

# Water on the Fly

## The Atglen & Susquehanna in West Sadsbury Township

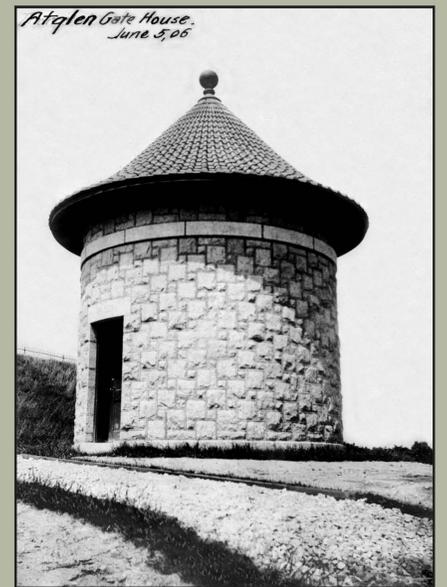


James P. Shuman photograph, Railroad Museum of Pennsylvania, PHMC.

During the decades of steam locomotion, water supply and consumption were key to the PRR's success. By volume, a steam locomotive could consume eight times as much water as coal. Increasing the size of tenders (a combined coal and water tank hauled behind the locomotive) did little to improve efficiency as time and fuel were expended to stop for water. Track pans allowed a moving locomotive to scoop water from a rail-level trough.

The A&S and the PRR's main line (curving north around Zion Hill) shared water facilities that included a two-million gallon reservoir and valve house (upper right image) on Zion Hill. A combination steam plant and pumping station (left images) filled four track pans on the main line and two on the A&S. Coal-fired boilers provided steam to keep the pans from freezing, allowing year-round use.

Water spraying beyond the scoop was exciting to watch, but it saturated the trackbed and often required additional systems to drain the excess water. Under the best water pick-up scenario, at least ten percent of the volume scooped did not reach the tender. Combined, the six track pans west of Atglen had an estimated design consumption exceeding 750,000 gallons per day.



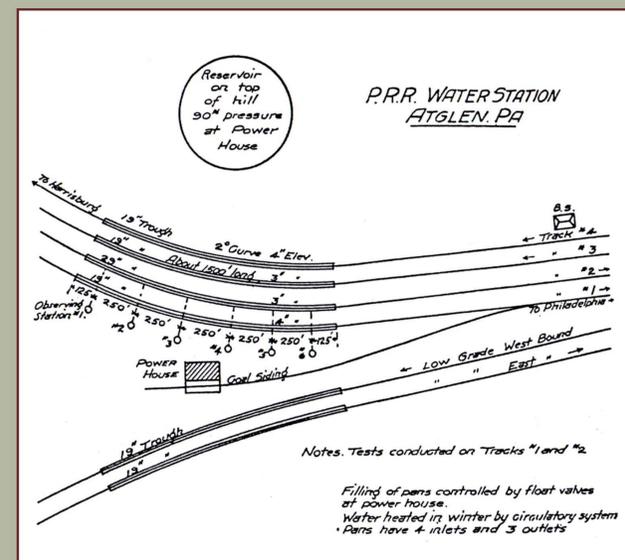
Personal collection of George Melasecca, Kirkwood, PA.



James P. Shuman photograph, Railroad Museum of Pennsylvania, PHMC.



Personal collection of Dan Copper, Harrisburg, PA.



Proceedings of the Fourteenth Annual Convention of the American Railway Engineering Association, 1913.



Railroad Museum of Pennsylvania, PHMC.

Water was heavy and hauling it on a train often required eliminating a revenue-producing car or two. The PRR's busy and time-sensitive eastern routes benefitted greatly from the use of track pans; they were cost-effective only for high-volume traffic. Their use required elaborate rules to govern train speed and scoop drop to ensure safe and maximum water retrieval. Once committed to scooping water, a locomotive faced a severe penalty in lost time if it failed to adequately fill.

Tests conducted between 1906 and 1910 at Atglen helped the PRR to determine optimum operational parameters including pan width (19-inch-wide trough) and pan length (PRR's averaged 1500 lineal feet) and the best speed for water retrieval (between 40 and 50 mph at most locations). Straight pan runs were preferred, and they were not typically designed for curves exceeding three percent. The Atglen pans were on a two percent curve.



Personal collection of Dan Copper, Harrisburg, PA.



Photo by James Alexander, Jr., Lawrenceville, NJ.

Panel courtesy of Amtrak®