

**GO-FILTERTM TURBIDITY REDUCTION FIELD DEMONSTRATIONS
May 2010**

Turbidity reduction field demonstrations are described below using three Go-FilterTM designs:

- Trailer mounted Standard,
- Skid mounted low profile (SLP), and
- Trailer mounted low profile (LP).

Chattanooga, Tennessee

A rural pond that receives runoff water from native sandy clay soil was selected as a winter field demonstration site for the Standard Go-FilterTM design (Figure 1).



Figure 1. Standard Go-FilterTM design system at Chattanooga, Tennessee turbidity reduction demonstration site. System components include two Aqua-Swirl[®] Models AS-4 and a three row filtration chamber.

Turbid water was pumped from the pond to the first swirl chamber at a flow rate of 100 gpm. A granular flocculent was added to the influent stream at the first swirl device by gravity feed. The flocculent was determined based on site-specific water conditions. An influent water sample was collected near the influent hose intake at the edge of the pond. Effluent samples were collected directly at the terminus of the discharge hose. The flocculation period was 30 minutes. Table 1 summarizes the turbidity results of influent and effluent samples. Influent turbidity was 153 NTUs and was reduced to 16.3 NTUs, an 89.3% turbidity reduction at the end of the 30 minute period. Effluent (post-filtration) samples exhibited a noticeable visual decrease in turbidity after 15 minutes of continuous treatment. An even greater reduction in turbidity was noticed at the 18 minute mark. After 30 minutes of continuous flow, a further reduction in visible turbidity was observed. Testing was discontinued since the effluent water was beginning to provide treatment to the source water. Figure 2 shows the influent and effluent samples and the turbidity reduction achieved during the field demonstration.

Table 1
Standard Go-Filter™ Field Demonstration Results
Chattanooga, Tennessee

Sample	Influent Turbidity (NTUs)	Effluent Turbidity (NTUs)	Turbidity Reduction (%)
Pond	153.0		
15 Minutes		66.3	56.7
18 Minutes		26.1	82.9
30 Minutes		16.3	89.3

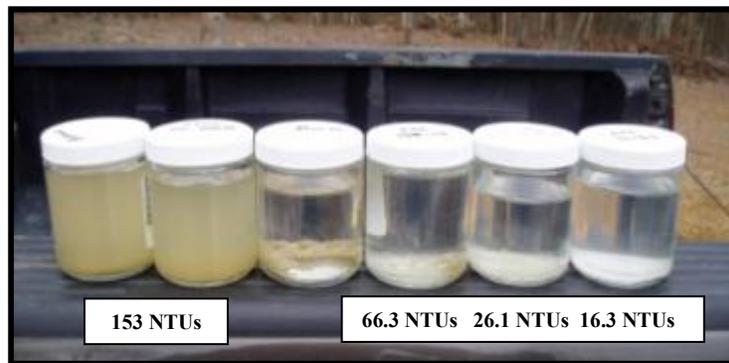


Figure 2. Influent pond samples (153 NTUs) and Go-Filter™ effluent samples showing turbidity reduction.

Calhoun, Georgia

A two hour field demonstration was performed in May 2010 at a northwest Georgia electrical transmission power line facility using an SLP Go-Filter™. A collection pond receives stormwater runoff from across a large drainage area of chert-rich clay soil and grass cover. Pre-demonstration site characterization samples determined the flocculent to be used. This system utilized two Aqua-Swirl® Models AS-3 followed by two low profile filter chambers. This model is capable of up to 1 cfs of treatment flow. Figure 3 shows the demonstration layout between the pump and the effluent side of the SLP Go-Filter™. Figure 4 is a closer effluent view of the Go-Filter™. Flow was maintained at 250 gpm for the duration of the demonstration. A granular flocculent was added by gravity feed to the influent water at the top of the first swirl chamber. Influent samples were collected from a sample port just upstream of the pump while effluent samples were collected at the terminus of the discharge hose. Turbidity readings were measured in the field using a properly calibrated portable electronic device. Table 2 summarizes influent and effluent turbidity values for two representative sample sets. Influent sample sets exhibited influent turbidity values of 651 and 521 NTUS, with reductions to 8.5 and 10 NTUs, respectively. Thus, greater than 98% reduction in turbidity was achieved. Figure 5 shows the influent and effluent sample sets and the significant reduction in turbidity levels.



Figure 3. Layout of SLP Go-Filter™ demonstration, Calhoun, Georgia. Water from stormwater collection pond is pumped to unit and discharged back to pond.



Figure 4. Effluent view of SLP Go-Filter™, Calhoun, Georgia site. Flocculent hopper positioned above first Aqua-Swirl®. Note that skid is positioned atop a trailer to facilitate transportation. The system normally operates at ground level, hopper would be lower.

Table 2
 SLP Go-Filter™ Field Demonstration Results
 Calhoun, Georgia

Sample	Influent Turbidity (NTUs)	Effluent Turbidity (NTUs)	Turbidity Reduction (%)
1	651	8.5	98.7
2	521	10	98.1

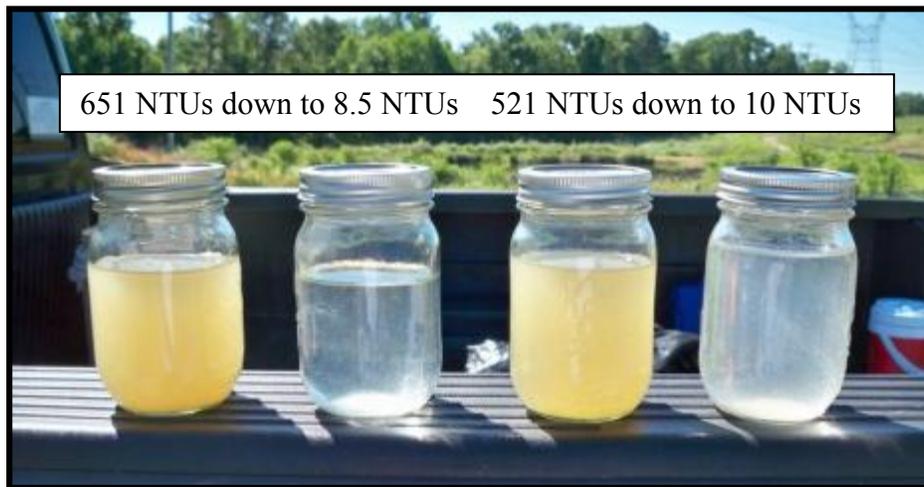


Figure 5. Influent and effluent samples showing turbidity reduction, Calhoun, Georgia.

Minneapolis, Minnesota

An LP Go-Filter™ was used in conjunction with a snow melting operation at an asphalt covered shopping center parking lot in January 2010. Figure 5 shows the LP Go-Filter™ used for this three hour demonstration. This device includes two Aqua-Swirl® Models AS-4 followed by three upflow filtration chambers that can be configured for series or parallel flows. Effluent water from the snow melter was pumped to the Go-Filter™ at a flow rate of approximately 300 gpm for three hours. Influent water samples to the Go-Filter™ were collected at the discharge pipe from the snow melter, while effluent samples were collected at the discharge pipe from the Go-Filter™. Effluent water temperature from the snow melter (influent to Go-Filter™) was maintained between 45 and 49 °F. Granular flocculent was added at the first swirl chamber by gravity feed. Water was discharged directly to a storm drain inlet located at the rear of the Go-Filter™. Figure 6 shows the turbidity levels achieved by the LP Go-Filter™ after 30 minutes of flow from startup. No turbidity measurements were performed for this demonstration.



Figure 5. LP Go-Filter™ used with snow melting operations, Minneapolis, Minnesota.



Figure 6. Progressive reduction in turbidity (right to left) over 30 minute period. Low turbidity levels maintained for 3 hour demonstration (similar to jar on far left).