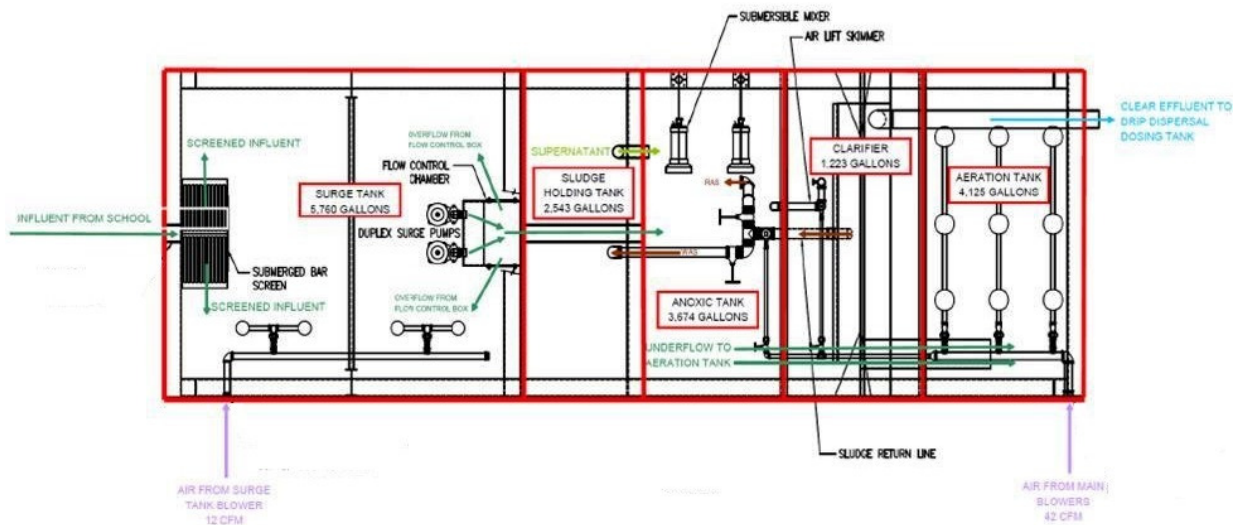


Bear Creek Community Charter School at Ten Mile Run

Sewage Treatment White Paper

Bear Creek Community Charter School will employ an innovative approach to sewage treatment for the new Bear Creek Community Charter School at Ten Mile Run. The approach is intended to achieve sustainable development, protect human health and protect environmental quality. The treatment component of the system includes filtration and a biological process, while the dispersal component recycles the effluent to the environment.

The project includes the construction of a new 5,600 gallon per day sanitary sewage treatment system designed based on the PureStream Biologically Engineering Single Sludge Treatment (BESST) System. The BESST process incorporates an anoxic selector and a sludge blanket upflow clarifier and provides BOD removal, nitrification/denitrification, and biological phosphorus removal.



The ultimate disposal from the treatment system will be on-site utilizing the American "Perc-Rite" Drip Dispersal System. Drip Dispersal is a land application system for dispersal of wastewater effluent in decentralized environments. Drip utilizes time dosed, low volume, equally distributed doses over an entire absorption area while at the same time providing final treatment and recycle back into the environment. Drip provides optimum conditions for groundwater recharge to the receiving environment. It is ideal for any size system, including single family homes, schools, churches, state parks, communities, commercial sites, etc. Drip systems are aesthetically pleasing and are installed subsurface utilizing the "out-of-site, out-of-mind" theory.

Time dosed systems provide for managing rest times between doses, peak flow notification, excess flow alarms and helps prevent soil saturation by maintaining an aerobic environment at the tubing interface. Drip is ideal for shallow installations, which maximizes the standoff to any site restrictions (i.e. rock, seasonal water table, etc.). Sloping sites and/or wooded sites are not a problem. Drip Dispersal is utilized in both warm and cold climates 365 days per year and can reduce storage requirements and may offer a reduced area footprint compared to conventional systems.

Drip dispersal is a method used to distribute wastewater, which has received at least primary treatment, over an area of land for final polishing, reuse or recharge of groundwater. It incorporates a pump and filter system using twelve drip zones and approximately 25,200 linear feet of pressure compensating drip tubing. An area of approximately 6 acres has been set aside for the drip dispersal area at the project site. Site soil testing, hydraulic conductivity testing, and calculations have been performed that indicate a minimum area of 2.1 acres is needed for the dispersal system.

Drip dispersal zones will dose either individually or two at a time but will forward flush individually at a minimum of 2 feet per second, every two weeks. The filter unit is a self-contained fully automatic disc filtration unit that automatically backwashes at preset intervals several times per day.

Five ground water monitoring wells of varying depths have been installed on site, which will facilitate regular and ongoing testing of ground water quality.

The proposed sewage flow for the new school is based upon sixteen months of actual flow data provided by the Western Wayne School District for Evergreen Elementary School. Based on the flow data provided, the proposed sanitary sewage treatment system for Bear Creek Community Charter School was designed based on a conservative effluent flow of 4.5 gallons/day/person and multiplied by two for a peaking factor. An additional 5.0 gallons day/person has been included in the design for shower facilities; however, these facilities were eliminated from the final building design. The analysis and design of the treatment plan was reviewed and approved by the Pennsylvania Department of Environmental Protection.

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