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Date: January 1, 2011

To: Bob Adams
CAG Co-Chair

From: Doug Streaker, P.E.
Biohabitats, Inc.

Re: Site Visit – September 2, 2009

The purpose of the site visit was to review the Rose Valley Phase II construction drawings and provide feedback to the CAG on the appropriateness of the design and identify any potential negative impacts.

I feel that the overall design approach of using the concrete cable mats (CCM) to cap the ACM currently in the existing stream banks and floodplain is a viable approach. Although in my experience in stream stabilization I have never used this type of product, I feel that if the Army Corp of Engineers (ACOE) properly designed their installation correctly, they will perform well in meeting the goal of the Removal Action, which is to remove the immediate threat that the exposed ACM presents.

Based on conversations with Eduardo Rovira, the ACOE designed the CCM based on velocities generated from a hydraulic model. Because EPA doesn't have a copy of the design report, I was unable to review these backup computations. Also, the spaces between the CCM in the stream bed are to be filled with gravel. It is recommended that this gravel be sized based on the hydraulic model as well.

The major issues that are of some concern are as follows:

1. The design does not include any energy dissipation. The current condition of the existing stream channel leads me to believe that during storm events, there is excessive stream energy within the incised stream channel. This is exhibited by bank and stream bed degradation. It is assumed that the designed CCM will adequately armor the stream bed and bank. But if the product is not installed correctly, there is a high potential for failure at any weak point or seam. This is a common problem when designing an armored system that doesn't include any energy dissipation.

2. The second issue is loss of in-stream habitat. During the field visit it was seen that the Rose Valley is supporting a strong fish population and appears to have stream bed features that likely support aquatic macro-invertebrates. The proposed design approach will create a uniform channel with little or no habitat for fish or macro-invertebrates. Eduardo mentioned that the EPA's biologist will be recommending habitat features that will enhance the stream, such as installing rocks above the CCM bottom. I would advocate the use of instream structures to create variations of flow (riffles and pools), as well as randomly placed rocks and woody debris. The use of these habitat structures should have no impact of the effectiveness of the CCM to contain the ACM material.
3. I do not feel that the proposed design will negatively impact the flooding issues that the current Rose Valley stream has. The proposed channel will be approximately the same roughness and a slightly larger cross section than the existing channel. The temporary road crossing will increase very local water levels during storm flows, but I wouldn't expect it to impact any flood elevations upstream due to a wider floodplain at the crossing location.