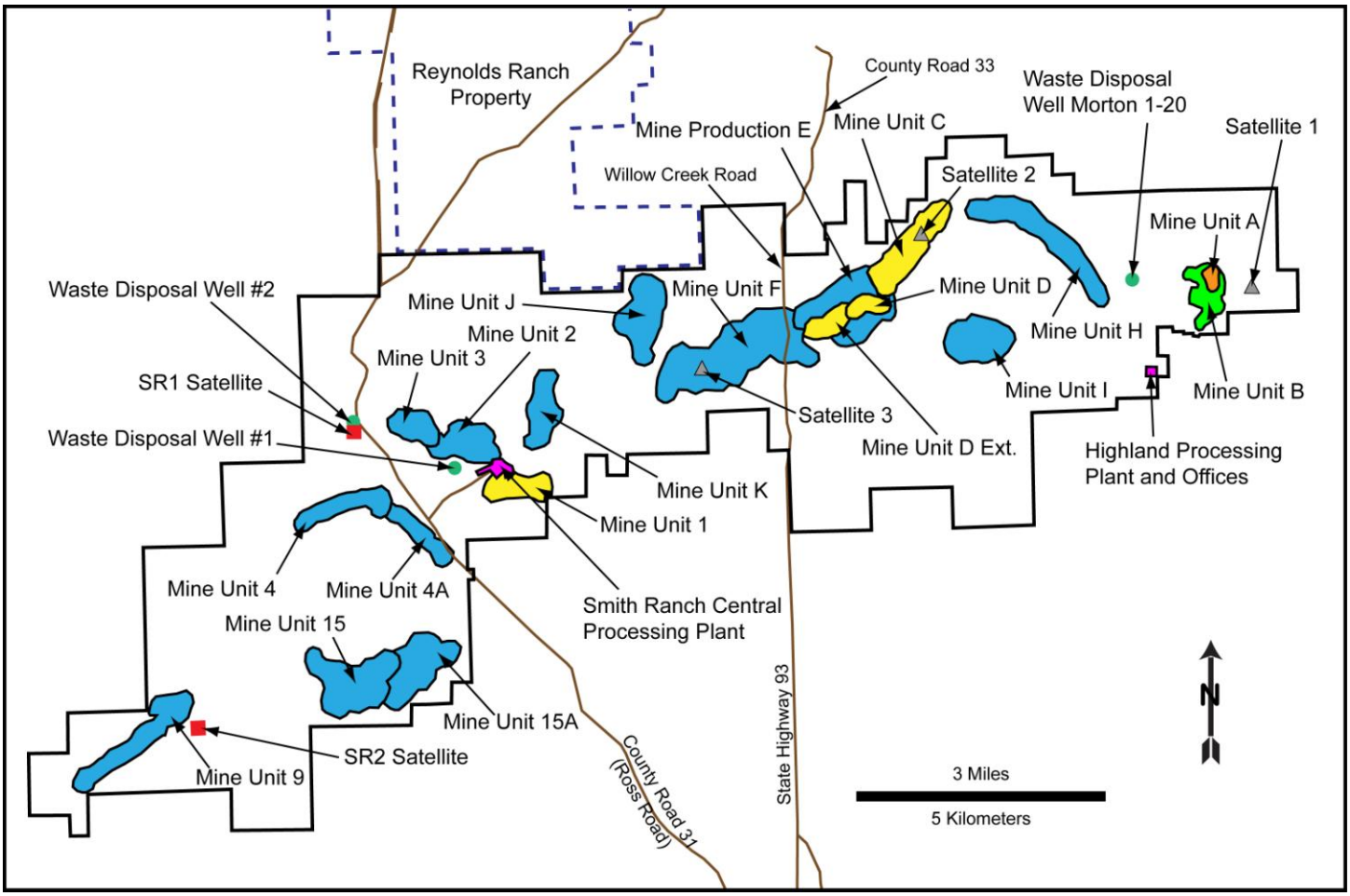

Figure 2. Smith Ranch and Highland Program Site Layout

Groundwater Protection and Airborne Effluent and Environmental Monitoring Program

Water samples are collected from 20 water wells on a quarterly basis for analysis of uranium and radium-266. The monitoring consists of quarterly sampling for natural uranium and radium-226 in groundwater wells and surface water sites used for livestock or for domestic water located within 1 kilometer of the operating wellfields. The sampling consists of 10 surface water (stock) ponds, 7 windmills (groundwater) and 11 wells (groundwater).

The licensee's environmental monitoring program consists of air particulate, radon, ambient gamma radiation, groundwater, and surface water. PRI's land application system incorporates monitoring of soil and vegetation, and sampling of irrigation fluid, radium treatment system, soil water at the irrigation areas, and monitor wells at Purge Storage Reservoir 2.

Continuous air particulate sampling are conducted at three locations: a background station, a downwind boundary station, and a nearest downwind resident station. At these stations, PRI samples the air for uranium, radium-226, lead-210 particulates, thorium-230, and radon-222 concentrations.

[1]Source: Golder Associates. "Smith Ranch-Highland License Renewal: Site Layout." Denver, Colorado: Golder Associates. 2010.

Additional Information

For more information about the Smith Ranch Uranium Recovery Facility, visit the NRC uranium recovery website at http://www.nrc.gov/info-finder/materials/uranium/ or contact the NRC facility project manager, Douglas Mandeville, at (301) 415-0724 or douglas.mandeville@nrc.gov.