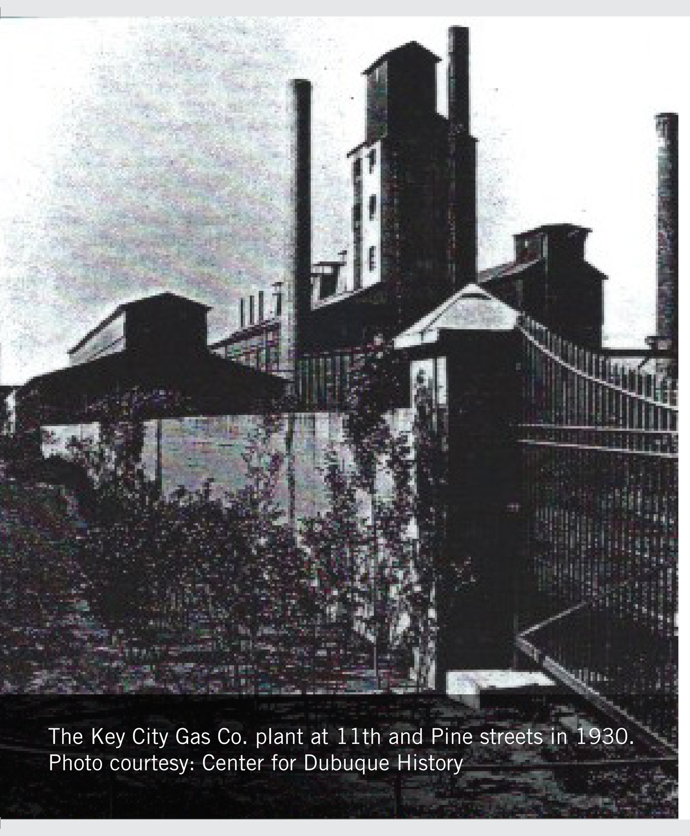
JULE OPERATIONS AND TRAINING CENTER



The Key City Gas Co. plant at 11th and Pine streets in 1930.
Photo courtesy: Center for Dubuque History

HISTORY

Until natural gas was introduced, coal was the primary natural resource used for making the gas used to illuminate street lights and mills, as well as for cooking and heating. By the latter half of the 19th century, most of the big cities in America had manufactured gas plants that were operated by utility companies. From 1890 until 1954, Key City Gas Co. owned and operated a manufactured gas plant at this site. To manufacture the fuel, coal and other ingredients were heated in large brick ovens. The process of burning coal resulted in carcinogenic byproducts including coal tar and iron oxide wastes. Some of these wastes were disposed of on site. Peoples Natural Gas Co. assumed ownership of the site in 1957 and demolished the Key City gas plant buildings in October 1959. In the 1960s, Peoples Natural Gas Co. sold a portion of the property to the City of Dubuque, which operated the Dubuque Public Works Garage on the site until 2005.

Coal tar found during initial site investigation.

CLEANUP

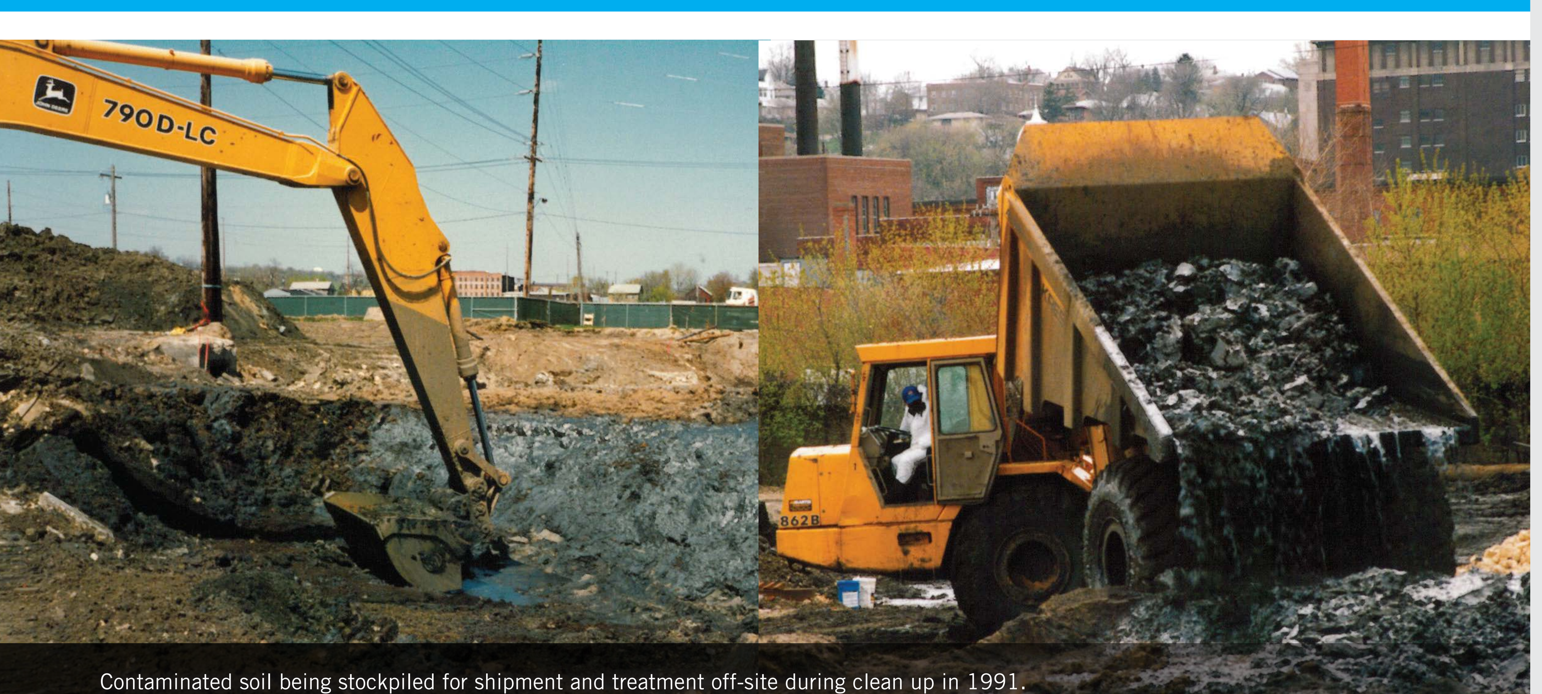
In 1983, while conducting a survey for the proposed extension of U.S. Highway 61, the Iowa Department of Transportation discovered contaminated residues from the gas manufacturing process, commonly referred to as coal tar, on the site. Contaminants were found in both the groundwater and soil. The Peoples Natural Gas site was added to the Superfund Program's National Priorities List on August 30, 1990. The cleanup began in 1989, and included the excavation and incineration of 17,250 cubic yards of contaminated soil and pumping and treatment of contaminated groundwater. Soil excavation and incineration were completed in 1998. Groundwater pumping and treatment began in 1996 and ended in 2003. A new pumping system was then installed between the site and the Mississippi River to capture any contaminated groundwater. This pumping system still operates today.

REDEVELOPMENT

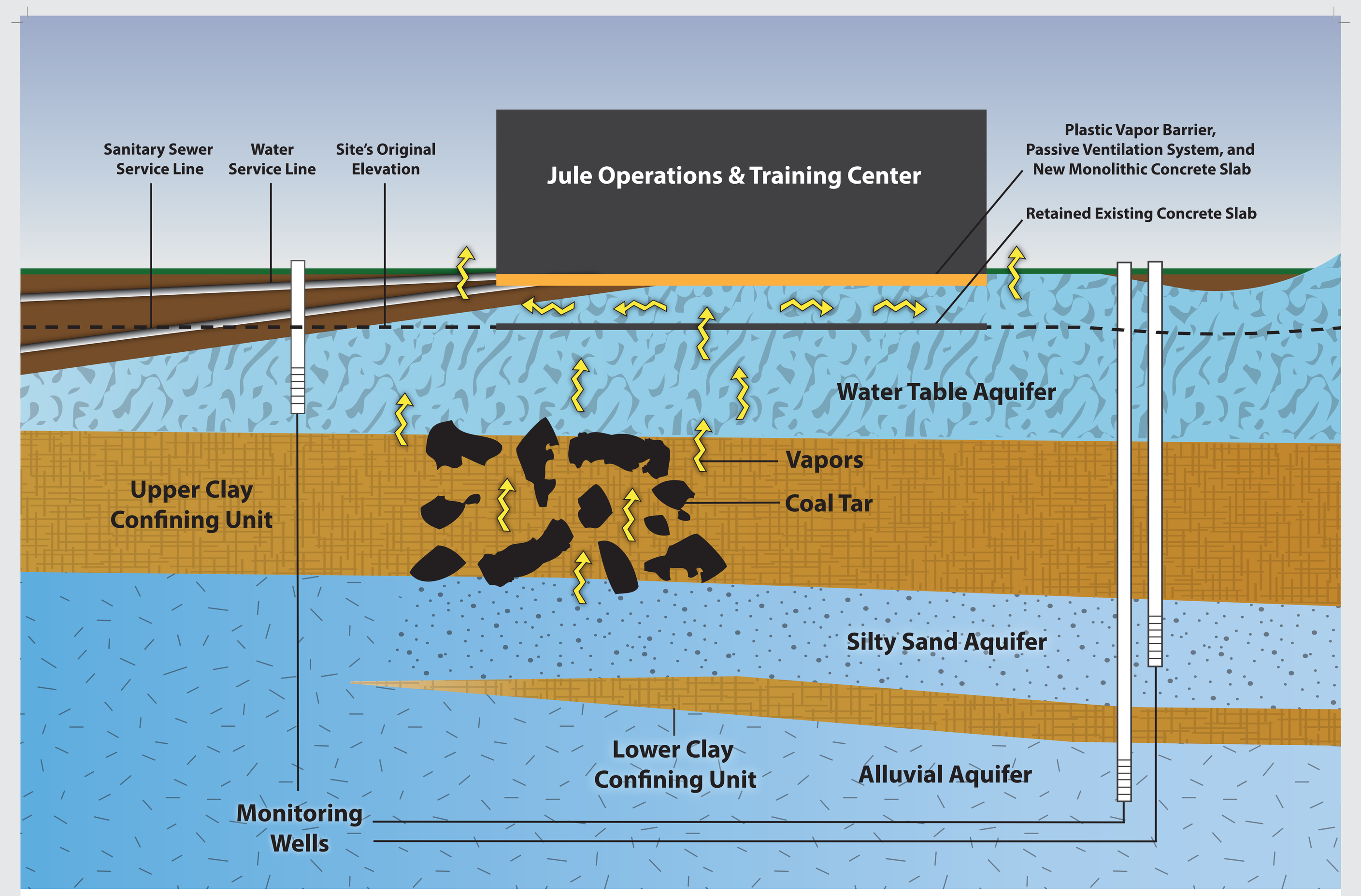
Superfund sites are not often redeveloped. In the absence of a suitable reuse, they persist as long-term vacant, fenced, and blighted properties. The City of Dubuque recognized an opportunity with the Peoples Natural Gas site to provide a much-needed space to house The Jule Operations and Training Center near the Intermodal Transportation Center.

The City collaborated with the United States Environmental Protection Agency, the Iowa Department of Natural Resources, the Iowa Department of Transportation, and MidAmerican Energy to transform this Superfund site into an asset for the community.

Despite multiple cleanup operations, a report issued in 2006 estimated 608,380 pounds of polycyclic aromatic hydrocarbons and 5,910 pounds of volatile organic compounds remained on site, primarily in the form of coal tar. Much of the remaining contamination is restrained by the site's geology.



Contaminated soil being stockpiled for shipment and treatment off-site during clean up in 1991.



The building design team worked together to protect both human health and the environment.

There are three aquifers and two clay confining units below the site. The remaining coal tar contamination is held in place by the upper and lower clay confining units, which restrain the movement of groundwater. The building design team created a redevelopment plan that would not increase the chance of contamination migrating into the Alluvial Aquifer. The plan included the demolition of the existing building, retaining the existing concrete slab, bringing in clean fill to raise the site's elevation, and pouring a new monolithic concrete slab. Exposure to soil, groundwater, and vapor contamination, both during and after construction, were also addressed.

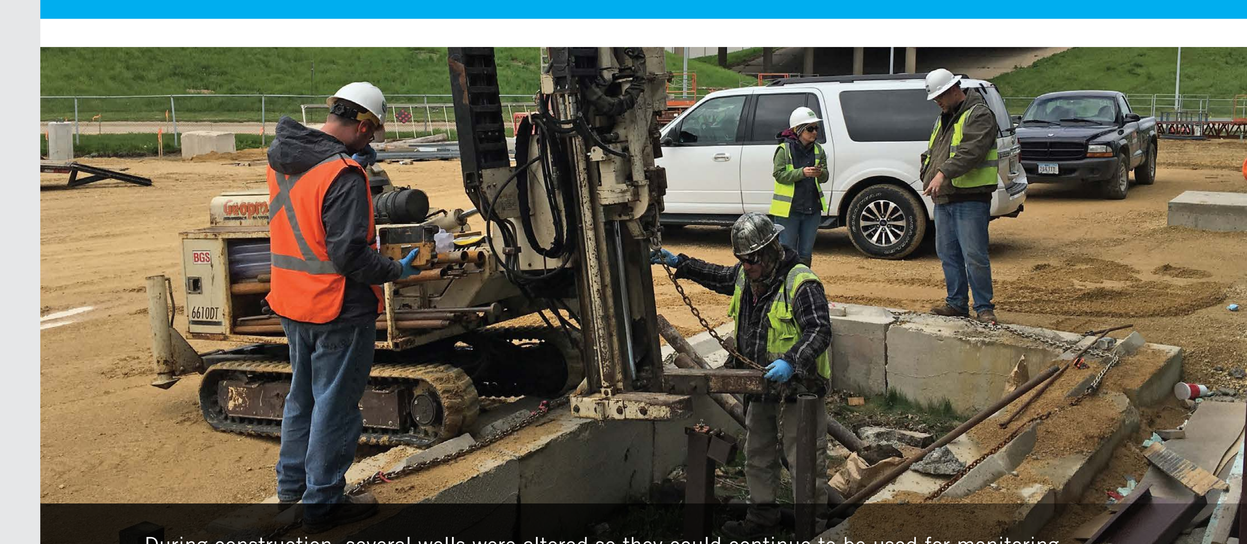
SOIL

During construction of The Jule Operations and Training Center, excavated soil was stockpiled on site and sampled. Depending on the laboratory results, soil was either disposed of at the Dubuque Metropolitan Area Solid Waste Agency Landfill or placed underneath the parking lot in the southwest corner of the site. New service lines were installed for potable water, sanitary sewer, and stormwater management. Materials chosen for these new service lines resist intrusion and degradation due to surrounding soil contamination. This both protects the users of the site and helps prevent repairs in the future due to material failures.

During construction, excavated soil was stockpiled on site and then sampled before determining a disposal method.

WATER

Groundwater on this site is sampled semi-annually to track the levels and locations of contamination through time. This is accomplished using groundwater monitoring wells. Typically, monitoring wells are 2-inch pipes drilled into the subsurface with slots at the bottom. The slots allow groundwater into the well so environmental professionals can gather samples. Three aquifers are present at this site: the Water Table Aquifer, the Silty Sand Aquifer, and the Alluvial Aquifer. There are monitoring wells both on and off the site in each of the three aquifers to monitor for contamination movement both horizontally and vertically.



During construction, several wells were altered so they could continue to be used for monitoring.

VAPOR

Harmful vapors can sometimes be produced from contaminated soil and groundwater. Vapors travel toward the surface and can accumulate inside structures, causing indoor air quality issues. This is called vapor intrusion.

During the site redevelopment, vapor intrusion concerns were addressed at The Jule Operations and Training Center in several ways:

- Raising the site increased the distance between the building and the contamination.
- The new building slab was poured as a monolithic slab – which means there are no concrete joints or vertical seams which could allow increased intrusion.
- A plastic vapor barrier and passive ventilation system were installed underneath the new concrete slab. These elements allow vapor that collects under the slab to be vented outdoors.

PARTNERSHIPS

The redevelopment of the Peoples Natural Gas site into The Jule Operations and Training Center was successful because of the partnerships between the City of Dubuque, United States Environmental Protection Agency, Iowa Department of Natural Resources, Iowa Department of Transportation, and MidAmerican Energy. The project serves as an excellent example of each organization's commitment to returning blighted properties in Dubuque to productive reuses.