

Attachment

8

***Stormwater Flood Management Grant Proposal
Santa Barbara County Flood Control and Water Conservation District
Flood Damage Reduction Costs and Benefits***

Attachment 8 consists of the following items:

- ✓ **Flood Damage Reduction Costs and Benefits.** Attachment 8 describes and quantifies the benefits and costs of each project in the proposal.

Introduction

This attachment provides information regarding the flood damage reduction costs and benefits that will be derived from the Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project (UPRR Bridge Project). The UPRR Bridge Project will reduce the risk of flood damage to the adjacent community and transportation system by increasing the flood flow conveyance of Las Vegas and San Pedro Creeks. Additional benefits include improved public safety and habitat restoration that will enhance fish passage. There will be minimal water quality benefits that are not calculated but result from a natural streambed replacing a concrete channel.

Project Abstract

The UPRR Bridge Project is proposed by the Santa Barbara County Flood Control and Water Conservation District (District). The UPRR Bridge Project increases flood protection by expanding the Las Vegas and San Pedro Creeks stormwater flows passages under the Union Pacific Railroad to accommodate a 25-year storm event. This task will be accomplished while adhering to the UPRR criteria that the 100-year energy grade line must remain below the subgrade track elevation. The UPRR Bridge Project is a component of the overall San Pedro and Las Vegas Creeks Capacity Improvement Project.

The UPRR Bridge Project consists of replacing the existing UPRR bridges on San Pedro and Las Vegas Creeks with ones that will accommodate increased flood flow. In addition, there will be channel grading downstream of the bridge structure replacing cement channeling with a natural bottom. The UPRR Bridge Project will open up approximately 584 creek feet of fish habitat for anadromous steelhead trout by replacing sections of the cement channel with a natural surface and by replacing a concrete grade control structure on San Pedro Creek that blocks fish passage with a fish transition structure.

The UPRR Bridge Project is Project B of overall San Pedro and Las Vegas Creeks Capacity Improvement Project. Only the UPRR Bridge Project is being proposed for funding with this application. The San Pedro and Las Vegas Creeks Capacity Improvement Project consist of the following:

- Project A: Replacement of the Calle Real and State Highway 101 culverts on San Pedro and Las Vegas Creeks, lowering the channel bed level, and constructing a fish transition structure within San Pedro Creek upstream of Calle Real. Caltrans is responsible for this work. Caltrans funding is secured through the 2012 State Highway Operation and Protection Program Budget (in accordance with Government Code Section 14526.5), committed, programmed (see Exhibit 8-2 or Caltrans 2012 SHOPP Project List http://www.dot.ca.gov/hq/transprog/SHOPP/2012_SHOPP_as_approved_by_the_CTC.pdf, p. 134), and approved by the California Transportation Commission.

The Project is underway, as project planning has been initiated including administration and finalizing of contract documents and advertising for construction. Caltrans and the District have been cooperating throughout the process (Exhibit 8-1). Environmental compliance documentation and permitting is complete, including: 1) Section 401 Permit (RWQC); 2) Section 1600 Streambed Alternation Agreement (DFG); 3) Nationwide Permits 6 and 43 (ACOE); 4) CEQA Final Negative Declaration; and 5) NEPA Determination, Categorical Exemption. The Caltrans work will proceed with or without Prop 1E funding for the UPRR Bridge Project (known as Project B from previous planning documents).

- Project B (UPRR Bridge Project): Replacement of the UPRR bridges on San Pedro and Las Vegas Creeks, including channel grading downstream of the bridge structures, and an enhanced fish passage structure for the Federally Endangered Steelhead.
- Project C: construction of the San Pedro Creek floodwall. This will be constructed by the District, commensurate with Projects A and B. Project C does not provide new flood benefits. It will construct a floodwall to protect property downstream from the UPRR Bridge Project adjacent to the Santa Barbara Airport from the potential additional flow associated with restoring the capacity of San Pedro Creek.

Summary Distribution of Project Benefits and Identification of Beneficiaries

Figure 8-1 shows the UPRR Bridge Project and **Table 8-1** summarizes the UPRR Bridge Project's benefits and beneficiaries. Local residents will benefit from flood protection, increased public safety, and habitat improvements. Other governmental entities that benefit include the City of Goleta, the Goleta Sanitary District, and the City of Santa Barbara.

Figure 8-1: Project Map



Table 8-1: Project Benefits and Beneficiaries

Project Benefits	Project Beneficiaries
Protection of residential property (structures and contents)	Local residents
Protection of commercial property (structures and contents)	Local and regional businesses
Reduced damage to roads and highways (includes UPRR rail transportation)	Local, regional, and interstate travelers
Avoided treatment of stormwater overflows by sanitary system overflows	Goleta Sanitary District and GSD ratepayers
Increased public safety and reduced indirect costs, including emergency response, and disruption to employment, commerce, transportation, and communications	Local residents and businesses and regional users of transportation facilities
Habitat restoration	Anadromous fish, regional habitat

Flood Damage Reduction Benefit Analysis (Section D1)

Flood damage reduction benefits were estimated with DWR’s F-RAM model. Because of differences in average flood depth for properties within the Las Vegas Creek and San Pedro Creek floodplains, separate F-RAM models were developed for each floodplain. In the tables that following, F-RAM modeling results have been consolidated.

Flood damages were estimated for the without- and with-project conditions for the following categories.

- Residential structures and contents
- Commercial structures and contents
- Roads and highways
- Indirect costs, including emergency response, and disruption to employment, commerce, transportation, and communications
- Goleta Sanitary District storm water treatment system

Hydrology

Hydrology and hydraulics were studied by HDR Engineering, Inc., and the results published in the reports entitled,

- San Pedro and Las Vegas Creeks Capacity Improvement Project, UPRR Bridge Replacement Hydrology and Hydraulic Analysis Report, Draft Technical Report, HDR Engineering, Inc., January 2013

- San Pedro and Las Vegas Creeks Capacity Improvement Project, Final Hydrology and Hydraulic Analysis Report” in 2008.

Biological resources and impacts are documented in the UPRR Bridge Project’s Mitigated Negative Declaration (MND) entitled, “Final Mitigated Negative Declaration, Las Vegas-San Pedro Creeks Capacity Improvement Project.” Additional information was taken from the District’s topographic AutoCAD file, “topo.WSEs.dwg” as transferred to GIS, the HDR Engineering, Inc. hydraulic HEC-RAS model, “San Pedro-Las Vegas Creek-2011 Fini.prj” as verified by Caltrans, from the HDR Engineering, Inc. hydrology HEC-HMS model, “SPLV_Existing.hms” and also from online-published Goleta Sanitary District reports.

Hydrologic conditions were modeled for 10-year, 25-year, 50-year, and 100-year storm events. Estimated average flood depths (in feet above ground level) for the without- and with-project conditions are summarized in **Table 8-2**.

Table 8-2 Average Flood Depths				
Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project				
F-RAM Model Inputs: Hydrology				
Hydrologic Event	10-Yr	25-Yr	50-Yr	100-Yr
Exceedance Probability	0.10	0.04	0.02	0.01
Average Flood Depth Above Ground Level (ft)				
<i>Las Vegas Creek Floodplain</i>				
Without Project	0.00	0.50	1.00	1.50
With Project	0.00	0.00	0.50	1.00
<i>San Pedro Creek Floodplain</i>				
Without Project	0.00	1.00	1.50	2.00
With Project	0.00	0.00	1.00	1.50

Figure 8-2: Existing Inundation Map (upstream of UPRR)

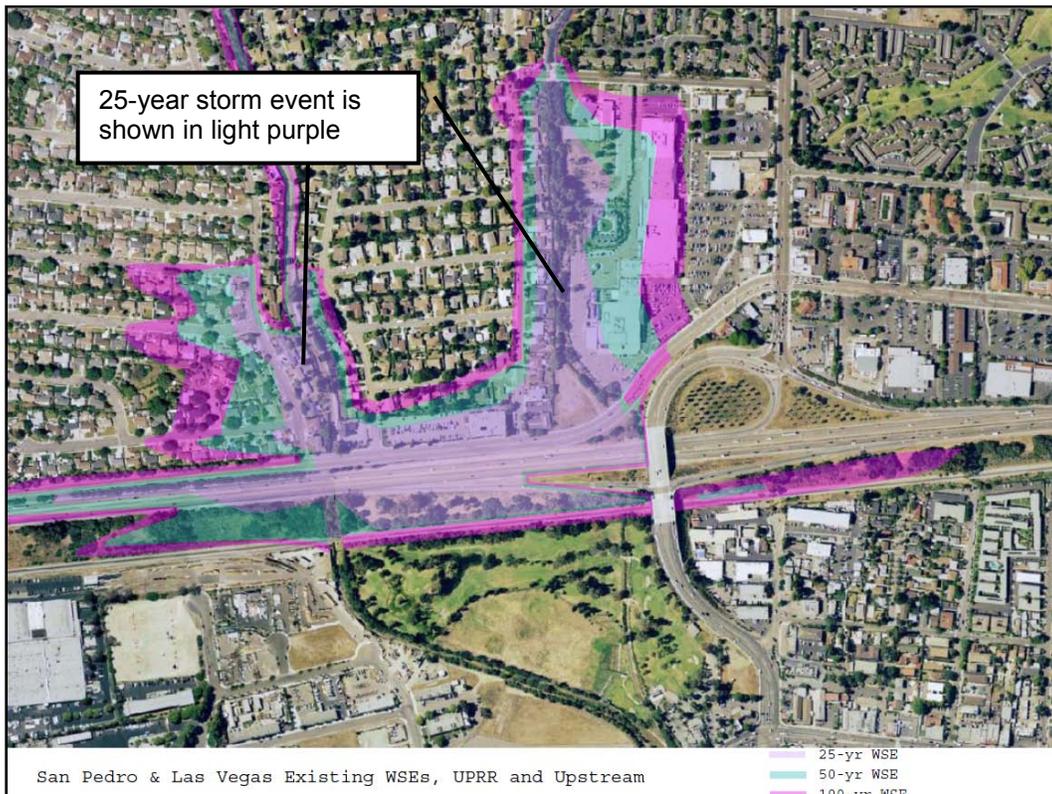


Figure 8-3: Post Project Inundation Map (upstream of UPRR)



Residential and Commercial Structures in Floodplain

FEMA flood insurance reduction maps and creek profiles were used to construct an inventory of impacted residential and commercial structures for the without- and with-project conditions. The number of residential structures was counted in AutoCAD and GIS. GIS was also used to calculate first floor area (in square feet) of commercial structures with the floodplains of the two creeks. The inventory of impacted residential structures for the without- and with-project conditions is summarized in **Table 8-3**. The inventory of impacted commercial building area for the without- and with-project conditions is summarized in **Table 8-4**.

Table 8-3				
Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project				
F-RAM Model Inputs: Impacted Residential Structures				
Hydrologic Event	10-Yr	25-Yr	50-Yr	100-Yr
Exceedance Probability	0.10	0.04	0.02	0.01
Count of Impacted Residential Structures				
<i>Las Vegas Creek Floodplain</i>				
Without Project	0	20	26	28
With Project	0	0	10	23
<i>San Pedro Creek Floodplain</i>				
Without Project	0	16	40	74
With Project	0	0	13	40

Table 8-4				
Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project				
F-RAM Model Inputs: Impacted Commercial Structures				
Hydrologic Event	10-Yr	25-Yr	50-Yr	100-Yr
Exceedance Probability	0.10	0.04	0.02	0.01
Impacted Commercial Structures (Sqft)				
<i>Las Vegas Creek Floodplain</i>				
Without Project	0	272,800	504,700	731,400
With Project	0	0	363,800	504,700
<i>San Pedro Creek Floodplain</i>				
Without Project	0	42,400	57,500	57,500
With Project	0	0	42,400	57,500

Transportation Corridors in Floodplain

FEMA flood insurance reduction maps and creek profiles were used to inventory miles of impacted roadways for the without- and with-project conditions using AutoCAD and GIS. Separate estimates were developed for arterial, major, and minor roads, per F-RAM input requirements. Additionally, approximately 0.2 miles of rail operated by Union Pacific lies within the 100-year floodplain and would be impacted by storm events of this magnitude or larger. Rail transportation was disrupted in both 1995 and 1998 when Las Vegas and San Pedro Creeks overtopped their banks. F-RAM does not include a category for rail transportation. F-RAM’s damage cost per mile for arterial roads was therefore used to estimate damage to the UPRR line. The inventory of impacted roads and the UPRR for the without- and with-project conditions is summarized in **Table 8-5**.

Table 8-5				
Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project				
F-RAM Model Inputs: Impacted Roads				
Hydrologic Event	10-Yr	25-Yr	50-Yr	100-Yr
Exceedance Probability	0.10	0.04	0.02	0.01
Impacted Roadways (miles)				
Arterial				
Without Project	0	0.89	1.17	1.17
With Project	0	0	0.69	0.86
Major				
Without Project	0	0.31	0.65	0.79
With Project	0	0	0.52	0.60
Minor				
Without Project	0	0.23	0.41	0.83
With Project	0	0	0.13	0.36
UPRR				
Without Project	0	0	0	0.34
With Project	0	0	0	0

State Route 101 Closure and Traffic Delay Impacts

State Route 101 is the main north/south highway in the region. It serves as the backbone of the circulation system for many cities and communities in addition to its role as an arterial for external trips. The vast majority of the Santa Barbara urbanized area along State Route 101 (Ventura County line to Hollister Avenue in Goleta) currently operates at Caltrans Level of Service (LOS) F which indicates an average vehicle-to-capacity ratio of 95 to 100%. Average traffic volume along this part of State Route 101 is about 7,735 vehicles per hour.¹ Flood events resulting in closure or reduced capacity of State Route 101 can cause significant economic costs related to traffic delays.² Floods closed State Route 101 in 1995, 1998, and 2000. The 1995 flood closed the highway in both directions. While the highway was reopened the following day, only one north-bound lane was open to traffic three days after the storm event due to cleanup and repair operations.

¹ Caltrans (2010), "Draft Project Report," 05-SB-101, PM 22.3/23.2, 06-258, EA 05-0G070K, October 6, 2010, Tables 1 and 2.

² Flooding in 1995 closed State Route 101 in both directions. While the highway was reopened the following day, only one north-bound lane was open to traffic three days after the storm event due to cleanup and repair operations. See Santa Barbara County Flood Control and Water Conservation District (1996), "Floods of 1995."

By default F-RAM sets indirect costs associated with disruption to transportation services to 25% of direct damages to roads. Because of the significance of flood-related road closure and traffic delay on State Route 101, F-RAM’s default estimation methodology was replaced with direct estimates of traffic disruption. Assumptions underlying the direct estimates are summarized in **Table 8-6**. Average delay times in Table 8-6 are based on Caltrans and newspaper reports of flood-related road and lane closures on State Route 101 in 1995, 1998, and 2000.³ The day of the flood event is indexed to Day 0 in the table. Average delay time is assumed to be reduced by half each subsequent day. Traffic is assumed to return to normal by the fourth day following the flood event. This is a conservative assumption. In 1995 some roads in the region remained closed for cleanup as long as nine days following the flood event.

Table 8-6				
Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project				
State Route 101 Traffic Delay Estimate				
Hydrologic Event	10-Yr	25-Yr	50-Yr	100-Yr
Exceedance Probability	0.10	0.04	0.02	0.01
Avg Hourly Traffic Volume	7,735	7,735	7,735	7,735
Delay Time (Hrs/Day)				
Without Project				
Day 0	0.000	3.000	5.000	5.000
Day 1	0.000	1.500	2.500	2.500
Day 2	0.000	0.750	1.250	1.250
Day 3	0.000	0.375	0.625	0.625
Total Hours Delay	0.000	5.625	9.375	9.375
With Project				
Day 0	0.00	0.00	2.00	2.00
Day 1	0.00	0.00	1.000	1.000
Day 2	0.00	0.00	0.500	0.500
Day 3	0.00	0.00	0.250	0.250
Total Hours Delay	0.00	0.00	3.75	3.75
Delay Time (Veh-Hrs)				
Without Project	0	43,509	72,516	72,516
With Project	0	0	29,006	29,006

³ Ibid. Also Santa Barbara County Flood Control and Water Conservation District (1998), “1998 Flood Report” and Caltrans (2010), “Project Study Report,” 05-SB-101, PM 22.3/23.2, 06-258, EA 05-0G070K, October 2002, page 3.

Goleta Sanitary System Stormwater Treatment

Reductions in overflow volumes for Las Vegas and San Pedro Creeks were estimated by the District from peak flow volumes generated in HDR's HEC-HMS computer model, and are summarized in the document "HEC-HMS Analysis Results_Attenuated Volumes_SBC 2013-01-17." Overflow volumes under the with-project condition are reduced by 112 MG, on average, for flood events exceeding a 10-year return interval – 21 MG is associated with overflow from Las Vegas Creek and 91 MG is associated with overflow from San Pedro Creek. It is estimated that half of this volume, 56 MG, would otherwise be discharged to the Goleta Sanitary System and require treatment. The expected annual reduction in stormwater flow is 7.9 MG/year and the expected annual reduction in stormwater treatment is half this quantity or 3.95 MG/year.

Without- and With-Project Flood Damage Estimates

F-RAM flood damage estimates for the without- and with-project conditions are summarized in Table 8-7. All dollar amounts are in 2012 dollars.⁴ Expected Annual Damages (EAD) calculated with F-RAM are shown at the bottom of the table.

- Residential and commercial property damages include damages to structures and contents, external landscapes and outbuildings, and cleanup costs. Structural and contents damages are derived from F-RAM's depth-damage curves and unit replacement cost assumptions. Residential external damages and cleanup costs are set by F-RAM at \$5000 and \$4000 per property, respectively. Commercial external damages and cleanup costs are set by F-RAM at 30% of direct structural damages.
- Damages to roads are based on F-RAM's unit cost assumptions for the three road types. As discussed above, F-RAM's unit damage cost for arterial roads was also used to estimate damages to the UPRR rail line.
- Indirect costs include costs for emergency response and costs associated with disruption to employment, commerce, transportation, and communications. These costs are set by F-RAM to equal 25% of direct residential, commercial, and roadway damages. Indirect damages for arterial roads have been removed from the estimate since these are calculated directly based on the traffic delay estimates summarized in **Table 8-6**.
- Traffic delay costs for State Route 101 are the product of total delay time (from Table 8-6), average vehicle occupancy, and the hourly value of travel time savings. Average vehicle occupancy is set to 1.204. The estimate is from Levine and Wachs (1996) for the Los Angeles – Ventura region.⁵ Travel time is valued at \$14.52/hr (2012 dollars). The estimate is based on U.S. DOT guidelines.⁶ Expected annual damages of traffic delay for

⁴ PSP Table 10 does not provide update factors for costs denominated in dollars earlier than 2008. An update factor for 2007 was requested from DWR. DWR has not responded to the request. Therefore, F-RAM results were multiplied by 1.11 to update its results from 2007 dollars to 2012 dollars. The update factor was calculated with the BLS CPI inflation calculator (www.bls.gov/data/inflation_calculator.htm).

⁵ Levine, Ned and Martin Wachs (1996). "Factors Affecting Vehicle Occupancy Measurement," University of California Transportation Center Working Paper No. 350.

⁶ Based on the U.S. Department of Transportation's recommended value of \$13.44/hr (2007 \$) for travel time for surface modes of transportation. The estimate is a weighted average of personal and business travel using the following distribution of travel by trip purpose: 94.4% personal, 5.6% business. U.S. Department of Transportation, "Revised Departmental Guidance: Valuation of Travel Time in Economic Analysis," February 11, 2003.

State Route 101 are counted separately for Las Vegas and San Pedro Creeks in the calculation of total expected annual damages since flooding of State Route 101 can occur if blockages occur to culverts and underpasses along either creek and it is appropriate to treat such blockage events as independent of one another.

- The expected annual reduction in Goleta Sanitary System stormwater treatment under the with-project condition is 3.95 MG/year. A unit cost of \$1,230/MG for treating incremental stormwater flows was applied to the expected annual reduction in treatment to estimate avoided treatment costs. The unit cost was estimated by applying standard industry percentages for allocating sewer O&M costs between flow, BOD, and TSS functions reported in Shook and Ivey (2012)⁷ to the Goleta Sanitary System's annual operating cost per MG in 2007 (as reported in Goleta Sanitary District Annual Audit Report 2007-2008).⁸ Flow-related costs were set to 32.5% of total operating costs, which is the mid-point percentage for the allocation of flow-related cost reported in Shook and Ivey.

⁷ Shook, Robert and Jennifer Ivey, "GETTING IT RIGHT: A STUDY OF COST OF SERVICE WASTEWATER TREATMENT ALLOCATIONS," Fort Worth Water Department. AWWA Texas-Water 2012 Conference Proceedings. Downloaded from www.tawwa.org/TW12Proceedings/P120428.pdf.

⁸ 2007 operating costs were used to maintain consistency with other F-RAM monetary assumptions, which are denominated in 2007 dollars.

Table 8-7 (PSP Table 11)				
Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project				
F-RAM Flood Damage Estimates				
(2012 Dollars)				
Hydrologic Event	10-Yr	25-Yr	50-Yr	100-Yr
Exceedance Probability	0.10	0.04	0.02	0.01
Damages to Residential Property¹				
Without Project	\$0	\$2,006,389	\$5,456,916	\$10,203,215
With Project	\$0	\$0	\$1,270,104	\$5,287,004
Damages to Commercial Property²				
Without Project	\$0	\$492,905	\$6,535,642	\$11,279,228
With Project	\$0	\$0	\$492,905	\$6,535,642
Damages to Roads				
Without Project	\$0	\$281,232	\$399,384	\$519,912
With Project	\$0	\$0	\$246,672	\$308,664
Indirect Costs³				
Without Project	\$0	\$635,057	\$3,019,011	\$5,398,664
With Project	\$0	\$0	\$502,421	\$3,032,828
State Route 101 Traffic Delay Costs⁴				
Without Project	\$0	\$760,383	\$1,267,305	\$1,267,305
With Project	\$0	\$0	\$506,922	\$506,922
Goleta Sanitary System Avoided Treatment⁵				
Without Project	\$0	\$74,257	\$74,257	\$74,257
With Project	\$0	\$0	\$0	\$0
Total Estimated Damages				
Without Project	\$0	\$4,250,223	\$16,752,515	\$28,742,581
With Project	\$0	\$0	\$3,019,024	\$15,671,060

Table 8-7 (PSP Table 11)	
Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project	
F-RAM Flood Damage Estimates	
(2012 Dollars)	
Expected Annual Damages⁶	
Without Project	\$980,820
With Project	\$358,819
Annual Flood Damage Reduction Benefit	
	\$622,001
Notes:	
¹ Includes F-RAM estimated damages to structure and contents, out buildings and landscape, plus cleanup costs.	
² Includes F-RAM estimated damages to structures and contents, plus cleanup costs.	
³ Includes F-RAM estimated costs for emergency response, costs associated with disruption to employment, commerce, transportation, and communications, excepting Hwy 101 traffic delays.	
⁴ Calculated from direct estimates of flood-related traffic delay and DOT guidelines for valuation of travel time.	
⁵ Avoided cost of treated sewer flows. Assumes sewer flow reduction equal to 1/2 of reduction in flood flow. Volume-related cost of treatment per million gallons set to 32.5% of O&M cost, per industry-standard functional cost allocation percentages reported in Shook & Ivey (2012).	
⁶ EAD estimated with F-RAM model	

Present Value of Expected Annual Damages

The present value of flood damage reduction benefits are summarized in **Table 8-8** (which corresponds to PSP Table 12). Benefits are assumed to commence in 2016 and have a useful life of 75 years. Future benefits are discounted using a 6% discount rate.

Table 8-8 (PSP Table 12)			
Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project			
Present Value of Expected Annual Damages			
(2012 Dollars)			
(a)	Expected Annual Damage Without Project ⁽¹⁾		\$980,820
(b)	Expected Annual Damage With Project ⁽¹⁾		\$358,819
(c)	Expected Annual Benefit	(a) – (b)	\$622,001
(d)	Present Value Coefficient ⁽²⁾		13.82
(e)	Present Value of Future Benefits Transfer to Table 17, column (d).	(c) x (d)	\$8,593,970
<p><i>(1) This program assumes no land use changes in the floodplain. So, EAD will be constant over analysis period.</i></p> <p><i>(2) Present value in 2012 given 6% real discount rate, 75-year useful life, and flood protection benefits commencing in 2016. 75-Year useful life is F-RAM default useful life assumption for flood protection channel improvements.</i></p>			

Monetized Benefit Analysis (Section D3)

In addition to the flood damage reduction benefits summarized in Table 8-8, the project will add 0.584 acres of riparian habitat to the watersheds of Las Vegas and San Pedro Creeks. The value of added riparian habitat is summarized in **Table 8-9**. The unit value is based on costs of habitat credits at the Los Carneros Mitigation Bank, located near the project site.

Table 8-9 (PSP Table 14) Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project Other Annual Project Benefits (2012 Dollars)									
(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
Year	Type of Benefit	Measure of Benefit (Units)	Without Project	With Project	Change Resulting from Project (e) – (d)	Unit \$ Value ⁽¹⁾	Annual \$ Value ⁽¹⁾ (f) x (g)	Present Value Coefficient ⁽²⁾	Present Value Benefit
2016-2090	Las Vegas Creek Riparian Habitat	Acres	0.197	0.494	0.297	\$4,235	\$1,258	13.817	\$17,380
2016-2090	San Pedro Creek Riparian Habitat	Acres	0.269	0.556	0.287	\$4,235	\$1,216	13.817	\$16,795
Total Present Value of Discounted Benefits Based on Unit Value (Sum of the values in Column (j) for all Benefits shown in table)									\$34,175
Comments: (1) Unit value of riparian habitat is the annualized cost of an acre of riparian mitigation credit from the Los Carneros Mitigation Bank. Mitigation credit cost is annualized at 6% over 75-year useful life of project. (2) Present value coefficient based on 6% discount rate, 75-year useful life, and project benefits commencing in 2016.									

Project Benefits and Costs Summary (Section D4)

Project Economic Costs

Project economic costs are summarized in Table 8-10. Budgeted project costs from PSP Table 6 are listed in column (a). Project expenditures in 2012 are sunk and therefore deducted in column (b). Caltrans has already programmed its funding for the replacement of the Calle Real and State Highway 101 culverts on San Pedro and Las Vegas Creeks, and construction of the fish transition structure within San Pedro Creek upstream of Calle Real. Costs for these

improvements are therefore also treated as project sunk costs and not listed in Table 8-10.⁹ Estimated costs for Project C are added to Project B costs and are listed in column (b) of Table 8-10. Additionally, the project will entail annual O&M costs that will be paid for by the District. O&M costs are expected to commence in 2016 and average \$13,200 per year.

⁹ Caltrans has stated to the District that replacement of the Calle Real and State Highway 101 culverts will proceed regardless of whether the Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project is implemented. However, the flood protection benefits can be realized only if both projects are implemented.

Table 8-10 (PSP Table 16) Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project Project Annual Costs (2012 Dollars)										
	Initial Costs Grand Total Cost from Table 6 (row (i), column (d))	Adjusted Grand Total Cost ⁽¹⁾	Annual Costs ⁽²⁾						Discounting Calculations	
			Admin	Operation	Maintenance	Replacement	Other	Total Costs (a) +...+ (g)	Discount Factor (Capital) Present Value Coeff (O&M)	Discounted Project Costs (h) x (i)
Year	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)	(i)	(j)
2012	\$148,999	-\$148,999						\$0	1.000	\$0
2013	\$273,568	\$35,373						\$308,941	0.943	\$291,454
2014	\$4,801,135	\$1,016,863						\$5,817,998	0.890	\$5,177,998
2016-2090					\$13,200			\$13,200	13.817	\$182,380
Total Present Value of Discounted Costs (Sum of Column (j))										\$5,651,832
Transfer to Table 17, column (c), Proposal Benefits and Costs Summaries										
Comments: Project costs expended in 2012 are sunk costs and therefore excluded from calculation of economic costs. Project costs paid by Caltrans for the expansion of the US 101 San Pedro Creek culvert are also sunk. Estimated costs for Project C added to column (b). Annual maintenance of Las Vegas and San Pedro Creek culverts and channels will be paid by the Santa Barbara Flood Control District, which has estimated an annual cost of \$13,200 for this work. Maintenance costs are assumed to commence in 2016 and are counted over the useful life of the project. The present value coefficient for annual maintenance costs is based on a 6% discount rate, 75-year useful project life, and maintenance costs commencing in 2016.										

Proposal Benefits and Costs Summary

Project benefits and costs are summarized in **Table 8-11**. Present value of economic benefits total to \$8.6 million. Present value of economic costs total to \$5.7 million. Net present value of the project is \$2.9 million. The project benefit-cost ratio is 1.5:1.

Table 8-11 (PSP Table 17)						
Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project						
Proposal Benefits and Costs Summary						
(2012 Dollars)						
Project	Project Proponent	Total Present Value Project Costs ⁽¹⁾	Total Present Value Project Benefits			From Section D2 – Briefly describe the main Non-monetized benefits
			From Section D2 – Flood Damage Reduction ⁽²⁾	From Section D3 – Monetized ⁽³⁾	Total	
(a)	(b)	(c)	(d)	(e)	(f) = (d) + (e)	(g)
Las Vegas and San Pedro Creeks Union Pacific Railroad Bridge Replacement Project	Santa Barbara County Flood Control District	\$5,651,832	\$8,593,970	\$34,175	\$8,628,145	

Non-Monetized Benefit Analysis

Project non-monetized benefits are summarized in **Table 8-12**.

Table 8-12 (PSP Table 13) Non-monetized Benefits Checklist		
No.	Question	Enter "Yes", "No" or "Neg"
	Community/Social Benefits Will the proposal	
1	Provide education or technology benefits?	No
	The project does not provide education and technology benefits.	
2	Provide social recreation or access benefits?	No
	The project does not provide social recreation or access benefits.	
3	Help avoid, reduce or resolve various public water resources conflicts?	Yes
	The project helps with flood control and will reduce flooding damages during storm events.	
4	Promote social health and safety?	Yes
	The project increase public safety and reduces flooding damages.	
5	Have other social benefits?	No
	Environmental Stewardship Benefits: Will the proposal	
6	Benefit wildlife or habitat in ways that were not quantified in Attachment 7?	Yes
	The project increases the riparian habitat.	
7	Improve water quality in ways that were not quantified in Attachment 7?	No
8	Reduce net emissions in ways that were not quantified in Attachment 7?	No
	The project does not reduce emissions.	
9	Provide other environmental stewardship benefits, other than those claimed in Sections D1, D3 or D4?	No

Table 8-12 (PSP Table 13) Non-monetized Benefits Checklist		
No.	Question	Enter "Yes", "No" or "Neg"
	Sustainability Benefits: Will the proposal	
10	Improve the overall, long-term management of California groundwater resources?	No
	The project does not improve groundwater resources.	
11	Reduce demand for net diversions for the regions from the Delta?	No
12	Provide a long-term solution in place of a short-term one?	Yes
	The project is a flood control management with a permanent solution.	
13	Reduce water consumption on a permanent basis?	No
14	Promote energy savings or replace fossil fuel based energy sources with renewable energy and resources?	No
	The project does not promote energy savings.	
15	Improve water supply reliability in ways not quantified in Attachment 7?	No
	The project does not improve water supply reliability.	
16	Other (If the above listed categories do not apply, provide non-monetized benefit description)?	No

Exhibit 8-1

Caltrans Letter to PWF (April 2012)

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DEPARTMENT OF TRANSPORTATION

50 HIGUERA STREET
SAN LUIS OBISPO, CA 93401-5415
PHONE (805) 549-3101
FAX (805) 549-3329
TTY 711
<http://www.dot.ca.gov/dist05/>



*Flex your power!
Be energy efficient!*

April 4, 2012

Thomas D. Fayram
Deputy Public Works Director
Water Resources Division
123 East Anapamu Street
Santa Barbara CA 93101

Dear Mr. Fayram:

GOLETA DRAINAGE UPGRADES PROJECT

Thank you for meeting with the California Department of Transportation (Caltrans) on Thursday March 29, 2012, to discuss our partnership project and explore further avenues of cooperation. The detailed components of Project A (Caltrans), Project A Interim (Caltrans), Project B (County Flood Control) and Project C (County Flood Control) are described in detail within the Environmental Document and Project Report.

Of specific concern at this time, is the energy dissipation structure that will be installed upstream of Calle Real on San Pedro Creek. This feature is an element of Project B as described in the Environmental Document and Project Report.

Based on our discussion, it was agreed that the County will proceed with the final design, obtain permits, and develop the construction contract documents for Project B. During this time, Caltrans will be finalizing the contract documents for Project A, and we anticipate advertising for construction in September 2013. Since both Projects A and B physically connect to one another and may overlap during construction, it is advisable for the County and Caltrans to meet again so project coordination can be further defined. The goal of this collaboration is to eliminate as much redundant construction contract work for the County and Caltrans as possible.

Optimally, if Project A Interim can be rendered unnecessary, Caltrans will consider accepting responsibility for implementing specific items of construction contract work associated with the energy dissipation structure upstream of Calle Real on San Pedro Creek. Caltrans believes that this cooperation will reduce total project cost and result in the best stewardship of public resources.

Thomas D. Fayram
April 4, 2012
Page 2

We look forward to our continued cooperation and coordination as these important projects proceed to completion.

Sincerely,

A handwritten signature in black ink, appearing to read 'Steve Price', written over a horizontal line.

STEVE PRICE
Deputy District Director
Maintenance and Operations

- c. Tim Gubbins-Caltrans Deputy Director Program Project Management
- Jon Frye-County Flood Control District
- Maureen Spencer-County Flood Control District
- Gerald Comati-COM3 Consulting

Exhibit 8-2

Caltrans 2012 SHOPP Project List

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2012 SHOPP Project List

Santa Barbara

(\$1,000)

Route	Post Miles	Location/Description	PPNO	EA	EFIS	Program Code	Prog Year	Capital		Support	
<u>MAJOR DAMAGE RESTORATION</u>											
101	22.3/23.0	Near Goleta, from Fairview Avenue to Los Carneros Road. Upgrade drainage culverts .	0707	OG070	0500000055	201.150	2012/13	RW: 76	PA&ED: 2,537	Const: 17,169	PS&E: 1,093
											RW: 119
											Con: 2,693
								Subtotal:	17,245		6,442
								Total (Capital + Support):		\$23,687	
<hr/>											
<u>COLLISION REDUCTION</u>											
101	45.6/46.4	In Gaviota, from 0.7 mile north of Beckstead Overcrossing to 0.8 mile south of Gaviota Tunnel. Improve roadway alignment.	2292	OT630	0500020029	201.010	2015/16	RW: 551	PA&ED: 1,509	Const: 6,355	PS&E: 1,401
											RW: 52
											Con: 1,284
								Subtotal:	6,906		4,246
								Total (Capital + Support):		\$11,152	
<hr/>											
154	R7.8/R8.3	Near Santa Ynez, at the intersection with State Route 246. Construct rural roundabout.	2267	OT000	0500000471	201.010	2013/14	RW: 65	PA&ED: 250	Const: 3,421	PS&E: 851
											RW: 209
											Con: 843
								Subtotal:	3,486		2,153
								Total (Capital + Support):		\$5,639	
<hr/>											
246	33.2/33.5	In Santa Ynez, from east of Edison Street to east of Meadowvale Lane. Construct left-turn channelization.	2308	OT970	0500020226	201.010	2013/14	RW: 54	PA&ED: 0	Const: 815	PS&E: 280
											RW: 56
											Con: 240
								Subtotal:	869		576
								Total (Capital + Support):		\$1,445	

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