

## 2. SURFACE IMPOUNDMENT CONSTRUCTION

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The Dallman Ash Pond was placed into service in approximately 1976 and is a diked embankment, covering approximately 34.5 acres in the Sugar Creek drainageway immediately down-gradient of Spaulding Dam and Lake Springfield.

Based on the 1976 Burns and McDonnell construction topographic map (see Figure 3), Sugar Creek meandered through the property. However, the creek channel was abandoned and rerouted to its present location when the surface impoundments were constructed. Abandonment of the creek channel included the placement of different types of soil, ranging from cohesive soils characterized as silty clays, to granular fill characterized as poorly graded silty to clayey sands. Soil analyses of the recompacted channel fill materials were conducted during hydrogeological investigations performed for the adjacent CCR landfill. The hydraulic conductivity of these creek fill materials was reported to range from  $7.6 \times 10^{-8}$  to  $2.1 \times 10^{-5}$  cm/sec<sup>1</sup>.

The berms for the Dallman Ash Pond were built to a height of approximately 27 feet (554 feet MSL), using slopes of 2.5H:1V for both the inner and outer slopes. The elevation of the base of the surface impoundments is approximately 527 feet MSL.

The berms of the surface impoundment were constructed of glacial till consisting of silty clay to clayey silt soil. Recompacted silty clay samples from the native soils have exhibited hydraulic conductivities in the  $1 \times 10^{-7}$  to  $1 \times 10^{-9}$  cm/sec range. The in-place creek sediment's soil hydraulic conductivities predominantly range from  $1 \times 10^{-6}$  to  $1 \times 10^{-8}$  cm/sec.

Prior to the area development, the upper layer of soil at the site consisted of mainly brown, light brown, and brownish-gray silty clays and clayey silts having soft to stiff consistency. This includes all eolian soils (loess) deposited near the surface, isolated pockets and lenses of fine-grained silty to clayey sand at some locations and alluvial silts and silty clays. Much of the shallow soils were displaced during area development.

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<sup>1</sup> Patrick Engineering – Hydrogeologic Report on Flue Gas Desulfurization Sludge Landfill, June 1993.