



Swift Powerhouse No. 2

Catastrophic Failure of Swift No. 2 Power Canal Embankment occurred on April 21, 2002 following 42 years of operation. Shortly after the failure, Pillori Associates was engaged to investigate and determine the cause of the failure. Numerous borings and test trenches were performed within the canal basin and surrounding environs in addition to visual inspection of the damages and an extrusive review of construction and power plant operational records. Through the investigation, it was discovered that the canal basin was constructed over an ancient lava flow emanating from Mount Saint Helen. Native sand and gravel was formed beneath the basalt at varying depths and the canal bed and embankments were constructed on top of the basalt using materials from local burrow areas.

Analysis by Pillori Associates determined that the failure was caused by long-term erosion of the natural sand and gravel beneath the basalt layer. Over time piping channels starting near the powerhouse tailrace spread out under the basal, eventually finding the edge of the basalt within the canal basin. Once the connection formed, hydraulic pressures quickly ensued, causing a blowout of the basalt and a sudden catastrophic failure of the 90-foot high canal embankment.



Canal Water Escaping Embankment Breach onto Local Highway



Canal Water Inundating Powerhouse and Local Highway



Canal Water Escaping Embankment Breach



Blowout Failure Under Canal Embankment-Empty Canal