



# MEMORANDUM

EUGENE WATER & ELECTRIC BOARD

*Rely on us.*

TO: Commissioners Brown, Mital, Helgeson, Manning and Simpson  
FROM: Mel Damewood, Engineering Manager  
DATE: March 21, 2014  
SUBJECT: Project Update and Request for Contract Approval  
Leaburg Dam Roll Gate 2 Hoist Replacement  
OBJECTIVE: Board Action

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## Issue

EWEB has received bids to replace the failed Roll Gate 2 hoist system at Leaburg Dam. Staff recommends award of the contract to the apparent responsible low bidder. In addition, due to higher costs than what were anticipated during the 2014 budgeting process (which occurred early in the hoist replacement design process), staff requests approval of a project budget amendment, which is included in the Budget Amendment being proposed for the annual April True-up of the Capital Budget.

## Background

Flow control at Leaburg Dam is provided by three 100-foot-wide by 16-foot-tall roll gates. In 2004, each roll gate was equipped with a hydraulic motor and chain drive hoist system, which positions the gate to maintain a predetermined water level in Leaburg Lake.

On January 19, 2012, the hydraulic motor for Roll Gate 2 failed, causing the gate to free fall into the fully closed position. On-site repair efforts proved unsuccessful. Consequently, the motor was removed, disassembled, and inspected. The inspection revealed that the motor had failed catastrophically. The reasons for the failure are not known with certainty.

A consulting engineering firm was retained in February 2013 to design the replacement hoist system. The consultant struggled to perform their scope of work and EWEB staff identified significant electrical and control system design problems that needed to be resolved. The consultant submitted final design documents in early February 2014 and the hoist replacement was advertised for bidding on February 14, 2014.

In November 2013, EWEB issued a separate contract for installation of a bulkhead in front of Roll Gate 2, which will isolate the roll gate from Leaburg Lake and permit inspection of the gate exterior and comprehensive testing of the new hoist in a dewatered condition.

Because Roll Gate 2 experienced a free fall and subsequent impact on the concrete spillway, Engineering and Operations staff are conducting thorough structural inspections of the gate to ascertain any impact damage. On January 27, 2014, staff inspected the interior of the roll gate and found no significant structural damage. Staff will complete the exterior inspection of the roll gate after the bulkhead is in place.

After work on Gate 2 is completed, staff recommends authorizing the contractor to proceed with installation of the bulkhead in front of Gates 1 and 3. This will allow staff to inspect these gates and comprehensively test their existing hoist systems in a dewatered condition. It has been 10 years since Gates 1 and 3 have been inspected and this effort will allow staff to detect indications of problems that might be developing with the existing systems and thus reduce the chance of another catastrophic failure.

Work at Leaburg Dam is anticipated to proceed as follows:

- Install bulkhead for Gate 2
- Install new hoist for Gate 2
- Test Gate 2
- Inspect Gate 2
- Remove Gate 2 bulkhead
- Install bulkhead and test and inspect Gates 1 and 3 sequentially

### **Hoist Replacement Bid Summary**

The construction contract was advertised on February 14, 2014. One bid was received and opened on March 13, 2014. Knight Construction's bid of approximately \$1.75 million compares to the Engineer's Estimate of \$1.6 million.

### **Budget Status**

The current 2014 budget for completion of the roll gate work is \$1,186,000. The 2014 budget was based in large part on the hoist consultant's original construction cost estimate of \$830,000. Since the development of this budget, the following changes have occurred:

- Hoist bid price. The hoist replacement bid price of \$1.75 million is more than double the consultant's original \$830,000 construction cost estimate. While the consultant's cost estimate increased over the course of design, the bid price is \$450,000 higher than the consultant's final construction cost estimate, and \$150,000 higher than the official Engineer's Estimate.
- Negotiated scope reductions. Because of the high bid price, staff entered into discussions with the hoist replacement bidder, Knight Construction. Reductions in scope resulted in a cost reduction of \$136,000.
- Concerns with the consultant's electrical and control system design. As stated previously, significant staff time has been invested to modify and improve the design

documents. It is anticipated that this need for increased staff time will be ongoing as the construction process reveals additional design shortcomings. Due to concerns about these deficiencies, \$100,000 has been budgeted for a 3rd Party firm with specific expertise in large gate hoists to assist with construction inspections, testing, and commissioning. Similarly, the in-house engineering staff budget was increased by over \$200,000.

- Higher than expected bulkhead bids. The bid price of the bulkhead work was \$399,000, significantly higher than the bulkhead design consultant’s construction cost estimate of \$280,000.
- Operations staff assistance and training. Approximately \$46,000 of Operations staff time was added to the budget for control system programming modifications, training, and commissioning. It was previously assumed that this work would be covered under the Leaburg/Waltermville operation and maintenance budget.
- Repairs to the dam’s three pier houses were added to the hoist replacement contract. These repairs included replacing leaking roofs (to protect electrical equipment), and safety improvements such as replacement of substandard floor hatches and guard railing. Costs for these improvements are included in the bid price.

A budget comparison is shown in the table below. Line items are organized into the following categories:

- Additional engineering and operations
- Construction cost estimating issue
- Scope changes
- Budget transfer

Item	Original 2014 budget, \$	Recommended 2014 budget, \$	Description
Bulkhead for Gates 1 & 3	150,000	189,000	Construction cost estimating issue
Hoist replacement bid	830,000	1,753,000 (a)	Construction cost estimating issue
Hoist negotiated cost reductions	0	-136,000	Scope change
Hoist bid subtotal and recommended authorization	--	1,617,000	--
Spare parts for hydraulic power units (Gates 1 and 3)	0	10,000	Scope change
3 <sup>rd</sup> party assistance during construction	0	100,000	Additional engineering and operations

EWEB Engineering staff time	101,000	306,000	Additional engineering and operations
EWEB Operations staff time	25,000	71,000	Additional engineering and operations
Allowance for electrical and control system change orders	0	100,000	Additional engineering and operations
Consultants (b)	50,000	164,000	Additional engineering and operations
Overhead	30,000	70,000	
Subtotal	1,187,000	2,627,000	
Gate 2 bulkhead installation	Budgeted for 2013	230,000	Budget transfer
Total	1,187,000	2,857,000	

Notes:

- (a) Includes cost of scope change for pier house improvements (new roofs and safety improvements) estimated at \$54,000.
- (b) Includes hoist replacement consultant and bulkhead installation consultant

**Requested Board Action**

Staff recommends the Board approve award of the Leaburg Dam Roll Gate 2 Hoist Replacement contract to Knight Construction. In addition, staff requests Board approval of the requested budget amendment to permit completion of the recommended work at Leaburg Dam.

If there are any questions or if more information is needed, please contact Mark Zinniker, Generation Engineering Supervisor, at 541.685.7449 or at [Mark.Zinniker@eweb.org](mailto:Mark.Zinniker@eweb.org).

**EWEB BOARD AGENDA ITEM ACTION REQUEST**  
***For Contract Awards, Renewals, and Increases generally over \$1 million***

The Board is being asked to approve a contract with **Knight Construction & Supply, Inc.** for **construction services**.

Backgrounder ("See backgrounder information") Yes

Board Meeting Date: April 1, 2014

Project Name/Contract#: LB Dam Roll Gate Hoist Replacement/057-2013

Primary Contact: Mel Damewood Ext. 7145

Secondary Contact: Roger Gray Ext. 7130

Purchasing Contact: Sarah Gorsegner Ext. 7348

**Action Requested:**

- Contract Award
- Contract Renewal
- Contract Increase
- Other

**Contract Amount:**

Original Contract Amount: \$1,617,000

Additional \$ Previously Approved: \$ n/a

Invoices over last approval: \$ n/a

Percentage over last approval: n/a %

Amount this Request: \$1,617,000

**Resulting Cumulative Total: \$1,617,000**

**Funding Source:**

- Budget
- Reserves
- New Revenue
- Bonding
- Other

**Contracting Method:**

Method of Solicitation: Formal Invitation to Bid

If applicable, basis for exemption: n/a

Term of Agreement: November 11, 2014

Option to Renew? No

Approval for purchases "as needed" for the life of the contract No

**Form of Contract:**

- Single Purchase
- Services
- Personal Services
- Construction
- IGA
- Price Agreement
- Other

**Narrative:**

In January, 2012 the hydraulic motor for the Roll Gate 2 Hoist at Leaburg Dam catastrophically failed. The hoist is a critical system component used to lower and raise the gate. To remain in compliance with Federal Energy Regulatory Commission (FERC) and EWEB standard operations requirements the equipment needs to be replaced. Work will include installing a new gate hoist, including electric motor, gear train, braking system, variable speed drive, and ancillary devices. Additional associated work will require fabrication of a new base plate to support the gearbox, modifications to control programming and sensing equipment, upgrades to the pier house roofing and railings, and other work associated with the replacement, testing, and commissioning of the equipment. EWEB requires the experience of a specialized construction firm with experience in gate replacement and repairs.

Staff issued a formal Invitation to Bid in February, 2014. Fourteen companies reviewed the project and 2 prime contractors attended the mandatory pre-bid meeting. EWEB received one responsive and responsible bid from Knight Construction & Supply, Inc. of Deer Park, Washington. Knight Construction has 44 years of heavy construction experience. Their work experience has included gate repairs at several northwest hydroelectric locations; their project superintendent has been with the company for 17 years and has direct experience with Gate Repairs.

EWEB engaged in negotiations with the contractor to value engineer the price of the project to within budget. The engineers estimate was \$1.6 million and EWEB has negotiated a savings of \$136,000 to \$1,617,000.

**ACTION REQUESTED:**

Management requests Board approve a contract with Knight Construction and Supply, Inc. for **construction services**. Funds for this work were budgeted for 2014; the project will require a budget amendment as outlined in the backgrounder.

**SIGNATURES:**

Project Coordinator: \_\_\_\_\_

Manager: \_\_\_\_\_

Purchasing Manager: \_\_\_\_\_

General Manager: \_\_\_\_\_

Board Approval Date: \_\_\_\_\_

Secretary/Assistant Secretary verification: \_\_\_\_\_