

**Gila County –Tonto Creek Bridge
BUILD Grant Application
Benefit-Cost Analysis Executive Summary
July 15, 2019**

Introduction

The Benefit-Cost Analysis (BCA) was performed following the guidance provided in the Benefit-Cost Analysis (BCA) Resource Guide. Many of the benefits of this project do not easily translate to simple quantification. The economic benefits of connecting to private developable land on the east side of Tonto Creek and providing a safe and efficient transportation network for the region cannot be easily quantified beyond impacts of construction activities and the inquiries the County has received from real estate agents representing clients interested in developing land on the east side of Tonto Creek once they know this project will be constructed. Providing an improved transportation network in the region does make an impact in terms of improving the per capita income in this area of the state that is below the national average.

Data was compiled, referenced, and analyzed using known or applicable monetary costs and benefits.

Current infrastructure within Tonto Basin (project area) mainly consists of unpaved two-lane rural roads with few paved roads. These roads are owned, operated, and maintained by either Gila County or the Tonto National Forest. Arizona State Route 188, a two-lane rural highway, runs parallel to Tonto Creek along the western edge of the project area and is the only road that provides the residents of Tonto Basin with access to Phoenix, Payson, and Globe. The Forest Service roads that cross Tonto Creek are at-grade dirt roads and provide the only access to SR 188.

The proposed project will construct a bridge, 1,980-ft in length, over Tonto Creek connecting the west side of Tonto Basin to the east side. Roadway improvements consisting of reconstruction and roadways leading up to the bridge are also included.

The Tonto Basin region of Gila County experiences seasonal flooding in the early winter and early spring. These events result in extended closures of the existing at-grade crossing of Tonto Creek. There are currently no structured crossings of Tonto Creek in the project area. Five fatalities have been attributed to individuals attempting to cross Tonto Creek since 1995. School children on the east side of the creek must cross Tonto Creek in unsafe conditions or miss school for weeks and even months at a time during flood events. **Table 1** summarizes the findings of the BCA using a 3% and 7% discount.

Table 2 includes a summary of project benefits and costs as requested in the NOFO. Dollar values are estimated for the life of the improvement, 60 years.

Table 2 – Summary of Project Benefits

Current Status/Baseline & Problem to be Addressed	Change to Baseline/Alternatives	Type of Impact	Population Affected by Impacts	Economic Benefit	Summary of Results		
At-grade dirt road crossings of Tonto Creek	Construction of a bridge across Tonto Creek and associated approach roadway improvements will provide a year-round 100-yr dry crossing of Tonto Creek	Improved safety for local population and recreational visitors utilizing National Forest Lands Elimination of fatalities from creek crossings during high flow events	Tonto Basin region of Gila County - population of over 1,400 Recreational users of National Forest Lands on the east side of Tonto Creek	Improved safety by providing reliable transportation network and elimination of fatalities	\$27,969,625		
One half of area population live on east side of creek							
Flows/flooding of Tonto Creek render at-grade roads impassable						Improved Air and Water quality	Not Estimated
Half of local population stranded until flows subside						Elimination of emergency rescue costs associated	\$874,005
Five fatalities have occurred over past 25 years from crossing during flow events						Reduction in annual maintenance \$ expenditures by County	\$701,959
County \$ expenditures for maintenance and flood response							

Construction of the Tonto Creek Bridge will provide near-term construction jobs in economically distressed Gila County. The Tonto Creek Bridge will allow year-round tourism and recreational use of the surrounding area and facilities and provide safe and reliable access to the undeveloped private land located on the east side of Tonto Creek – the largest cluster of undeveloped land within Gila County. It will provide residents the ability to travel to work and school regardless of weather conditions. And finally, it will provide reliable, year-round access for law enforcement, fire, and emergency medical service personnel.

To the extent possible given the available data, the BCA prepared reflects the economic benefits in all major long-term impact areas identified in the grant application. These include:

- State of Good Repair – The project will reduce yearly maintenance costs in addition to the emergency repair and reconstruction costs Gila County currently expends annually to maintain the at-grade dirt roads improved by the project. The 60-yr 7% discounted life cycle cost of the project is **\$18,659,731** compared to the baseline benefits of **\$27,969,625**.
- Long-Term Economic Competitiveness – Improved and reliable transportation facilities will eliminate residents’ lost works days based on their inability to travel to work due to high creek flows and flooding. The year-round all-weather crossing of Tonto Creek also will provide greater opportunities to develop the existing large tracts of land into viable and sustainable residential and commercial facilities. Lost revenue from visitors and recreational users of the land in the region will also be greatly reduced with safe and

reliable access. The area is well known for its year-round camping, hiking, mountain biking, boating, and fishing – 90% of which is accessed from the east side of Tonto Creek.

- Livability – Access to a safe transportation facility for the area that accommodates vehicles, pedestrians, bicyclists, hikers, and campers, as well as school children adds to the livability of the area. The project also provides enhanced job commuting options, improves connections between residential and commercial areas, and provides consistent access to emergency services.
- Environmental Sustainability – Air and water quality will be improved through the removal of at-grade vehicular traffic through Tonto Creek. Riparian habitat will re-establish with the removal of the at-grade crossings, which supports the Tonto Creek Riparian Unit’s goal.
- Safety – Construction of the bridge will improve safety in a number of ways by providing:
 - A year-round, all-weather crossing for residents and visitors to the region.
 - A safe route to school for the students and teachers of Tonto Basin Elementary School.
 - Consistent access during emergency situations as fire fighters, police, and emergency personal will be able to access the east side of Tonto Creek regardless of the weather conditions.
 - Access for the Tonto National Forest to fight fires on lands located on the east side of Tonto Creek.
 - A means to eliminate fatalities experienced over the last 25 years from individuals attempting to cross the creek when the creek is flowing. As previously stated, five fatalities since 1995 have been attributed to the at-grade road crossings.

The total project cost is \$20,493,884. The land acquisition (right-of-way) has been completed and paid for by the County. Utility relocations are pending construction funding. With the securing of construction funding, the project schedule will allow construction to begin on or before November 2021. **Table 3** summarizes the project costs and breakdown of financial commitment.

Table 3: Project Costs

Project Components	Breakdown		
	Costs	Gila County	BUILD Grant
Construction			
Land Acquisition	\$383,450	\$383,450	-
Utility Relocation	\$200,100	\$200,100	-
Construction	\$19,910,334	\$2,490,533	\$17,419,801
Total Project Cost:	\$20,493,884		
Construction Funding:		\$3,074,083	\$17,419,801
	100%	15%	85%

Discounting

The following life-cycle costs and baseline benefits have been discounted following the Office of Management and Budget Circulars A-4 and A-94 at 7% and 3%. The 7% discount rate represents the average expected return on private capital. The 3% discount rate represents the social rate of time preference for households and individuals. The 3% rate may be more appropriate for the long-term benefits that accrue to current households and future generations and to lower-income households for whom long-term wealth accumulation or future social benefits will be more highly valued.

Assumptions and Data

The assumption used for elimination of fatalities associated with crossing during moderate to high flow events is based on the five documented fatalities that have occurred since 1995. The safety analysis used a 25-year period from 1995 to 2019. The yearly average of fatalities due to crossing incidents is 0.20 or 5 divided by 25.

Cost data for yearly maintenance and flooding-related emergency response is from Gila County records. Construction data and costs is based on the current 100% plans, specifications and estimate completed for the project.

Life-Cycle Costs

Discounted life-cycle costs for the construction of the Tonto Creek Bridge is presented in **Table 4** (attached at end of document). Yearly maintenance and future rehabilitation needs were estimated following the guidelines furnished by the Arizona Department of Transportation (ADOT) Bridge Group – Operations Services. The costs include yearly maintenance after year 10 of between 0.20% and 0.25% of the cost of the bridge. A value of 0.25% was used in the analysis. Bridge deck joints are assumed to require replacement every 15 years. Deck rehabilitation is assumed to be required every 30 years. The total construction cost for the Tonto Creek Bridge project is **\$20,493,884**.

Benefit Costs

The baseline benefits of the project were developed using recent and historical data compiled by Gila County. An analysis with monetized benefits was performed using available County

resources and data. For the purposes of the analysis presented, three specific and quantitative items were included as follows.

1. Costs associated with seasonal flooding
 - Emergency Response
 - Gila County Public Works
 - Gila County Sheriff
2. Costs associated with yearly non-flood-related maintenance of the existing at-grade dirt roads across Tonto Creek
3. Costs associated with the loss of life from crossing-related fatalities

Since 2003 Gila County has spent **\$1,058,330** on flood-related emergency response and rescue. This equates to a baseline benefit for emergency response and rescue of **\$62,255** per year. Costs associated with yearly non-flood-related road maintenance of the existing at-grade dirt roads across Tonto Creek in Tonto Basin average **\$50,000**. Construction of this project eliminates costs expended for this work.

Since 1995 (25-year period) five documented fatalities have been attributed to crossing Tonto Creek within Tonto Basin.

- 1995 – 1 man
- 1997 – 1 woman
- 2005 – 2 men
- 2008 – 1 woman

The costs associated with fatalities was determined following the recommendations presented in the BUILD Benefit-Cost Analysis (BCA) Resource Guide for *Guidance on Treatment of the Economic Value of a Statistical Life U.S. Department of Transportation Analyses – 2015*. This value is set at \$9,400,000 per fatality. Tonto Basin has averaged 0.2 crossing-related fatalities per year over the past 25 years. A value of \$1,880,000 per year was used in the baseline benefit calculation for avoided fatalities with the construction of the bridge. **Table 5** (attached to end of document) presents the No Build Baseline Benefits used in the analysis.

To provide DOT with a reasonable and defensible BCA, several eligible project benefits described in Circulars A-4 and A-94 have not been monetized or included in our analysis. These include:

Valuation of Reduction in Health and Safety Risks to Children and Impacts on Children – The children that live in the area are subjected to the flooding and dangerous crossing conditions when going to school.

Potential loss of life from inability to respond to fire and emergency medical service calls on the east side of Tonto Creek – Data provided by the Tonto Basin Fire District indicates an average of 20 fire and 82 EMS related dispatches a year to the east side of Tonto Creek for first

responders. Road closures due to flooding result in the existing at-grade crossings being closed an average of 26 days per year or 7% of the time. These closures equate to 1.4 non-responses for fire emergencies and almost 6 non-responses for EMS emergencies yearly. Assuming that 1% of all EMS calls are serious life-threatening emergencies resulting in death without assistance, this would equate to approximately 0.10 potential lives lost yearly and 6 over the life-span of the project.

Non-fatal Health and Safety Risks – Historical data on the average number of law enforcement incidents per year that require crossing of Tonto Creek is unavailable, but is likely to exceed the number of medical emergencies and is estimated at 100 per year. If Tonto Creek cannot be crossed 7 percent of the time without a bridge, the number of law enforcement incidents that cannot be responded to per year is 7.

Benefits from Improved Air and Water Quality – An estimated 101 tons of PM₁₀ will be removed from the air through the construction of the bridge and paving of the dirt roads (please see calculations in attached BCA spreadsheet).

Economic Development of Available Land on the East Side of Tonto Creek with Year-Round, Safe, Reliable Access – Developing the private land on the east side of Tonto Creek would provide Tonto Basin and Gila County with economic benefits in the form of higher land and tax values.

Loss of Worker Productivity – Specific data is not available for the number of lost work days or job terminations from the inability to cross Tonto Creek. A number of local residents have reported being terminated due to excessive work absence due to flooding.

Benefit-Cost Analysis Summary

Table 6 summarizes the calculated costs and benefits, discounted at 3% and 7% for the items discussed above.

Table 6: Benefit-Cost Ratio and Net Present Value

	Present Value @ 3%	Present Value @ 7%
Costs:		
60-yr Life Cycle Cost of Bridges		
Tonto Creek	\$20,770,439	\$ 18,659,731
Benefits:		
Emergency Response Exp.	\$55,136,772	\$27,969,625
Annual at-grade Maint. Exp.		
Deaths avoided (VSL)		
Benefit/Cost Ratio:	2.65	1.50

Table 4 - Construction Costs for Tonto Creek Bridge¹

1 - Source: 100% Construction Cost Estimate Kimley-Horn July 2019
 2 - Source: Arizona Department of Transportation Bridge Group Operation & Roadway Design Group

Roadway:	\$5,416,211
Bridge:	\$10,608,451
Other:	\$4,469,222
Total:	\$20,493,884

Estimate of Future Annual Maintenance Costs of Roadway per Lane-Mile²

Annual Maintenance Cost Per Lane Mile Using PeCos Latest FY Data	
Category	Other Locations
1. Paved Surfaces & Shoulders	\$420
2. Roadside	\$230
3. Drainage & Environmental	\$100
4. Rest Areas	\$230
5. Traffic Operations - Signla & Lighting, Signing & Striping	\$935
6. Landscaping	\$85
7. Winter Storms	\$155
8. Emergency Response	\$30
9. Miscellaneous Maintenance	\$300
10. Support and Other Operating Expenses	\$1,165
11. Other Specialty Items	\$0
MCL = Maintenance Cost per Lane Mile	\$3,650
Annual Maintenance Cost of Project	
PW = Pavement Width	32
NL = Number of 12-ft Lanes	2,667
LP = Length of Project in Miles (1.18 miles less 2,012 ft bridge)	0.8
PMC = Current Project Maintenance Cost	\$7,787

Estimate of Future Maintenance Cost of Bridge²

Maintenance Cost of Bridge using ADOT Bridge Group Operaion Data	
Category	
Bridge Deck Replacement after 30 years	\$1,500,000
Bridge Joint Replacement after 15 years	\$50,000
Annual Maintenance after year 10	0.25%
Annual Maintenance Costs (0.25% x Construction Cost)	\$26,521

Costs - Construction & Maintenance

Year	Initial Constr.	Roadway Annual Maint.	Bridge Annual Maint.	Bridge Deck/Joint	Total Costs	3% Discount Rate	7% Discount Rate
2021	\$5,123,471	\$0	\$0	\$0	\$5,123,471	\$ 4,974,244	\$ 4,788,291
2022	\$15,370,413	\$0	\$0	\$0	\$15,370,413	\$ 14,488,088	\$ 13,425,114
2023	\$0	\$0	\$0	\$0	\$0	\$ -	\$ -
2024	\$0	\$7,787	\$0	\$0	\$7,787	\$ 6,918	\$ 5,940
2025	\$0	\$7,787	\$0	\$0	\$7,787	\$ 6,717	\$ 5,552
2026	\$0	\$7,787	\$0	\$0	\$7,787	\$ 6,521	\$ 5,189
2027	\$0	\$7,787	\$0	\$0	\$7,787	\$ 6,331	\$ 4,849
2028	\$0	\$7,787	\$0	\$0	\$7,787	\$ 6,147	\$ 4,532
2029	\$0	\$7,787	\$0	\$0	\$7,787	\$ 5,968	\$ 4,235
2030	\$0	\$7,787	\$0	\$0	\$7,787	\$ 5,794	\$ 3,958
2031	\$0	\$7,787	\$0	\$0	\$7,787	\$ 5,625	\$ 3,699
2032	\$0	\$7,787	\$0	\$0	\$7,787	\$ 5,461	\$ 3,457
2033	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 23,362	\$ 14,237
2034	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 22,681	\$ 13,305
2035	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 22,021	\$ 12,435
2036	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 21,379	\$ 11,621
2037	\$0	\$7,787	\$26,521	\$50,000	\$84,308	\$ 51,008	\$ 26,690
2038	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 20,152	\$ 10,150
2039	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 19,565	\$ 9,486
2040	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 18,995	\$ 8,866
2041	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 18,442	\$ 8,286
2042	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 17,905	\$ 7,744
2043	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 17,383	\$ 7,237
2044	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 16,877	\$ 6,764
2045	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 16,386	\$ 6,321
2046	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 15,908	\$ 5,908
2047	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 15,445	\$ 5,521
2048	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 14,995	\$ 5,160
2049	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 14,558	\$ 4,822
2050	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 14,134	\$ 4,507
2051	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 13,723	\$ 4,212
2052	\$0	\$7,787	\$26,521	\$1,550,000	\$1,584,308	\$ 615,245	\$ 181,785
2053	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 12,935	\$ 3,679
2054	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 12,558	\$ 3,438
2055	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 12,192	\$ 3,213
2056	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 11,837	\$ 3,003
2057	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 11,493	\$ 2,807
2058	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 11,158	\$ 2,623
2059	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 10,833	\$ 2,451
2060	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 10,517	\$ 2,291
2061	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 10,211	\$ 2,141
2062	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 9,914	\$ 2,001
2063	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 9,625	\$ 1,870
2064	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 9,344	\$ 1,748
2065	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 9,072	\$ 1,634
2066	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 8,808	\$ 1,527
2067	\$0	\$7,787	\$26,521	\$50,000	\$84,308	\$ 21,014	\$ 3,506
2068	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 8,302	\$ 1,333
2069	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 8,061	\$ 1,246
2070	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 7,826	\$ 1,165
2071	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 7,598	\$ 1,088
2072	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 7,377	\$ 1,017
2073	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 7,162	\$ 951
2074	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 6,953	\$ 889
2075	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 6,751	\$ 830
2076	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 6,554	\$ 776
2077	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 6,363	\$ 725
2078	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 6,178	\$ 678
2079	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 5,998	\$ 634
2080	\$0	\$7,787	\$26,521	\$0	\$34,308	\$ 5,823	\$ 592
					\$ 20,770,439	\$ 18,659,731	

Table 5 - Project Benefits

Accidents - Tonto Creek crossing related deaths¹

Year	Fatalities	Year	Fatalities
1995	1	2006	0
1996	1	2007	0
1997	0	2008	1
1998	0	2009	0
1999	0	2010	0
2000	0	2011	0
2001	0	2012	0
2002	0	2013	0
2003	0	2014	0
2004	0	2015	0
2005	2	2016	0
		2017	0
		2018	0
		2019	0
			0.2 average/year over previous 25 yrs

Annual Maintenance Costs for Existing Dirt Roads¹

\$50,000 - Gila County Public Works

Flood Response Costs¹

Period:	2003-2010	2011-2019
Public Works:	\$389,730	\$225,500
Emergency Management:	\$251,450	\$155,250
Sherriff Office:	\$24,250	\$12,150
	\$665,430	\$392,900

Average Cost 17 yr period: \$62,255

1 - Source: Gila County Public Work and Emergency Management Division

\$9,400,000	Value of Statistical Life (VSL) per fatality
\$1,880,000	Average Annual VSL

Benefit - Eliminate Accidental Fatalities

Year	Average VSL	3% Discount Rate	7% Discount Rate
2021	\$1,880,000	\$1,825,243	\$1,757,009
2022	\$1,880,000	\$1,772,080	\$1,642,065
2023	\$1,880,000	\$1,720,466	\$1,534,640
2024	\$1,880,000	\$1,670,356	\$1,434,243
2025	\$1,880,000	\$1,621,705	\$1,340,414
2026	\$1,880,000	\$1,574,470	\$1,252,723
2027	\$1,880,000	\$1,528,612	\$1,170,770
2028	\$1,880,000	\$1,484,089	\$1,094,177
2029	\$1,880,000	\$1,440,863	\$1,022,595
2030	\$1,880,000	\$1,398,897	\$955,697
2031	\$1,880,000	\$1,358,152	\$893,174
2032	\$1,880,000	\$1,318,594	\$834,742
2033	\$1,880,000	\$1,280,189	\$780,133
2034	\$1,880,000	\$1,242,901	\$729,096
2035	\$1,880,000	\$1,206,700	\$681,399
2036	\$1,880,000	\$1,171,554	\$636,821
2037	\$1,880,000	\$1,137,431	\$595,160
2038	\$1,880,000	\$1,104,302	\$556,224
2039	\$1,880,000	\$1,072,138	\$519,836
2040	\$1,880,000	\$1,040,910	\$485,828
2041	\$1,880,000	\$1,010,593	\$454,045
2042	\$1,880,000	\$981,158	\$424,341
2043	\$1,880,000	\$952,580	\$396,580
2044	\$1,880,000	\$924,835	\$370,636
2045	\$1,880,000	\$897,898	\$346,388

Benefit - Elimination of Annual Dirt Rd Crossings Maintenance

Year	Maint. \$	3% Discount Rate	7% Discount Rate
2021	\$50,000	\$48,544	\$46,729
2022	\$50,000	\$47,130	\$43,672
2023	\$50,000	\$45,757	\$40,815
2024	\$50,000	\$44,424	\$38,145
2025	\$50,000	\$43,130	\$35,649
2026	\$50,000	\$41,874	\$33,317
2027	\$50,000	\$40,655	\$31,137
2028	\$50,000	\$39,470	\$29,100
2029	\$50,000	\$38,321	\$27,197
2030	\$50,000	\$37,205	\$25,417
2031	\$50,000	\$36,121	\$23,755
2032	\$50,000	\$35,069	\$22,201
2033	\$50,000	\$34,048	\$20,748
2034	\$50,000	\$33,056	\$19,391
2035	\$50,000	\$32,093	\$18,122
2036	\$50,000	\$31,158	\$16,937
2037	\$50,000	\$30,251	\$15,829
2038	\$50,000	\$29,370	\$14,793
2039	\$50,000	\$28,514	\$13,825
2040	\$50,000	\$27,684	\$12,921
2041	\$50,000	\$26,877	\$12,076
2042	\$50,000	\$26,095	\$11,286
2043	\$50,000	\$25,335	\$10,547
2044	\$50,000	\$24,597	\$9,857
2045	\$50,000	\$23,880	\$9,212

Benefit - Elimination of Emergency Flood Response Costs

Year	Maint. \$	3% Discount Rate	7% Discount Rate
2021	\$62,255	\$60,441	\$58,182
2022	\$62,255	\$58,681	\$54,376
2023	\$62,255	\$56,972	\$50,818
2024	\$62,255	\$55,312	\$47,494
2025	\$62,255	\$53,701	\$44,387
2026	\$62,255	\$52,137	\$41,483
2027	\$62,255	\$50,619	\$38,769
2028	\$62,255	\$49,144	\$36,233
2029	\$62,255	\$47,713	\$33,862
2030	\$62,255	\$46,323	\$31,647
2031	\$62,255	\$44,974	\$29,577
2032	\$62,255	\$43,664	\$27,642
2033	\$62,255	\$42,392	\$25,833
2034	\$62,255	\$41,158	\$24,143
2035	\$62,255	\$39,959	\$22,564
2036	\$62,255	\$38,795	\$21,088
2037	\$62,255	\$37,665	\$19,708
2038	\$62,255	\$36,568	\$18,419
2039	\$62,255	\$35,503	\$17,214
2040	\$62,255	\$34,469	\$16,088
2041	\$62,255	\$33,465	\$15,035
2042	\$62,255	\$32,490	\$14,052
2043	\$62,255	\$31,544	\$13,132
2044	\$62,255	\$30,625	\$12,273
2045	\$62,255	\$29,733	\$11,470

Benefit - Eliminate Accidental Fatalities

Year	Average VSL	3% Discount Rate	7% Discount Rate
2046	\$1,880,000	\$871,746	\$323,728
2047	\$1,880,000	\$846,355	\$302,549
2048	\$1,880,000	\$821,704	\$282,756
2049	\$1,880,000	\$797,771	\$264,258
2050	\$1,880,000	\$774,535	\$246,970
2051	\$1,880,000	\$751,976	\$230,813
2052	\$1,880,000	\$730,074	\$215,713
2053	\$1,880,000	\$708,809	\$201,601
2054	\$1,880,000	\$688,164	\$188,412
2055	\$1,880,000	\$668,121	\$176,086
2056	\$1,880,000	\$648,661	\$164,567
2057	\$1,880,000	\$629,768	\$153,801
2058	\$1,880,000	\$611,425	\$143,739
2059	\$1,880,000	\$593,617	\$134,335
2060	\$1,880,000	\$576,327	\$125,547
2061	\$1,880,000	\$559,541	\$117,334
2062	\$1,880,000	\$543,243	\$109,658
2063	\$1,880,000	\$527,421	\$102,484
2064	\$1,880,000	\$512,059	\$95,779
2065	\$1,880,000	\$497,145	\$89,513
2066	\$1,880,000	\$482,665	\$83,657
2067	\$1,880,000	\$468,606	\$78,184
2068	\$1,880,000	\$454,958	\$73,070
2069	\$1,880,000	\$441,707	\$68,289
2070	\$1,880,000	\$428,841	\$63,822
2071	\$1,880,000	\$416,351	\$59,647
2072	\$1,880,000	\$404,224	\$55,744
2073	\$1,880,000	\$392,451	\$52,098
2074	\$1,880,000	\$381,020	\$48,689
2075	\$1,880,000	\$369,922	\$45,504
2076	\$1,880,000	\$359,148	\$42,527
2077	\$1,880,000	\$348,687	\$39,745
2078	\$1,880,000	\$338,531	\$37,145
2079	\$1,880,000	\$328,671	\$34,715
2080	\$1,880,000	\$319,098	\$32,444
SUM (ALL YEARS)		\$52,030,060	\$26,393,661

Benefit - Elimination of Annual Dirt Rd Crossings Maintenance

Year	Maint. \$	3% Discount Rate	7% Discount Rate
2046	\$50,000	\$23,185	\$8,610
2047	\$50,000	\$22,509	\$8,047
2048	\$50,000	\$21,854	\$7,520
2049	\$50,000	\$21,217	\$7,028
2050	\$50,000	\$20,599	\$6,568
2051	\$50,000	\$19,999	\$6,139
2052	\$50,000	\$19,417	\$5,737
2053	\$50,000	\$18,851	\$5,362
2054	\$50,000	\$18,302	\$5,011
2055	\$50,000	\$17,769	\$4,683
2056	\$50,000	\$17,252	\$4,377
2057	\$50,000	\$16,749	\$4,090
2058	\$50,000	\$16,261	\$3,823
2059	\$50,000	\$15,788	\$3,573
2060	\$50,000	\$15,328	\$3,339
2061	\$50,000	\$14,881	\$3,121
2062	\$50,000	\$14,448	\$2,916
2063	\$50,000	\$14,027	\$2,726
2064	\$50,000	\$13,619	\$2,547
2065	\$50,000	\$13,222	\$2,381
2066	\$50,000	\$12,837	\$2,225
2067	\$50,000	\$12,463	\$2,079
2068	\$50,000	\$12,100	\$1,943
2069	\$50,000	\$11,748	\$1,816
2070	\$50,000	\$11,405	\$1,697
2071	\$50,000	\$11,073	\$1,586
2072	\$50,000	\$10,751	\$1,483
2073	\$50,000	\$10,438	\$1,386
2074	\$50,000	\$10,134	\$1,295
2075	\$50,000	\$9,838	\$1,210
2076	\$50,000	\$9,552	\$1,131
2077	\$50,000	\$9,274	\$1,057
2078	\$50,000	\$9,003	\$988
2079	\$50,000	\$8,741	\$923
2080	\$50,000	\$8,487	\$863
SUM (ALL YEARS)		\$1,383,778	\$701,959

Benefit - Elimination of Emergency Flood Response Costs

Year	Maint. \$	3% Discount Rate	7% Discount Rate
2046	\$62,255	\$28,867	\$10,720
2047	\$62,255	\$28,026	\$10,019
2048	\$62,255	\$27,210	\$9,363
2049	\$62,255	\$26,418	\$8,751
2050	\$62,255	\$25,648	\$8,178
2051	\$62,255	\$24,901	\$7,643
2052	\$62,255	\$24,176	\$7,143
2053	\$62,255	\$23,472	\$6,676
2054	\$62,255	\$22,788	\$6,239
2055	\$62,255	\$22,124	\$5,831
2056	\$62,255	\$21,480	\$5,449
2057	\$62,255	\$20,854	\$5,093
2058	\$62,255	\$20,247	\$4,760
2059	\$62,255	\$19,657	\$4,448
2060	\$62,255	\$19,085	\$4,157
2061	\$62,255	\$18,529	\$3,885
2062	\$62,255	\$17,989	\$3,631
2063	\$62,255	\$17,465	\$3,394
2064	\$62,255	\$16,956	\$3,172
2065	\$62,255	\$16,463	\$2,964
2066	\$62,255	\$15,983	\$2,770
2067	\$62,255	\$15,518	\$2,589
2068	\$62,255	\$15,066	\$2,420
2069	\$62,255	\$14,627	\$2,261
2070	\$62,255	\$14,201	\$2,113
2071	\$62,255	\$13,787	\$1,975
2072	\$62,255	\$13,386	\$1,846
2073	\$62,255	\$12,996	\$1,725
2074	\$62,255	\$12,617	\$1,612
2075	\$62,255	\$12,250	\$1,507
2076	\$62,255	\$11,893	\$1,408
2077	\$62,255	\$11,547	\$1,316
2078	\$62,255	\$11,210	\$1,230
2079	\$62,255	\$10,884	\$1,150
2080	\$62,255	\$10,567	\$1,074
SUM (ALL YEARS)		\$1,722,934	\$874,005