Let $V$ be a one-dimensional non-discrete valuation domain with maximal ideal $M$ and corresponding value group the real numbers. In 1973, Jimmy Arnold showed that the ring of formal power series $V[[x]]$ is infinite dimensional. The goal here is to give a much more explicit way to both describe and construct infinite chains of primes in $V[[x]]$. We present a way to relate each nonzero power series in $M[[x]]$ to a certain type of continuous function on the set of positive real numbers. This relation provides a way to construct chains of primes of $V[[x]]$ such that each prime in one these chains is properly contained in the prime ideal $M[[x]]$ and each properly contains the prime $MV[[x]]$. Each chain has the property that if $\{P_n\}$ is a countable subset of the chain, then $P = \bigcup P_n$ and $Q = \bigcap P_n$ are members of the chain (thus $P$ is properly contained in $M[[x]]$ and $Q$ properly contains $MV[[x]]$). (Received September 26, 2005)