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SPRING 2006

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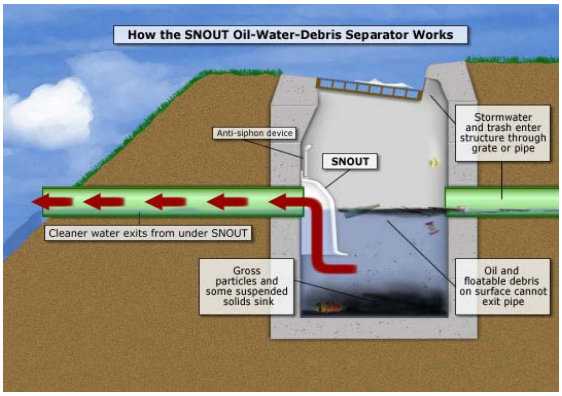
Erosion Control & Stormwater Regulations
by Roy Pedersen, P.E.

Much attention is being paid to controlling storm water quantity and quality these days. This article will examine some of the products and methods being used to comply with current day regulations. The National Pollutant Discharge Elimination System (NPDES) Phase II regulations went into effect in 2003. This lowered the size threshold of sites that need permits from 5 acres to 1 acre. A term that is shortened into the acronym BMP means "Best Management Practices". This is a collective term for many different techniques used to filter impurities from storm water.

Several companies manufacture drain inlets that have filters to take parking lot litter out of the storm runoff before the water leaves the site. One such product is called the SNOUT. This is a device that traps floatable debris inside a manhole and allows water to pass through.



Trapped debris can be removed and properly disposed of periodically.

Another product that filters runoff is called "smartsponge". Both of these products filter oil, grease, sediment, trash, and debris and are considered BMP's.

When new soil slopes are constructed it is important to utilize erosion control procedures, or BMP's, to attempt to prevent or minimize soil erosion. Ways to do this are straw mulch cover, establishing vegetation and installing a "brow ditch" at the top of the slope to channel runoff and prevent formation of gullies.

Sediment control measures are utilized to capture soil that has eroded and prevent it from reaching the stream. This can be a silt fence, that we are all familiar with, or filter rolls, silt bags, hay bale sediment traps, sedimentation ponds, or again, vegetated strips.

A familiar product to all, compost, is now being used to control erosion on many projects in Texas. Compost can filter sediment, prevent erosion and improve soil, so it is a product we will be seeing more of along our highway and land development projects. (Greg Yoko, Land Development Today, February 2005).

Another practice for soil stabilization that has been around but is being revisited is lime treatment. By adding lime, a chemical process occurs whereby a wet, unworkable site dries up and becomes workable. By drying the site, erosion and sedimentation are reduced, and final stabilization with vegetation can be completed sooner. (Greg Yoko, Land Development Today, February 2005).

Experts say that the proper combination of BMP's for a project site will adequately control erosion and sedimentation. While this new awareness and NPDES permit requirement is still new, we should

expect to see streams become less muddy after rain storms as contractors and the design community become more skilled in the use of the proper BMP's.

Large Document Archiving & Restoration
by Glenn D. Cooley, PE

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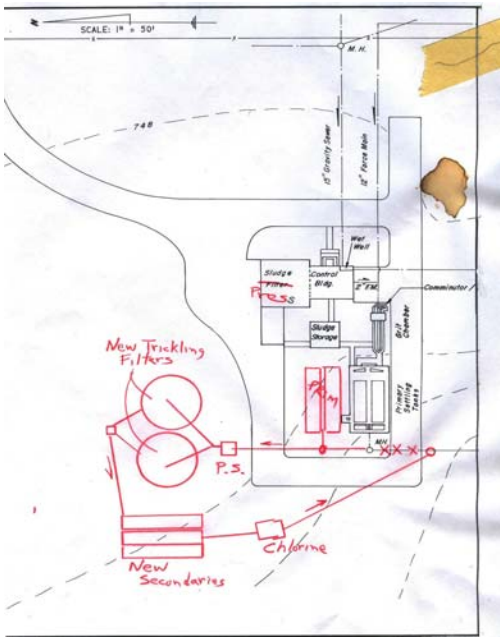

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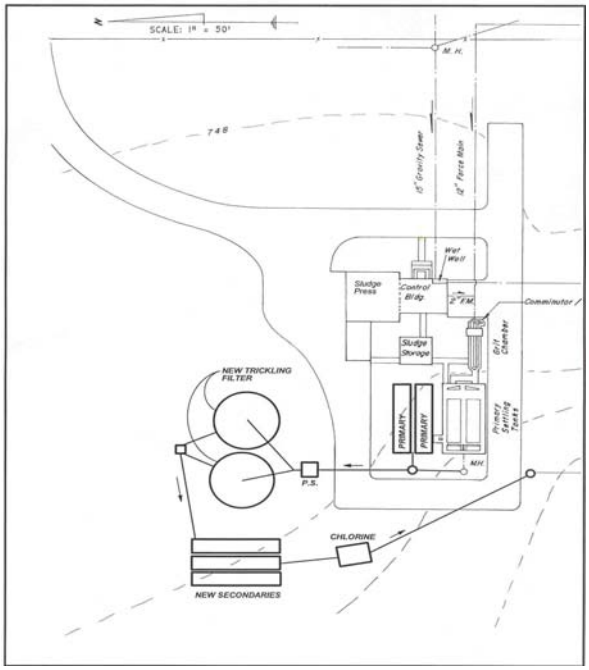

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Village of Cattaraugus Slow Sand Filtration
By: Garrett M. Hacker, Project Engineer

The Village of Cattaraugus slow sand filtration project involved connecting three spring sites in the Town of New Albion to provide a high quality and efficient source of potable water to the Village of Cattaraugus. The Village was required to bring the supply springs up to standards to meet the New York State Health Department's "Surface Water Treatment Rule". The two slow-sand filtration systems were designed and constructed on separate sites within the Town and adjacent to the existing spring sites. Both filtration facilities are located such that the plant inlet is lower than the spring outfall to enable gravity feed.

Slow-Sand Filtration Systems are very cost effective due to their simple operations and relatively low capital costs. They are made up of four main parts; the stilling well / metering flume, pre-chlorination chamber, filter bed and

post-chlorination chamber.

The spring water enters the facility through a valve pit. The valve layout enables water to bypass the facility and enter an adjacent swale, therefore making it possible to drain the stilling well.

If the valving allows water to continue through

the system, it next flows through a stilling well where raw water sampling is conducted. A 2-inch Parshall flume connects the stilling well area with the pre-chlorination basin. The Parshall flume houses an ultra-sonic level device which monitors the flow rate for pre and post chlorination application.

The pre-chlorination contact chamber is equipped with an 8-inch overflow pipe to discharge excess water. A float switch calibrated to the overflow elevation, shuts-off of the pre and post chlorination units. A valved drain allows the pre-chlorination basin to be routinely cleaned and inspected. An 8-inch pipe with a splash block connects the pre-chlorination basin to the 1440 square foot filtration bed.

Sizing the filtration bed is based on the recommended 45 to 150 gpd / sf standard as referenced in the "Recommended Standards for Water Works," Great Lakes Upper Mississippi River Board of State Public Health & Environmental Managers (10 State GLUMRB Standards). The sand filtration is dependant on a layer of bacteria to form on the top layer of the sand where microbiological action collects particles that move vertically by gravity through the media. A recharge period is required for these bacteria to form during initial startup and after each cleaning. Once the water penetrates this top filter cake it then filtrates through the remaining sand and gravel media until it reaches the under drain collection system. Water is collected by 4-inch laterals and flows to an 8-inch header which delivers the filtered water to the post-chlorination chamber.

The post-chlorination chamber is designed to

provide over an hour of contact time to properly mix with the spring water at the 100 gpm design flow rate. A concrete tank constructed into the hillside contains the filter media and contact chambers to gain the benefits of gravity flow. This entire basin is then enclosed with a building to prevent contamination and light exposure.

Both facilities were constructed in the summer of 2001 by Eastern Summit Development of Springville New York. The total project cost was approximately $551,000.00 funded by United State Department of Agriculture New York Rural Development and the New York State Drinking Water State Revolving Fund.

Our Land - Joseph Ellicott and the Grand Survey

By: Jim Nearhood, P.L.S.

In my previous article I have described the situation in Western New York from the Seneca Indian invasion and massacre of the Erie Indians in 1654, the French and English exploration, the land claims by Massachusetts and New York, the early purchasers and the Holland Land Company's development being surveyed by Joseph Ellicott. We had left Joseph in a log cabin during the winter of 1788-1789 working on the mapping of the first year's field work. It had been hoped that one full season would complete the fieldwork using about 150 men in supplying, feeding, maintaining equipment and doing the actual survey work, but the winters in Western New York would only allow a seven to eight month survey season. Also the large amount of information requested on soil, water, terrain, vegetation, and occupants required more time.

The addition of surveying out the Indian reservations and the laying out of many villages caused the surveying to be extended into late Spring 1800. The mapping was being done continuously, the detailed reports were compiled and in late October, 1800 the final maps and reports were delivered by Joseph Ellicott to the Philadelphia office. But Joseph's work was done, and on November 1, 1800, his 40th birthday, he was appointed Resident Agent in charge of the 3.3 million acre purchase.

His duties would be to oversee the stakeout of the great lots, city's and sales; also to manage the real estate advertising and sales of individual lots. On November 5, 1800 Joseph left Philadelphia for what he called New Amsterdam, now Buffalo. He arrived on December 28th. He had spent Christmas on the wilderness trail in Western New York that year.

Next time we'll talk about the great land sale.

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