

AOC	Description
#1	Site Groundwater
#2	Site Pond, Site Creek, and Northeast Creek
#3	Burial Pits
#4	Evaporation Ponds
#5	Former Leachfield/Sanitary Sewer
#6	Soils Beneath Buildings
#7	Limestone Storage and Fill
#8	Outdoor and Shallow Surface Area
#9	Former Gas Station
#10	Natural Gas Pipeline
#11	Red Room Roof Burial Area
#12	Domestic Well #3
#13	Deul's Mountain
#14	Cistern/Burn Pit
#15	Joachim Creek Bridge

TO HEMATITE

Fig. 1.4. Areas of concern at the Hematite Site.

CHAPTER 1 TABLES

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Table 1.1. Chemicals used at the Hematite Facility (adapted from LBG 2003)

Chemical	Use and known storage volumes
Anhydrous ammonia	– less than 750,000 lbs/year used as a reducing gas (cracked ammonia) in the production of UO ₂ , powder, pellets, and in preparation of material for recycle. Typically stored on-site in 16,000-gal tanks. Typical quantity stored on-site was 47,000 lbs.
Potassium hydroxide (KOH)	– approximately 4,000 lbs/year. Mixed with process water and used as wet-scrubber liquor to remove hydrofluoric acid from the recycle pyrohydrolysis-process effluent. Typical quantity stored on-site: <4,000 lbs.
Liquid nitrogen	– approximately 10,000 L/year were delivered by tanker or generated on-site for use with ammonia to provide air vent cover gas in the conversion process and the pellet furnaces. Typical quantity stored on-site: <8,000 gal. 66,000 lbs typical storage.
Hydrochloric acid	– approximately 900 lbs/year used in cleaning heat-exchanger tubes in the steam boiler and demineralizer regeneration. Typical quantity stored on-site: <1,000 lbs.
Nitric acid	– less than 15,000 lbs/year used to dissolve the U ₃ O ₈ wet-recovery process feed material. Typical quantity stored on-site: <5,000 lbs.
Hydrogen peroxide	– approximately 20,000 lbs/year used to provide a source of oxygen in the wet-recovery process. Typical quantity stored on-site: <7,000 lbs.
Isopropyl alcohol	– approximately 5,000 lbs/year used in cleaning. Typical quantity stored on-site: <3,000 lbs.
Hydrogen fluoride (HF)	– from 1998 until 2001, approximately 980,000 lbs of 35% hydrofluoric acid was generated as a byproduct of UF ₆ to UO ₂ conversion. Typical quantity stored on-site: <60,000 lbs.
Trichloroethylene (TCE)	– TCE was a thinner for a binding agent used in pellet manufacturing. Records indicate that one drum of TCE was buried in the Burial Pits. TCE was used as a manufacturing aid until the late 1980's and for miscellaneous uses within the plant until the early 1990's.
Perchloroethylene (PCE)	– PCE was used from 1962 to 1972 for fuel refinement for the U.S. Navy, and the Facility used PCE in a pilot fuel process in 1964 and 1965 (Building 255). PCE was used as a process catalyst until the early 1970s and was used at the Hematite Facility in a historic uranium-processing operation. Specific beginning and end dates for the use of this chemical are unknown.

Table 1.2. Historical and current use of buildings within the Hematite Facility (Adapted from LBG 2003; refer to Fig. 1.3 for locations within the Hematite Facility.)

Building number or area designation	Description
Building 101 Tile Barn	The Tile Barn was most recently used as the emergency operations center. Historically, clean and radiological-contaminated equipment had been stored in this building. During construction of the emergency operations center, residual radiological contamination was detected at low activities.
Building 110 Office Building	This building houses the security office and general office space. Radioactive work has never been performed in this building.
Building 115 Diesel Generator – Fire Pump Building	This building housed a diesel-powered emergency generator and a diesel-powered firewater pump. The diesel generator provides backup emergency power to maintain critical loads. No work with radioactive material is known to have been performed in this building.
Building 120 Wood Barn	The Wood Barn has a dirt floor and had historically been used to store both clean and radiological-contaminated equipment. The dirt floor may contain low levels of radioactive contamination.
Building 230 Rod Loading	This building was built around 1992 and was used for loading finished pellets (standard, erbium, and gadolinium) into fuel rods and assemblies in preparation for shipment off-site. No appreciable amounts of chemicals were used in this building. This building currently houses general offices and equipment storage.
Building 231 Warehouse	This building was used for storage of shipping containers. Some refurbishment of shipping containers was conducted in this building. This building is currently used for shipping/receiving and material storage.
Building 235 West Vault	The building was used to store depleted and natural uranium.
Building 240 Red Room, Green Room	This building contained laboratory and maintenance areas, a recycle recovery area, a waste incineration area, and the Health Physics laboratory. Historically, this building housed operations for the conversion of uranium hexafluoride into compounds, solutions, and metal. Building 240 was further divided into two areas: the “Red Room” used for high-enrichment conversion processes and the “Green Room” used for low-enrichment conversion processes and high-enrichment scrap processing. Effluent streams for the wet-conversion processes were piped to the Evaporation Ponds for settling and evaporation. During the plants operation, spills and leaks occurred in these areas and parts of the slab have been subsequently re-poured over the existing contaminated flooring.
Building 252 South Vault	The building was used for storage of oil, chemicals, and source and special nuclear material of various enrichments.
Building 253 Office Building	This building contained offices, various site utilities, uranium storage areas, processing areas, and decontamination facilities. Within Building 253 is an inner building (Building 250) that was formerly a stand-alone structure that housed a boiler, cooling tower pumps, a recycle hopper, and storage areas. Sub-slab contamination was found during the construction of Building 253 in 1989.
Building 254 Pellet Plant	This building was constructed in 1989 and housed equipment and operations for producing fuel pellets from granules of UO_2 or U_3O_8 .
Building 255 Erbia Plant	This building was used for the fabrication of uranium compounds into physical shapes. It contained equipment and operations for production of uranium-erbium pellets until 1989 when Building 254 was constructed and pelletizing operations were moved to the new building.
Building 256 Pellet Drying and Warehouse	This structure was for drying of pellets in electric ovens. The structure was also used as a main warehouse for shipping pellets and powder, and for receiving site supplies.
Building 260 Oxide and Oxide Loading Dock	This building, which was built in 1968, housed equipment and operations for the conversion of UF_6 into uranium oxide granules. Other chemicals used or generated in this area include: UO_2 , UO_2F_2 , U_3O_8 , NH_3 , N_2 , dissociated ammonia, limestone, and CaF_2 .