

Hershey Mill Dam

Looking Downstream from East Embankment



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Township Engineering Studies

- PADEP Criteria – Dam to be modified to pass 100-year storm of 1,475 cfs
 - Increase spillway capacity
 - Overtopping protection

Yerkes Associates Study

- Existing spillway capacity = 245 cfs
- 100 – year storm overtops dam by 1.25 feet
- Option 1 - \$220 K
 - Construct secondary spillway - concrete retaining wall 200 feet long, 0.97 ft higher than existing spillway crest
 - Raise dam crest 1 foot
- Option 2 - \$241 K
 - Overtopping protection with articulated concrete block (ACB)
 - Same configuration as above



HERSHEY'S MILL DAM

Spillway Capacity Alternative Analysis

OPTION 1

Create a 200' long, secondary spillway east of the existing one and 0.97' higher.
 Remove existing trees, stumps and groundcover from top and sides of dam.



Yerkes Cost Estimate \$259,607.00





HERSHEY'S MILL DAM

Spillway Capacity Alternative Analysis

OPTION 2

Create a 200' long, secondary spillway east of the existing one and 0.97 higher. Articulated blocks with open cells and connected by cable will be filled with grass seed. Existing trees, stumps and groundcover from top and sides of dam will be removed.



RETTEW.

Yerkes Cost Estimate \$280,495.00



Articulated Concrete Block

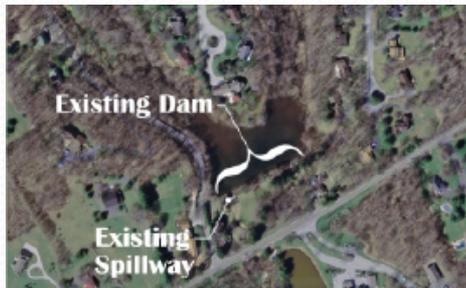


Articulated Concrete Block



Yerkes (contd)

- Option 3 – \$115 K
 - Dam Breach – Remove existing spillway/ stone walls; remove two feet of pond sediments (“legacy sediments”)
 - Assumes sediment is uncontaminated and can be re-distributed on site
 - Create two new channels for tributary streams
 - Hydroseed pond bottom



HERSHEY'S MILL DAM

Spillway Capacity Alternative Analysis

OPTION 3

Remove dam and allow stream and wetland vegetation to re-establish at natural levels.

Cost estimate further explained.



REITMAN

Rettew Study

- Review/ update of Yerkes options
- Option 1 - \$260 K
- Option 2 - \$280 K
- Option 3
 - Remove dam completely
 - Allow stream/wetland vegetation to re-establish at natural levels
 - Cost estimate w/ engineering - \$218 K
 - Available grant - \$100 K
 - Balance \$118 K

Commentary to Township

- Cost estimate without detail or apparent contingency
- Construction cost elements not defined
 - Removal/Management of Sediment – possibly \$3 to \$5/CY **w/o Transportation & Disposal**
 - Clamshell
 - Mudcat or Divers
 - 8,000 cubic yards/3 feet sediment
 - Stream Restoration Costs - up to \$1 million/stream mile
 - Approximately 0.2 to 0.3 stream miles
 - Wetlands/Habitat
 - Re-stocking
 - Flora/Fauna

URS Sediment Study

- Conducted on November 3, 2008
- Noted depth of water/depth of sampler refusal
- Priority Pollutants
 - Metals
 - Pesticides
 - PCBs

URS Sampling Study Results

- Sediment thickness – 0 to 6 feet thick
- Chemical Analyses
 - Compared to NOAA Threshold Effects Level(TEL) and Probable Effects Level (PEL) for freshwater sediments
 - PEL is action level requiring mitigation for sediment releases from dam removal projects
 - No results exceeded PEL
 - TEL exceeded for several metals but are within background levels
 - No special handling required
 - Concentrations < PADEP Clean Fill Standards

Other Options/Discussions

- Preserve spillway and viewscape
 - Pump water over spillway
- Appropriate stream restoration
- Drivers for dam removal in PA
 - Shad restoration
 - Water Quality
 - Sediment/ Nutrient Trap

Potential Dam Restoration Elements

- Slope/Wall Stability
 - Sheetpiling
 - Remove wall/ extend slope
 - Rip-rap against stone wall
- Hydraulic
 - Spillway crest lowering (w/ flashboards or gate)
 - Embankment armoring (ACB)

Maintenance – Near Term

- Tree/ vegetation removal
- Repair of eroded/scoured areas
- Low outlet valve operational?
- Access to Dam

Estimated Project Costs

- Developed to date – various studies
- Engineering
 - \$36 K - \$100 K+
- Construction Admin/Inspection/Cert. - \$15 K - \$20 K+
- Construction - \$60 K - \$320 K+
- Sediment Removal/ T&D
 - Removal - \$10 K - \$50K+
 - T&D - ?
- Stream Restoration - \$200 - \$300 K
- Contingency – 15 to 35 %

Estimated Project Costs (contd.)

- Dam Upgrade - \$500 to \$660 K+
- Dam Breach – \$380 to \$690 K
 - Sediment Management not included
 - Grant Moneys Available – Breach Only - \$100 – 120 K
 - Balance - \$280 K to \$570 K

Post - Construction

- Operation/ Maintenance
- Monitoring/ Adaptive Management

Discussions

