

Willamette Falls Locks Capital Repair Cost Summary

February 2, 2019

The Willamette Falls Locks Commission (WFLC) was established by the Oregon Legislature through SB 256 in the 2017 legislative session. The WFLC is charged with making recommendations for funding to repair and reopen the Willamette Falls navigation canal and locks. At its January 30, 2019 meeting, the WFLC voted unanimously to recommend **\$15.535** million for Lottery bond financing for the repairs needed to restore the facility to a safe operating condition, provide upgrades to the operating system and plan for scheduled rehab. The well-respected consulting firm KPFF conducted an evaluation and found the locks to be in remarkably good condition considering their age and provided a report to the WFLC on recommend needed repairs, upgrades to restore the facility to a safe operating condition, and annual and periodic maintenance actions. <http://orsolutions.org/wp-content/uploads/2018/11/WFLC-KPFF-Assessment-Final-Report-10-10-18.pdf>

Recommended repairs to restore the facility to a safe operating condition and to provide a facility that can be maintained at a reasonable cost, including:

• Control seepage and repair erosion	\$2.33 million
• Seismic upgrade	3.33
• Replace gudgeon anchors	1.07
• Replace pedestrian drawbridge and various walkways	1.29
• Repair/Replace Valves	0.93
• Install fire protection system	0.76
• Repair electrical system	0.28
• Misc. smaller repairs	0.82
Subtotal	\$10.81 million

Upgrades to operating systems with modern equipment, thereby allowing for more efficient operations and maintenance, including:

• Install new hydraulic power units	\$.62 million
• Replace control system	1.21
• Replace lighting system	0.78
Subtotal	\$2.61 million

In addition to repairs and upgrades needed to return the Locks to operational condition, there should be a plan for a scheduled major rehab on a five-year cycle, including:

• Hydrographic survey and dredging	\$.19 million
• Adjust diagonals on miter gates	.03
• Correction of grounding system	.03
• Replace all hydraulic hoses	.05
• Inspect slide gates and replace ½ of the valves	.24
Total 5-year rehab.	\$0.54 million

• Repairs and upgrades-\$10.81 plus \$2.61 million	\$13.42 million
• 5-year rehab	0.54
• Sinking Fund @ \$75 k/year*	0.375
• Inflation @ 5%/year	1.2

Total Cost over a 5 year period (2018 dollars)

\$15.535 million

In the long term, it is recommended that a *sinking fund be established to fund expected major capital repairs, including:

<ul style="list-style-type: none"> Remove, inspect and repair all gates every 50-years at an estimated cost of \$1.215 million 	\$50k/year
<ul style="list-style-type: none"> Repair flood damage based upon a 30-year cycle at a cost of \$0.71 million 	\$25k/year

Unknowns and Contingencies

The Locks and Canal are 146 years old and, as such, there are unknowns and contingencies to consider that would impact the costs presented above. Described below are those identified by KPFF and the manner in which they have been accounted for in the scope and WFLC cost estimate.

- Contingencies are included for all of the cost estimates sufficient to provide a Rough Order of Magnitude (ROM) engineer’s estimate. All of the costs include a 30% contingency to account for items that are not individually specified.
- In addition, a 20% contingency is added to all individual costs and the 30% contingency to provide for carrying out the needed engineering and design and completing the permitting process.
- One of the biggest unknowns is the extent of seepage and erosion and the best approach for correcting this problem. As a result, the line items dealing with seepage and erosion control have an added contingency to increase their cost from \$1.3 to \$2.3 million.
- The second major unknown is the scope and cost of needed seismic upgrades.
- Designing seismic upgrades is challenging and further engineering will be required to define the final costs for seismic upgrades.
- The Corps has completed a Section 216 Disposition Study with an integrated Environmental Assessment (EA). KPFF recommended having this assessment reviewed by a qualified environmental expert to determine whether any additional documentation to satisfy NEPA is required. The costs reflected above have included \$50,000 for this purpose, but further work is needed to determine if environmental review discovers missing elements
- The upper gates are a continuation of the dam across the face of Willamette Falls and are subject to periodic licensing requirements under the Federal Energy Regulatory Commission (FERC). While PGE has this responsibility, the consultant has recommended coordinating with PGE to determine whether a new owner will bear any responsibilities during the next licensing event. This is not accounted for in the cost estimate above however, the next FERC licensing event is not scheduled until 2035.
- Escalation is assumed at 5% per year. Actual costs could vary from this and add or subtract cost.
- Removal of the gates on a 50-year cycle is a major undertaking and the actual cost of repair will not be known until they are disassembled. This cost estimate is based upon likely repairs, not actual repairs and the actual cost could be higher or lower.
- The sinking fund for flood damage repair of \$710,000 is recommended to be accumulated at the rate of \$25,000 per year, meaning it will take nearly 30 years to accumulate that amount. However, a major flood could happen in any year without sufficient funds in the sinking fund to execute repairs leaving the organization with a funding shortfall when the flood event occurs.
- The \$15.535 million cost estimate is strictly for the repair and reopening of the Locks to marine traffic. None of the cost of land access to the site and upgrade to the adjacent public park and museum are included. If there were surplus funds, some of these improvements could be implemented as well.