US Army Corps of Engineers®
St. Paul District

Appendix A: Economics

UPPER ST. ANTHONY FALLS LOCK AND DAM

SECTION 216 DISPOSITION STUDY

REVISED DRAFT INTEGRATED DISPOSITION STUDY AND ENVIRONMENTAL ASSESSMENT

June 2025

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1 Introduction

This appendix contains the analysis of economic benefits for the disposition of Upper St. Anthony Falls (USAF) Lock and Dam. Economic benefits serve as one of the criteria used for selection of an alternative for project disposition. This project is unique in that it has reached the end of its useful life in terms of carrying out its authorized mission (navigation) and thus no longer produces the economic benefits as intended. However, while the project no longer produces economic benefits, it still incurs costs to the federal government in the form of minimal operation and maintenance to carry out its secondary purposes: water supply, hydropower, recreation and flood control.

In this analysis, for purposes of amortization and discounting future values to present worth, an interest rate of 3.0% was used. The period of analysis for assessment of costs was 50 years, and the price level for costs are October 1, 2024 (fiscal year 2025).

2 Costs

If the government takes no action toward disposition, it will continue to incur costs. Cost avoidance forms the foundation for the economic benefits of a project's disposal. These avoided costs take a variety of forms, which include 1) routine operation and maintenance, 2) utilities, 3) flood operations, 4) major maintenance and 5) inspections. Here, costs were expressed in average annual terms so that alternatives can be compared on an equal basis. Projected future costs for items such as major maintenance or flood operations account for inflation; they were discounted back to present worth and then amortized over the 50-year period of analysis. Average annual costs for the No Action alternative were estimated to be $1,296,000. These are the costs expected to be incurred on an average annual basis if the government retains the property. The No Action alternative serves as the base condition from which other alternatives' costs are compared to estimate cost savings benefits.

Two action alternatives to the No Action alternative were formulated to meet the study objectives: complete disposition (Full Disposal) and partial disposition (Partial Disposal). Full Disposal would incur costs related to only the transfer of ownership to the receiving entity. The items of the transfer or sale would be determined during the disposal process and could require significant or insignificant additional costs to the government. For this analysis, it was assumed that the property will be transferred in an as-is condition, requiring removal of federal nonfixed property, such as security systems, furnishings and supplies. The lock and dam machinery would be turned over to the new owner.

Decommissioning and removal of nonfixed federal property would be performed by the U.S. Army Corps of Engineers (USACE) operations division. Average annual costs for the Full Disposal alternative are estimated at $33,000.

Under the Partial Disposal alternative, USACE would continue to operate the flood gate and would retain control over project features necessary to do this. Disposed features would incur the contracting and decommissioning costs related to disposition. Retained features would incur the costs related to maintenance (annual and major), flood operations, utilities and inspections. Average annual costs for the Partial Disposal alternative were estimated to be $546,000.

More details on the costs can be found in Appendix I.

3 Benefits

Benefits produced by disposal of the USAF project consist of the saving of costs anticipated to occur under the No Action alternative. For this analysis, the No Action alternative was viewed as the planning principal's without-project condition, where project typically refers to the construction of a new water resource project. The No Action alternative serves as the basis from which the impacts of other alternatives can be assessed and is the condition or scenario expected to prevail if none of the disposition alternatives are found worthy of implementation.

Therefore, the costs for the No Action condition serve as a basis from which costs for the alternative scenarios can be compared to estimate their cost savings benefits. Like traditional National Economic Development (NED) benefit analysis, where the alternative that produces the greatest net benefit is deemed the NED Plan, the disposition alternative that produces the greatest cost savings relative to the without-action scenario (No Action alternative) can likewise be viewed as the NED Plan. The following table summarizes the comparison of cost savings benefits by disposition alternative.

Table 3-1. Average Annual Life Cycle Costs and Benefits by Alternative (Fiscal Year 2025 Price Levels, Fiscal Year 2025 Discount Rate of 3.0%)

Cost Information	No Action	Full Disposal	Partial Disposal
Present Value of Costs	$33,352,000	$837,000	$14,039,000
Average Annual Costs	$1,296,000	$33,000	$546,000
Annual Cost Savings*	-	$1,263,000	$750,000

* Compared to No Action alternative costs

As the above table shows, the alternative that yields the greatest net benefits is Full Disposal. Taken at face value, Full Disposal would be the recommended plan. However, criteria other than cost savings benefits are considered when recommending or selecting the final plan. These are discussed in the Plan Formulation section of the main report.

The table below shows the annualized costs for all operations, maintenance, repair, replacement, and rehabilitation actions by line item for both the No Action and Partial Disposal alternatives.

Table 3-2. Annualized Costs For All Operation, Maintenance, Repair, Replacement and Rehabilitation Actions (Fiscal Year 2025 Price Levels, Fiscal Year 2025 Discount Rate of 3.0%, 50-Year Period of Analysis)

Line Item	First Cost	Frequency	PV Cost	Annualized	No Action Annualized Costs	Partial Disposal Annualized Costs
Repair, reactivate and recalibrate sensor perimeter fence	$13,098	starting at year 10; 20; 30; 40; 50	$29,396	$1,143	$1,143	$1,143
Repair decorative perimeter fence adjacent to main external parking lot (vehicle damage)	$45,841	replace at year 1; then maintenance starting at year 25; 50	$78,192	$3,039	$3,039	$3,039
Fencing with gate access to emergency generator area	$65,488	starting at year 25; 50	$46,215	$1,796	$1,796	$1,796
Install concertina wire on top of perimeter fence	$5,239	starting at year 25; 50	$3,697	$144	$144	$144
Install balanced magnetic switches and glass breakage sensors on all windows	$52,390	starting at year 25; 50	$36,972	$1,437	$1,437	$1,437
Emplace bars, metal mesh, or fence fabric on all windows at ground level, and second level if access	$32,744	replace at year 1	$32,744	$1,273	$1,273	$1,273
Emplace bars, metal mesh, or fence fabric on all windows at ground level, and second level if access	$3,274	starting at year 25; 50	$2,311	$90	$90	$90
Replace and upgrade perimeter fence and gates to current standards (minimum 8'; recommended 9')	$157,170	replace at year 1	$157,170	$6,108	$6,108	$6,108
Replace and upgrade perimeter fence and gates to current standards (minimum 8'; recommended 9')	$15,717	at year 25	$7,507	$292	$292	$292

Line Item	First Cost	Frequency	PV Cost	Annualized	No Action Annualized Costs	Partial Disposal Annualized Costs
PI-2020-USAF-002- Disposition Impacts on Dam Safety	$13,098	annually; starting year 1	$336,996	$13,098	$13,098	$13,098
PERIODIC ROUTINE OPERATION & MAINTENANCE: PI-2020-USAF-001- New Tainter Gate Exercising	$10,059	annually; starting year 1	$258,813	$10,059	$10,059	$10,059
PI-2020-USAF-004- INSPECTIONS: Item R: Soundings/Diving Inspection During Low Flows	$39,293	starting at year 5; every five years	$190,424	$7,401	$7,401	$7,401
PI-2020-USAF-003- Xcel Inspections	$13,098	starting at year 5; every five years	$63,475	$2,467	$2,467	$2,467
PI-2015-USAF-003- Update HEC-RAS Modeling	$13,098	at year 1	$13,098	$509	$509	$509
PERIODIC ROUTINE OPERATION & MAINTENANCE: Miter Gate Anchorages - Paint	$15,586	at year 25	$7,444	$289	$289	$0
PERIODIC ROUTINE OPERATION & MAINTENANCE: Miter Gate Anchorages - Paint	$13,490	at year 25	$6,443	$250	$0	$250
Visitor center camera missing needs replacement	$13,098	starting at year 25; 50	$9,243	$359	$359	$359
Lower Land I-Star panel Communication Failure	$1,572	starting at year 10; 20; 30; 40; 50	$3,528	$137	$137	$137
PI-2020-USAF-006- EAP Update	$13,098	at year 1	$13,098	$509	$509	$509
Video Camera 5 & 8 has broken RG-6 that needs to be pulled and connected.	$13,098	starting at year 25; 50	$9,243	$359	$359	$359

Line Item	First Cost	Frequency	PV Cost	Annualized	No Action Annualized Costs	Partial Disposal Annualized Costs
PI-2020-USAF-005- INSPECTIONS: Item P: Bridge Inspection	$1,624	starting at year 5; every five years	$7,871	$306	$306	$306
PI-2020-USAF-007b- Roofing Repair	$13,098	at year 25	$6,255	$243	$243	$243
PERIODIC ROUTINE OPERATION & MAINTENANCE: Item B: Supplies related to lighting maintenance	$1,310	annually; starting year 1	$33,700	$1,310	$1,310	$1,310
PI-2020-USAF-009b- Riprap Overlay	$229,206	at year 25	$109,470	$4,255	$4,255	$4,255
PI-2020-USAF-008- Stairway Painting	$130,975	at year 25	$62,554	$2,431	$2,431	$2,431
PI-2020-USAF-009a- Piezometers	$6,549	starting at year 5; every five years	$31,737	$1,233	$1,233	$1,233
PI-2020-USAF-011- Training Dike Erosion	$26,195	starting at year 10; 20; 30; 40; 50	$58,793	$2,285	$2,285	$2,285
PI-2020-USAF-012- Culvert Valve Bulkheads	$130,975	at year 25	$62,554	$2,431	$2,431	$2,431
PI-2020-USAF-010- Mooring Cell Inspections	$13,098	starting at year 5; every five years	$63,475	$2,467	$2,467	$0
PI-2020-USAF-013- PMF Update	$327,438	at year 1	$327,438	$12,726	$12,726	$12,726
Paint Floating Mooring Bits/Ballard's	$1,048	starting at year 2; every two years	$1,944	$76	$76	$0
Diesel Fuel Tank-Paint	$1,048	starting at year 2; every two years	$13,285	$516	$516	$516
Caulk Doors and Windows-Central Control Stand	$20,503	starting at year 5; every five years	$99,365	$3,862	$3,862	$3,862
Caulk Doors and Windows-Lower Control Stand	$20,503	starting at year 5; every five years	$99,365	$3,862	$3,862	$3,862

Line Item	First Cost	Frequency	PV Cost	Annualized	No Action Annualized Costs	Partial Disposal Annualized Costs
Window Glazing-Central Control Stand	$8,820	at year 25	$4,212	$164	$164	$164
Caulk Doors and Windows-Upper Control Stand	$20,503	starting at year 5; every five years	$99,365	$3,862	$3,862	$3,862
Window Glazing-Lower Control Stand	$8,820	at year 25	$4,212	$164	$164	$164
Window Glazing-Upper Control Stand	$8,820	at year 25	$4,212	$164	$164	$164
Replace Broken Glass CCS Lock Door	$1,048	replace at year 1; then maintenance starting at year 25	$1,788	$69	$69	$69
Xcel Hydropower Plant Operation and Maintenance Coordination	$36,855	annually; starting year 1	$215,667	$8,382	$8,382	$8,382
Dewatering Event	$8,947,750	starting at year 20; 40	$7,697,146	$299,153	$299,153	$299,153
PERIODIC ROUTINE OPERATION & MAINTENANCE: Item A: Building and Grounds weekly site checks (4 hours per week)	$21,270	annually; starting year 1	$547,274	$21,270	$21,270	$21,270
PERIODIC ROUTINE OPERATION & MAINTENANCE: Item D: Grease/Hydraulic fluid/Miscellaneous wear items (Land Wall and River Wall)	$1,061	annually; starting year 1	$27,298	$1,061	$1,061	$1,061
PERIODIC ROUTINE OPERATION & MAINTENANCE: Item E: Winterization & Spring Start Up	$6,545	annually; starting year 1	$168,392	$6,545	$6,545	$6,545

Line Item	First Cost	Frequency	PV Cost	Annualized	No Action Annualized Costs	Partial Disposal Annualized Costs
PERIODIC ROUTINE OPERATION & MAINTENANCE: Item F: Tainter Gate Operation for Horseshoe Dam Maintenance	$4,090	annually; starting year 1	$105,245	$4,090	$4,090	$4,090
PERIODIC ROUTINE OPERATION & MAINTENANCE: Item G: Elevator Maintenance	$3,579	annually; starting year 1	$92,089	$3,579	$3,579	$3,579
UTILITIES: Item H: City Water & Storm Water Sewer Tax	$10,482	annually; starting year 1	$269,690	$10,482	$10,482	$10,482
UTILITIES: Item I: Phone & Internet	$3,835	annually; starting year 1	$98,667	$3,835	$3,835	$3,835
UTILITIES: Item J: Trash Pickup	$1,534	annually; starting year 1	$39,467	$1,534	$1,534	$1,534
MAJOR MAINTENANCE (OCCUR ON 25-YEAR INTERVAL): Item L: Blast & Paint Bulkheads	$213,042	at year 25	$101,750	$3,955	$3,955	$3,955
MAJOR MAINTENANCE (OCCUR ON 25-YEAR INTERVAL): Item M: Blast & Paint Tainter Gates	$958,688	at year 25	$457,874	$17,796	$17,796	$17,796
INSPECTIONS: Item O: Periodic Inspection Safety	$102,260	starting at year 5; every five years	$495,585	$19,261	$19,261	$19,261
INSPECTIONS: Item Q: Instrumentation	$9,587	starting at year 5; every five years	$46,461	$1,806	$1,806	$1,806
FLOODING OPERATIONS: Item S: Tainter Gate Operations & Sandbagging Labor	$16,362	starting at year 10; 20; 30; 40; 50	$36,722	$1,427	$1,427	$1,427

Line Item	First Cost	Frequency	PV Cost	Annualized	No Action Annualized Costs	Partial Disposal Annualized Costs
FLOODING OPERATIONS: Item T: Sandbags/ misc. flood related supplies	$6,391	starting at year 10; 20; 30; 40; 50	$14,345	$558	$558	$558
LOWER GUIDE WALL RESURFACING	$511,300	at year 25	$244,200	$9,491	$9,491	$0
RIVER WALL RESURFACING	$511,300	at year 25	$244,200	$9,491	$9,491	$0
CONCRETE MUD JACKING (for uneven walkways; option for grouting underneath)	$63,913	at year 25	$30,525	$1,186	$1,186	$1,186
HIGH MAST POLE REMOVAL	$6,391	at year 25	$3,052	$119	$0	$119
HIGH MAST POLE REPLACEMENT	$44,739	at year 25	$21,367	$830	$830	$0
SPILLWAY STRUCTURE CONCRETE REHABILITATION	$2,556,500	at year 25	$1,220,999	$47,455	$47,455	$47,455
VERTICAL CONCRETE REHABILITATION (vertical surfaces for upper & lower guide walls, and any vertical surface outside of lock chamber used for navigation)	$6,391,250	at year 25	$3,052,497	$118,637	$118,637	$0
CONCRETE PAVEMENT REHABILITATION TO RESURFACE	$95,869	at year 25	$45,787	$1,780	$1,780	$1,780
ELECTRICAL CABINET REHABILITATION	$1,278,250	at year 25	$610,499	$23,727	$23,727	$0
MACHINERY REPLACEMENT	$25,565,000	at year 25	$12,209,986	$474,547	$474,547	$0
DOLPHIN REPLACEMENT	$5,368,650	at year 25	$2,564,097	$99,655	$99,655	$0
DOLPHIN MAINTENANCE	$230,085	starting at year 15; 30; 45	$303,318	$11,789	$11,789	$0