Preliminary Treatment

The flow diagram of the treatment plant shows both the liquid and solids treatment trains and the various types of treatment they receive. Sewage enters the plant through the influent channel where it is measured and sampled. Pretreatment of the influent flow consists of a barscreen and grinder that either removes or reduces the size of the material and than moves on to the grit removal system. Here the flow's velocity is reduced just enough to allow heavier inorganic material to drop out of the flow and be furthered processed for disposal. From the grit removal system, the wastewater flows by gravity to the primary distribution box which distributes the flow to 3 primary clarifiers. Primary settling removes organic and inorganic settleable solids from the wastewater. Collector mechanisms move the settled solids into hoppers where the sludge is drawn from the clarifiers and pumped to 2 sludge thickeners. Oil, grease and other floating material are collected and also pumped to the sludge thickeners.

Trickling Filters

Effluent flow from the primary clarifiers is directed to the Trickling Filter Pump Station. Here the wastewater is pumped to 4 trickling filters. Each filter is filled with plastic media coated with a layer of bacteria. As wastewater flows over the media, it is cleaned by the layer of bacteria by removing the organic material in the wastewater. The effluent from the trickling filters flows to the filter collection box. Here a portion of the filter effluent is recycled back to the Trickling Filter pump station and pumped to the trickling filters to maintain a prescribed wetting rate.

Rotating Biological Contactors and Secondary Treatment

Treated wastewater from the trickling filters flow by gravity to the Rotating Biological Contactors (RBCs), the flow is evenly split between 4 trains of 5 RBCs where more advanced treatment occurs. Here the wastewater is treated to remove more organic material in the form of ammonia nitrogen. The effluent flows from the RBCs are distributed to 4 secondary clarifiers. Solids are collected and removed from the secondary clarifiers by the same methods used in the primary clarifiers. The solids are drawn off the bottom of the clarifiers and flow by gravity to a wetwell where the solids are pump to the head of the plant and eventually settle in the primary clarifiers.

Solids Disposal

The solids from all plant processes are either pumped to or settle out in the primary clarifiers. The solids drawn from the bottom of the primary tanks are pumped to the sludge thickeners. The thickeners increase the solids concentration prior to dewatering. The thickened solids are pumped from the thickeners directly to the belt filter press. Chemicals are added to the solids to aid in the dewatering process. Dewatered solids are lime stabilized and hauled to a landfill for disposal.

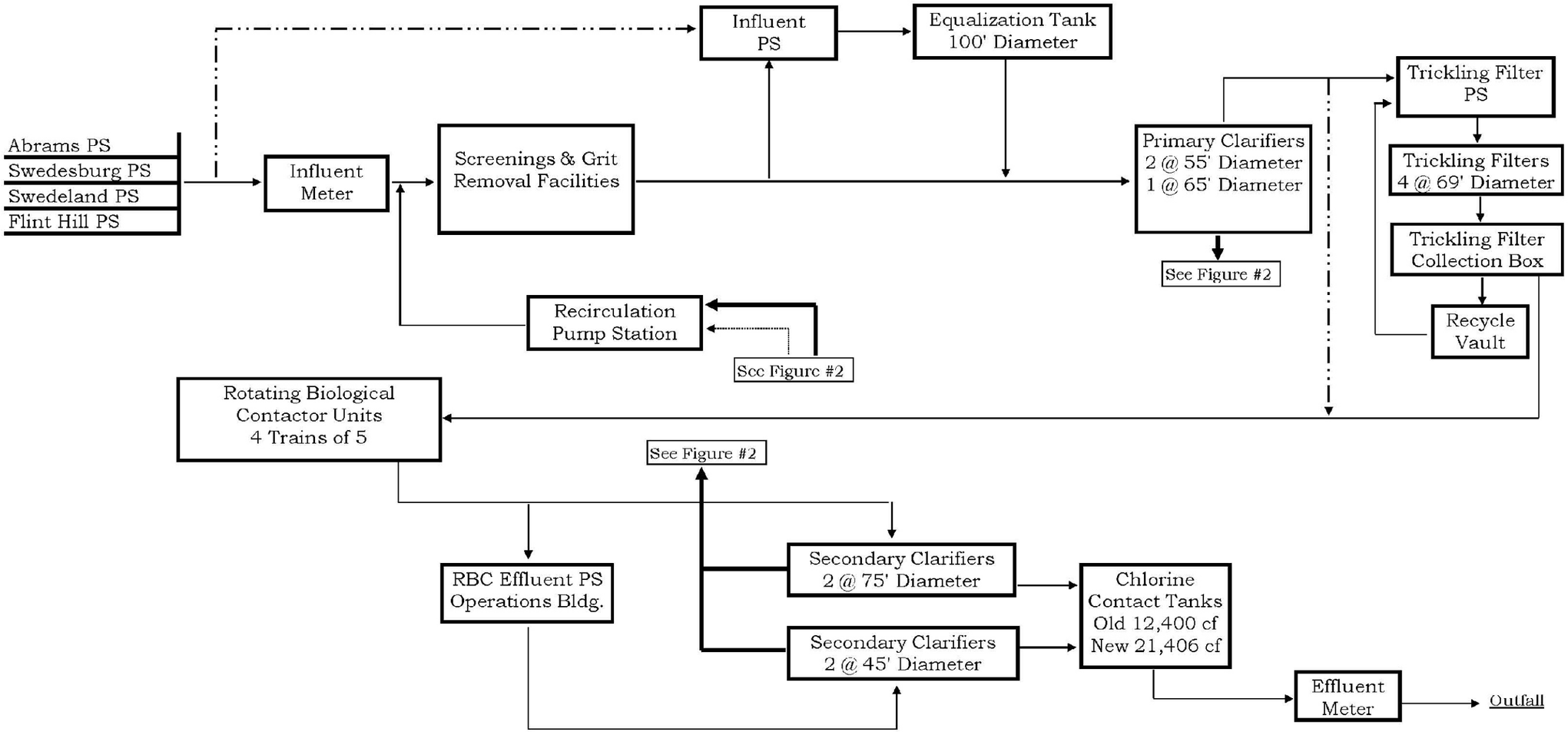
Upper Merion Township Municipal Authority

The Matsunk Water Pollution Control Center (WPCC) is located off of River Road on McCoy's Lane in Upper Merion Township, Montgomery County. The facility discharges its treated effluent to Frog Run, a tributary to the Schuylkill River. The WPCC was originally constructed in 1966 with a design treatment capacity of 1.25 million gallons per day (mgd). In 1983 the WPCC was expanded to 2.5 mgd and another expansion in 1989 brought the treatment capacity of the facility to its current rating of 5.5 mgd.

The Upper Merion Municipal Utility Authority provides wastewater treatment and conveyance for all of Upper Merion Township, Montgomery County, Pennsylvania. The Township is bordered by the Borough of Bridgeport and the Schuylkill River to the north, the Schuylkill River and the Borough of West Conshohocken to the east, the Townships of Lower Merion, Radnor and Tredyffrin to the south and the Townships of Tredyffrin and Schuylkill to the west.

The Matsunk drainage basin serves the eastern portion of the Township and contains approximately 4,200 acres; Matsunk also serves a portion of Tredyffrin Township that contains approximately 280 acres. Additionally, the Matsunk WPCC serves the Abrams drainage basin; this basin is referred to as the middle basin and contains approximately 2,250 acres. The Matsunk WPCC and all conveyance facilities within the Township are operated and maintained by the Township under a management agreement with the Authority. The designated service area handles a mixture of residential, commercial and industrial users.

Matsunk Water Pollution Control Center
Flow Diagram



Design Flow

5.50mgd Average Annual Flow

6.88mgd Maximum Monthly Flow

13.75mg Peak Hourly Flow

Legend

- Wastewater
- Sludge
- Process Water
- Bypass Flow

Design Loadings

CBOD	180
TSS	200
TKN	35