



Applied Polymer Systems, Inc.

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Innovations

Outstanding Florida Waterbody

In Stormwater Control

Leitner Creek By-Pass Canal is an annual public works project to ensure flood control in the relatively flat topography of Lee County, Florida. This canal is over 4400 feet in length and the maintained portion discharges to an Outstanding Florida Waterbody (OFW) tributary emptying into Estero Bay. OFW's have the highest level of water quality protection in the state. As if this were not difficult enough, water levels in the canal vary from several inches to over 4 feet in depth. Typical problems encountered in the past have been: high turbidity levels from the clean-out efforts, lengthy turbidity plumes moving downstream causing environmental and visual impairment, odor complaints associated with organic sediment and vegetation removal, and conflicts between the need for permit compliance and flood control maintenance.



Design: A movable metal box was designed for ease of mobility and mixing of the Floc Logs. Note the Floc Logs placed within the metal box.



Clarity: The actual NTU value of the discharge water was read at about 7.5 NTU. The clarity and color of the water speaks for itself.

Tony Pellicer and Leigh Simmons, Lee County Natural Resources Management Division, first heard about APS products while attending a local erosion control-training seminar. They later contacted the APS office and technical services personnel to inquire about using PAM products to control turbidity. A site-specific water/soil sample test showed that APS 706b Floc Logs along with 712 powder could be used to provide flocculation and chelation of the fine mucky soil particles generated from the maintenance activities. The 712 powder could be used to stabilize the canal embankment and provide additional turbidity treatment as needed.



Above: Particle curtain strategically placed to catch the particles that did not settle out by gravity.

Below: With an NTU value between 10 and 14, the environment downstream from the work area remains undisturbed.

The project was able to proceed with minimal changes to current procedure. Odor complaints were significantly reduced. A tremendous visual improvement was apparent in the canal. Water clarity improved so well that fish were observed feeding along the streambed. This is a testament to the turbidity control and non-toxic materials used in APS products.

Future uses will explore more efficient use of floc log mixing devices that are adaptable to different types of drainage maintenance equipment.

This is another example of how APS can help protect natural resources and allow needed canal maintenance to proceed without jeopardizing permit compliance.



A metal box was designed and constructed to provide a movable mixing zone for the Floc Logs. Several were attached to this box and to the Water Spyder to allow agitation and current flow to dissolve the APS product for turbidity treatment. Particle curtains made of PVC pipe and jute were constructed and placed downstream to capture fine flocculent material that did not gravity settle.

Turbidity values in the work area ranged between 423 - 1,000 NTUs. These were acted on by the Floc logs, which caused the mucky sediment to form floc materials and chelating bridges between individual particles. As these particles clumped together, they became larger and heavier. Gravity settled out most of these particles leaving the water very clear. Two hundred (200) feet downstream of the work area turbidity was down to 7.5 NTUs. These levels continued to remain low and resisted resuspension, so that even more than 1,000 feet downstream of the work area, turbidity levels were between 10 - 13.5 NTUs.

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