Emergency Flow Bypass Project

Our client, a publicly-owned treatment works in Lorain County, Ohio, was experiencing isolated events where the incoming flow exceeded the peak design flow for the treatment equipment. These high flow events caused overflows of the equalization tanks, which in turn caused soil erosion and property damage.

HB Engineering worked with our client to get the communities to start efforts to reduce inflows and infiltration in their sanitary sewer collection systems. As part of the plan to eliminate overflows and bypasses at the treatment works, HB Engineering obtained approval from the Ohio EPA for the construction of an emergency flow bypass to provide primary settling and disinfection of the emergency bypass flow.

The emergency flow bypass utilized the existing off-line holding capacity of the equalization tanks as primary settling basins. Overflow baffles, weirs, and troughs, were installed in these tanks such that under overflow conditions, primary settling for flows up to 6,000 gallons per minute would occur. Solids retained through primary settling were returned to the headworks for processing through the treatment works.

The primary effluent was chlorinated using liquid sodium hypochlorite solution. A variable speed peristaltic pump flow paced by a flow meter controlled the addition of rate for the sodium hypochlorite solution.

Similarly sodium bisulfate was added using a variable speed peristaltic pump flow paced by a flow meter located at the end of the emergency flow piping to remove residual chlorine.

The treated emergency flow was combined into the usual treatment works flow prior to post-treatment aeration and discharge to the receiving waters. The system was designed such that the combined effluent quality would meet the discharge limitations of the current Ohio EPA discharge permit.

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