

Environmental Restoration Project



ER Site No. 136: Bldg 907 Septic System

ADS: 1303

Operable Unit: Tech Area II

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Site History

Building 907 (ER Site 136) was constructed in 1948 and is in the northern portion of Technical Area II (TA-II). The building was initially designed for the final assembly of nuclear weapons and contains 1.5-ft-thick walls that separate the various assembly bays. An earthen berm on the south side of the building was originally built to isolate the building in case of an accidental detonation of high explosives (HE).

Building 907 was constructed with two effluent release systems: a septic system and an HE drain system. The HE system was designed and constructed to drain the assembly bays, and passes through a catch box about 200 ft south of Building 907. The catch box was designed to collect HE particulates by precipitation from the discharged water. Sometime in 1991 or 1992, the catch box collapsed. The HE system extends an additional 600 ft to the southwest, passing under Building 906. The discharge drains into a 200-ft-long, open ditch west of Building 919.

The septic system extends about 250 ft southwest from the southwest corner of Building 907, and consists of a 450-gal septic tank, two 1000-gallon septic tanks located downstream of the first for additional capacity, a 13-ft-deep by 5-ft-wide seepage pit, and approximately 400 ft of clay drainage tile in trenches.

During the early 1950s, eight to ten employees worked three 8-hour shifts per day assembling and packaging nuclear weapons. Floor sweeping was not allowed in Building 907 because it could generate static electricity discharges that could detonate the explosives. Therefore, any explosive residue and dust were flushed into floor drains with a water hose and discharged into the HE drain system. A mixture of kerosene and water may have been used to clean the floors.

In the late 1950s, when bomb assembly operations were discontinued, the building was converted into an explosives testing and development facility. These operations involved mixing small quantities of explosives in separate handling areas. During this period, according to

interviews, explosive residues were not flushed down the floor drains, but small amounts of cleaning compounds may have been discharged to the sanitary system.

Work areas and components in Building 907 were typically cleaned with organic compounds, including isopropyl alcohol, toluene, petroleum distillates, nitromethane, acetone, and methanol. Carbon tetrachloride was used to clean the work tables and components. Longtime employees indicated liberal use of carbon tetrachloride during operations. It was used (over 2 to 3 gal per month) until about 1951, when it was replaced by trichloroethylene (TCE) because the carbon tetrachloride caused headaches in personnel.

Between 1980 and 1985, Building 907 contained a darkroom for processing X-ray and high-speed black and white film. During this time, developing solutions and rinse water were discharged through a sink to the Building 907 septic system. After 1985, only rinse water was discharged from the darkroom to the septic system until closure of the system in 1992 when the building was connected to the City of Albuquerque sanitary sewer system.

From 1982 to 1992, cooling water from several lasers also was discharged to the Building 907 septic system. No contaminants are known to have been discharged with the cooling water. Based on aerial photographs, the vegetation over the 200-ft-long septic system ranges from 20 to 30 ft in width. In addition, the photographs show vegetation in the areas above the sanitary and HE drain lines southwest of Buildings 906 and 907. Between 1948 and 1992, an estimated 13 million gallons of effluent may have been discharged to the septic system.

The regional aquifer in the vicinity of ER Site 136 is within the upper unit of the Santa Fe Group. The depth to the regional aquifer in the nearest monitor well to ER Site 136(TA2-NW1-595) is approximately 520 feet (ft) below ground surface (fbgs) or 4,889.3 ft above mean sea level (famsl). A shallow water-bearing zone also exists in the vicinity of ER Site 136. The depth to the shallow zone ranges from approximately 267 to 320 fbgs (5,081 to 4,889 famsl). Monitor wells TA2-SW1-325, TA2-NW1-320, WYO-2, TA2-W-19, and TA2-W-01 are located in the vicinity of ER Site 136 and are screened in the shallow water-bearing zone.

The area is essentially flat, with a gentle slope to the west of approximately 4 percent. Tijeras Arroyo, the largest drainage feature at SNL/NM, is located approximately one half mile from the site. The surface geology consists of unconsolidated alluvial and colluvial deposits derived from the Sandia and Manzanita Mountains. These deposits consist of sediments ranging from clay to gravel derived from the granitic rocks of the Sandia Mountains and greenstone, limestone, and quartzite derived from the Manzanita Mountains.

Surficial deposits are underlain by the upper unit of the Santa Fe Group. In this area, the piedmont-slope alluvium may be up to 100 ft thick, and the upper Santa Fe unit is approximately 1,200 ft thick.

The piedmont-slope alluvium, which was deposited by the ancestral Tijeras Arroyo, is generally coarse-grained sand and gravel. The upper Santa Fe unit was deposited from 5 to 1 million years

ago and consists of coarse- to fine-grained fluvial deposits from the ancestral Rio Grande that intertongue with coarse-grained alluvial-fan/piedmont-veneer facies, which extend westward from the Sandia and Manzanita Mountains. ER Site 136 is near the easternmost limit of the ancestral Rio Grande deposits.

Several rift-bounding faults are located east of ER Site 136. The nearest is the Sandia fault-zone, characterized by north-trending, west-dipping normal faults. The westernmost fault is located approximately 1.2 miles east of the site.

Constituents of Concern

HE compounds: RDX, HMX, nitroguanidine, and nitrocellulose and, plastic bonded explosives: (PBX), nitromethane, and baratol

Cleaning compounds: methanol, acetone, isopropyl alcohol, toluene, petroleum distillates, TCE, and carbon tetrachloride

Photochemicals: include solutions with silver, cadmium, chromium, and cyanide

Metals: including arsenic, barium, lead, mercury, selenium, and silver

Possibly radionuclides

Current Hazards

There are no hazards at this site related to contamination of surface or subsurface soils.

Current Status of Work

Investigations have included passive soil vapor surveys, soil sampling, and surface radiation surveys. Waste was removed from the septic tank, and the empty tank inspected by the New Mexico Environment Department (NMED) in late 1995; concrete samples were collected to verify that no COCs remained.

Based on an absence of contamination, ER Site 136 was proposed for No Further Action (NFA) in June 1995. Regulatory approval of the NFA is pending results of the TA-II groundwater investigation.

Future Work Planned

Additional soil sampling was performed in 2000. An RSI data submittal with a revised risk assessment will be submitted to NMED. Additional investigations will be at the discretion of NMED. The clean out of the HE catch pits is scheduled for 2004. Material from the HE retention pit will be removed and characterized for disposal in 2002.

Waste Volume Estimated/Generated

Eight drums of liquid radioactive septic waste were generated from the septic tank. Also one drum of radioactive PPE was generated from this activity. All waste has been disposed off-site.

Information for ER Site 136 was last updated Jan 24, 2003.