Effective BMP Combinations for Stormwater Management in Urban Areas

The Interstate 405 Renton Stage 2 project implemented an effective combination of Best Management Practices (BMPs) to manage the large amount of stormwater runoff anticipated from the Rolling Hills area along the I-405 corridor. The detention filtration system, dubbed the "bath tub", has the capacity to hold about 120,000 gallons of turbid stormwater runoff (Fig. 1). As stormwater passes through the system it is filtered at each step and the discharge can be managed based on water quality. The first step of the system is the quarry spall pit underlain by geotextile fabric, including filter fabric baffles to control flow and increase filtering capability. This quarry spall filtration system also works as a containment area for the natural sedimentation process. If the water is still turbid it will be routed to an optional sand filtration system set up in a vacated utility trench that was backfilled with clean sand (Fig. 2). The water is then discharged to storm drains if it meets the NPDES construction permit requirements, or it is discharged to Renton's sanity sewer. Water can also be recycled back into the quarry spall system for more filtering. Baker tanks are used for extra containment capacity as well as holding water that needs to be recycled back into the system for further filtering (Fig. 3). These types of detention filtration systems are not new, but they are not used as often as they could be because they require proactive planning and communication between WSDOT, contractor personnel, and the adjacent jurisdiction. In urban areas where space is limited, this type of proactive planning can lead to very successful stormwater management. In this case, the detention filtration system effectively held about six baker tank's worth of stormwater, thereby alleviating some of the issues related to managing large amounts of stormwater in a limited space.

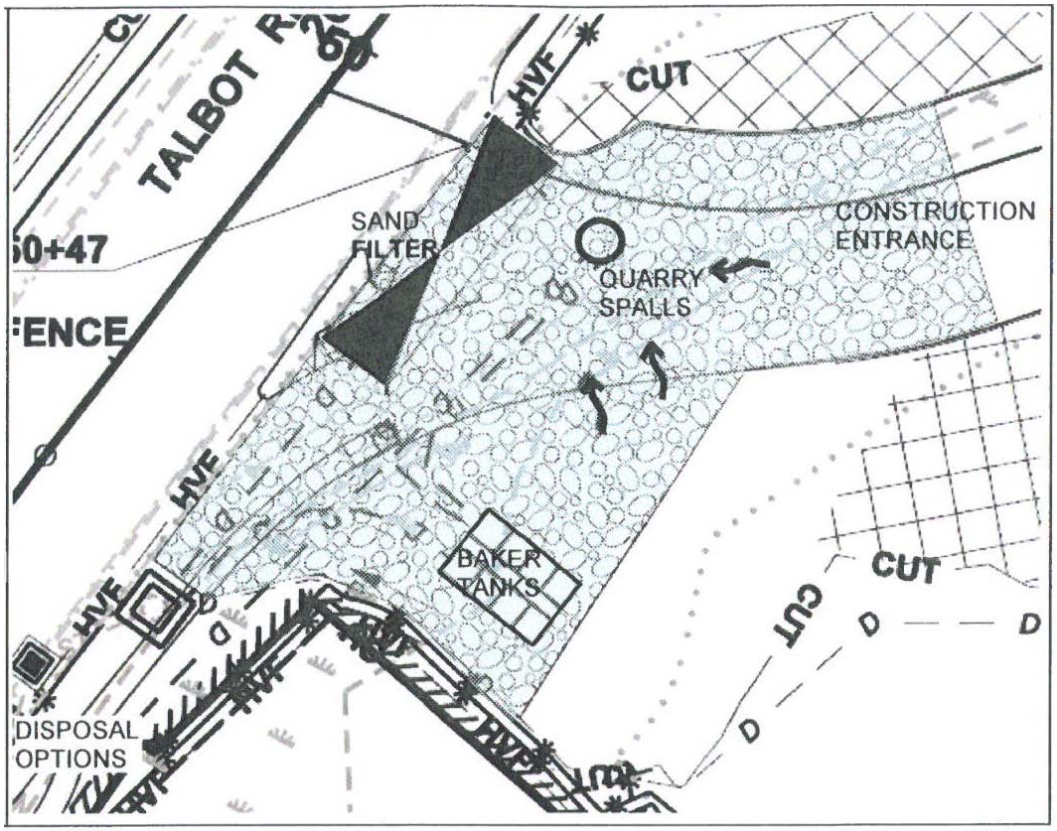

Figure 1. Quarry spall and sand filtration system under construction entrance.

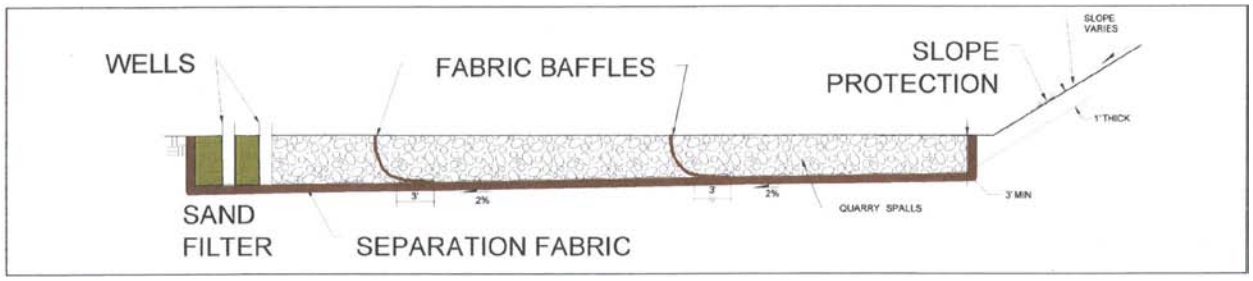

Figure 2. A section view of the filtration system.

Figure 3. The filtration system finished and in use under the construction entrance.