

MEMO



To: Idaho Water Resource Board
From: Brian W. Patton, P.E.
Subject: Twin Lakes-Rathdrum Creek Flood Control District No. 17
Twin Lakes Dam Replacement Project
Date: September 11, 2002

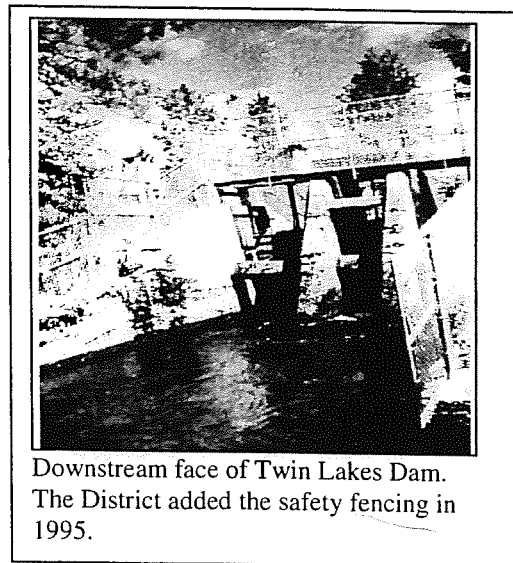
Mike
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The Twin Lakes-Rathdrum Creek Flood Control District No. 17 is requesting a loan in the amount of \$500,000 to replace Twin Lakes Dam.

1.0 BACKGROUND

The Twin Lakes Dam is located on Rathdrum Creek at the outlet of Twin Lakes about 3 miles upstream of Rathdrum and has the following characteristics:

Type	Concrete Gravity
Hydraulic Height	10.4 feet
Structural Height	13 feet
Storage Volume	9,090 Acre Feet
Size Classification	Large
Hazard Classification	Under review
Year Constructed	1906



The dam raises the natural level of Twin Lakes to store water. It was originally constructed in 1906 by the East Green Acres Irrigation District. For a number of reasons, the irrigation district converted to a groundwater system in the 1970's with financial backing from the U.S. Bureau of Reclamation (USBR). As part of the irrigation district's contract with the USBR, the dam and storage right was transferred to the USBR. In 1992, the USBR transferred title of the dam and storage right to the Twin Lakes-Rathdrum Creek Flood Control District No. 17. See page 5-C-12 for title transfer documentation.

2.0 PROBLEM

In 1996 due to concerns about the condition and age of the dam, the IWRB authorized \$5,000 in grant funds to assist the District with an evaluation of the dam and the development of preliminary repair/replacement options. The study was done by the District's consulting engineer, Welch-Comer Engineers (Coeur d'Alene). Welch-Comer issued a report in 1998 that recommended either extensive repairs to the existing dam or full replacement with a new dam. Replacement with a new dam is clearly the best option when considering cost and expected life of the project.

3.0 TWIN LAKES-RATHDRUM CREEK FLOOD CONTROL DISTRICT No. 17

The Flood Control District was formed in 1992 by order of the IDWR Director, as per Idaho Code, after being petitioned by the required percentage of voters within the district boundaries. The purpose of the flood control district's formation was to assume ownership of the dam and operate the dam and lake to achieve the goals listed in Paragraph 4, which include flood control through Rathdrum. The District has the authority to construct, own, and operate water resource projects, levy property tax assessments, and enter into contracts with state and federal agencies. A contract causing a multi-year indebtedness must be approved by 2/3 of the

qualified voters within the district. The District includes both downstream people that benefit from the flood control provided by the dam, and upstream lake people that benefit from the lake level provided by the dam. In addition to Twin Lakes Dam the District owns and operates other flood control works on Rathdrum Creek. The District encompasses 1,200 separate properties with a total assessed value of approximately \$92 million. See Page 5-C-7 for a map of the District.

4.0 DAM OPERATION

The dam is operated by the flood control district according to rule curves developed by the USBR. The operational goals are as follows:

- 1) Limit releases to a maximum of 165 cfs. This is the maximum flow that can be passed through Rathdrum without causing flood damage.
- 2) Limit maximum lake level to 10.4 feet on the dam staff gage. Levels greater than 10.4 feet begin to cause damage to lake-shore properties.
- 3) Fill lake by June 1st and hold as full as possible through September.
- 4) Between September 30 and December 1, lower the lake level to 8.0 feet on the dam staff gage to provide flood control space for the next spring runoff and winter thunderstorm events. Additional space may be evacuated for flood control storage through the winter based on precipitation and snow pack levels as per the rule curves.

See Page 5-C-14 for the rule curve diagram.

5.0 PROPOSED PROJECT

The proposed project is the replacement of the existing 96-year old concrete dam with a new concrete dam. No change in storage volume or dam operation is planned. See Page 5-C-11 for the preliminary design for the replacement dam.

6.0 PROJECT COST ESTIMATE

The project cost estimate was developed by Welch-Comer Engineers and reviewed by Staff. It was originally developed in 1998, and has been scaled up to current cost levels.

Cofferdam, conduit, & care of water	\$37,000
Remove existing dam	61,000
Site preparation	18,000
Reinforced concrete structure	92,000
Gates, motors, & gears	50,000
Automatic controllers & sensors	18,000
Trashracks	7,000
Walkway	12,000
Site fencing	12,000
Embankment work	12,000
Construction contingency	32,000
Engineering & project administration	<u>79,000</u>
TOTAL	\$430,000

The District is requesting a \$500,000 loan to cover legal and election costs in addition to the \$430,000 construction cost.

7.0 FINANCING PLAN

The District is proposing to borrow \$500,000 from the IWRB for the construction of the new dam, as well as for legal and voter election costs. The District, however, has \$87,000 in reserve funds. Staff believes that the District should use some of its reserve funds toward the project. Staff suggests that the IWRB loan be in the amount of \$450,000 and that the District pay for the remainder of the costs from its reserve funds. This would leave the District with \$37,000 in reserve funds.

8.0 FINANCIAL ANALYSIS

The following assumes \$450,000 loan (as discussed in Paragraph 7) at 6%.

Current Financial Conditions:

Assessed Valuation	Current Levy Rate	Current Annual Tax Revenue	Current Annual Expenses	Current Annual Excess to put Toward Project
\$91,832,397	0.000352882	\$32,406	\$15,321	\$17,085

And with the loan:

	Estimated annual Payment to IWRB	Estimated Required Levy Rate	Estimated Final Tax Revenue	Estimated Average Increase per Property	Estimated Final Tax Assessment per Property
15-year loan	\$46,350	0.0007	\$62,350	\$25	\$52
20-year loan	\$39,300	0.0006	\$55,300	\$19	\$46

And:

Indicator	Before Project	With project 20-year term	With project (15-year term)
Revenues/Expenses	2.12 (strong)	1.01 (acceptable)	1.01 (acceptable)
Cash Reserves/Annual Expenses	5.68 (strong)	0.75 (acceptable)	0.67 (acceptable)
Debt Service Coverage Ratio	No debt (strong)	1.01 (acceptable)	1.01 (strong)
Total Long Term Debt per Property	No debt (strong)	\$358 (strong)	\$358 (strong)
Overall Rating	Strong	Acceptable	Acceptable

9.0 SECURITY

The security will be a voted property tax assessment pledged to the IWRB. The Kootenai County Treasurer will collect the property taxes from the residents of the District through the County's annual property tax assessment. The annual payments will be sent directly to the IWRB. The remainder will be returned to the District for dam O&M and District operations.

10.0 VOTER APPROVAL

As required by the Idaho Code chapter governing flood control districts, the residents of the District will be voting on November 5th to approve the project, the loan contract, and the excess tax levy. A 2/3 majority is required for approval. The District's polls predict an approval rate of about 78%. The IWRB's loan authorization will be contingent upon voter approval.

11.0 WATER RIGHT

Water Right 95-0973 (formerly number 14757), which allows storage in Twin Lakes, was transferred from the

Irrigation District to the USBR along with the dam as part of the Irrigation District's groundwater project. The USBR changed the water right use from irrigation to recreation and wildlife storage. The water right was transferred to the Flood Control District along with the dam in 1992, although the Flood Control District has not yet recorded the change of ownership with IDWR. This will be a requirement of the loan.

12.0 FLOOD CONTROL ANALYSIS

The dam can regulate up to approximately the 50-year flood event to a no-damage level in Rathdrum, and to more than a 100-year event at the dam. Although a detailed analysis has not been done, it appears that the average annual damages prevented by flood control operations would exceed the annualized cost of dam reconstruction. Rather than conduct a detailed flood control feasibility analysis, we are assuming the project is feasible if the District's residents vote to approve the project and tax themselves to support the project.

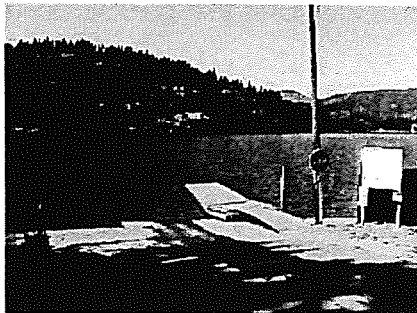
13.0 INCIDENTAL BENEFITS OF TWIN LAKES DAM

Water Supply

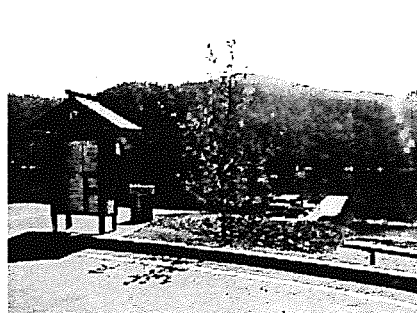
Although the dam is no longer operated specifically to provide irrigation storage, numerous downstream irrigators have natural flow rights on Rathdrum Creek that benefit from the storage and controlled release of the spring runoff. There are also several large water diversions directly from the lake that benefit from the higher lake level and reduced pump lift provided by the dam. Water distribution in this system is done under the supervision of the Water District 95-C watermaster.

Recreation

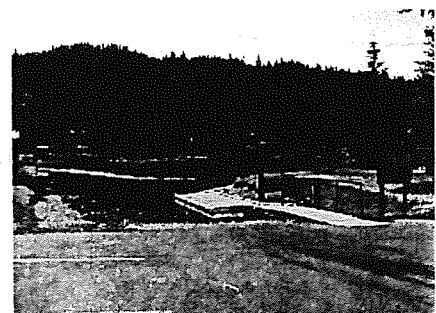
Twin lakes receives a substantial amount of recreational use. Kootenai County maintains several public boat launch facilities as shown in the following pictures:



Lower Twin Lakes Boat Launch



Upper Twin Lakes Boat Launch



Twin Lakes Middle Channel Boat Launch

There are also numerous private boat launches. In its operations, the District attempts to keep the lake full through the summer to accommodate recreation to the extent possible.

Fishery Habitat

The Department of Fish & Game maintains a very active fishery in Twin Lakes and routinely stocks it with a variety of fish species including Rainbow Trout, Brown Trout, and Kokanee. Although the fishery would be present without the dam, the larger lake provided by the dam has allowed a larger fishery.

Aquifer Recharge

A 1987 report by the Idaho Water Resources Research Institute reports an annual flow (recharge) of approximately 11,000 AF from Twin Lakes into the Rathdrum Prairie Aquifer, and that the rate of this recharge increases with higher lake levels made possible by the dam.

14.0 IWRB AND FLOOD CONTROL PROJECTS

The IWRB has been financially involved with a number of previous flood control projects including the construction of flood control works on Goose Creek, the Raft River, at the Roberts area of the Snake River, and

the Rathdrum Creek Sump (see Paragraph 15). The IWRB assisted with the Milo Creek Flood Control Study at Kellogg, and the evaluation of this dam that led to this project. The IWRB has also been involved with the potential Corps of Engineers Little Wood River Flood Control Project.

15.0 PREVIOUS RELATED PROJECT

After the Irrigation District switched to its groundwater system, the surface canal system was no longer needed and was farmed over, leaving no place for the excess flows of Rathdrum Creek, causing damage to the farmland in high water years. The Irrigation District, USBR, and the City constructed the Rathdrum Creek Sump, which is essentially a large drain to dispose of the high flows. It is located downstream of the City where Rathdrum Creek enters the Rathdrum Prairie. This has the additional benefit of recharge to the Rathdrum Prairie Aquifer. The IWRB paid \$2,740 in grant funds for this project in 1984. This sump is now owned and operated by the Flood Control District.

16.0 INCLUSION IN POOLED REVENUE BOND

Consideration was given to inclusion of this project into a pooled revenue bond. This is not practical because an application must achieve a Baa3 bond rating in order to be eligible for a pooled revenue bond. The Idaho Code governing flood control districts does not allow flood control districts to issue "bonds," which precludes achieving a bond rating. Rather, the Idaho Code allows flood control districts to enter into "contracts" with federal agencies or the State of Idaho, and pledge tax revenues to secure the repayment required by the contract with approval of 2/3 of the district's residents. An alternative may be to replace the flood control district with a Local Improvement District (LID) which can be included in a pooled revenue bond, however, considering the costs and time associated with formation of the LID, the project costs would increase substantially and the project would be delayed at least a year.

17.0 CONCLUSION AND RECOMMENDATION

The Twin lakes Dam is approximately 96 years old and replacement of the dam is prudent to ensure the benefits provided by the dam continue. It is operated to provide primary benefits of flood control. It also provides incidental benefits of recreation, fishery habitat, aquifer recharge, and improved water supply in this system. It appears the District's residents are willing tax themselves to support repayment of the dam's replacement.

Staff recommends Authorization of a \$450,000, 6%, 15-year Revolving Development Account Loan with the following phased disbursement plan:

- A. A maximum of \$100,000 may be disbursed on or before August 31, 2003.
- B. The remainder of the loan may be disbursed after August 31, 2003.

This is subject to approval of the District's voters on November 5, 2002. If not approved by the voters, the loan authorization will terminate.