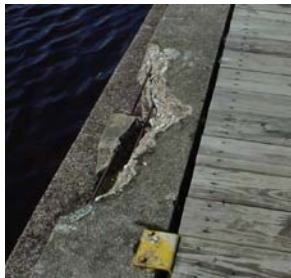


MEADOW DAM ROCK RAMP DESIGN

Kleinschmidt Associates was the successful bidder for engineering services for the design of a rock ramp fish passage at the Meadow Dam, also known as the Fields Pond Dam, in Orrington, Maine.



The Meadow Dam is a concrete and masonry structure located on Sedgeunkedunk Stream at the outlet of a large wetland complex known as the Sedgeunkedunk Meadows. The dam also backwaters Fields Pond, which is separated from the meadows by a geological narrows. The dam was originally owned by Eastern Fine Paper, who operated dams on Sedgeunkedunk Stream to provide water to a paper mill in Brewer, Maine.



The dam was founded on ledge and was in poor condition, with extensive leakage. A dam inspection, condition assessment and opinion of repair cost was performed by Kleinschmidt for the Town of Orrington through a subcontract with Olver Associates in 2004. The results were subsequently presented at a selectmen's meeting with an opinion of cost for dam repair.

A study conducted by Aquatic Science Associates, Inc. (May 2007) found broad support amongst local residents, state and federal agencies, and non-governmental organizations for an alternative that would restore fish passage at site while maintaining existing pond levels. In particular, a rock ramp downstream of the dam was the favored solution. The construction of the rock ramp would include stabilizing the dam and controlling leakage, and allowing for a passive management of pond levels without the intensive use of gates.

Site Visit and Kickoff Meeting

Kleinschmidt conducted a site visit and kickoff meeting, which included additional measurements of the Meadow Dam. Kleinschmidt used the existing topographic survey of the dam and stream, supplemented by additional field measurements for preparing construction drawings for the site. The site visit also served as a follow up to Kleinschmidt's 2004 dam inspection, to see if site conditions (e.g., leakage) have further deteriorated or if there are new stability concerns for the structure. Permit applications and agency consultation was prepared by Aquatic Science Associates, Inc.

Develop Rock Ramp Conceptual Design

Kleinschmidt developed a conceptual design for the rock ramp at Meadow Dam and prepared a hydrologic analysis for the site. Kleinschmidt consulted with the Maine Department of Environmental Protection to determine whether there are any existing water level orders for the pond, as well as any minimum flows required downstream of the dam.

West Gate Evaluation



The west gate at the Meadow Dam—separated from the rest of the structure by a ledge outcropping—was leaking badly into a side channel. Based on preliminary discussions that Aquatic Science Associates, Inc. had with permitting agencies, it was permissible to fill the side channel (which was probably historically excavated) to eliminate leakage. Kleinschmidt evaluated the feasibility of cutting off flow in the side channel, and determining whether the channel should convey any flow during floods.

Draft Construction Drawings and Budget

Kleinschmidt produced construction drawings, specifications and opinions of probable construction cost. This mainly consisted of adding detail to the 50% design prepared in the previous tasks. The design included best management practices for erosion and sediment control as will be required by the permits. This task also included a draft flow management plan for construction, proposing pond level to be maintained during construction and any instream flow requirements. A draft project manual was prepared for the design, including additional specifications, bid forms, terms and conditions, special conditions and relevant background data. An opinion of probable construction costs was prepared for the entire project.

Final Design and Construction Budget

Kleinschmidt prepared the final design package. The final design included 15 paper and CD copies of the construction drawings—stamped by a professional engineer licensed in Maine—as well as the project manual including bid forms.

Assistance in Soliciting Contractor Bids

Kleinschmidt provided bid for construction materials to the Town of Orrington. In addition to the final design drawings and specifications, the bid materials included a project manual that includes bid forms, contract form, project schedule, copies of permits (obtained by the Town), special conditions and requirements for insurance and bonds.

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