



**County of Ventura Watershed Protection District Proposition 1E Grant
Application South Oxnard Stormwater Flood Management Project
Attachment 7: Technical Justification**

Technical Justification

This attachment provides information regarding the physical benefits that will be derived from the J Street Drain Project. Narrative descriptions of the expected flood protection benefits of the project are presented in this attachment. Quantitative analyses are provided to monetize the benefits in present value terms. Additionally, descriptions of the non-monetized benefits to be realized are presented.

	Present Value
Costs	\$19,000,000
Monetizable Benefits	
Flood Damage Reduction	\$21,143,477
Qualitative Benefit or Cost	
Trash Reduction	Likely to increase net benefits moderately
Water Quality	Likely to increase net benefits significantly
Recreational	Likely to increase net benefits significantly
Roads & Utilities	Likely to increase net benefits moderately
Ecosystem Restoration	Likely to increase net benefits significantly

The existing channel’s limited capacity and backwater affects several street crossings and the adjacent neighborhood. The most recent flood event occurred January 18, 2010. The Oxnard Wastewater Treatment Plant, located at 6001 S. Perkins Road, was in danger of losing power and may have been forced to discharge untreated sewage into the Ormond Beach Lagoon, beach, ocean and surrounding lands. The proposed project reduces the risk of flood damage by removing and replacing the existing trapezoidal channel with a deeper and wider reinforced concrete facility and implementing a Beach Elevation Management Plan. Concrete lining reduces hydraulic roughness and flow irregularities and increases capacity.

A 100-yr event is projected to cause flooding along 2.2 miles of J Street and damage single family, multi-family, commercial, industrial structures, and public infrastructure. The project will provide benefits over an assumed 50-year project lifetime. Benefits will begin accruing once the Phase 1 and 2 facilities are constructed from 2013 through 2016. Administration and Operations and Maintenance costs to maintain the proposed project throughout the project lifetime are the same as the without project condition.



Event Damage under Without and With Project Conditions

Flood damages for the 10-year, 25-year, 50-year, and 100-year flood recurrences/probabilities under without-Project and with-Project conditions were estimated and are given in Table 7-1. The District’s standard is 100-year protection. The 10-year, 25-year and 50-year damages are projections based on the calculated 100-year event. The expected prevented annual damage by the Project is estimated to be approximately \$1,708,794. Table 7-3 also gives the estimated present value of future benefits, which is the expected prevented annual damage brought forward to a present worth at an assumed discount rate (i.e., 6%) over the Project lifetime (i.e., 50 years). The estimated present worth of future benefits of the Project is approximately \$21,143,477.

Table 7-1 Flood Damage Reduction

Hydraulic Event	Event Probability	Without-Project			With-Project			Event Benefit
		Damage to Buildings	Damage to Contents	Total Damages	Damage to Buildings	Damage to Contents	Total Damages	
10-yr	0.100	0	0	0	0	0	0	0
25-yr	0.020	15,165,870	6,186,534	21,352,404	0	0	0	21,352,404
50-yr	0.010	18,243,003	7,441,773	25,684,776	0	0	0	25,684,776
100-yr	0.002	21,979,522	8,965,992	31,295,106	0	0	0	31,295,106

Diagram 7-2 Loss Probability Curve

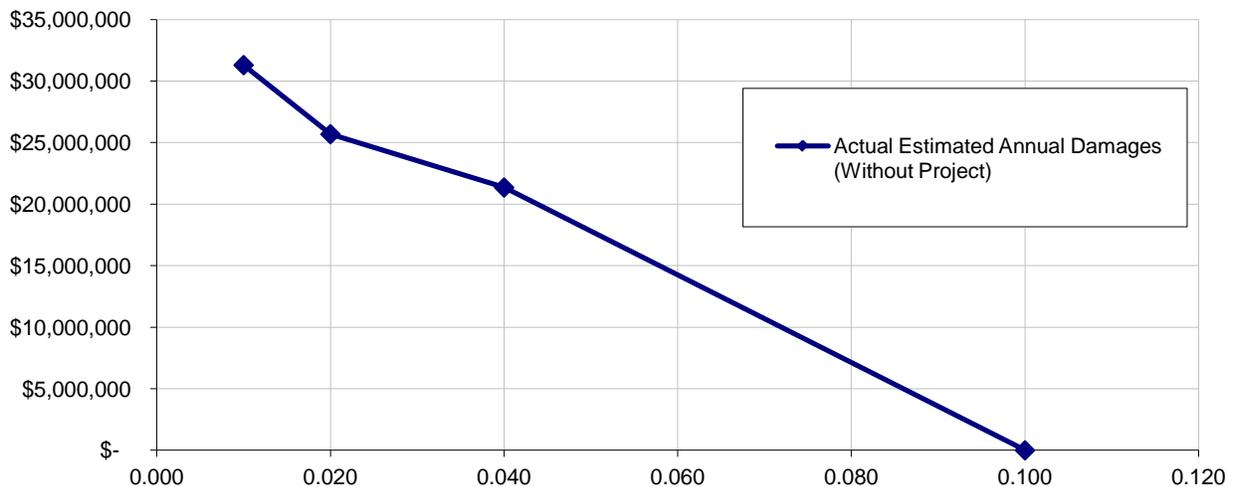




Table 7-3 Flood Damage Reduction

Year	Annual Cost without Project	Annual Cost With Project	Change resulting from Project	Disc. Factor	Discount Costs Total x Disc. Factor
2013				1	
2014				0.94	
2015				0.88	
2016				0.83	
2017	1,708,794	0	1,708,794	0.78	1,332,859.32
2018	1,708,794	0	1,708,794	0.73	1,247,419.62
2019	1,708,794	0	1,708,794	0.69	1,179,067.86
2020	1,708,794	0	1,708,794	0.65	1,110,716.10
2021	1,708,794	0	1,708,794	0.61	1,042,364.34
2022	1,708,794	0	1,708,794	0.57	974,012.58
2023	1,708,794	0	1,708,794	0.54	922,748.76
2024	1,708,794	0	1,708,794	0.51	871,484.94
2025	1,708,794	0	1,708,794	0.48	820,221.12
2026	1,708,794	0	1,708,794	0.45	768,957.30
2027	1,708,794	0	1,708,794	0.42	717,693.48
2028	1,708,794	0	1,708,794	0.4	683,517.60
2029	1,708,794	0	1,708,794	0.37	632,253.78
2030	1,708,794	0	1,708,794	0.35	598,077.90
2031	1,708,794	0	1,708,794	0.33	563,902.02
2032	1,708,794	0	1,708,794	0.31	529,726.14
2033	1,708,794	0	1,708,794	0.29	495,550.26
2034	1,708,794	0	1,708,794	0.27	461,374.38
2035	1,708,794	0	1,708,794	0.26	444,286.44
2036	1,708,794	0	1,708,794	0.24	410,110.56
2037	1,708,794	0	1,708,794	0.23	393,022.62
2038	1,708,794	0	1,708,794	0.21	358,846.74
2039	1,708,794	0	1,708,794	0.2	341,758.80
2040	1,708,794	0	1,708,794	0.19	324,670.86
2041	1,708,794	0	1,708,794	0.18	307,582.92
2042	1,708,794	0	1,708,794	0.17	290,494.98
2043	1,708,794	0	1,708,794	0.16	273,407.04
2044	1,708,794	0	1,708,794	0.15	256,319.10
2045	1,708,794	0	1,708,794	0.14	239,231.16
2046	1,708,794	0	1,708,794	0.13	222,143.22
2047	1,708,794	0	1,708,794	0.12	205,055.28



2048	1,708,794	0	1,708,794	0.11	187,967.34
2049	1,708,794	0	1,708,794	0.11	187,967.34
2050	1,708,794	0	1,708,794	0.1	170,879.40
2051	1,708,794	0	1,708,794	0.1	170,879.40
2052	1,708,794	0	1,708,794	0.09	153,791.46
2053	1,708,794	0	1,708,794	0.08	136,703.52
2054	1,708,794	0	1,708,794	0.08	136,703.52
2055	1,708,794	0	1,708,794	0.07	119,615.58
2056	1,708,794	0	1,708,794	0.07	119,615.58
2057	1,708,794	0	1,708,794	0.07	119,615.58
2058	1,708,794	0	1,708,794	0.06	102,527.64
2059	1,708,794	0	1,708,794	0.06	102,527.64
2060	1,708,794	0	1,708,794	0.05	85,439.70
2061	1,708,794	0	1,708,794	0.05	85,439.70
2062	1,708,794	0	1,708,794	0.04	74,047.74
2063	1,708,794	0	1,708,794	0.04	65,503.77
2064	1,708,794	0	1,708,794	0.03	56,959.80
2065	1,708,794	0	1,708,794	0.03	48,415.83
Total Present Value of Discounting Benefits over Project Life					21,143,477.76

Local, Statewide and Regional Benefits

The flood damage reduction will provide local benefits by providing improved flood protection to areas below Pleasant Valley Road along J Street. The beneficiaries of improved flood protection are the residents, businesses, property owners, and public agencies in the cities of Oxnard and Port Hueneme.

The Flood Damage Reduction Project will provide regional benefits by avoiding impacts of flooding on businesses and the Oxnard Wastewater Treatment Plant that employ people from surrounding neighborhoods. Over 225,000 people rely on wastewater service from the City of Oxnard.

The Flood Damage Reduction Project can provide statewide benefits by reducing reliance on the State disaster relief funds.

Other Flood Damage Reduction Benefits

Trash Reduction

The project includes installation of a boom to reduce the amount of trash conveyed from the J Street Drain watershed to the ecologically sensitive Ormond Lagoon and the Pacific Ocean. It is anticipated that approximately nine tons of trash would be removed annually from the boom at the upstream end of Phase 1. The following beneficial uses identified in the *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties* would be improved: Non-contact Water Recreation (REC-2), Warm Freshwater Habitat (WARM), Estuarine Habitat (EST), Wetland Habitat (WET), Marine Habitat (MAR),



Wildlife Habitat (WILD), Rare, Threatened, or Endangered Species (RARE), Migration of Aquatic Organisms (MIGR), and Spawning, Reproduction, and/or Early Development (SPWN).

Water Quality

The future half-mile linear park will provide water quality benefits by removing pollutants that otherwise enter the lagoon and affect the coastal habitat. The linear footprint of the project will provide an opportunity to construct bioswales to capture and infiltrate surface runoff. The linear park will replace 4.1 acres of previously impervious concrete and asphalt with native soil and vegetation.

Recreation

According to 2010 US Census block data, there are 59,103 people within a 1.5 mile buffer of the proposed linear park in the City of Oxnard and Port Hueneme. There is a direct use recreational value of the linear park. Covering the channel creates a more attractive and cohesive community that will stimulate urban redevelopment, provide health benefits and safer routes for bicyclists, pedestrians, and children going to school. The linear park will provide an enhancement to an industrial and poverty-stricken area and create a nexus to the future restored estuary at Ormond Beach.

Roads & Utilities

Flooding will continue to occur on J Street if the project is not implemented. There are avoided costs due to street flooding and protection of buried utilities from erosion. The new channel will offer protection from erosion damage. A 33" sewer trunk line owned by the City of Oxnard is located +/- 2ft from the channel wall and runs parallel the length of the project.

Ecosystem Restoration

Reduction of pollutants conveyed via the J Street Drain to the Ormond Lagoon and Pacific Ocean improves an increasingly rare coastal habitat that supports threatened and endangered species and is an important component of the Pacific Flyway.

The Ormond Lagoon is a coastal estuary that supports endangered tidewater goby, endangered California least tern, and threatened western snowy plover. The gobies breed in the lagoon, and the terns forage there during the nesting season. During periods of high storm runoff, the lagoon may breach and discharge to the ocean, permitting relocation of gobies from Ormond Lagoon to other estuaries such as those at the mouths of the Ventura and Santa Clara Rivers. This improves genetic diversity of the regional goby populations. Reducing trash to the lagoon improves the habitat of these species.

Reduction of trash conveyed to the Ormond Lagoon may improve endangered tidewater goby breeding success. Gobies create burrows in the lagoon substrate. Trash depositing on the lagoon bottom could obstruct new burrow creation, or could smother existing burrows. Furthermore, some birds may collect small bits of trash and mistakenly feed them to their young; collecting trash at the boom, thereby preventing its conveyance to the lagoon, may reduce the occurrence of this.



Benefits Timeline Description

As described in Attachment 5 (Schedule), construction of project will be completed and fully online by the end of summer 2016. So, the prevented flood damage benefit by the project will be received starting in the 2016-2017 rain season.

All facility components of the project are assumed to have a useful life of 50 years and, thus, benefits are calculated from the time the project comes online through 2065 (50 years after the project comes online).

South Oxnard Stormwater Flood Management Project
Attachment 1 of Proposition 1E Grant Proposal Attachment 7 (Technical Justification)
[Documents Referenced Below Contained on CD-DVD]

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