



KEY NOTES

Geopro® Learning Tool

July 2, 2004

Active Water Clarification Systems

Applied Polymer Systems, Inc. [APS] *Floc Logs*® enable environmentally safe, economical clarification of nearly all surface waters contaminated by suspensions of natural soil particles. A previously published **KeyNote**, “*Storm Drain System Clarification*”, provides details as to how to achieve clarified storm water via a ‘passive’ system, i.e., gravity ‘driven’. This **KeyNote** addresses ‘active’, i.e., pump driven, systems ... how they work and what applications are best served by this approach.

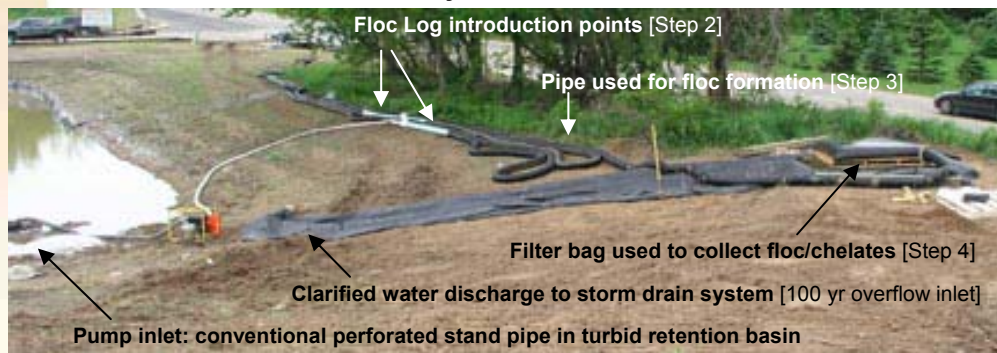
Step 2: Polymer Introduction

The introduction of **APS Floc Logs**® into pipes, tanks, hoses, swales, etc., is simple due to their consistency, choice of shapes and inherent securing features. Contact your **Price and Company, Inc.** [PCI] Regional Representative to determine which method(s) best fits the project conditions.

Step 3: Floc Formation

To achieve rapid floc formation, turbulent rather than laminar flow is desired within pipes, tanks, hoses or swales. Again, contact your **PCI** Representative to inquire what mixing methods will produce the best results.

Active Storm Water Clarification System



Step 4: Settling Time and/or Filtration

Once the floc has formed, it must have an opportunity to settle out and/or be filtered from

the moving water, depending on the type of floc formed. Heavier floc will settle without filtration. Filtration methods, including ‘*baffle grids*’, ‘*particle curtains*’ and ‘*filter bags*’ provide removal of lighter floc from passing water. Where water clarity must be optimized to meet regulatory or environmental constraints, both settlement and filtration methods should be considered.

The bench tests suggested in Step 1 greatly assist in system design for Steps 3 and 4 as well. For instance, time evaluations made during the tests correlate directly to pipe, swale or hose length as well as tank size. In addition,

Each of the four steps of using *Floc Logs* discussed within “*Storm Drain System Clarification*” is required for pump driven systems. As modified for active systems In short:

Step 1: Polymer Selection

Site specific soil lithology and water chemistries require a match in polymer chemistry to render the desired water quality and polymer use efficiency. No-charge bench tests, conducted by **APS** or its distributors, ensure proper polymer selection.

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the floc type produced during testing often guides what components are needed for settlement and/or filtration of the floc and chelates. Bench tests that match polymer to site-specific soil chemistry all but eliminate poor to negligible clarification results and lead to efficient, economical systems relative to both set-up and operational costs.

System / Pump Considerations

Often, system capacity is set by hydraulic outlet capacities, e.g., maximum release rates from a detention basin. For some applications, system capacity is controlled by maximum pumping rates, e.g., dredging operations. Regardless, the quantity of polymer used within an active system is dependent on the pump output rate [which may or may not be its maximum operating rate]. Therefore, the pump output curve should be on-site and referenced during system design and installation.

If the pump intake originates from a turbid water body, the inlet screen should be configured to float, preventing its movement into bottom sediments.

Depending on the total number of *Floc Logs* used, one or more introduction points [see Step 2, above] may be required. To achieve maximum efficiency in polymer performance, consider allowing partial mixing between introduction points.

Floc Logs may be introduced either up or down-gradient to displacement pumps. If a rotor/stator pump powers an active system, *Floc Logs* should be introduced only down-gradient from the pump.

Once a system is in place, system refinements [tweaking] should be expected to achieve optimum results.

Applications for Active Systems

Active systems regularly produce reductions in turbidity ranging from 1 to 3 orders of magnitude [10 to 1000 times] for a wide array of applications, including:

- ❖ Decorative pond clarification
- ❖ Sediment basin clarification
- ❖ Detention and retention basin clarification
- ❖ Site & excavation dewatering effluents
- ❖ Storm drain system cleaning water clarification
- ❖ Wheel wash-water clarification
- ❖ Hydraulic excavation water clarification
- ❖ Mechanical dredging runoff clarification
- ❖ Hydraulic dredging water clarification

Active systems can perform on virtually any turbid water condition. Additional information regarding *APS Floc Logs* and their related active system applications is available at:

www.siltstop.com
www.priceandcompany.com

Or call **Price and Company, Inc.** toll free!

Floc Log is a trademark of Applied Polymer Systems, Inc.



Water before active clarification system

Clarified water after settlement

Clarified water after settlement and filtration

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