

# **Appendix A – Economic & Costs**

Upper St. Anthony Falls Lock and Dam

Section 216 Disposition Study

Draft Integrated Disposition Report and Environmental Assessment

December 2020

# Appendix A

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# **Economic Appendix**

## 1 Introduction

This appendix contains the analysis of economic benefits for the disposition of USAF Lock and Dam. Economic benefits serve as one of the criteria used for selection of an alternative for project disposition. For purposes of amortization and discounting future values to present worth, an interest rate of 2.5% is used. The period of analysis is 50 years and the price level for costs is October 2020.

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 no longer produces the economic benefits as intended. However, while the project no longer produces benefits, it still incurs costs to the Federal government in the form of minimal operation and maintenance to carry out its other 'secondary" purposes: water supply, hydropower, recreation, and flood control.

### 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. Costs are expressed in average annual terms so that alternatives can be compared on an equal basis. The period of analysis for assessment of costs is 50 years. Projected future costs for items such as major maintenance or flood operations account for inflation, are discounted back to present worth, and then amortized over the 50-year period of analysis. Average annual costs for the No Action alternative are estimated at \$243,500. 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.

Four alternatives to No Action have been formulated to meet the study objectives. These include two alternatives involving complete disposition and two versions of partial disposition. Alternative 1 only incurs costs related to the transfer of ownership to the receiving entity. The items of the transfer or sale will be determined during the disposal process and may require significant or insignificant additional costs to the government. For the purpose of this analysis, it is assumed that the property will be transferred in an as-is condition, requiring removal of federal non-fixed property, such as security systems, furnishings, supplies, etc. The lock and dam machinery will be turned over to the new owner. Preparation of contracts for transfer requires input from Real Estate, Office of Counsel, Engineering, Operations, Contracting, and Environmental (SHPO issues). Decommissioning and removal of non-fixed Federal property would be performed by Operations Division. Average annual costs for the Complete Disposition alternative is estimated at \$23,500.

Alternative 1a includes all features of Alternative 1 along with a monetary incentive after transfer of ownership to expedite disposal of the property. The amount of any incentive will be determined through negotiation and may be limited, as authorized, by Congress.

The partial disposition alternatives (versions 2 and 2a) consist of a combination of features that will either be disposed or retained. For both of these alternatives, the Corps would continue to operate the flood gate and would retain control over project features necessary to do this. Disposed features will incur the contracting and decommissioning costs related to disposition. Retained features will incur the costs related to maintenance (annual and major), flood operations, utilities, and inspections. Alternative 2 retains much of these costs. On an average annual basis these costs amount to \$224,100, nearly as much as the No Action costs. Alternative 2a assumes most of these costs being funded by a new partner. Remaining costs to be funded by the Federal

government amounts to \$40,2003 on an average annual basis. Table 2 indicates which activities are associated with each alternative. Table 3, Table 5, Table 7, Table.9, and Table 11 indicate the estimated costs incurred for each activity under each alternative. Table 4, Table 6, Table.8, and Table 10, and Table 12 present the calculation of average annual cost by alternative. At an interest rate of 2.5% over a 50-year project life, the amortization factor applied to the lump sum present value of scheduled costs is 0.03526. Costs are expressed in October 2020 price level.

### 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 can be 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.

The costs for the No-Action/Without Project condition serve as a basis from which costs for the alternative scenarios can be compared in order to estimate their cost savings benefits. Like traditional 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 No-Action/Without Project can likewise be viewed as the NED Plan. The following table summarizes the comparison of cost savings benefits by disposition alternative. Alternative 1a includes the same disposal costs as Alternative 1. Alternative 1a would also include the additional cost of the incentive payment to the new owner; however, that amount is not yet known and is not included in this cost analysis. The amount of any incentive will be determined through negotiation and may be limited, as authorized, by Congress.

Table 1: Average	Annual Life-Cy	cle Costs and Ber	nefits by Alternativ	е	
	No Action				
	<u>Alternative</u>	Alternative 1	Alternative 1a	Alternative 2	Alternative 2a
Average Ann Costs	\$243,500	\$23,500	\$23,500 (plus incentive)	\$224,100	\$40,200
Cost Savings Benefits*		\$220,000	\$220,000 (minus incentive)	\$19,400	\$203,300

<sup>\*</sup> Compared to No Action costs

As the above table shows, the alternative that yields the greatest net benefits is Alternative 1, Complete Disposition. Taken at face value, Alternative 1 would be the recommended plan. However, criteria other than cost savings benefits, may be considered when recommending or selecting the final plan. These are discussed in the "Plan Formulation" section of the main report.

# 4 Assumptions for Alternatives' Costs

#### No action

- The study period is for the next fifty years.
- The facility receives electrical power free from Excel Energy.
- USACE will retain ownership and maintenance responsibility for the facility.
- The costs contained in this estimate are required to operate and maintain the facility in its current condition.
- The facility is not permanently staffed.
- The facility will be maintained and operated to fulfill the flood damage reduction mission as required.
- All current routine maintenance will continue.
- USACE will facilitate tours given by the National Park Service.
- The public restroom will be maintained and operated during the summer months.

- The St. Paul District will continue to comply with ER 1110-2-8157, "Responsibility for Hydraulic Steel Structures".
- All HSS structures will be dewatered for inspection on at least a 25 year interval.
- Estimate assumes only the upper miter gates and Tainter gates will be painted and have their seals replaced twice during the study period.
- Estimate assumes Periodic Inspections, bridge inspections, instrumentation, and diving and sounding inspections will continue on a five year interval.

#### Alternative 1

- All features would be sold or bequeathed to a separate individual or entity absolving the Government from any future operation or maintenance activities.
- Assume property would be sold in, "As Is" condition.
- Assume a survey for hazardous materials would be conducted prior to property sale or transfer.

#### Alternative 1a

- All features would be sold or bequeathed to a separate individual or entity absolving the Government from any future operation or maintenance activities.
- Assume property would be sold in, "As Is" condition.
- Assume a survey for hazardous materials would be conducted prior to property sale or transfer.
- Assume Government would provide an incentive to the new owner.

#### Alternative 2

- The study period is for the next fifty years.
- The facility receives electrical power free from Excel Energy.
- USACE will retain ownership and maintenance responsibility for the facility.
- The facility is not permanently staffed
- The facility will be maintained and operated to fulfill the flood damage reduction mission as required. All
  current routine maintenance will continue, USACE will facilitate tours given by the National Park
  Service.
- The St. Paul District will continue to comply with ER 1110-2-8157, "Responsibility for Hydraulic Steel Structures".
- All HSS structures will be dewatered for inspection on at least a 25 year interval.
- Estimate assumes Periodic Inspections, bridge inspections, instrumentation, and diving and sounding inspections will continue on a five year interval.

#### Alternative 2a

- The study period is for the next fifty years.
- A feasibility study would be conducted jointly with a local sponsor.
- Estimated total cost of the feasibility study is \$400k, over two years cost shared 50 50 between USACE and the Local Sponsor.
- Local Sponsor would be responsible for day to day operations.
- Local Sponsor would be responsible for major maintenance.
- Local Sponsor would be responsible for Section 106 costs.
- USACE would continue to operate the Tainter Gate during Flood Events.
- USACE would continue to conduct periodic inspections, bridge inspections, diving inspections, and conduct instrumentation data collection.
- The facility would no longer receive electrical power free from Excel Energy.
- USACE will retain ownership and maintenance responsibility for the facility.
- The facility is not permanently staffed.

- The facility will be maintained and operated to fulfill the flood damage reduction mission as required. All
  current routine maintenance will continue, USACE will facilitate tours given by the National Park
  Service, the public restroom will be maintained and operated during the summer months.
- The St. Paul District will continue to comply with ER 1110-2-8157, "Responsibility for Hydraulic Steel Structures".
- All HSS structures will be dewatered for inspection on at least a 25-year interval.
- Estimate assumes Periodic Inspections, bridge inspections, instrumentation, and diving and sounding inspections will continue on a five-year interval.

Table 2: Cost Activities by Alternative

						Alternatives		
			Frequency (Times /					
Item	Cost Category	Activity Description	year)	No Action	Alt 1	Alt 1a	Alt 2	Alt 2a
1	Routine Operation & Maint	Building and Grounds weekly site checks (4 hrs per week)	1	Х			Х	
2		Supplies Related to Lighting Maintenance		Х			Х	
3		Upper Miter Gate and Tainter Gate Exercising and Greasing	3	Х			Х	
4		Grease, Hydraulic Fluid, & misc. wear items		Х			Х	
5		Winterization & Spring Start Up	2	Х			Х	
6		Labor involved with National Park Service Tours	1	Х			Х	
7		Tainter Gate Operation for Horseshoe Dam Maintenance	1	Х			Х	
8		Elevator Maintenance	1	Х			Х	
	Utilities	City Water & Sewer	1	X			X	
10 11		Phone & Internet Trash Pickup	1	X			X	
				^			^	
12		Electrical Service	1					
12	Flood Operations	Flood Event Operations (Assume a ten year frequency)	Every 10 Yrs	х			Х	Х
14		Sandbags/misc. flood related materials and supplies	Every 10 Yrs	X			X	X
14		Sandbags/ misc. mood related materials and supplies	LVETY 10 113	Λ				^
15	Major Maintenance	Replace exterior joint material on CCS, public restroom, and control stand	Every 25 Yrs	х				
16		Replace roof on CCS, restroom, and control stand	Every 20 Yrs	Х				
17		Blast & Paint Bulkheads	Every 25 Yrs	Х			Х	
18		Blast & Paint Tainter Gate	Every 25 Yrs	Х			Х	
19		Blast & Paint Upstream Miter Gates, Inspect Downstream Gates & Paint Valves	Every 25 Yrs	Х			Х	
20		Horizontal & Vertical Concrete Surface Repairs	Every 25 Yrs	Х			Х	
21		Miscellaneous Dewatering Activities	Every 25 Yrs	Х			Х	
22		Stair Tower Maintenance	Every 50 Yrs	Х			Х	
23		Blast & Paint Pedestrian Bridge	Every 50 Yrs	Х			Х	
24		Parking Lot Crack Sealing	Every 5 yrs	Х				
45		Parking Lot Seal Coating	Every 25 Yrs	X				
26		Parking Lot Striping	Every 10 Yrs	X				
27		Parking Lot Pavement Replacement	Every 50 Yrs	Х				
20	Inspections	Pariadic Increation	Evon, Evre	Х			Х	Х
29	'	Periodic Inspection	Every 5 yrs	X			X	X
30		Bridge Inspection Instrumentation	Every 5 yrs	X			X	X
31		Soundings/Diving Inspection	Every 5 yrs Every 5 yrs	X			X	X
31		Soundings/ Diving inspection	Lvery 3 yrs	Λ				^
32	Property Disposal	OC Real Property Contract Sale Coordination	One time		Х	Х	Х	Х
33	· · · ·	RE Real Property Contract Sale Coordination	One time		X	X	X	X
34		Ops Real Property Contract Sale Coordination	One time		X	X	Х	Х
35		PM Real Property Contract Sale Coordination	One time		X	X	X	X
36		EC Real Property Contract Sale Coordination	One time		X	X	Х	Х
37		Env Real Property Contract Sale Coordination	One time		X	X	X	X
38		HTRW Scope Prep (EC)	One time		X	X	X	X
39		HTRW Survey Cost (Contract)	One time		Х	Х	Х	Х
	Electrical /Security	Security System Maintenance	Every 5 Yrs				Х	Х
41		New separate electrical systems	One time					
42	Decommissioning	Disable / Remove Gate Operating Machinery (Labor)	One time		Х	Х		
43		Disable / Remove Gate Operating Machinery (Machines)	One time		X	X		
		Disable / Remove Gate Operating Machinery (Travel)	One time		X	X		
44					Х	Х		İ
44 45		Disable / Remove Security System	One time		^	^		
		Disable / Remove Security System Final Trash Removal	One time		X	X		

Table 3: Costs for No Action Alternative

City Water & Sewer    1			No Astina Altamatica	Table 3. Costs i	OI IN	<i>-</i>	וטוו אונ	Ciliati	ve				
Month   Mont			NO ACTION AITEMATIVE				Labor			Material or	Service Costs		
Process   Proc												Material Cost/	
Compared and Com	Item		Notes	Activity Description	Hours	Rate		Labor Cost	Quantity	UOM	Unit Cost		Amount
Compared and Com			Includes security fence checks, building utilities										
Company   Comp			heating/AC upkeep, waste water sump pumps, (two										
1													
The conclusion gives with an and other registers are not in the conclusion of the				Building and Grounds weekly site									
A	1				208	\$80	1	\$16,640					\$16,640
Part	2	R							1	each	\$250	\$250	\$250
Comparison   Com													
1													
A place of the common of the control of the common of the common of the control o		i		Upper Miter Gate and Tainter Gate									
Unique temporary that upproving the Upper Note of Section 1 (1) and the Committee of S	3		all components to verify correct operation		32	\$80	3	\$7,680					\$7,680
Contract	4	e							3	each	\$350	\$1.050	\$1.050
With the state of			Includes pinning and unpinning the Upper Miter									. ,	. , ,
Comparison of the Comparison	5			Winterization & Spring Start Up	64	\$80	2	\$10.240					\$10.240
The second of the control of the con		r	Includes key inventory/security system operation and	Labor involved with National Park									
Description in the confidence of the forest to professor of the confidence of the forest of the confidence of the confid	6			Service Tours	80	\$80	1	\$6,400					\$6,400
Description is on the honorchic data.  Control of the post interval of the post of the pos		i		Tainter Cate Operation for									
CATANA and exercity system mandeman and an accurated by a system and accurate and accurate particles and accurate	7				40	\$80	1	\$3,200					\$3,200
or electronic doublets. Scalening contents and properly complete the complete of the complete													
March   Marc		&											
Part		М	replaced on a five year interval. DVR recording units										
Page 1													
City Worter & Sener  City Wort		100		Security System Maintenance			Every 5 Yrs		1	each	\$4,000	\$4,000	\$800
U   City Water & Sever		t	CCS elevator routine maintenance and repair	Elevator Maintenance			1		1	each	\$2,800	\$2,800	\$2,800
Cry Water & Sewer  1 1 1 each 53,000												Routine O&M	\$49,060
Cry Water & Sewer  1 1 1 each 53,000													
Procedure   Proc													
Tradi Phone in Internet    1		i		City Water & Sewer			1		1	each	\$8,144	\$8,144	\$8,144
Train Picusp   1		1		Phone & Internet			1		1	each	\$3,000	\$3,000	\$3,000
Secretary is provided free, without costs by Seal   Secretary is provided free, without costs by Seal   Secretary is provided free, without seal place of the secretary is seal to the seal of the secretary is seal to the seal of the secretary is seal to the seal of the seal of the secretary is seal to the seal of the seal o		t									12,222	,,,,,,	,,,,,,,
serge, Buildings are heated with electric heat.    Secretary Buildings are heated with electric heat.   Secretary Buildings   Secret		i		Trash Pickup			1		1	each	\$1,200	\$1,200	\$1,200
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across overwall  of across			3,									Utilities	\$12,344
across overwall  of across													
Includes sandbags and associated supplies needed   Sandbags/misc flood related   during a flood event   sandbags/misc flood related   during a flood event   sandbags and supplies   Sandbags/misc flood related   sandbags and		F		Flood Event Operations (Assume a									
Massume exterior joint sealant has a life span of 25		0	across cross over wall	ten year frequency)	160	\$80	Every 10 Yrs	\$12,800					\$12,800
M Assume exterior joint sealant has a life span of 25 a years. Sealant will have to be replaced twice during the 50 year study period control stand the 50 year study period control		o o					5 · · · 40 · · ·				<b>45.000</b>	år 000	<b>45.000</b>
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1													
Manage		j		stand			Every 25 Yrs		1	each	\$40,000	\$40,000	\$40,000
Marching the Stoyear Study period   Stoy 2000   Stoy				Replace roof on CCS, restroom, and									
devatered for inspection on a 25 year cycle. Miter i Gates and Tainter Valves were last painted and inspected approximately 15 years ago. Assume to bulkheads, upper miter gates, tainter gates, will be blasted and painted if they are pulled. Assume this work will brite: Work will occur in 2009 and 2055.  A Sasume racking and areas of delamination will be repaired once during the study period.  C Activities include design, mobe, providing instrumentation, placing bulkheads, upper mitoritoring the walls on the bottom of the lock chamber, and removing debris of the landwall and the river wall. These will have to be sandblasted and paints decided one during the study period.  Due to the over 50 foot head difference there are substantial stair towers located at the lower end of the landwall and the river wall. These will have to be sandblasted and paints decided the inverve wall. These will have to be sandblasted and paints decided the inverve wall. Sasume cracks will be sealed in the parking lot every five years.  Assume parking lot will be seal coated twice during the Sivers study period.  Assume parking lot will be restriped every ten years. Assume parking lot will be restriped every the years. Assume parking lot will be restriped every the years. Assume parking lot will be restriped every the years. Assume parking lot will be restriped every the years. Assume parking lot will be restriped every the years. Assume parking lot will be restriped every the years. Assume parking lot period.  Pedestrian bridge provides access to the river wall. Assume parking lot will be restriped every ten years. Assume parking lot will be restriped every ten years. Assume parking lot will be restriped every ten years. Assume parking lot period.  Pedestrian bridge provides access to the river wall. Assume parking lot will be restriped every ten years. Assume parking lot will be replaced once during the Soyear study period.  Pedestrian bridge provides access to the river wall. Assume parking lot will be replaced once during the Soyear s			· · · · · · · · · · · · · · · · · · ·	control stand					1		+,		
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substantial stair towers located at the lower end of the landwall and the river wall. These will have to be sandblasted and painted once during the study period to guard against section loss due to corrosion.  Pedestrian bridge provides access to the river wall. Assume parking lot will be sealed in the parking lot every five years  Assume parking lot will be seal coated twice during the 50 year study period  Assume parking lot will be re-striped every ten years. Assume parking lot pavement will be replaced once during the 50 year study period  Parking Lot Seal Coating  Parking Lot Seal Coating  Every 50 Yrs  1 each \$5,000 \$50,000	$\vdash$		the bottom of the lock chamber and removing debris				Every 25 Yrs		1	each	\$500,000	\$500,000	\$500,000
the landwall and the river wall. These will have to be sandblasted and painted once during the study period to guard against section loss due to corrosion.  Pedestrian bridge provides access to the river wall Assume cracks will be sealed in the parking lot every five years Assume parking lot will be seal coated twice during the 50 year study period  Assume parking lot will be re-striped every ten years Assume parking lot pavement will be re-placed once during the 50 year study period  Assume parking lot pavement will be replaced once during the 50 year study period  Periodic Inspection  Assume inspections will continue to occur on a five p o year interval  Soundings/Diving Inspection  Every 50 Yrs  2 each \$250,000 \$500,000 \$500,000 \$175,000													
to guard against section loss due to corrosion.  Stair Tower Maintenance  Pedestrian bridge provides access to the river wall Assume cracks will be sealed in the parking lot every five years  Assume parking lot will be seal coated twice during the 50 year study period  Assume parking lot will be re-striped every ten years  Assume parking lot will be re-striped every ten years  Assume parking lot will be re-striped every ten years  Assume parking lot pavement will be replaced once during the 50 year study period  Parking Lot Pavement Replacement  To a c s  Stair Tower Maintenance  Every 50 Yrs  1			the landwall and the river wall. These will have to be										
Pedestrian bridge provides access to the river wall Assume racks will be sealed in the parking lot every five years Assume parking lot will be seal coated twice during the 50 year study period  Assume parking lot will be re-striped every ten years Assume parking lot will be re-striped every ten years Assume parking lot pavement will be replaced once during the 50 year study period  Assume parking lot pavement will be replaced once during the 50 year study period  Parking Lot Seal Coating Every 5 yrs  Every 10 Yrs  Every 10 Yrs  Every 10 Yrs  Every 10 Yrs  Every 50 Yrs  Assume parking lot pavement will be replaced once during the 50 year study period  Parking Lot Striping Every 10 Yrs  Every 10 Yrs  Every 50 Yrs  Assume parking lot pavement will be replaced once during the 50 year study period  Periodic Inspection Bridge Inspection Bridge Inspection Every 5 yrs  Every 5 yrs  Every 5 yrs  Assume inspections will continue to occur on a five year interval  Every 5 yrs							Every FOV		2	azch	\$350,000	\$500,000	\$500,000
Assume parking lot will be sealed in the parking lot every five years  Assume parking lot will be seal coated twice during the 50 year study period  Assume parking lot will be re-striped every ten years  Assume parking lot will be re-striped every ten years  Assume parking lot pavement will be replaced once during the 50 year study period  Parking Lot Seal Coating  Every 5 yrs  1 each \$50,000 \$50,000 \$50,000  Every 10 yrs  1 each \$5,000 \$50,000 \$50,000  Every 10 yrs  1 each \$50,000 \$50,000 \$50,000  Assume parking lot pavement will be replaced once during the 50 year study period  Parking Lot Striping  Every 10 yrs  1 each \$50,000 \$50,000 \$50,000  Every 50 yrs  1 each \$225,000 \$225,000 \$225,000  Major Maintenance \$4,100,000  Bridge Inspection  Bridge Inspection  Bridge Inspection  Every 5 yrs  1 each \$50,000 \$80,000 \$80,000 \$80,000 \$80,000 \$80,000 \$10,000  Every 5 yrs  1 each \$50,000 \$10,00	Н												
Five years	Н						every 50 Yrs		1	eacn			\$175,000
the 50 year study period	$\vdash$		five years	Parking Lot Crack Sealing			Every 5 yrs		1	each	\$5,000	\$5,000	\$5,000
Assume parking lot will be re-striped every ten years   Assume parking lot pavement will be replaced once during the 50 year study period   Parking Lot Pavement Replacement   Every 50 Yrs   1   each   \$225,000				Parking Lot Seal Coating			Every 25 Yrs		1	each	\$50.000	\$50.000	\$50,000
Assume parking lot pavement will be replaced once during the 50 year study period													\$5,000
Major Maintenance   \$4,100,000			Assume parking lot pavement will be replaced once										
Periodic Inspection	$\vdash$		during the 50 year study period	Parking Lot Pavement Replacement			Every 50 Yrs		1	each			
n t  s i Assume inspections will continue to occur on a five p o year interval e n  c s  Bridge Inspection Every 5 yrs 1 each \$7,500 \$7,500 \$5													
s i Assume inspections will continue to occur on a five p o year interval e n c s Soundings/Diving Inspection Every 5 yrs 1 each \$10,000 \$10,0	$\vdash$	1							1				
p o year interval           e n           c s         Soundings/Diving Inspection         Every 5 yrs         1         each         \$10,000         \$10,000         \$10,000			Assume inspections will continue to occur on a five						1				
C S Soundings/Diving Inspection Every 5 yrs 1 each \$10,000 \$10,000 \$10,000		ро											
				Soundings/Diving Inspection			Every Ever		1	each	\$10,000	\$10,000	\$10,000
, , , , , , , , , , , , , , , , , , ,				Journalings/ Diving Inspection			Every 3 yrs		-	Catri	\$10,000		\$107,500

Table 4: Average Annual Costs for No Action Alternative

				С	ost by Iten	n life			
								Total	PV of Tot
<u> Year</u>	PV Factor	<u>1 yr</u>	<u>5 yrs</u>	<u>10 yrs</u>	<u>20 yrs</u>	<u>25 yrs</u>	<u>50 yrs</u>	Cost by Yr	Cost by \
1	0.9756	61,362						61,362	59,8
2	0.9518	61,362						61,362	58,4
3	0.9286	61,362	117,956					179,318	166,5
4	0.9060	61,362	117,550					61,362	55,5
5	0.8839	61,362		23,085	101,250			185,697	164,1
6	0.8623	61,362						61,362	52,9
7	0.8413	61,362						61,362	51,6
8	0.8207	61,362	117,956					179,318	147,1
9	0.8007	61,362	117,550					61,362	49,1
						2 420 625			
10	0.7812	61,362				3,128,625		3,189,987	2,492,0
11	0.7621	61,362						61,362	46,7
12	0.7436	61,362						61,362	45,6
13	0.7254	61,362	117,956					179,318	130,0
14	0.7077	61,362						61,362	43,4
15	0.6905	61,362		23,085				84,447	58,3
16	0.6736	61,362						61,362	41,3
17	0.6572	61,362						61,362	40,3
18	0.6412	61,362	117,956					179,318	114,9
19	0.6255	61,362						61,362	38,3
20	0.6103	61,362						61,362	37,4
21	0.5954	61,362						61,362	36,5
22	0.5809	61,362						61,362	35,6
23	0.5667	61,362	117,956					179,318	101,6
24	0.5529	61,362						61,362	33,9
25	0.5394	61,362		23,085	101,250		911,250	1,096,947	591,6
26	0.5262	61,362						61,362	32,2
27	0.5134	61,362						61,362	31,
28	0.5009	61,362	117,956					179,318	89,8
29	0.4887	61,362						61,362	29,9
30	0.4767	61,362						61,362	29,2
31	0.4651	61,362						61,362	28,
32	0.4538	61,362						61,362	27,8
33	0.4427	61,362	117,956					179,318	79,3
34	0.4319	61,362						61,362	26,5
35	0.4214	61,362		23,085		3,128,625		3,213,072	1,353,8
36	0.4111	61,362						61,362	25,2
37	0.4011	61,362						61,362	24,6
38	0.3913	61,362	117,956			-		179,318	70,1
39	0.3817	61,362						61,362	23,4
40	0.3724	61,362						61,362	22,8
41	0.3633	61,362						61,362	22,2
42	0.3545	61,362						61,362	21,
43	0.3458	61,362	117,956					179,318	62,0
44	0.3374	61,362						61,362	20,7
45	0.3292	61,362		23,085	101,250			185,697	61,3
46	0.3211	61,362						61,362	19,7
47	0.3133	61,362						61,362	19,2
48	0.3057	61,362	117,956					179,318	54,8
49	0.2982	61,362						61,362	18,2
50	0.2909	61,362						61,362	17,8
:al							Lump sum P	V of costs	6,906,5
							Avg ann equ	iivalent	\$ 243,

Table 5: Costs for Alternative 1 or 1a (not including incentive)

	Alternative 1: Annual Cost for Full Disposal							
Item	Actvity	Notes	Responsible ORG	Hours	Rate	Amount	Contract	Sub Total
	Prepare Contract for Sale or Disposal							
		OC to prepare and review contract						
29	Property Sale Coordination	for sale or disposal	Office of Counsel	1,000	\$150	\$150,000		\$150,000
		RE to provide input to contract for						
30	Property Sale Coordination	sale or disposal	Real Estate	660	\$115	\$75,900		\$75,900
		OPS to provide input to Contract for						
31	Property Sale Coordination	sale or disposal	Operations	400	\$115	\$46,000		\$46,000
32	Property Sale Coordination	PM to manage process	Project Management	660	\$115	\$75,900		\$75,900
		EC to provide input to contract for						
33	Property Sale Coordination	sale or disposal	Engineering	660	\$115	\$75,900		\$75,900
34	Property Sale Coordination	SHPO Coordination	Environmental	400	\$115	\$46,000		\$46,000
35	Write Scope for Hazardous Material Survey		Engineering	120	\$115	\$13,800		\$13,800
36	Hazardous Material Survey		Contracting				\$50,000	\$50,000
								\$533,500
	Decomissioning							
		Assume a crew of four people for						
39	Disable/Remove Gate Operating Machinery (Labor)	four weeks	Operations	640	\$90	\$57,600		\$57,600
		Assume a 100 ton crane on floating						
		plant and an additional flat topped						
40	Disable/Remove Gate Operating Machinery (Machines)	barge for three weeks	Operations	120	\$250	\$30,000		\$30,000
41	Disable/Remove Gate Operating Machinery (Travel)	Assume 4 travelers for four weeks	Operations				\$20,000	\$20,000
42	Disable/Remove Security System	Assume two people for two weeks	Operations	160	\$90	\$14,400		\$14,400
43	Final Trash Removal		Operations				\$10,000	\$10,000
							·	\$132,000

Table 6: Average Annual Costs for Alternative 1 or 1a (without incentive)

			C	ost by Iten	n Life			
							Total	PV of Total
Year	PV Factor	1 Yr	5 yrs	10 yrs	25 yrs	50 yrs	Cost by Yr	Cost by Y
1	0.9756	682,100					682,100	665,4
2	0.9518	0					0	
3	0.9286	0					0	
4	0.9060	0					0	
5	0.8839	0					0	
6	0.8623	0					0	
7	0.8413	0					0	
8	0.8207	0					0	
9		0					0	
10		0					0	
11		0					0	
12	0.7436	0					0	
13		0					0	
14		0					0	
15		0					0	
16							0	
		0						
17	0.6572	0					0	
18		0					0	
19		0					0	
20		0					0	
21		0					0	
22	0.5809	0					0	
23		0					0	
24	0.5529	0					0	
25	0.5394	0					0	
26	0.5262	0					0	
27	0.5134	0					0	
28	0.5009	0					0	
29	0.4887	0					0	
30	0.4767	0					0	
31	0.4651	0					0	
32		0					0	
33		0					0	
34		0					0	
35		0					0	
36		0					0	
37		0					0	
38		0					0	
39		0					0	
40		0					0	
41		0					0	
41		0					0	
43		0					0	
44		0					0	
45		0					0	
46		0				-	0	
47		0					0	
48		0					0	
49		0					0	
50	0.2909	0					0	
						Lump Sur	n of PV Costs	665,4
						Ave Annu	al Equivalent	23,4

Table 7: Costs for Alternative 2

		Alternative 2										
						Labor Frequency			Material o	r Service Costs		
						(Times per					Material Cost/	
Item		Notes	Activity Description	Hours	Rate	year)	Labor Cost	Quantity	UOM	Unit Cost	Contract	Amount
		Includes security fence checks, building utilities, heating/AC upkeep, waste water sump pumps, (two										
		located in the gallery, one in the Shop and one lift										
		station for all waste water), General lighting upkeep, U.S. Flag adjustments, security system operation and	Building and Grounds weekly site									
1		maintenance, and snow removal.	checks (4 hours per week)	208	\$80	1	\$16,640					\$16,64
2		Item includes light bulbs and other supplies need to	Supplies Related to Lighting Maintenance					1	oach	\$250	\$250	\$25
	R	maintain lighting at the site.	Maintenance					1	each	\$250	\$250	\$2
	0	Includes greasing and fluid level checks in miter gate										
	u	machinery/equipment, grease and fluid level checks										
3	t i	in Tainter gate machinery/equipment, and operating all components to verify correct operation	Upper Miter Gate and Tainter Gate Exercising and Greasing	32	\$80	3	\$7,680					\$7,68
	n	Upper Miter Gate and Tainter Gate consumable	Grease, Hydraulic Fluid, & misc.				, ,					
4	е	supplies Includes pinning and unpinning the Upper Miter	wearitems					3	each	\$350	\$1,050	\$1,05
	0	Gates, Setting aerators above the Tainter gate, and										
5	p e	turning on and checking heating Includes key inventory/security system operation and	Winterization & Spring Start Up Labor involved with National Park	64	\$80	2	\$10,240					\$10,24
6	r	public restroom/drinking fountain maintenance	Service Tours	80	\$80	1	\$6,400					\$6,40
	a t	Includes activities associated with passing flow										
7	i	through the lock chamber to allow Excel to perform maintenance on the horseshoe dam	Tainter Gate Operation for Horseshoe Dam Maintenance	40	\$80	1	\$3,200					\$3,20
	o n	CCURE and security system maintenance and	noisestice Dain Maintenance	40	300	1	\$5,200					33,20
	"	upgrades. Includes replacing hardware is it wears out										
	&	or becomes obsolete. Security cameras are generally replaced on a five year interval. DVR recording units										
	М	also have a finite lifespan and need to be replaced										
	a	periodically. Card readers at entrances will have to be replaced as well.	Security System Maintenance			Every 5 Yrs		1	each	\$4,000	\$4,000	\$80
	i n	CCS elevator routine maintenance and repair(Assume	occurry bystem Maintenance			LVELY 3 115		1	edtii	34,UU	\$4,000	,38U
	t	no Elevator Maintenance)	Elevator Maintenance			1		0	each	\$2,800	\$0	\$
											Routine O&M	\$46,26
	U t											
	i	Assume no sewer or water usage	City Water & Sewer			1		0	each	\$8,144	\$0	\$
	I i		Phone & Internet			1		1	each	\$3,000	\$3,000	\$3,00
	t		rnone & internet						eacii	95,000	33,000	\$3,00
	i	Assume no Trash Pick-up	Trash Pickup			1		0	each	\$1,200	\$0	\$
	e	Electricity is provided free, without cost by Excel Energy. Buildings are heated with electric heat.	Electrical Service			1		1	each	\$C	\$0	\$
		Energy, buildings are neared with electric near.	Licerred Service			-		-	Cucii	70	Utilities	\$3,00
												,,,,,
	F	Includes operating the Tainter gate and sandbagging	Flood Event Operations (Assume a									
	0	across cross over wall	ten year frequency)	160	\$80	Every 10 Yrs	\$12,800					\$12,80
	0	Includes sandbags and associated supplies needed	Sandbags/misc. flood related									
	d	during a flood event	materials and supplies			Every 10 Yrs		1	each	\$5,000	\$5,000 Flood Event	\$5,00 \$17,80
												317,00
		According to ER 1110-2-8157 all HSS structures must be	Blast & Paint Bulkheads Blast & Paint Tainter Gate			Every 25 Yrs Every 25 Yrs		1	each each	\$500,000 \$750,000		\$500,00 \$750,00
		dewatered for inspection on a 25 year cycle. Miter Gates and Tainter Valves were last painted and	biast & railit failiter Gate			Every 25 fis		1	eacii	\$730,000	\$750,000	\$730,00
		inspected approximately 15 years ago. Assume										
		bulkheads, upper miter gates, tainter gates, will be blasted and painted if they are pulled. Assume this	Blast & Paint Upstream Miter Gates, Inspect Downstream Gates & Paint									
		work will twice. Work will occur in 2030 and 2055.	Valves			Every 25 Yrs		1	each	\$750,000	\$750,000	\$750,00
		Assume cracking and areas of delamination will be repaired once during the study period	Horizontal & Vertical Concrete			Every 25 Yrs		1	each	\$500,000	\$500,000	\$500,00
		Activities include design, mobe, providing	Surface Repairs			E-CIY 23 115			cauli	,,oul.	2,500,000	,J00,000
		instrumentation, placing bulkheads, pumping down										
		the lock chamber, monitoring the walls for movement, pre-stressing miter gates, mucking out	Miscellaneous Dewatering									
		the bottom of the lock chamber and removing debris	Activities			Every 25 Yrs		1	each	\$500,000	\$500,000	\$500,00
		Due to the over 50 foot head difference there are substantial stair towers located at the lower end of										
		the landwall and the river wall. These will have to be										
		sandblasted and painted once during the study period	Chair Tannan M. C.			F		•	,	\$250.000	Apr	Ae
		to guard against section loss due to corrosion.	Stair Tower Maintenance			Every 50 Yrs		2	each		,,,,,,,,	\$500,00
		Pedestrian bridge provides access to the river wall	Blast & Paint Pedestrian Bridge			Every 50 Yrs		1	each	\$175,000 Ma	\$175,000 jor Maintenance	\$175,00 \$3,675,00
						_						
	l n t		Periodic Inspection Bridge Inspection			Every 5 yrs Every 5 yrs		1 1	each each	\$80,000 \$7,500		\$80,00 \$7,50
	n t	Assume inspections will continue to occur on a five	Instrumentation			Every 5 yrs		1	each	\$10,000		\$10,00
	ро	year interval										
	e n		Soundings/Diving Inspection			Every 5 yrs		1	each	\$10,000	\$10,000	\$10,00
			U. U. O.			, , , , , ,				, 25,500	Inspections	\$107,50
			OC Real Property Contract Sale									
			Coordination	320	\$150	one time	\$48,000					\$48,00
	R e		RE Real Property Contract Sale	cco	¢11F	one time	67F 000					ėtr co
	a		Coordination Ops Real Property Contrac Sale	660	\$115	one time	\$75,900			<b>†</b>		\$75,90
	1		Coordination	160	\$115	one time	\$18,400			ļ		\$18,40
	P D		PM Real Property Contract Sale Coordination	240	\$115	one time	\$27,600					\$27,60
	r i		EC Real Property Contract Sale									
_	o s p p		Coordination Env Real Property Contract Sale	120	\$115	one time	\$13,800			-		\$13,80
	e o		Coordination	320	\$115	one time	\$36,800					\$36,80
-	r s t a		HTRW Scope Prep (EC)	80	\$115	one time	\$9,200			1 b	Ane ar-	\$9,20
_			HTRW Survey Cost (Contract)			one time				l each	\$25,000	\$25,00
	y I	Section 106 Coordination	Federal Cost Borne by GSA			one time			1	1 each	\$0	\$

Table 8: Average Annual Costs for Alternative 2

				Cost	by Item lif	e			
								Total	PV of Tot
<u>Year</u>	PV Factor	<u>1 yr</u>	<u>5 yrs</u>	<u>10 yrs</u>	<u>20 yrs</u>	<u>25 yrs</u>	<u>50 yrs</u>	Cost by Yr	Cost by
1	0.9756	306,966						306,966	299,4
2	0.9518	49,066						49,066	46,7
3	0.9286	49,066	112,900					161,966	150,4
4	0.9060	49,066						49,066	44,4
5	0.8839	49,066		18,000	-			67,066	59,2
6	0.8623	49,066		-,				49,066	42,3
7	0.8413	49,066						49,066	41,2
8	0.8207	49,066	112,900					161,966	132,9
9	0.8207	49,066	112,300					49,066	39,2
						2 227 522			
10	0.7812	49,066				3,037,500		3,086,566	2,411,2
11	0.7621	49,066						49,066	37,3
12	0.7436	49,066						49,066	36,4
13	0.7254	49,066	112,900					161,966	117,4
14	0.7077	49,066						49,066	34,7
15	0.6905	49,066		18,000				67,066	46,3
16	0.6736	49,066						49,066	33,0
17	0.6572	49,066						49,066	32,2
18	0.6412	49,066	112,900					161,966	103,8
19	0.6255	49,066	,					49,066	30,6
20	0.6103	49,066						49,066	29,9
21	0.5954	49,066						49,066	29,2
22	0.5809	49,066						49,066	28,5
23	0.5667	49,066	112,900					161,966	91,7
24	0.5529	49,066	112,300					49,066	27,1
25	0.5394	49,066		18,000	_		683,400	750,466	404,7
26	0.5262	49,066		10,000			003,400	49,066	25,8
27	0.5134	49,066						49,066	25,1
28	0.5009	49,066	112,900					161,966	81,1
29	0.4887	49,066	112,300					49,066	23,9
30	0.4767	49,066						49,066	23,3
	0.4767							49,066	
31 32	0.4538	49,066						49,066	22,8 22,2
		49,066	112 000						
33		49,066	112,900					161,966	71,7
34	0.4319	49,066		10.000		2 027 500		49,066	21,1
35 36	0.4214	49,066		18,000		3,037,500		3,104,566	1,308,1
	0.4111	49,066						49,066	20,1
37	0.4011	49,066	112 000					49,066	19,6
38	0.3913	49,066	112,900			-		161,966	63,3
39	0.3817	49,066						49,066	18,7
40	0.3724	49,066						49,066	18,2
41	0.3633	49,066						49,066	17,8
42	0.3545	49,066	445 5					49,066	17,3
43	0.3458	49,066	112,900					161,966	56,0
44		49,066		4				49,066	16,5
45	0.3292	49,066		18,000	-			67,066	22,0
46	0.3211	49,066						49,066	15,7
47	0.3133	49,066						49,066	15,3
48	0.3057	49,066	112,900					161,966	49,5
49	0.2982	49,066						49,066	14,6
50	0.2909	49,066						49,066	14,2
tal							Lump sum P		6,356,2

Table 9: Costs for Alternative 2a

Sum			Alternative 2a										
March   Marc			Alternative Za							Material or	Service Costs		
March   Marc													
Marchan country from charts and participations of the beginning of the b	Item		Notes	Activity Description	Hours	Rate		Labor Cost	Quantity	UOM	Unit Cost		Amount
March   Continue   C				, , , , , , , , , , , , , , , , , , , ,			,						
Comparison of the process of the p													
Section   Comparison   Compar			located in the gallery, one in the Shop and one lift										
Proceduration of the common process of the				Building and Grounds weekly site									
2	1				208	\$80	0	\$0					ç
Processing and fluid sout decks in mother part of south of the control of the c	2								0	each	\$250	¢n.	
Part		- [	manitani ngriting at the site.	Mantenance					- 0	eacii	\$230	ŞU	
Part			Includes greasing and fluid level checks in miter gate										
1			machinery/equipment, grease and fluid level checks										
Page   Marcel State and Testinet and Consciousable   Page   Pag	2				22	¢90		ćo					5
Second Content of the Content of t	3				32	\$80	0	ŞU					3
Comparison of the Comparison of the Telephone Spirits of the Comparison of the Com	4	e	supplies						0	each	\$350	\$0	9
Fig.   Collection Service (Institute) quality stages (Institute)   Collection Service (Institute) quality stages (Institute)   Collection Service (Institute) quality stages (Institute)   Collection Service (Institute)   Collectio		_											
Control of the cont	5			Winterization & Spring Start Up	64	\$80	0	\$0					\$
Processing the Control of the Cont				Labor involved with National Park									
The control of the forest of the forest one of	6			Service Tours	80	\$80	0	\$0					\$
A				Tolores Cote Consultantes									
or CCCS event control protein maintenance and organization regulated on a five year interval, DOT is controlling and an event of protein five proteins of the control proteins	7	i			40	\$80	0	\$0					\$
B   00   00   00   00   00   00   00													
September of an five year interval. (CPI equations)   September of the project of a registed on an interval of the project of a registed on an interval of the project of a registed on an interval of the project of a registed on an interval of the project of a registed on an interval of the project of a registed of a regi													
March Asset Printle Engage and reved to be episcade		&											
1   Continue containe maintenance and regard/assume   Continue containe maintenance   Continue containe maintena		м											
To   Control Minimensor   Co		a											
Eventor Maintenance		' 1		Security System Maintenance			Every 5 Yrs		1	each	\$4,000	\$4,000	\$80
Autume no sewer or water usage		n t		Elevator Maintonanco			0		0	o a ch	¢2 900	ćo.	\$1
Assume no sewer or water usage  City Water & Sewer  Room & Internet  Tash Pickup  Floring Buildings are housed with electric fuses  City City by provided free, without cost by Excel  City City Septiment of Tash Pickup  City City City City Septiment of Tash Pickup  City City City City City Septiment of Tash Pickup  City City City City City City Septiment of Tash Pickup  City City City City City City Septiment of Tash Pickup  City City City City City City City City		-	no acceptor Maniteriance)	erevator mannendile			J		J	Edul	32,000	7.	
1												noutifie U&M	\$800
1		U											
## Phone & Internet ## 1			Assume no sewer or water usage	City Water & Sewer			1		0	each	\$8.144	śo	\$0
1			Assume no sever of water assign	city video a sever			-			cucii	30,244	Ç	· ·
Assume no Trash Pick-Use   Trash Pick-				Phone & Internet			1		0	each	\$3,000	\$0	\$1
e e Secritoria is provided free, without cost by Excel for gray, Buildings are heated with electric heat.  For gray, Buildings are so and sandbagging the provided of the sandbags and associated supplies needed with a service of the sandbags and associated supplies needed with a service of the sandbags and associated supplies needed with a service of the sandbags and associated supplies needed with a service of the sandbags and associated supplies needed with a service of the sandbags and associated supplies needed with a service of the sandbags and associated supplies needed with a service of the sandbags and associated supplies needed with a service of the sandbags and associated supplies needed with a service of the sandbags and associated supplies needed with a service of the sandbags and associated supplies needed with a service of the sandbags and associated supplies needed with service of the sandbags and associated supplies needed and sandbags and associated they are pulled. Associated sandbags and associated and sandbags and associated sandbags and associated and sa													
Seering Buildings are heated with electric heat.   Electrical Service   1   1   each   50   50   Utilities		i		Trash Pickup			1		0	each	\$1,200	\$0	\$0
Production of Particles operating the Tainter gate and sandbagging   Flood Event Operations (Assume a prosis cross over wall)   Flood Event Operations (Assu				Electrical Service			1		1	each	ėn.	ėn.	\$0
For a construction of the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function of the function will continue to occur on a five in the function of the function will continue to occur on a five in the function of the function of the function of the function will continue to occur on a five in the function of the functi			Energy, buildings are neated with electric neat.	Liectical Service			-			eacii			\$(
Includes operating the Tainter gate and sandbagging   Flood Geneti Operations (Assume a to provide a consistency of the post													
O			Includes operating the Tainter gate and candhagging	Flood Event Operations (Assume a									
O					160	\$80	Every 10 Yrs	\$12,800					\$12,800
d   during a flood event			Includes candhags and associated supplies needed	Sandhags/misc_flood related									
According to ER 1110-2-8157 all HSS structures must be devatered for inspection on a 35 year cycle. Mider Gates and Tainter Valves were last painted and inspected approximately 15 years ago. Assume builsheads, upper miter grates, rainter gates, will be blasted and painted if they are pulled. Assume this work will time. Work will write. Work will core during the study period instrumentation, plaing bulkheads, pumping down the look chainder, monitoring the walls for movement, per-streaming meter gates, musting yend of the landwall and the river wall. These will have to be sandblasted and painted one during the study period to gaard against section loss due to corrosion.  Pedestrian bridge provides access to the river wall. Bask & Paint Pedestrian Bridge    Policy		d					Every 10 Yrs		1	each	\$5,000	\$5,000	\$5,000
dewatered for inspection on a 25 year cycle. Miter												Flood Event	\$17,800
dewatered for inspection on a 25 year oyle. Miter Gates and Tainter Valves were last painted and inspected approximately 15 years ago. Assume bulkheads, upper miter gates, tainter gates, will be blasted and painted if they are pulled. Assume this work will wite. Work will twice. Work will contri 2000 and 255.  Assume cracking and areas of delamination will be regarded one during the study period Activities include design, moke, providing down the lock chamber, monitoring the walls for movement, pre-stressing milter gates, musking out the bottom of the lock chamber and removing delation the lock chamber, monitoring the walls for movement, pre-stressing milter gates, musking out the bottom of the lock chamber and removing delatis the bottom of the lock chamber and removing delatis substantial stair towers located at the lower and of the landwall and the river wall. These will have to be sandblasted and painted cone during the study period to guard against section loss due to corrosion.  Pedestrian bridge provides access to the river wall.  Pedestrian bridge provides access to the river wall.  In 1 In 1 In 1 In 2 In 2 In 2 In 3 In 3 In 3 In 4 In 4 In 4 In 5 In 5 In 6 In 6 In 7 In 6 In 7 In 8			According to ED 1110 2 9157 all HCC structures must be	Blast & Paint Bulkheads			Every 25 Yrs		0	each	\$500,000	\$0	\$0
Gates and Tailnet Valves were last painted and inspected approximately Valves and painted if they Yaman ago, Assume bulkheads, upper miter gates, will be blasted and painted if they are pulled. Assume tracking and areas of defamination will be instrumentation, placing bulkheads, pumping down the lock chamber, montoning the walls for movement, pre-tressing miter gates, mucking out the bottom of the lock chamber, amontoning the walls for movement, pre-tressing miter gates, mucking out the bottom of the lock chamber, amontoning the walls for movement, pre-tressing miter gates, mucking out the south of the lock chamber and removing debris. Activities    Valves				Blast & Paint Tainter Gate							\$750,000		\$1
bulkheads, upper miter gates, tainter gates, will be blasted and painted if they are pulled. Assume carding and seas of delamination will be repaired once during the study period and comment, pre-stressing miter gates, muching out the bottom of the lock chamber, monitoring the walls for movement, pre-stressing miter gates, muching out the bottom of the lock chamber and removing debris and the river wall. These will have to be sandblasted and painted in done during the study period in grant and the river wall. These will have to be sandblasted and painted in done during the study period in grant and the river wall. These will have to be sandblasted and painted in one during the study period in grant and the river wall. These will have to be sandblasted and painted once during the study period to guard against section loss due to corrosion.    Pedestrian bridge provides access to the river wall   Sair Tower Maintenance   Every 50 Yrs   0   each   \$500,000   \$0													
blasted and painted if they are pulled. Assume this work will those. When will toccur in 2030 and 2055. Assume cracking and areas of delamination will be repaired once during the study period of the content of the co				Blact & Daint Unstream Miter Cates									
Assume ranking and areas of delamination will be   Soziotatal & Vertical Concrete   Soziotatal &													
repaired once during the study period   Surface Repairs   Every 25 Yrs   0   each   \$500,000   \$0							Every 25 Yrs		0	each	\$750,000	\$0	\$0
Activities include design, mobe, providing instrumentation, placing bulkheads, pumping down the lock chamber, monitoring the walls for movement, pre-stressing milet gates, musking out the bottom of the lock chamber and removing debris.  Due to the over 50 root head difference there are substantial stair towers located at the bower end of the landwall and the river wall. These will have to be sandblasted and painted once during the study period to guard against section loss due to corrosion.  Pedestrian bridge provides access to the river wall.  1 1							Every 25 Yrs		0	each	\$500,000	\$0	\$0
Instrumentation, placing bulkheads, pumping down the lock chamber, and notioning the walls for movement, pre-stressing miter gates, mucking out the bottom of the lock chamber, and removing debris Activities			Activities include design, mobe, providing				,		-		7220,000	ŞÜ	,
movement, pre-stressing miter gates, mucking out the bottom of the lock chamber and removing debris of the landwall and the river wall. These will have to be sandblasted and painted once during the study period to guard against section loss due to corrosion.  Pedestrian bridge provides access to the river wall  Pedestrian bridge provides access to the river wall  Pedestrian bridge provides access to the river wall  Periodic Inspection  Periodic Inspectio			instrumentation, placing bulkheads, pumping down								I		
the bottom of the lock chamber and removing debris Due to the over 50 foot head difference there are substantial stair towers located at the lower end of the landwall and the river wall. These will have to be sandblasted and painted once during the study period to guard against section loss due to corrosion. Stair Tower Maintenance    Pedestrian bridge provides access to the river wall   Periodic Inspection   Every 50 Yrs   0   each   \$525,000   \$50     Major Maintenance   Every 50 Yrs   0   each   \$175,000   \$50     Major Maintenance   Every 50 Yrs   1   each   \$510,000   \$50     Pedestrian bridge provides access to the river wall   Blast & Paint Pedestrian Bridge   Every 50 Yrs   1   each   \$510,000   \$50     Pedestrian bridge provides access to the river wall   Blast & Paint Pedestrian Bridge   Every 50 Yrs   1   each   \$510,000   \$50     Pedestrian bridge provides access to the river wall   Blast & Paint Pedestrian Bridge   Every 50 Yrs   1   each   \$510,000   \$50     Pedestrian bridge provides access to the river wall   Blast & Paint Pedestrian Bridge   Every 50 Yrs   1   each   \$510,000   \$50     Pedestrian bridge provides access to the river wall   Blast & Paint Pedestrian Bridge   Every 50 Yrs   1   each   \$510,000   \$50     Pedestrian bridge provides access to the river wall   Blast & Paint Pedestrian Bridge   Every 50 Yrs   1   each   \$510,000   \$50     Periodic Inspection   Every 50 Yrs   1   each   \$510,000   \$50     Periodic Inspection   Every 50 Yrs   1   each   \$510,000   \$50     Periodic Inspection   Every 50 Yrs   1   each   \$510,000   \$50     Periodic Inspection   Every 50 Yrs   1   each   \$510,000   \$50     Periodic Inspection   Every 50 Yrs   1   each   \$510,000   \$50     Periodic Inspection   Every 50 Yrs   1   each   \$510,000   \$50     Periodic Inspection   Every 50 Yrs   1   each   \$510,000   \$50     Periodic Inspection   Every 5				Missallaneous Dougstoring									
Due to the over S0 foot head difference there are substantial stair towers located at the lower end of the landwall and the river wall. These will have to be sandblasted and painted once during the study period to guard against section loss due to corrosion.   Pedestrian bridge provides access to the river wall   Blast & Paint Pedestrian Bridge   Every 50 Yrs   0   each   \$250,000   \$0						<u> </u>	Every 25 Yrs		0	each	\$500,000	\$0	\$0
The landwall and the river wall. These will have to be sandblasted and painted once during the study period to guard against section loss due to corrosion.   Pedestrian bridge provides access to the river wall to guard against section loss due to corrosion.   Pedestrian bridge provides access to the river wall to guard against section loss due to corrosion.   Pedestrian bridge provides access to the river wall to guard against section loss due to corrosion.   Pedestrian bridge provides access to the river wall to guard against section loss due to corrosion.   Pedestrian bridge provides access to the river wall to guard against section loss due to corrosion.   Pedestrian bridge provides access to the river wall to guard against section loss due to corrosion.   Pedestrian bridge provides access to the river wall to guard against section loss due to corrosion.   Pedestrian bridge provides access to the river wall to guard against section loss due to corrosion.   Pedestrian bridge provides access to the river wall to guard against section loss due to corrosion.   Pedestrian bridge provides access to the river wall to guard against section loss due to corrosion.   Pedestrian bridge provides access to the river wall to guard against section loss due to corrosion.   Pedestrian bridge provides access to the river wall to guard against section loss due to corrosion.   Periodic Inspection   Every 5yrs	$\neg$	ĺ	Due to the over 50 foot head difference there are										
Sandblasted and painted once during the study period to guard against section loss due to corrosion.   Stair Tower Maintenance   Every 50 Yrs   0   each   \$250,000   \$0											1		
to guard against section loss due to corrosion.    Pedestrian bridge provides access to the river wall   Blast & Paint Pedestrian Bridge   Every 50 Vrs   0   each   \$25,000   50											I		
Periodic Inspection   Every Syrs   1   each   \$30,000   \$80,000				Stair Tower Maintenance			Every 50 Yrs		0	each	\$250,000	\$0	\$
Periodic inspection			Pedestrian bridge provides access to the river wall	Blast & Paint Pedestrian Bridge			Every 50 Yrs		0	each			\$
Assume inspections will continue to occur on a five   State	-										Ma	jor Maintenance	\$0
Same inspections will continue to occur on a five   Same inspection   Same inspections will continue to occur on a five   Same inspections will continue to occur on a five   Same inspections   Same ins				Periodic Inspection			Every 5 yrs		1	each	\$80,000	\$80,000	\$80,000
D   O   vear interval				Bridge Inspection			Every 5 yrs		1	each	\$7,500	\$7,500	\$7,50
Soundings/Diving Inspection				Instrumentation			Every 5 yrs		1	each	\$10,000	\$10,000	\$10,000
C s   Soundings/Diving Inspection   Every Syrs   1   each   \$10,000   \$10,000			year mervar								1		
Cordination   State   Coordination   Cordination   Coordination				Soundings/Diving Inspection		L	Every 5 yrs		1	each	\$10,000	\$10,000	\$10,000
Coordination   320   \$150   one time   \$48,000													\$107,50
Coordination   320   \$150   one time   \$48,000	-			OC Real Property Contract Sale									
R R Real Property Contract Sale   Coordination   660   \$115   one time   \$75,900				Coordination	320	\$150	one time	\$48,000					\$48,00
Coordination   160   S115   One time   S18,400	Π.	, [											
Coordination   160   \$115   one time   \$18,400     PM Real Property Contract Sale   Coordination   240   \$115   one time   \$27,600     P D   EC Real Property Contract Sale   Coordination   120   \$115   one time   \$13,800     O S   Env Real Property Contract Sale   Coordination   320   \$115   one time   \$36,800     P D   Coordination   320   \$115   one time   \$36,800     P D   Coordination   320   \$115   one time   \$9,200     F S   HTRW Scope Prop (EC)   80   \$115   one time   \$9,200     T S   Cost will be spread over first two   1   each   \$25,000		L			660	\$115	one time	\$75,900					\$75,90
P D   Coordination   240   \$115   one time   \$27,600	ē	а			160	\$115	one time	\$18,400			L		\$18,40
P D	$\neg$	1		PM Real Property Contract Sale									
Coordination   120   S115   One time   S13,800	—∣,	P D			240	\$115	one time	\$27,600					\$27,60
0 s         Env Real Property Contract Sale           P D         Coordination         320         \$115         one time         \$36,800           e o         HTRW Scope Prep (EC)         80         \$115         one time         \$9,200           f s         HTRW Survey Cost (Contract)         one time         \$9,200           t a         Cost will be spread over first two         1 each         \$25,000		r i		Coordination	120	\$115	one time	\$13,800			<u> </u>		\$13,80
e o HTRW Scope Prep (EC) 80 \$115 one time \$9,200   r s HTRW Survey Cost (Contract) one time 1 each \$25,000   t a Cost will be spread over first two				Env Real Property Contract Sale									
T   S   HTRW Survey Cost (Contract)   One time   1   each   \$25,000     t   a													\$36,80
t a Cost will be spread over first two		r s		HTRW Survey Cost (Contract)	- OU	2112		2,2UU		1	each	\$25,000	\$9,200 \$25,000
IN THEIR PORTION OF FEASIBILITY STUDY I VEARS OF the study period I I I two times I I I Deach I \$1 mol				Cost will be spread over first two									
		y I	Fed Portion of Feasibility Study	years of the study period			two times			2	each	\$1,000	\$2,00 \$256,70

Table 10: Average Annual Costs for Alterative 2a

				Cost l	y Item life	2			
								Total	PV of Tot
<u>Year</u>	PV Factor	<u>1 yr</u>	<u>5 yrs</u>	<u>10 yrs</u>	<u>20 yrs</u>	<u>25 yrs</u>	<u>50 yrs</u>	Cost by Yr	Cost by \
1	0.9756	361,159						361,159	352,3
2		101,250						101,250	96,3
3		-	112,900					112,900	104,8
4		-	,					-	-
5		-		18,000	-			18,000	15,9
6		-						-	-
7	0.8413	-						-	-
8		-	112,900					112,900	92,6
9		-	,					-	-
10		-				-		-	-
11		-						-	_
12		_						_	_
13		-	112,900					112,900	81,9
14		-	,500					-	-
15		-		18,000				18,000	12,4
16		-		10,000				- 18,000	12,4
17		_						_	_
18		-	112,900					112,900	72,3
19		_	111,000					-	
20		-						_	-
21		-						-	_
22		-						_	_
23		-	112,900					112,900	63,9
24		-	,					-	-
25		-		18,000	-		-	18,000	9,7
26		-						-	-
27	0.5134	-						-	-
28	0.5009	-	112,900					112,900	56,5
29	0.4887	-						-	-
30	0.4767	-						-	-
31	0.4651	-						-	-
32	0.4538	-						-	-
33	0.4427	-	112,900					112,900	49,9
34	0.4319	-						-	_
35		-		18,000		-		18,000	7,5
36		-						-	-
37		-						-	-
38		-	112,900			-		112,900	44,1
39		-						-	-
40		-						-	-
41		-						-	-
42		-						-	-
43		-	112,900					112,900	39,0
44		-						-	-
45		-		18,000	-			18,000	5,9
46		-						-	-
47		-						-	-
48		-	112,900					112,900	34,5
49		-						-	-
50	0.2909	-						-	-
tal							Lump sum		1,140,3
							Avg ann eq	uivalent	40,2