



Yerkes Associates, Inc.

Consulting Engineers / Site Planners / Land Surveyors

July 9, 2009

East Goshen Township
1580 Paoli Pike
West Chester, PA 19380-6199

Attn: Rick Smith, Township Manager

Re: Hershey's Mill Dam / Alternative Spillway Configuration Review

Dear Mr. Smith:

At your request we have reviewed the design for modifying the Hershey's Mill Dam Spillway, as designed by E.B. Walsh & Associates on behalf of Mr. Neil DeReimer. We were provided the following items for review:

- Letter from the Township to DEP dated June 25, 2009
- Copy of email from Neil DeReimer to Rick Smith dated June 25, 2009
- Preliminary Stormwater Management report prepared by E.B. Walsh & Associates, Inc. dated June 26, 2009
- Supporting documentation for the North American Green's C350 Turf Reinforcement Matting
- An 11" x 17" copy of the Preliminary Hershey's Mill Dam Restoration plan prepared by E.B. Walsh & Associates, Inc. dated June 23, 2009
- A CD containing copies of Yerkes Associates, Inc. plans for the existing conditions of the spillway and the alternatives to modify the spillway or breach the dam, dated March 28, 2008, and the above referenced E.B. Walsh & Associates, Inc. plan and report

The proposed spillway configuration consists of raising the berm an average of one foot in height across most of its width, raising the existing spillway sidewalls two feet in height using concrete construction and installing two 45-foot wide spillways on the east side of the existing spillway, both stabilized with turf reinforcement. There are notes accompanying the proposal indicating that the downslope embankment of the dam must be stabilized, but no suggested method of stabilization is given.

We offer the following comments for your consideration:

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1444 Phoenixville Pike, P.O. Box 1568, West Chester, PA 19380-0078 / Tel: 610-644-4254 / Fax: 610-640-0771

1. The design is based on the 100-Year storm. If DEP views this dam the same way they have the Milltown Dam, they will most likely require that any modifications be designed to the Probable Maximum Flood (PMF) 500-Year or larger storm.
2. It does not appear that the designer took into account the base flow over the spillway in the calculations. In comparison to even the 100-year event, the base flow is minor, but it should be included.
3. The existing and proposed conditions for the spillway and berm should both be routed for an adequate comparison.
4. The weirs in the Pond Report do not appear to match the provided plan. The total proposed new weir length on the plan is 90 feet (2 x 45 feet), but the calculations in the report use 110 feet. Each weir should be modeled separately. The report also states that there is a five foot weir which is not shown on the plan. We question why the proposed weir was broken into two 45-foot sections instead of just one full length weir.
5. To facilitate the review; the elevations of the water, weir and berm should reflect actual data and not be modified to model the berm as raised. Again, both the existing and proposed conditions of the spillway weirs and berm should be modeled.
6. Cross sections of the spillway and berm should be provided. The designer has not indicated what is to be done with the most serious deficiency of the dam, the existing stonewall that supports the dam on the downstream side. The plan notes that the "Downslope embankment at proposed spillways must be reinforced to prevent erosion" but no method of accomplishing that "reinforcing" is presented. (We understand that the study is essentially a hydraulic analysis of the watershed and the dam's ability to pass flows, but the physical changes that need to be made to the dam to accomplish the modifications will all be part of the overall cost that must be evaluated.)
7. Calculations should be provided demonstrating the appropriateness of the proposed North American Green (NAG) C350 Turf Reinforcement Matting. We recommend the designer use NAG's Erosion Control Materials Design Software for the evaluation.
8. The extent of the lining should be indicated on the plan. In particular how is the area at the toe of the spillway, and beyond, to be stabilized?

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9. It is our understanding that this alternative is being proposed as a more cost effective solution to breaching the dam, therefore, a detailed construction cost estimate should be provided for review

The above information is required to properly evaluate the economical and technical feasibility of the proposed alternative modifications.

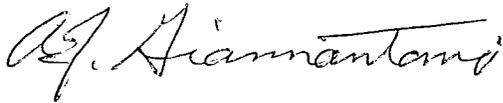
Please do not hesitate to call us if you have any questions.

Sincerely,

YERKES ASSOCIATES, INC.



Christopher P. Martincic, P. E.
Project Manager



Albert J. Giannantonio, P.E.
President