05-SCr-17-PM 0.74/2.2
20.10.201.335
EA 05-0Q600K
PI: 0500020290
September 2011

PROJECT STUDY REPORT

To

Request for **Programming in the 2012 SHOPP**

On Route 17, In Santa Cruz County, in Santa Cruz

Between 0.74 mi North of Route 1/17 Separation

And Sims Road.

APPROVAL RECOMMENDED:

STEVE DiGRAZIA
PROJECT MANAGER

LANCE GORMAN
DISTRICT MAINTENANCE ENGINEER

APPROVED:

RICHARD KRUMHOLZ
DISTRICT 5 DIRECTOR

DATE

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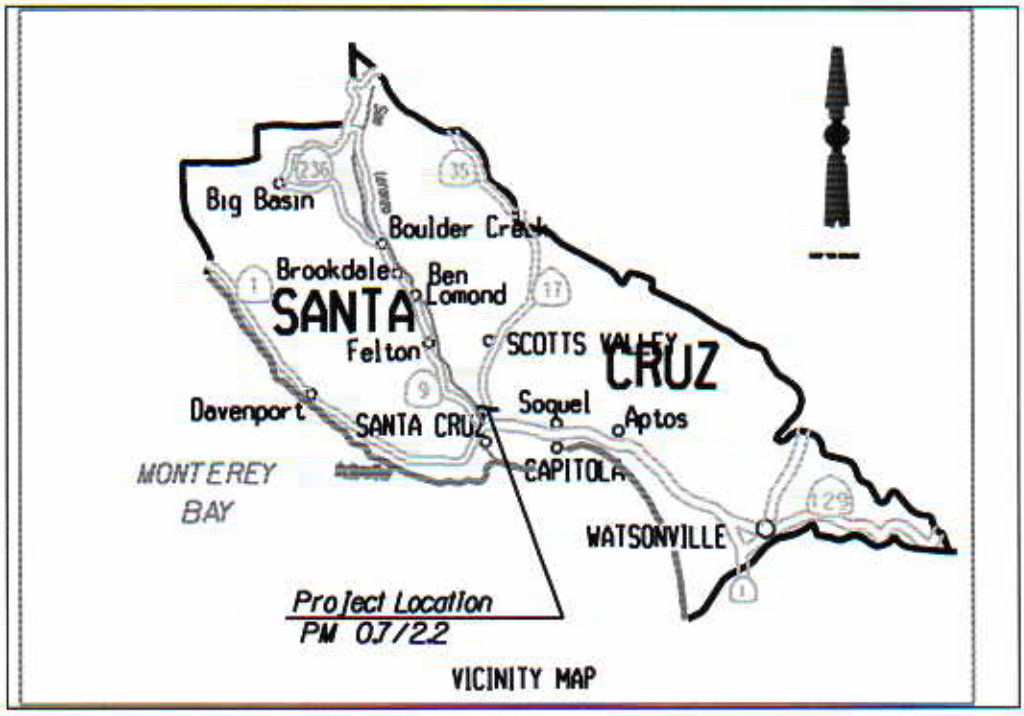

VICINITY MAP

On Route 17, In Santa Cruz County

Between 0.74 mile North of Route 1/17 Separation

And Sims Road.

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This Project Study Report has been prepared under the direction of the following Registered Engineer. The registered civil engineer attests to the technical information contained herein and the engineering data upon which recommendations, conclusions, and decisions are based.

REGISTERED CIVIL ENGINEER

9-16-2011
DATE

05-SCr-17-PM 0.74/2.2
20.10.201.335
EA 05-0Q600K
PI: 0500020290
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Table of Contents

Introduction	1
Background	2
Purpose and Need Statement	3
Deficiencies	3
Corridor and System Coordination	4
Alternatives	5
Community Involvement	7
Considerations Requiring Discussion	8
Environmental Determination/Document	8
Funding	9
Schedule	10
FHWA Coordination	10
District Contacts	10
Project Reviews	11
Attachments	11

1. INTRODUCTION

This project is located in Santa Cruz County on southbound State Route 17 between Postmile 0.74 and 2.20, which coincides with the Pasatiempo Overcrossing (O.C.) and Beulah Park Undercrossing (U.C.). State Route 17 (SR-17) joins Santa Cruz and State Route 1 with Highway 101, 280, 85 and 880 corridors in the Santa Clara Valley. The scope of work consists of reducing erosion and stabilizing the cut slopes of the southbound lanes. This project is one of several projects within Santa Cruz county identified by District 5 that proposes improvements in order for the Department to comply with the State NPDES permit.

This project is categorized as a Tier III and Tier IV project under the 201.335 SHOPP program that is proposing to meet statewide stormwater permit compliance and location specific stormwater permit requirements. For this project, there is a regulatory order from the Central Coast Regional Water Quality Control Board, CCRWQCB, called a Total Maximum Daily Load (TMDL) that was set in 2003. This sediment/siltation TMDL sets a pollutant (sediment) load reduction for all waters in the San Lorenzo River watershed. Caltrans is a named stakeholder in this TMDL and Caltrans (District 5) is required to comply with this TMDL. Failure to do so will result in regulatory legal action that will force Caltrans to address these location specific requirements and TMDLs. This project will directly minimize sediment loading to Carbonara Creek (which is in the San Lorenzo River watershed) from the State R/W.

This is a Category 5 project funded from the SHOPP Storm Water Mandates 20.10.201.335, in the 2015/2016 fiscal year.

See the cost estimate for specific work items included in this project.

Project Limits (Dist., Co., Rte., PM)	05, SCr, 17, PM0.74/2.2
Number of Alternatives:	3
Alternative Recommended for Programming:	1
Programmed or Proposed Capital Construction Costs	$10,197,000
Programmed or Proposal Capital Right of Way Costs:	$182,000
Funding Source:	20.10.201.335

Type of Facility (conventional, expressway, freeway):	Freeway
Number of Structures:	Retaining Walls (up to 4)
Anticipated Environmental Determination/Document	ND/MND
Legal Description	State Route 17 in Santa Cruz County
Project Category	SHOPP

2. BACKGROUND

There are numerous slopes within the project limits that are continually eroding and failing which results in sediment laden stormwater to discharge to the receiving water bodies.

Within the Santa Cruz 17 corridor, the north and south bound lanes are separated by a 22-foot median with concrete barrier. The southbound shoulder has shoulder widths up to 10-feet wide. The southbound embankment has slopes 0.75:1 at the highway elevation and flatter slopes as you get closer to the ridge line. The steeper slopes are devoid of vegetation where erosion has occurred. Ephemeral springs are reported to occur along the faces of these slopes following the rainy season. The slope is currently drained by a concrete valley gutter which follows a 10 to 15 foot wide terrace, incised by erosion gullies and slump failure scarps. This gutter, has been broken by slope movement and/or erosion, and mended by re-directing surface water directly down-slope of the break with two 18-inch diameter HDPE corrugated drain pipes on both ends. The corrugated pipes are fitted with energy attenuators and terminate on the inside edge of the AC dike along the shoulder near PM 1.29 and 1.35. The uninterrupted portions of the gutter on either end terminate in natural drainages at the north and south end of the project boundaries.

Directly above the project area, the Pasatiempo Golf Course spans across the ridge-line beyond the northern and southern limits of the proposed area for sediment reduction. The eastern boundaries of this course (side closest to Highway 17) are between 1000 and 2,500 feet up slope of Highway 17. Below the golf course are several residential communities, some residences with swimming pools up-slope of the project, and private roads. With exception to the golf course and a few properties, the slopes between the golf course and Highway 17 are densely populated with groves of native, redwood, coast live oak, tanbark oak, douglas fir, and the invasive acacia trees. Acacia dominate much of the slope, many of which have fallen, exposing loose soils beneath the humus layer.

The Project Initiation Form initially identified project limits from post mile 0.0 to 12.5. This project will occur between post miles 0.74 and 2.2. Implementation of additional

sediment control measures outside the limits of this project will require the initiation of new projects.

3. PURPOSE AND NEED STATEMENT

Need:

This project is needed to comply with the Central Coast Regional Water Quality Control Board's Region 3- regulatory order that establishes a Total Maximum Daily Load for the San Lorenzo River Watershed (including Carbonara Creek, Lompico Creek, and Shingle Mill Creek).

Purpose:

The purpose of the project is to reduce the amount of sediment deposited in Carbonaro Creek which is part of the San Lorenzo River watershed. The project will assist Caltrans in achieving the total maximum daily load assigned to the Department in the San Lorenzo River TMDL (set as San Lorenzo River 7041 ton/yr (Total WLA 306,139 ton/yr) Lompico Creek 219 ton/yr (Total WLA 9,542 ton/yr) Carbonara Creek 270 ton/yr (Total WLA 11,728 ton/yr) Shingle Mill Creek 20 ton/yr (Total WLA 857 ton/yr)). In addition, it will ensure that Department's stormwater discharges are in compliance with the Statewide NPDES permit.

4. DEFICIENCIES

This project will minimize the soil erosion and slope failures that have been occurring in the embankment of the southbound lanes on Route 17 over the last few years. Also, parts of the surface drainage system have collapsed and need to be replaced.

Traffic and Collision Data

TRAFFIC DATA									
SEGMENT INFORMATION		DESIGN HOURLY VOLUME (DHV)				AVERAGE DAILY TRAFFIC (ADT)			
FROM	TO	2009	2012	2022	2032	2009	2012	2022	2032
SCR-17 PM 0.74	PM 2.18	5700	5702	5708	5713	63,000	63,145	63,627	64,110

CURRENT INFORMATION				ADJUSTED GROWTH RATES YR 2000 - 2030	
POST MILES	SPLIT (%)	TRUCKS IN PEAK HOUR (%)	TRUCKS IN ADT (%)	PEAK HR GROWTH (VEH)	ADT GROWTH (VEH)
0.74 - 2.18	65	3	13.9	1	48

COLLISION DATA (APRIL 1, 2007 TO MARCH 31, 2011)									
Post Miles	TOTAL NUMBER OF ACCIDENTS	Number Persons Killed	Number Persons Injured	Actual Accident Rate			Average Accident Rate		
				F	F+I	Total	F	F+I	Total
0.74 TO 1.38	32	1	7	0.022	0.18	0.72	0.008	0.24	0.72

According to the latest 3-year available accident history for this segment, there were a total of 32 accidents with 1 person killed, and 7 injured. For a similar facility, the total Actual and Average accident rates (expressed as the number of accidents per million vehicle miles) were similar (0.72). However, this facility had a greater number of actual fatalities, 0.022 versus 0.008, than the average accident rate.

5. CORRIDOR AND SYSTEM COORDINATION

State Route 17 originates at SR 1 in the City of Santa Cruz in Santa Cruz County and extends northeast 12.55 miles to the Santa Cruz County/Santa Clara County line where it enters Caltrans District 4. The route continues for 13.94 miles in Santa Clara County where it transitions to a six-lane urban freeway before continuing as I-880 from the junction of I-280 and I-880 in the City of San Jose.

The largest component of weekday traffic on the District 5 portion of Route 17 is regional traffic, mainly commuters traveling from Santa Cruz County residences to job sites in Santa Clara, Alameda, Contra Costa and San Mateo Counties. On weekends and summer weekday off-hours, Santa Cruz County becomes the attractor for regional and interregional recreational and tourist trips from Santa Clara County and beyond. The highway also carries local and regional traffic including commuter traffic generated in the cities of Santa Cruz and Scotts Valley, the community of Pasatiempo, and other unincorporated areas.

The high traffic volumes, rugged topography, roadway geometrics, and the environmental sensitivity of the Route 17 corridor present challenges for the District's

transportation planners, project managers, construction and maintenance crews. Numerous projects to improve drainage, add railing, and provide additional warning signage have been completed in the past decade.

State Route 17 is an important corridor linking coastal and inland activity centers. In recognition of its strategic importance, Route 17 was designated a High Emphasis Route on the Interregional Road System (IRRS). The route serves as the primary interregional commuter route between residences in the City of Santa Cruz and nearby communities and job centers in Santa Clara, Alameda, Contra Costa, and San Mateo Counties. It is also the route of choice between the Santa Clara Valley and popular recreational destinations in Santa Cruz. Recreational travel peaks happen during summer weekends.

6. ALTERNATIVES

Several remediation alternatives exist for sediment reduction, all of which include drainage improvement, tree maintenance, and erosion control. Alternatives include drainage, biotechnical soil stabilization techniques, extensive erosion control measures, earthwork, horizontal drains, retaining walls, and tree maintenance or no improvements. Two alternatives will remove the concrete valley gutter and construct a biotechnical erosion control system. Both alternatives (except the no-build option) will require Temporary Construction Easements (TCE).

Alternative 1

To displace soils for buttressing locally over-steepened and recessed faces at highway elevation, a retaining wall with soil nails (along most of the length of the project, approximately 1800' long and 20' high) will be used both as a barrier to the influx of sediment migration from erosion upslope and/or support for slopes which have failed or are susceptible to failure. The selection of retaining wall type and the design will consider drainage and access for maintenance staff, for removal of sediment accumulation behind the wall. The ultimate length, height, and location of the wall would be determined from site specific characteristics, including ground and surface water conditions, anticipated sediment volumes, and topography. In the Project Report stage of this project, an Advance Planning Study (APS) will be requested from the Headquarters (HQ) Division of Structures.

Removal of the existing concrete valley gutter which follows the 15-foot wide terrace would be replaced with a slope interceptor drain (modified bio-retention basin) on the terrace to retain upstream flows. Construction of this will require the removal of

most of the existing vegetation on the lower slope (acacia, tan bark coast live oak, coast redwood, and douglas fir trees).

Additional biotechnical soil stabilization techniques and extensive erosion control measures would be implemented. Biotechnical soil stabilization techniques are commonly defined as practices that use both vegetation and structural components, including the use of geotextiles for soil reinforcement as well as utilizing strategic planting or native species including grasses, shrubs, and trees, through seeding, planting, and/or staking of live cuttings, with reinforcement by use of geotextiles, mulch, live gabions and rockeries. Both the use of plants and other materials such as rock and geotextiles may be used to construct drainage systems to intercept both surface and subsurface water flow. Because of the anticipated high volumes of surface and subsurface water flow, biotechnical drainage design will be augmented with slope-interceptor drains, installed in natural or constructed depressions (swales) for capture of surface flow.

Extensive erosion control measure and best management practices such as polymer stabilized fiber matrix, fiber rolls, compost blanket and biodegradable erosion control netting will be implemented during construction to control storm water discharges and provide permanent erosion control to all disturbed areas. In addition, extensive tree maintenance, namely lowering or removing of leaning trees particularly at the top of the cut slope and adjacent drainage systems would be implemented.

Horizontal drain (H-Drain) would serve as an additional drainage system for augmenting removal of subsurface water flow along the cutslope. Reduction of subsurface flow through the local formation material would both diminish saturation potential of the loose overlying soils, and reduce spring flow along the steep faces at highway elevation, which result in undercutting and retreat of the cutslope face. The H-drains would be placed strategically, in areas where existing spring activity occurs, and/or erosion is most problematic. The H-drains would be connected directly to the existing drainage inlets (DIs) along the highway. The existing DIs will require modification to accommodate higher volumes of water during storm events.

To account for the tree maintenance (thinning, topping and removing) of invasive and native vegetation, biological and visual mitigation/replacement planting and irrigation work including a three-year plant establishment and possible long term monitoring, period will be included. The planting palette would consist of natives, which can be weaned off irrigation as they mature.

The estimated cost for this alternative is $9,060,000.

Alternative 2

A combination alternative would be considered to address location-specific treatment needs. This would include approximately 3 retaining walls to be constructed at each severe wash-out location, or 2 longer retaining walls to be placed at two of the wash-out locations each along with extensive biotechnical soil stabilization techniques.

This alternative, as stated earlier, would be combined with the removal of the concrete valley gutter, the construction of the slope interceptor drain, additional locations and different types of biotechnical soil stabilization techniques, extensive erosion control measures, tree maintenance work (thinning, removing and topping), construction of drainage inlets and down drains, and biological and visual plant mitigation. Additional biotechnical soil stabilization techniques such as vegetated gabions, and vegetated geo berm toe walls may need to be considered in this alternative.

A bio-retention basin would be constructed to retain upstream flows. Construction of this retention basin will require the relocation/removal of existing acacia, tan bark oak, and Douglas fir trees. A drainage system that may include new drainage inlets (DIs) and downdrains would need to be constructed.

The estimated cost for this alternative is $8,090,000.

Alternative 3

The no-build alternative proposes no improvements. This alternative is not a viable alternative because Caltrans is a stakeholder in the TMDL regulation, and is required to reduce sedimentation on the highway adjacent to protected drainages during storm events.

7. COMMUNITY INVOLVEMENT

Any proposed construction on State Route 17 would consider concerns of affected surrounding communities and users of the route not limited to private residences, schools, businesses. Typically involvement is through Public Outreach in consequent stages of this project.

8. CONSIDERATIONS REQUIRING DISCUSSION

Right of Way

Construction easements will be required. To determine the precise right of way requirements, detailed design development is needed which can occur during the Project Report phase. No utility relocation is anticipated. Potholing for utilities will be done as part of the construction contract. No permanent R/W parcels are anticipated. No mitigation parcels are anticipated. A R/W Data Sheet is attached.

Constructibility Review

A constructability review was not completed during this phase as members of the PDT including Maintenance have determined that the project will utilize standard and uncomplicated construction methods. During the PA&ED phase of the project, a constructability review will be conducted as the preferred alternative will have been chosen at that time.

Risk Management Plan

A risk management plan has been prepared. See Attachment J. The primary risk is the possibility of a schedule delay associated with a project studies component and a right of way (ROW) acquisition duration critical path. The 24 month duration for the project studies component is based on the assumption that a Mitigated Negative Declaration will be required for CEQA. Since nine temporary construction easements are required, the acquisition duration was established to be as long as possible considering that project delivery must occur no later than the fourth quarter of the last year of the 2012 SHOPP program. This resulted in a duration of 20 months for ROW acquisition. This may not be adequate to complete acquisitions. If the project can achieve environmental certification in a period shorter than 24 months, additional duration can be added to ROW acquisitions if needed. If this is not possible, a schedule delay will result requiring the preparation of a Progam Change Request. If significant community involvement is encountered, a schedule delay may result.

A separate landscape contract may need to be split out from this project due to the anticipated length of plant establishment period and construction cost of landscape work. If this occurs, a review of the project support costs will be necessary and a revision of support costs may be required .

9. ENVIRONMENTAL DETERMINATION/DOCUMENT

A Preliminary Environmental Analysis Report (PEAR) was prepared on September 7, 2011 (See Attachment). The proposed project will have minimal economic, social, and environmental significance and therefore is a Project Development Category 5 project. It is anticipated that the project will be Negative Declaration/Mitigated Negative Declaration for the California Environmental Quality Act (CEQA)and Categorical Exclusion for the National Environmental Policy Act (NEPA). A mitigated Negative Declaration may be required due to visual impacts.

10. FUNDING

10A. CAPITAL SUPPORT ESTIMATE FOR THE PROGRAMMABLE ALTERNATIVE IN THE 2012 SHOPP

CAPITAL AND SUPPORT COST SUMMARY

PROJECT COST COMPONENT	Fiscal Years				TOTALS
	2012/2013	2013/2014	2014/2015	2015/2016	
R/W CAPITAL			$182		$182
CONST. CAPITAL				$10,197	$10,197
PA & ED	$507				$507
PS & E			$1,005		$1,005
R/W SUPPORT	$135				$135
CONST. SUPPORT				$738	$738
TOTAL	$642	$0	$1,187	$10,935	$12,764

NOTE: All costs are in $1000. Right of Way Capital costs as shown are escalated. Support Costs are escalated at 3% per year. Support Categories are the same as those indentified by SB 45. Construction Capital is escalated at 3% per year.
Capital to Support Cost Ratio: 24%

11. SCHEDULE

HQ Milestones	Delivery Date (Month, Day, Year)
Begin Design	7/1/2012
Begin Environmental	10/1/2012
PA & ED	7/1/2014
Regular Right of Way	8/8/2014
Project PS&E	12/1/2015
Right of Way Certification	3/24/2016
Ready to List	4/1/2016
Approve Contract	8/1/2016
Contract Acceptance	8/8/2017
End Project	7/2/2018

12. FHWA COORDINATION

Per Joint Stewardship and Oversight Agreement (2010), this project is eligible for federal-aid funding and is considered to be under current FHWA-Caltrans Stewardship Agreements.

13. DISTRICT CONTACTS

NAME	TITLE	CONTACT NUMBER
Martin Nishikawa	Senior Design Engineer	(559) 230-3122
Steve DiGrazia	Project Manager	(805) 549-3437
Marissa Nishikawa	NPDES/Storm Water Coordinator	(559) 243-8007
Manny T. Marcos	Project Engineer	(559) 230-3124
Pete Petrakis	Project Engineer	(559) 230-3117
Pete Riegelhuth	Storm Water Coordinator	(805) 549-3375
Matt C. Fowler	Environmental Manager	(805) 542-4603
Mike Jurasius	Geotechnical Engineer	(805) 549-3729
Katherine Brown	Landscape Architect	(805) 549-3195
Rod Tabarez	Right-Of-Way	(805) 549-3207
Tom Barnett	District Maintenance	(831) 476-1351
Tom Davis	Hydraulics	(559) 243-3500

14. PROJECT REVIEWS

Field Review	Martin Nishikawa	Date	8/16/2011
District Maintenance	Tom Barnett	Date	8/16/2011
HQ Design Coordinator	Christine Inouye	Date	9/1/2011

For SHOPP Projects:

District SHOPP Program Advisor	Marissa Nishikawa	Date	9-7-11
HQ SHOPP Program Advisor	Jagjiwan Grewal	Date	9-7-11

ATTACHMENTS:

Attachment A	Alternative 1 7-Page Estimate
Attachment B	Alternative 2 7-Page Estimate
Attachment C	Project Title Sheet
Attachment D	Alternative 1 Layout, Typical, Slope Interceptor Drain
Attachment E	Alternative 2 Layout, Typical, Slope Interceptor Drain
Attachment F	Storm Water Data Report (SWDR)
Attachment G	Preliminary Environmental Analysis Report (PEAR)
Attachment H	Right of Way Data Sheet
Attachment I	Traffic Management Data Sheet
Attachment J	Risk Management Plan

PLANNING COST ESTIMATE

Caltrans

Dist-Co-Rte: 05-SCr-17
PM: PM 0.74/1.38
EA: 05-0Q600k
Program Code: 20.10.201.335

PROJECT DESCRIPTION:

Limits: **On Route 17, In Santa Cruz County, in Santa Cruz between 0.74 miles East of Route 1/17 Separation and Beulah Park U.C.**

Proposed Improvement: (Scope of Work) **Construct approximately 1800 foot (20 height maximum) of Retaining Wall with return walls. A bio-retention basin, Horizontal Drains (H-Drains), an updated drainage system, and planting would be constructed. Much of the work will required Temporary Construction Easements (TCE).**

Alternative: 1

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	**Total of Sections 1 - 10 shown above**	$ 5,235,773
TOTAL STRUCTURES ITEMS		$ 3,672,000
	SUBTOTAL CONSTRUCTION COSTS	$ 8,907,773
TOTAL RIGHT OF WAY ITEMS (Not Escalated)		$ 149,249
	TOTAL PROJECT CAPITAL OUTLAY COSTS	$ 9,057,022

Reviewed by District Program Manager: Marissa C Nishka (Signature) 9-16-11 (Date)

Approved by Project Manager: Steve Ong (Signature) 9/16/11 (Date)

Phone Number: 805/549-3437

Form revised 12/01/09

ATTACHMENT A

PLANNING COST ESTIMATE

Dist-Co-Rte: 05-SCr-17
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I. ROADWAY ITEMS

Section 1 - Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation	500	CY	$7	$3,500	
Remove Downdrain	3	EA	$500	$1,500	
Remove Conc Valley Gutter	1,650	LF	$40	$66,000	
Clearing and Grubbing	4	AC	$20,000	$72,000	
Remove Tree	50	EA	$500	$25,000	
Prune Existing Plants-Invasive Weed Era	200	EA	$900	$180,000	
Type 60D Barrier (Included in Ret Wall C	900	LF	$0	$0	
Tubular Handrailing (Ret Wall)	120	LF	$25	$3,000	
MBGR (@ Begin Ret Wall, 4 locations)	80	LF	$200	$16,000	
				Subtotal Earthwork:	$367,000
Section 2 - Pavement Structural Section*					
PCC Pvmt ____ **Depth**	0	CY	$0	$0	
PCC Pvmt ____ **Depth**	0	CY	$0	$0	
Asphalt Concrete	0	Ton	$0	$0	
Lean Concrete Base	0	CY	$0	$0	
Cement-Treated Base	0	CY	$0	$0	
Aggregate Base	0	CY	$0	$0	
Treated Permeable Base	0	CY	$0	$0	
Aggregate Subbase	0	CY	$0	$0	
Pavement Reinforcing Fabric	0	SF	$0	$0	
Edge Drains	0	FT	$0	$0	
				$0	
				Subtotal Pavement Structural Section:	$0
Section 3 - Drainage					
Slope Interceptor Drain	1	LS	$700,000	$700,000	
Storm Drains	0	LS	$0	$0	
Pumping Plants	0	LS	$0	$0	
Project Drainage	1	LS	$650,000	$650,000	
				$0	
				Subtotal Drainage:	$1,350,000

* Reference sketch showing typical pavement structural section elements of the roadway. Include (if available) T.I., R-Value and date when tests were performed.

PLANNING COST ESTIMATE

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Section 4 - Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Environmental Compliance-Monitoring/M	1	LS	$90,000	$90,000	
Environmental Compliance-Contractor Si	1	LS	$170,000	$170,000	
Wall Stain	1	LS	$45,000	$45,000	
Equipment/Animal Passes	0	EA	$0	$0	
Water Pollution Control	1	LS	$150,000	$150,000	
Hazardous Waste Investigation and/or Mitigation Work	0	LS	$0	$0	
Environmental Compliance	0	LS	$0	$0	
Resident Engineer Office Space	0	LS	$0	$0	
	0	LS	$0	$0	
				Subtotal Specialty Items:	$455,000

Section 5 - Traffic Items					
Temporary K-Rail	1,800	LF	$25	$45,000	
Traffic Delineation Items	0	LS	$0	$0	
Traffic Signals	0	LS	$0	$0	
Overhead Sign Structures	0	EA	$0	$0	
Roadside Signs	0	EA	$0	$0	
Traffic Control Systems (130 days)	130	DAY	$750	$97,500	
Transportation Management Plan	0	LS	$0	$0	
Temporary Detection System	0	LS	$0	$0	
Staging	0	LS	$0	$0	
				$0	
				Subtotal Traffic Items:	$142,500

PLANNING COST ESTIMATE

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II. ROADSIDE ITEMS

Section 6 Planting and Irrigation	Quantity	Unit	Unit Price	Item Cost	Section Cost
Mitigation Planting	1	LS	$80,000	$80,000	
Temporary Irrigation	1	LS	$55,000	$55,000	
Plant Establishment	1	LS	$120,000	$120,000	
Relocate Existing Irrigation	0	LS	$0	$0	
Facilities	0	LS	$0	$0	
Irrigation Crossovers	0	LS	$0	$0	
				$0	
			Subtotal Planting and Irrigation Section:		$255,000

Section 7: Roadside Management and Safety Section	Quantity	Unit	Unit Price	Item Cost	Section Cost
Erosion Control	1	LS	$135,000	$135,000	
Slope Protection-Biotechnical Soil Stabil	1	LS	$1,200,000	$1,200,000	
Additional Erosion Control (Supplemental Wo	1	LS	$10,000	$10,000	
Additional Planting (Supplemental Work)	1	LS	$5,000	$5,000	
Damage Repair (Supplemantal Work)	1	LS	$15,000	$15,000	
Slope Protection	0	LS	$0	$0	
Side Slopes/Embankment Slopes	0	LS	$0	$0	
Maintenance Vehicle Pull outs					
Off-freeway Access (gates, stairways, etc.)					
Roadside Facilities (Vista Points, Transit, Park & Ride, etc)	0	LS	$0	$0	
Relocating roadsice facilities/features	0	LS	$0	$0	
				$0	
			Subtotal Roadside Management and Safety Section:		$1,365,000

TOTAL SECTIONS 1 thru 7 $3,934,500

NOTE:Extra lines are provided for items not listed; use additional lines as appropriate.

PLANNING COST ESTIMATE

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III. ROADWAY ADDITIONS

Section 8 - Minor Items

					Item Cost	Section Cost
Subtotal Sections 1 thru 7)	$3,934,500	x	0.05 (5 to 10%)	=	$196,725	
				TOTAL Minor Items:		$196,725

Section 9 - Roadway Mobilization

Subtotal Sections 1 thru 8)	$4,131,225	x	0.10 (10%)	=	$413,123	
				TOTAL Roadway Mobilization:		$413,123

Section 10 - Supplemental Work & Contingencies

Supplemental Work

Subtotal Sections 1 thru 8)	$4,131,225	x	0.05 (5 to 10%)	=	$206,561	

Contingencies

Subtotal Sections 1 thru 8)	$4,131,225	x	0.25 (**%)	=	$1,032,806	
				Supplemental Work & Contingencies:		$1,239,368
				TOTAL ROADWAY ADDITIONS Sections 8 thru 10:		$1,849,215
				TOTAL ROADWAY ITEMS:		$5,783,715
				(Subtotal Sections 1 thru 10)		

Estimate Prepared by: Manny T. Marcos (Print or Type Name) Phone: 559-230-3124 08/28/11 (Date)

Estimate Checked by: _____ (Print or Type Name) Phone: _____ 0/0/00 (Date)

****Use appropriate percentage per PDPM, Part 3 Chapter 20.**
http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm - pdpm

PLANNING COST ESTIMATE

Dist-Co-Rte: 05-SCr-17
PM: PM 0.74/1.38
EA: 05-0Q600k
Program Code: 20.10.201.335

II. STRUCTURE ITEMS

	STRUCTURE No. 1	No. 2	No. 3
Bridge Name			
Structure Type	Soil Nail Retaining Wall		
Wall Length (out to out) - (ft) - 4 WALLS 30' each	900		
Wall Heigh - (ft)	20' max, 15' avg	0	0
Total Area - ft^2	18,000	0	0
Footing Type (pile/spread)	0	0	0
Cost per ft^2 (incl. 10 % mobilization and 20 % contingency)	120	0	0
Total Cost for Structure	$2,160,000	$0	$0

SUBTOTAL STRUCTURES ITEMS **$2,160,000**
(Sum of Total Cost for Structures)

Railroad Related Costs (Not incl. in R/W Est)				$0
				$0

SUBTOTAL RAILROAD ITEMS **$0**

TOTAL STRUCTURES ITEMS **$2,160,000**
(Sum of Structures items plus Railroad Items)

COMMENTS:

Estimate Prepared by: Michael Downs (Print or Type Name) Phone: 916-227-9365 08/29/11 (Date)

(If appropriate, attach additional pages as backup)

PLANNING COST ESTIMATE

Dist-Co-Rte: 05-SCr-17
PM: PM 0.74/1.38
EA: 05-0Q600k
Program Code: 20.10.201.335

III. RIGHT OF WAY ITEMS

No. of years for Escalation = 0

	Current Values	Rate (%)	Escalation Factor		Escalated Values
A. Acquisition, including excess lands, damages to remainder(s) and Goodwill	$138,025	25%	5%	-	$167,770
B. Utility Relocation (State Share)	$0	25%	5%	-	$0
C. Relocation Assistance	$0	25%	5%	-	$0
D. Clearance/Demolition	$0	25%	5%	-	$0
E. Title and Escrow Fees	$11,224	25%	5%	-	$13,643
TOTAL RIGHT OF WAY ITEMS=**	$149,249				$181,413
					(Escalated Value)

Anticipated Date of Right of Way Certification: 0/0/00
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work

Right of Way Branch Cost Estimate for Work* $0

* This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items

COMMENTS:

Estimate Prepared by: _____ Phone: _____ 0/0/00
(Print or Type Name) (Date)

(If appropriate, attach additional pages and backup including Right of Way Data Sheet and Environmental Mitigation and Compliance Cost Estimate Sheet).

PLANNING COST ESTIMATE

Dist-Co-Rte: 05-SCr-17
PM: PM 0.74/1.38
EA: 05-0Q600k
Program Code: 20.10.201.335

PROJECT DESCRIPTION:

Limits: On Route 17, In Santa Cruz County, in Santa Cruz between 0.74 miles East of Route 1/17 Separation and Beulah Park U.C.

Proposed Improvement: (Scope of Work) This alternative would include approximately 4 retaining walls to be constructed at each severe wash-out locations, or 2 lengthier retaining walls. This would be combined with the existing concrete valley gutter, construction a slope interceptor drain, biotechnical soil stabilization techniques, erosion control measures, tree maintenance work (thinning, removing and topping), drainage inlets and down drains, and biological and visual plant mitigation. Biotechnical soil stabilization techniques such as vegetated gabions, and vegetated geo berms toe walls may need to be considered in this alternative.

Alternative: 2

SUMMARY OF PROJECT COST ESTIMATE

TOTAL ROADWAY ITEMS	Total of Sections 1 - 10 shown above	$ 5,783,715
TOTAL STRUCTURES ITEMS		$ 2,160,000
SUBTOTAL CONSTRUCTION COSTS		$ 7,943,715
TOTAL RIGHT OF WAY ITEMS (Not Escalated)		$ 149,249
TOTAL PROJECT CAPITAL OUTLAY COSTS		$ 8,092,964

Reviewed by District Program Manager: Marin L. Mahr (Signature) 9-16-11 (Date)

Approved by Project Manager: Steven DeYoung (Signature) 9/16/11 (Date)

Phone Number: 805-549-3437

Form revised 12/01/09

ATTACHMENT B

PLANNING COST ESTIMATE

Dist-Co-Rte: 05-SCr-17
PM: PM 0.74/1.38
EA: 05-0Q600k
Program Code: 20.10.201.335

I. ROADWAY ITEMS

Section 1 - Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
Roadway Excavation	1,000	CY	$7	$7,000	
Remove Downdrain	3	EA	$750	$2,250	
Remove Conc Valley Gutter	1,650	LF	$40	$66,000	
Clearing and Grubbing	4	AC	$20,000	$72,000	
Remove Tree	50	EA	$600	$30,000	
Prune Existing Plants-Invasive Weed	200	EA	$900	$180,000	
Type 60D Barrier (Included in Ret W	1,800	LF	$0	$0	
Tubular Handrailing (Ret Wall)	1,800	LF	$25	$45,000	
MBGR (@ Begin Ret Wall)	20	LF	$200	$4,000	
				Subtotal Earthwork:	$406,250

Section 2 - Pavement Structural Section*					
PCC Pvmt ____ **Depth**	0	CY	$0	$0	
PCC Pvmt ____ **Depth**	0	CY	$0	$0	
Asphalt Concrete	0	Ton	$0	$0	
Lean Concrete Base	0	CY	$0	$0	
Cement-Treated Base	0	CY	$0	$0	
Aggregate Base	0	CY	$0	$0	
Treated Permeable Base	0	CY	$0	$0	
Aggregate Subbase	0	CY	$0	$0	
Pavement Reinforcing Fabric	0	SF	$0	$0	
Edge Drains	0	FT	$0	$0	
				$0	
				Subtotal Pavement Structural Section:	$0

Section 3 - Drainage					
Slope Interceptor Drain	1	LS	$700,000	$700,000	
Drainage System	1	LS	$650,000	$650,000	
Pumping Plants	0	LS	$0	$0	
Project Drainage	0	LS	$0	$0	
				$0	
				Subtotal Drainage:	$1,350,000

* Reference sketch showing typical pavement structural section elements of the roadway. Include (if available) T.I., R-Value and date when tests were performed.

PLANNING COST ESTIMATE

Dist-Co-Rte: 05-SCr-17
PM: PM 0.74/1.38
EA: 05-0Q600k
Program Code: 20.10.201.335

Section 4 - Specialty Items	Quantity	Unit	Unit Price	Item Cost	Section Cost
Environmental Compliance-Monitorir	1	LS	$90,000	$90,000	
Environmental Compliance-Contract	1	LS	$170,000	$170,000	
Wall Stain	1	LS	$90,000	$90,000	
Equipment/Animal Passes	0	EA	$0	$0	
Walter Polution Control	1	LS	$150,000	$150,000	
Hazardous Waste Investigation and/or Mitigation Work	0	LS	$0	$0	
Environmental Compliance	0	LS	$0	$0	
Resident Engineer Office Space	0	LS	$0	$0	
	0	LS	$0	$0	
				Subtotal Specialty Items:	$500,000

Section 5 - Traffic Items					
Temporary K-Rail	1,800	LF	$25	$45,000	
Traffic Delineation Items	0	LS	$0	$0	
Traffic Signals	0	LS	$0	$0	
Overhead Sign Structures	0	EA	$0	$0	
Roadside Signs	0	EA	$0	$0	
Traffic Control Systems (130 days)	130	DAY	$500	$65,000	
Transportation Management Plan	0	LS	$0	$0	
Temporary Detection System	0	LS	$0	$0	
Staging	0	LS	$0	$0	
				$0	
				Subtotal Traffic Items:	$110,000

PLANNING COST ESTIMATE

Dist-Co-Rte: 05-SCr-17
PM: PM 0.74/1.38
EA: 05-0Q600k
Program Code: 20.10.201.335

II. ROADSIDE ITEMS

Section 6 Planting and Irrigation	Quantity	Unit	Unit Price	Item Cost	Section Cost
Mitigation Planting	1	LS	$150,000	$150,000	
Temporary Irrigation	1	LS	$80,000	$80,000	
Plant Establishment	1	LS	$120,000	$120,000	
Relocate Existing Irrigation	0	LS	$0	$0	
Facilities	0	LS	$0	$0	
Irrigation Crossovers	0	LS	$0	$0	
				$0	
			Subtotal Planting and Irrigation Section:		$350,000

Section 7: Roadside Management and Safety Section	Quantity	Unit	Unit Price	Item Cost	Section Cost
Erosion Control	1	LS	$180,000	$180,000	
Slope Protection-Biotechnical Soil St	1	LS	$650,000	$650,000	
Additional Erosion Control (Supplementa	1	LS	$5,000	$5,000	
Additional Planting (Supplemental W	1	LS	$3,000	$3,000	
Damage Repair (Supplemantal Work	1	LS	$7,500	$7,500	
Slope Protection	0	LS	$0	$0	
Side Slopes/Embankment Slopes	0	LS	$0	$0	
Maintenance Vehicle Pull outs					
Off-freeway Access (gates, stairways, etc.)					
Roadside Facilities (Vista Points, Transit, Park & Ride, etc)	0	LS	$0	$0	
Relocating roadsice facilities/features	0	LS	$0	$0	
				$0	
			Subtotal Roadside Management and Safety Section:		$845,500

TOTAL SECTIONS 1 thru 7 $3,561,750

NOTE:Extra lines are provided for items not listed; use additional lines as appropriate.

PLANNING COST ESTIMATE

Dist-Co-Rte: 05-SCr-17
PM: PM 0.74/1.38
EA: 05-0Q600k
Program Code: 20.10.201.335

III. ROADWAY ADDITIONS

Section 8 - Minor Items

				Item Cost	Section Cost
Subtotal Sections 1 thru 7)	$3,561,750	x	0.05 (5 to 10%)	= $178,088	

TOTAL Minor Items: $178,088

Section 9 - Roadway Mobilization

Subtotal Sections 1 thru 8)	$3,739,838	x	0.10 (10%)	= $373,984	

TOTAL Roadway Mobilization: $373,984

Section 10 - Supplemental Work & Contingencies

Supplemental Work

Subtotal Sections 1 thru 8)	$3,739,838	x	0.05 (5 to 10%)	= $186,992	

Contingencies

Subtotal Sections 1 thru 8)	$3,739,838	x	0.25 (**%)	= $934,959	

Supplemental Work & Contingencies: $1,121,951

TOTAL ROADWAY ADDITIONS Sections 8 thru 10: $1,674,023

TOTAL ROADWAY ITEMS: $5,235,773

(Subtotal Sections 1 thru 10)

Estimate Prepared by: Manny T. Marcos (Print or Type Name) Phone: 559-230-3124 08/28/11 (Date)

Estimate Checked by: _____ (Print or Type Name) Phone: _____ 0/0/00 (Date)

**Use appropriate percentage per PDPM, Part 3 Chapter 20.
http://www.dot.ca.gov/hq/oppd/pdpm/pdpmn.htm - pdpm

PLANNING COST ESTIMATE

Dist-Co-Rte: 05-SCr-17
PM: PM 0.74/1.38
EA: 05-0Q600k
Program Code: 20.10.201.335

II. STRUCTURE ITEMS

	STRUCTURE			
Bridge Name	No. 1	No. 2	No. 3	
Structure Type	Soil Nail Retaining Wall			
Wall Length (out to out) - (ft)	1,800			
Wall Heigh - (ft)	20' max, 15' avg	0	0	
Total Area - ft^2	30,600	0	0	
Footing Type (pile/spread)	0	0	0	
Cost per ft^2 (incl. 10 % mobilization and 20 % contingency)	120	0	0	
Total Cost for Structure	$3,672,000	$0	$0	

SUBTOTAL STRUCTURES ITEMS **$3,672,000**
(Sum of Total Cost for Structures)

Railroad Related Costs (Not incl. in R/W Est)				$0
				$0

SUBTOTAL RAILROAD ITEMS **$0**

TOTAL STRUCTURES ITEMS **$3,672,000**
(Sum of Structures items plus Railroad Items)

COMMENTS:

Estimate Prepared by: Michael Downs (Print or Type Name) Phone: 916-227-9365 08/29/11 (Date)

(If appropriate, attach additional pages as backup)

PLANNING COST ESTIMATE

Dist-Co-Rte: 05-SCr-17
PM: PM 0.74/1.38
EA: 05-0Q600k
Program Code: 20.10.201.335

III. RIGHT OF WAY ITEMS

No. of years for Escalation = 0

	Current Values 2,011	Rate (%)	Escalation Factor		Escalated Values (2015)
A. Acquisition, including excess lands, damages to remainder(s) and Goodwill	$138,025	25%	5%	-	$167,770
B. Utility Relocation (State Share)	$0	25%	5%	-	$0
C. Relocation Assistance	$0	25%	5%	-	$0
D. Clearance/Demolition	$0	25%	5%	-	$0
E. Title and Escrow Fees	$11,224	25%	5%	-	$13,643
TOTAL RIGHT OF WAY ITEMS=**	$149,249				$181,413
					(Escalated Value)

Anticipated Date of Right of Way Certification: 03/24/16
(Date to which Values are Escalated)

F. Construction Contract Work

Brief Description of Work

Right of Way Branch Cost Estimate for Work* $0

* This dollar amount is to be included in the Roadway and/or Structures Items of Work, as appropriate. Do not include in Right of Way Items

COMMENTS:

Estimate Prepared by: _____ Phone: _____ 0/0/00
(Print or Type Name) (Date)

(If appropriate, attach additional pages and backup including Right of Way Data Sheet and Environmental Mitigation and Compliance Cost Estimate Sheet).

PLANNING COST ESTIMATE

Dist-Co-Rte: 05-SCr-17
PM: PM 0.74/1.38
EA: 05-0Q600k
Program Code: 20.10.201.335

I. ROADWAY ITEMS

Section 1 - Earthwork	Quantity	Unit	Unit Price	Item Cost	Section Cost
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Remove Downdrain	3	EA	$750	$2,250	
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Tubular Handrailing (Ret Wall)	1,800	LF	$25	$45,000	
MBGR (@ Begin Ret Wall)	20	LF	$200	$4,000	
				Subtotal Earthwork:	$406,250
Section 2 - Pavement Structural Section*					
PCC Pvmt ____ **Depth**	0	CY	$0	$0	
PCC Pvmt ____ **Depth**	0	CY	$0	$0	
Asphalt Concrete	0	Ton	$0	$0	
Lean Concrete Base	0	CY	$0	$0	
Cement-Treated Base	0	CY	$0	$0	
Aggregate Base	0	CY	$0	$0	
Treated Permeable Base	0	CY	$0	$0	
Aggregate Subbase	0	CY	$0	$0	
Pavement Reinforcing Fabric	0	SF	$0	$0	
Edge Drains	0	FT	$0	$0	
				$0	
				Subtotal Pavement Structural Section:	$0
Section 3 - Drainage					
Slope Interceptor Drain	1	LS	$700,000	$700,000	
Drainage System	1	LS	$650,000	$650,000	
Pumping Plants	0	LS	$0	$0	
Project Drainage	0	LS	$0	$0	
				$0	
				Subtotal Drainage:	$1,350,000

* Reference sketch showing typical pavement structural section elements of the roadway. Include (if available) T.I., R-Value and date when tests were performed.

INDEX OF SHEETS

Sheet No.	Description
1	Title Sheet
2	Typical Cross Sections

STATE OF CALIFORNIA
DEPARTMENT OF TRANSPORTATION

PROJECT PLANS FOR CONSTRUCTION ON
STATE HIGHWAY

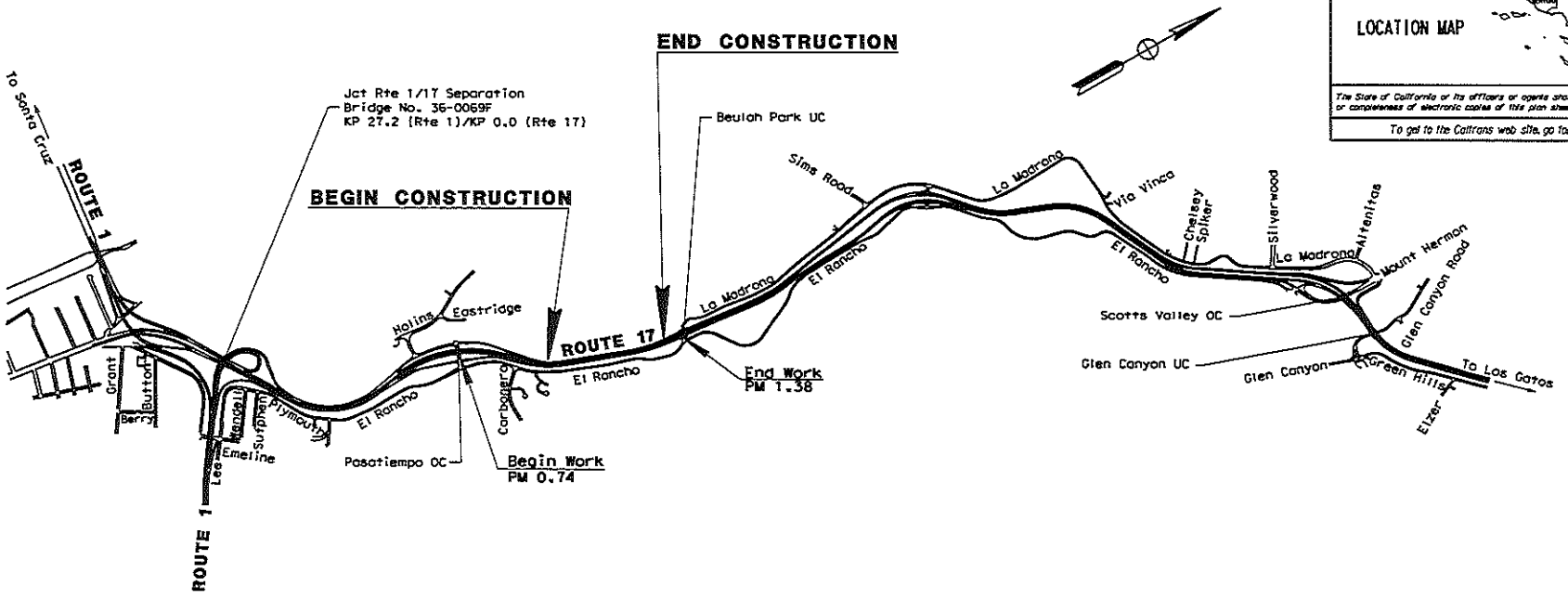
IN SANTA CRUZ COUNTY IN AND NEAR SANTA CRUZ
FROM PASATIEMPO OC (PM 0.74) TO BEULAH PARK UC (PM 1.38)

To be supplemented by Standard Plans dated May, 2006

DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO.	TOTAL SHEETS
05	SCr	17	0.74 / 1.38	1	--

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To get to the Caltrans web site, go to: http://www.dot.ca.gov



Project Engineer Date
Registered Civil Engineer

Plans Approval Date

REGISTERED PROFESSIONAL ENGINEER
CIVIL
STATE OF CALIFORNIA

The Contractor shall possess the class (or classes) of license as specified in the "Notice to Contractors."

NO SCALE

PROJECT ENGINEER	DIST	PROJECT MANAGER	DATE
P. Petrakis	05	D. Hessing	##/##

Contract No. 05-00600K

FORM DC-OE-93-PF (REV. 3/88)	RELATIVE BORDER SCALE IS IN MILLIMETERS (0 20 40 60 80)	USERNAME => RUSCH DGN FILE => MRQUEST	CU 05602	EA 00600K

LAST REVISION 07-16-11 DATE PLOTTED => ##/##/##

ATTACHMENT C

ATTACHMENT D

NOTES:

1. DIMENSIONS OF THE STRUCTURAL SECTIONS ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.

DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO	TOTAL SHEETS
05	SCr	17	0.74 / 1.38	2	--

REGISTERED CIVIL ENGINEER

PLANS APPROVAL DATE

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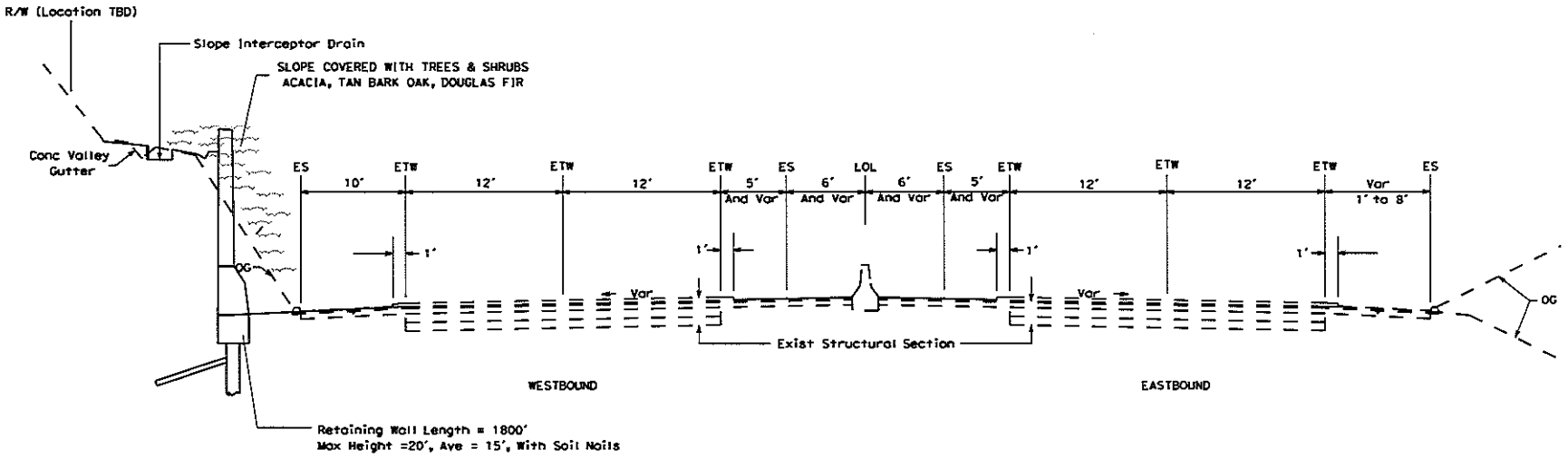
REGISTERED PROFESSIONAL ENGINEER — CIVIL — STATE OF CALIFORNIA

To get to the Caltrans web site, go to: http://www.dot.ca.gov



ROUTE 17

PM 0.74 to 1.38

ALTERNATIVE 1

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

TYPICAL CROSS SECTIONS

NO SCALE

X-1

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans MAINTENANCE DESIGN
PROJECT ENGINEER: PETE PETRAKIS
CALCULATED/DESIGNED BY: MARY T. MARCOS
CHECKED BY
DATE REVISED BY
DATE REVISED

LAST REVISION 07-18-11
DATE PLOTTED => ROUTE
TIME PLOTTED => RTIME

RELATIVE BORDER SCALE IS IN MILLIMETERS 0 20 40 60 80

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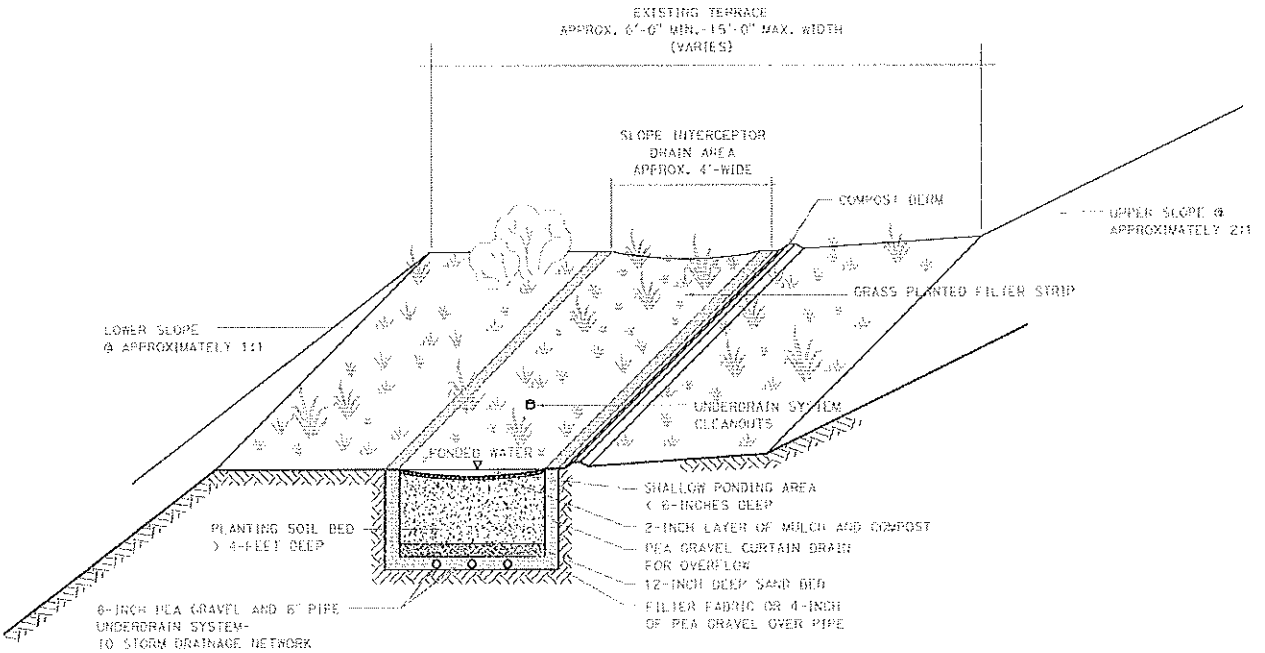
DGN_FILE => $REQUEST

CU 06231 | EA 00600K



SLOPE INTERCEPTOR DRAIN AT TERRACE

ATTACHMENT E

DIST	COUNTY	ROUTE	POST MILE TOTAL PROJECT	SHEET NO	TOTAL SHEETS
05	SCr	17	0.74 / 1.38	2	--

REGISTERED CIVIL ENGINEER

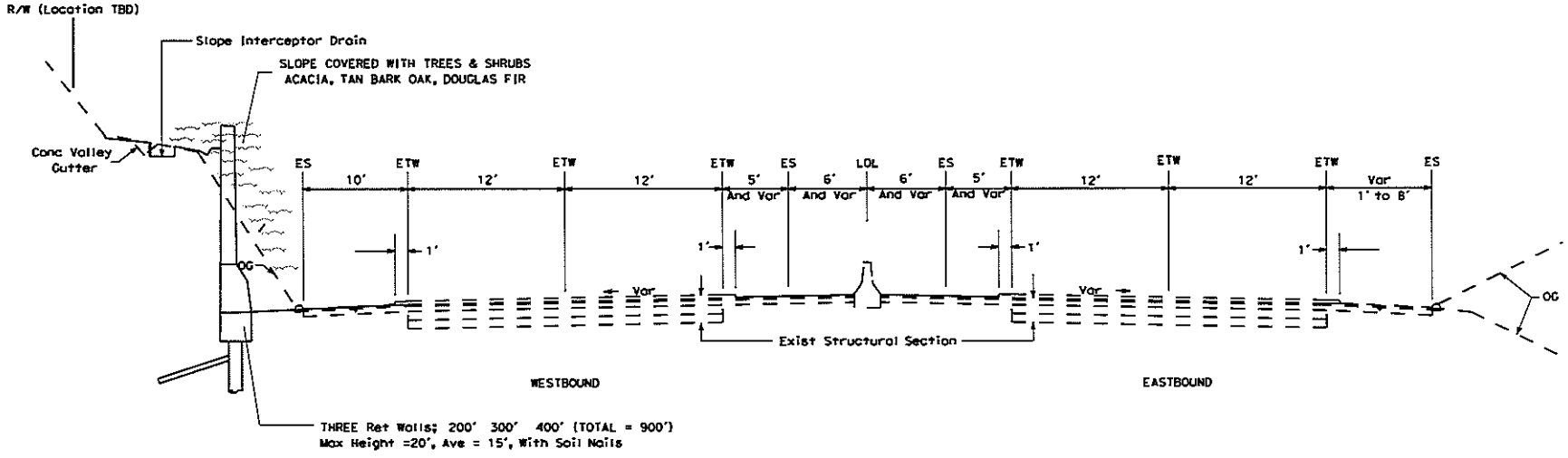
PLANS APPROVAL DATE

The State of California or its officers or agents shall not be responsible for the accuracy or completeness of electronic copies of this plan sheet.

To get to the Caltrans web site, go to: http://www.dot.ca.gov

NOTES:

1. DIMENSIONS OF THE STRUCTURAL SECTIONS ARE SUBJECT TO TOLERANCES SPECIFIED IN THE STANDARD SPECIFICATIONS.



ROUTE 17

PM 0.74 to 1.38

ALTERNATIVE 2

ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE SHOWN

TYPICAL CROSS SECTIONS

NO SCALE

X-1

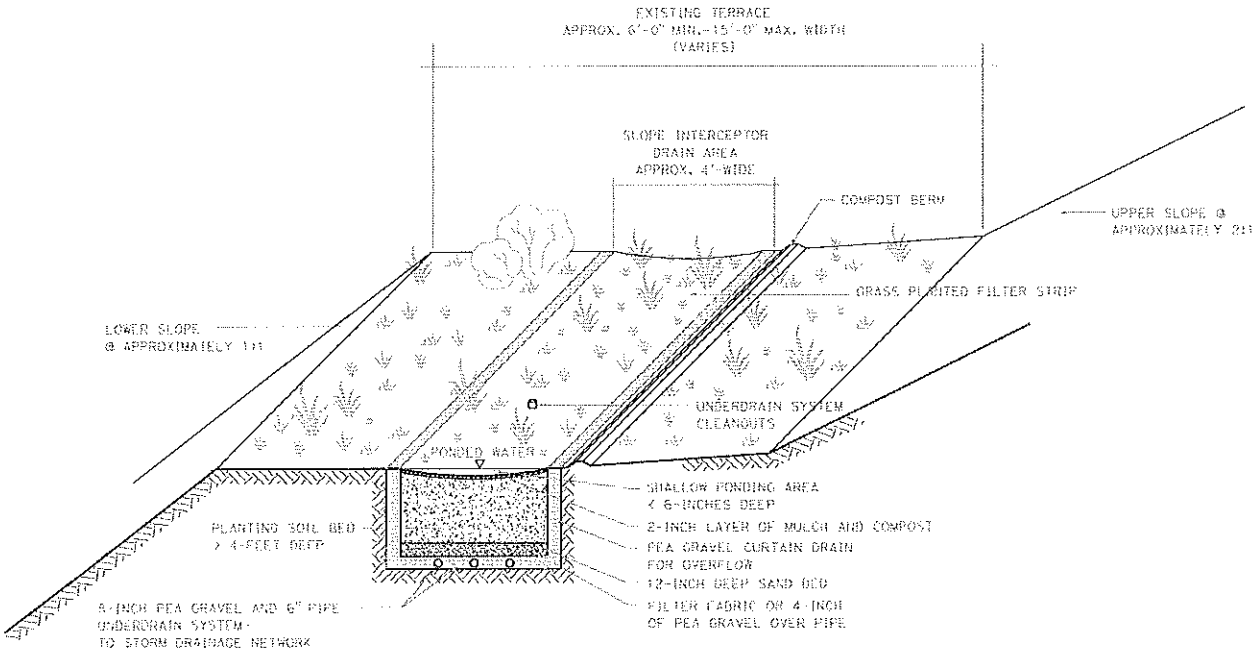
STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
Caltrans MAINTENANCE DESIGN
PROJECT ENGINEER: PETE PETRAKIS
CALCULATED/DESIGNED BY: MANNY T. MARCOS
CHECKED BY
DATE REVISED BY
DATE REVISED

LAST REVISION 07-18-11 DATE PLOTTED => &DATE
TIME PLOTTED => &TIME

RELATIVE BORDER SCALE IS IN MILLIMETERS 0 20 40 60 80

USERNAME => &USER
DGN FILE => &REQUEST

CU 06231 EA 00600K



SLOPE INTERCEPTOR DRAIN AT TERRACE

Short Form - Storm Water Data Report

Caltrans

Dist-County-Route: 05-SCr-17
Post Mile Limits: 0.74/ ~~1.4~~ 2.2
Project Type: Mandates for TMDL Compliance
Project ID (or EA): 05-0002-0290-K (05-0Q600K)
Program Identification: 20.10.201.335

Phase: ☒ PID ☐ PA/ED ☐ PS&E

Regional Water Quality Control Board(s): Central Coast, Region 3

1.	Is the project required to consider incorporating Treatment BMPs?	Yes ☐	No ☒
2.	Does the project disturb 5 or more acres of soil?	Yes ☐	No ☒
3.	Does the project disturb more than 1 acre of soil and not qualify for the Rainfall Erosivity Waiver?	Yes ☐	No ☒
4.	Does the project potentially create permanent water quality impacts?	Yes ☐	No ☒
5.	Does the project require a notification of ADL reuse	Yes ☐	No ☒

If the answer to any of the preceding questions is "Yes", prepare a Long Form – Storm Water Data Report.

Estimate Construction Start Date: 8/1/2016 Construction Completion Date: 8/8/2017

Separate Dewatering Permit (if yes, permit number) Yes ☐ Permit #_____ No ☒

Erosivity Waiver Yes ☐ Date: _____ No ☒

This Short Form – Storm Water Data Report has been prepared under the direction of the following Licensed Person. The Licensed Person attests to the technical information contained herein and the data upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.

Pete Petrakis 9-7-11

Pete Petrakis, Registered Project Engineer *Date*

I have reviewed the stormwater quality design issues and find this report to be complete, current and accurate:

FOR Marissa Nishikawa 9/8/2011

(PE Stamp Required for PS&E only) *Marissa Nishikawa, Regional SW Coordinator or Designee* *Date*

ATTACHMENT F

1. Project Description

- This project is located in Santa Cruz County on southbound State Route 17 between Post 0.74 and 2.4, which coincides with the Pasatiempo Overcrossing (O.C.) and the Beulah Park UC. ramps. State Route 17 (SR-17) joins Santa Cruz and Route 1 with Highway 101, 280, 85 and 880 corridors in the Santa Clara Valley. The scope of work consists of, reducing erosion and slope stabilization of the southbound lanes embankment. This project is one of several that have been identified in order for the Department to comply with the State NPDES permit.

- It is also categorized as a Tier IV project under the 335 SHOPP program that is proposing to meet location specific stormwater permit requirements. For this project, there is regulatory order from the Central Coast Regional Water Quality Control Board, CCRWQCB, called a Total Maximum Daily Load (TMDL) that was set in 2003. This sediment/siltation TMDL sets a pollutant (sediment) load reduction for all waters in the San Lorenzo River watershed. Caltrans is a named stakeholder in this TMDL and Caltrans (District 5) is required to comply with this TMDL. Failure to do so will result in regulatory legal action that will force Caltrans to address these location specific requirements and TMDLs. The project will assist Caltrans in achiving the total maximum daily load assigned to the Department in the San Lorenzo River TMDL (set as San Lorenzo River 7041 ton/yr (Total WLA 306,139 ton/yr) Lompico Creek 219 ton/yr (Total WLA 9,542 ton/yr) Carbonera Creek 270 ton/yr (Total WLA 11,728 ton/yr) Shingle Mill Creek 20 ton/yr (Total WLA 857 ton/yr)). The San Lorenzo River TDML can be found at this web site, http://www.swrcb.ca.gov/centralcoast/water_issues/programs/tmdl/docs/san_lorenzo/sediment/slr_sed_tmdl_bpa.pdf

- Alternatives

- Several remediation alternatives exist for sediment reduction, all which include drainage improvement, tree maintenance, and erosion control. Alternatives include drainage, biotechnical soil stabilization techniques, extensive erosion control measures, earthwork, horizontal drains, retaining walls, and tree maintenance or no improvements. Both alternatives will remove the concrete valley gutter and construct a biotechnical erosion control system. As well, both alternatives (except the no-build option) will require a Temporary Construction Easement (TCE).

- Alternative 1

To displace soils for buttressing locally over-steepened and recessed faces at highway elevation, a retaining wall with soil nails (along most of the length of the project, approximately 1800' long and 20' high,) will be used both as a barrier to the influx of sediment migration from erosion upslope and/or support for slopes which have failed or are susceptible to failure. The selection of retaining wall type and the design, should consider drainage and access for maintenance, for removal of sediment accumulation behind the wall. The ultimate length, height, and location of the wall would be

determined from site specific characteristics, including ground and surface water conditions, anticipated sediment volumes, and topography. In the Project Report stage of this project, an Advance Planning Study (APS) will be requested from the Headquarters (HQ) Division of Structures.

Removal of the existing concrete valley gutter which follows the 15-foot wide terrace would be replaced with a slope interceptor drain (modified bio-retention basin) on the terrace to retain upstream flows. This slope interceptor drain would be constructed to retain upstream flows. Construction of this will require the removal of most of the existing vegetation on the lower slope (acacia, tan bark coast live oak, coast redwood, and douglas fir trees.)

Additional biotechnical soil stabilization techniques and extensive erosion control measures would be implemented. Biotechnical soil stabilization techniques are commonly defined as practices that use both vegetation and structural components, including the use of geotextiles for soil reinforcement as well as utilizing strategic planting of native species including grasses, shrubs, and trees, through seeding, planting, and/or staking of live cuttings, with reinforcement by use of geotextiles, mulch, live gabions and rockeries. Both the use of plants and other materials such as rock and geotextiles may be used to construct drainage systems to intercept both surface and subsurface water flow. Because of the anticipated high volumes of surface and subsurface water flow, biotechnical drainage design will be augmented with slope interceptor drains, installed in natural or constructed depressions (swales) for capture of surface flow.

Extensive erosion control measure and best management practices such as polymer stabilized fiber matrix, fiber rolls, compost blanket and biodegradable erosion control netting will be implemented during construction to control storm water discharges and provide permanent erosion control to all disturbed areas. In addition, extensive tree maintenance, namely lowering or removing of leaning trees particularly at the top of the cut slope and adjacent drainage systems would be implemented.

Horizontal drain (H-Drain) would serve as an additional drainage system for augmenting removal of subsurface water flow along the cutslope. Reduction of subsurface flow through the local formation material would both diminish saturation potential of the loose overlying soils, and reduce spring flow along the steep faces at highway elevation, which result in undercutting and retreat of the cutslope face. The H-drains would be placed strategically, in areas where existing spring activity occurs, and/or erosion is most problematic. The H-drains would be connected directly to the existing drainage inlets (DIs) along the highway. The existing DIs will require modification to accommodate higher volumes of water during storm events.

To account for the tree maintenance (thinning, topping and removing) of invasive and native vegetation, biological and visual mitigation/replacement planting and irrigation

work including a three-year plant establishment and possible long term monitoring, period will be included. The planting palette would consist of natives, which can be weaned off irrigation as they mature.

- Alternative 2

A combination alternative should be considered to address location specific treatment needs. This would include approximately 4 retaining walls to be constructed at each severe wash-out locations, or 2 lengthier retaining walls to be placed at two of the wash-out locations each along with extensive biotechnical soil stabilization techniques.

This alternative, as stated above, would be combined with the removal of the concrete valley gutter, the construction of the slope interceptor drain, additional locations and types of the biotechnical soil stabilization techniques, extensive erosion control measures, the tree maintenance work (thinning, removing and topping), the construction of drainage inlets and down drains, and biological and visual plant mitigation. Additional biotechnical soil stabilization techniques such as vegetated gabions, and vegetated geo berms toe walls may need to be considered in this alternative.

A bio retention basin would be constructed to retain upstream flows. Construction of this retention basin will require the relocation/removal of existing acacia, tan bark oak, and Douglas fir trees. A drainage system that may include new drainage inlets (DIs) and downdrains would need to be constructed.

- Alternative 3

This is the no build alternative. The no-improvements alternative is not a viable alternative because Caltrans is a stakeholder in the TMDL regulation, and is required to reduce sedimentation on the highway adjacent to protected drainages during storm events.

- The DSA is estimated to be approximatly 1800' by 60' or 108,000 sq ft or 2.5 acres. This accounts for the worst case alternative (full retaining wall and grading for bench/access.
- This project is expect to result in a reduction of impervious surfaces resulting from the removal of the existing concrete V-ditch.
- There are no existing permanent storm water treatment BMPs within or near this projects limits.
- The receiving water is Carbonara Creek, which is 303(d) listed as impaired by nitrogen, pathogens, and has a TMDL (discussed above) for sedimentation/siltation.

2. Construction Site BMPs

- This project will require a SWPPP.
- Carbonara Creek has beneficial uses listed for COLD, SPWN, and MIGR. This would make the project, at a minimum of a risk level 3 for the new Construction General Permit. Further RL determination will take place in PA&ED. (SEE ATTACHED)

- Coordination with Construction to determine the appropriate selection of Construction Site BMPs being implemented into the contract documents will be done at PS&E.
- Items anticipated to be temporary construction site BMP bid items are
  - Prepare ~~WPCP~~ SWPPP
  - Construction Site Management
  - Temporary Fence (type ESA)
  - Temporary Hydraulic Mulch (bonded fiber matrix)
  - Temporary Concrete Washout (portable)
  - Temporary Check Dam
  - Temporary Fiber Roll
  - Temporary Silt Fence
  - Temporary Construction Site Entrance
  - Move In/Out (temporary erosion control)
  - Temporary Drainage Inlet Protection
  - Rain Event Action Plan
  - Stormwater Annual Report
  - Stormwater Sampling and Analysis Day
  - Water Pollution Control Maintenance Sharing (supplemental item)
  - Additional Water Pollution Control (supplemental item)

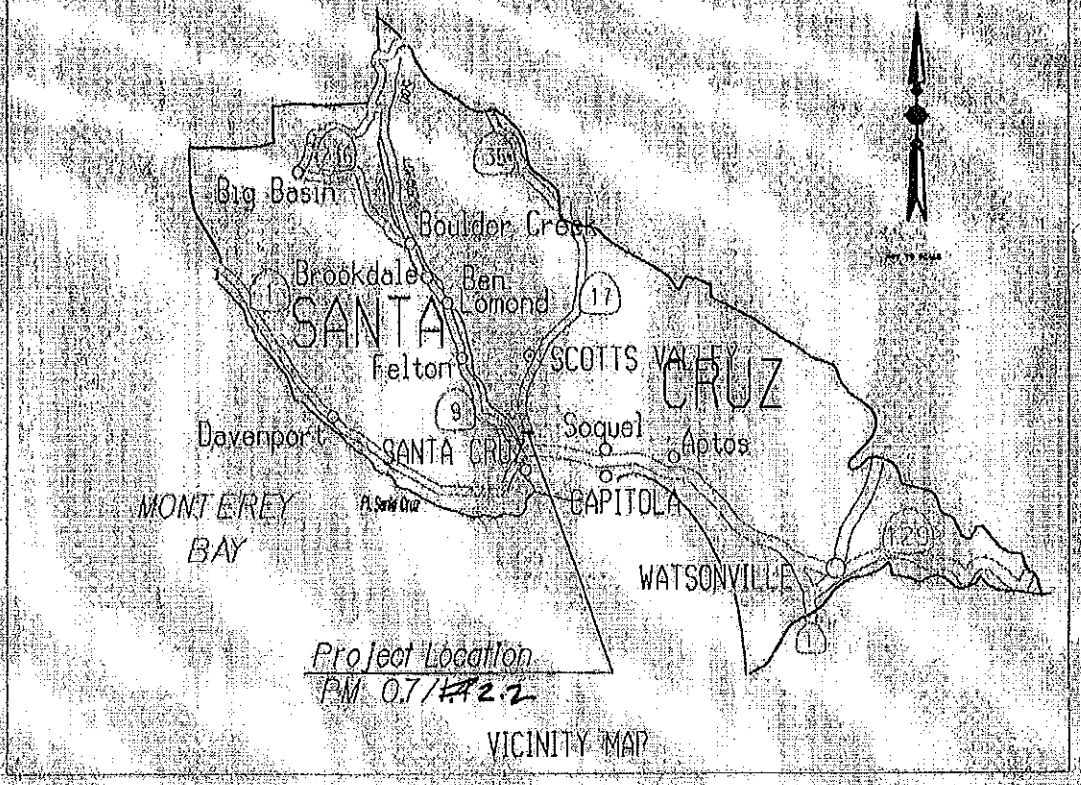
- Approximately 1% of the total project cost is estimated for temporary construction site BMPs.
- Document coordination effort to get concurrence from Construction regarding the Construction Site BMP strategy and associated quantities (To be done at PS&E).

3. Required Attachments[1]

- Vicinity Map
- Evaluation Documentation Form
-)

[1] Additional attachments may be required as applicable or directed by the District/Regional Design Storm Water Coordinator (e.g. BMP line item estimate, DPP, CS checklists, etc).

Vicinity Map



DATE: 8/26/2011

Project ID (or EA): 05-0002-0290-K (05-0Q600K)

NO.	CRITERIA	YES ✓	NO ✓	SUPPLEMENTAL INFORMATION FOR EVALUATION
1.	Begin Project Evaluation regarding requirement for consideration of Treatment BMPs	✓		See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPs. Go to 2.
2.	Is this an emergency project?		✓	If Yes, go to 10. If No, continue to 3.
3.	Have TMDLs or other Pollution Control Requirements been established for surface waters within the project limits? Information provided in the water quality assessment or equivalent document.	✓		If Yes, contact the District/Regional NPDES Coordinator to discuss the Department's obligations under the TMDL (if Applicable) or Pollution Control Requirements, go to 9 or 4. RGA (Dist./Reg. SW Coordinator Initials) If No, continue to 4.
4.	Is the project located within an area of a local MS4 Permittee?	✓		If Yes, *(write the MS4 Area here)*, go to 5. If No, document in SWDR go to 5.
5.	Is the project directly or indirectly discharging to surface waters?	✓		If Yes, continue to 6. If No, go to 10.
6.	Is it a new facility or major reconstruction?		✓	If Yes, continue to 8. If No, go to 7.
7.	Will there be a change in line/grade or hydraulic capacity?	✓		If Yes, continue to 8. If No, go to 10.
8.	Does the project result in a net increase of one acre or more of new impervious surface?		✓	If Yes, continue to 9. If No, go to 10. *Net Loss (Net Increase New Impervious Surface)*
9.	Project is required to consider approved Treatment BMPs.			See Sections 2.4 and either Section 6.5or 6.5 for BMP Evaluation and Selection Process. Complete Checklist T-1 in this Appendix E.
10.	Project is not required to consider Treatment BMPs. RGA *(Dist./Reg. Design SW Coord. Initials)* PGP *(Project Engineer Initials)* 9/8/11 *(Date)*	✓		Document for Project Files by completing this form, and attaching it to the SWDR.

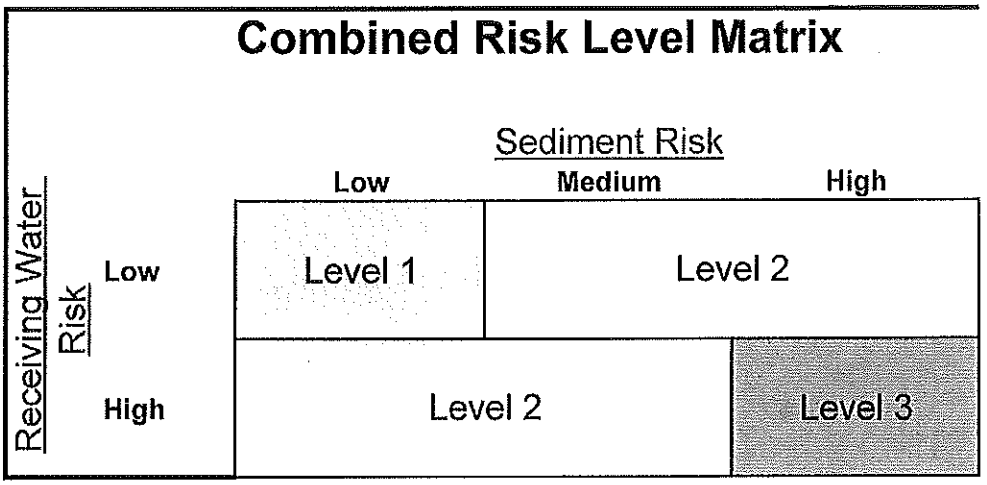
1 *See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMP*

	B	C	D
1	Version 6/10/2009		
2	**Risk Determination Worksheet**		
3			
4		**Step 1**	Determine Sediment Risk via one of the options list
5			1. GIS Map Method - EPA Rainfall Erosivity Calcul
6			2. Individual Method - EPA Rainfall Erosivity Calcu
7		**Step 2**	Determine Receiving Water Risk via one of the opti
8			1. GIS map of Sediment Sensitive Watersheds pro
9			2. List of Sediment Sensitive Watersheds provided
10		**Step 3**	Determine Combined Risk Level
11	**05-0002-0290-K (05-0Q600K) SCr 17 335 Shopp**		
12	Dist-County-Route		**05-SCr-17-0.74/2.2**
13		Latitude	**37deg 00min 23sec**
14		Longitude	**122deg 01min 16sec**
15		Begin Const	**8/1/2016**
16		End Const.	**8/8/2017**
17		DSA	**2.8**
18		LS Combined	**5.97 (from LS table 50' slope at 60%- worst cas**
19		K-Factor	**0.32**
20		"R" Value	**28.17**
21		Receiving Water	**Carbonara Creek**
22		303(d) listed	**Yes- W/ TMDL for Sediment**
23		Beneficial Use	
24		Cold	**Yes**
25		Spawn	**Yes**
26		Migratory	**Yes**
27			
28			
29			
30			
31			
32			
33			**Preliminary Project RL Assessment by Pete Riegelhuth, NPDES/Stormwater Unit, on 9/16/2011**

	A	B	C
1	**Sediment Risk Factor Worksheet**		**Entry**
2	**A) R Factor**		
3	Analyses of data indicated that when factors other than rainfall are held constant, soil loss is directly proportional to a rainfall factor composed of total storm kinetic energy (E) times the maximum 30-min intensity (I30) (Wischmeier and Smith, 1958). The numerical value of R is the average annual sum of EI30 for storm events during a rainfall record of at least 22 years. "Isoerodent" maps were developed based on R values calculated for more than 1000 locations in the Western U.S. Refer to the link below to determine the R factor for the project site.		
4	http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm		
5	**R Factor Value**		114
6	**B) K Factor (weighted average, by area, for all site soils)**		
7	The soil-erodibility factor K represents: (1) susceptibility of soil or surface material to erosion, (2) transportability of the sediment, and (3) the amount and rate of runoff given a particular rainfall input, as measured under a standard condition. Fine-textured soils that are high in clay have low K values (about 0.05 to 0.15) because the particles are resistant to detachment. Coarse-textured soils, such as sandy soils, also have low K values (about 0.05 to 0.2) because of high infiltration resulting in low runoff even though these particles are easily detached. Medium-textured soils, such as a silt loam, have moderate K values (about 0.25 to 0.45) because they are moderately susceptible to particle detachment and they produce runoff at moderate rates. Soils having a high silt content are especially susceptible to erosion and have high K values, which can exceed 0.45 and can be as large as 0.65. Silt-size particles are easily detached and tend to crust, producing high rates and large volumes of runoff. Use Site-specific data must be submitted.		
8	Site-specific K factor guidance		
9	**K Factor Value**		0.32
10	**C) LS Factor (weighted average, by area, for all slopes)**		
11	The effect of topography on erosion is accounted for by the LS factor, which combines the effects of a hillslope-length factor, L, and a hillslope-gradient factor, S. Generally speaking, as hillslope length and/or hillslope gradient increase, soil loss increases. As hillslope length increases, total soil loss and soil loss per unit area increase due to the progressive accumulation of runoff in the downslope direction. As the hillslope gradient increases, the velocity and erosivity of runoff increases. Use the LS table located in separate tab of this spreadsheet to determine LS factors. Estimate the weighted LS for the site prior to construction.		
12	LS Table		
13	**LS Factor Value**		5.97
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**		217.7856
16	**Site Sediment Risk Factor**		**High**
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

Receiving Water (RW) Risk Factor Worksheet.	Entry	Score
A. Watershed Characteristics	yes/no	
A.1. Does the disturbed area discharge (either directly or indirectly) to a **303(d)-listed waterbody impaired by sediment** (For help with impaired waterbodies please check the attached worksheet or visit the link below) or has a **USEPA approved TMDL implementation plan for sediment**?: 2006 Approved Sediment-impared WBs Worksheet http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml	yes	High
OR		
A.2. Does the disturbed area discharge to a waterbody with designated beneficial uses of SPAWN & COLD & MIGRATORY? http://www.ice.ucdavis.edu/geowbs/asp/wbguse.asp		

Combined Risk Level Matrix



Project Sediment Risk: High

Project RW Risk: High

Project Combined Risk: Level 3

U.S. ENVIRONMENTAL PROTECTION AGENCY

National Pollutant Discharge Elimination System (NPDES)

Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

Facility Name: SCr 17 335 Shopp
Start Date: 08/01/2016
End Date: 08/08/2017
Latitude: 37.0063
Longitude: -122.0211

Erosivity Index Calculator Results

AN EROSIVITY INDEX VALUE OF 114 HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **08/01/2016 - 08/08/2017**.

A rainfall erosivity factor of 5.0 or greater has been calculated for your site and period of construction. **You do not qualify for a waiver from NPDES permitting requirements.**

Start Over

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The documents on this site are best viewed with Acrobat 8.0

122° 1' 27"
122° 1' 6"
37° 0' 32"
37° 0' 9"
586800
586880
586960
587040
587120
587200
587280
4096320
4096240
4096160
4096080
4096000
4095920
4095840
4095760
4095680
La Madrona Dr
Sierra Cir
Eastridge Dr
El Rancho Dr
Clubhouse Rd
Eastridge Ct
122° 1' 28"
N
Map Scale: 1:3,420 if printed on A size (8.5" x 11") sheet.
Meters
0 30 60 120 180
Feet
0 100 200 400 600

K Factor, Rock Free

K Factor, Rock Free— Summary by Map Unit — Santa Cruz County, California (CA087)				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
110	Ben Lomond sandy loam, 5 to 15 percent slopes		2.3	37.0%
115	Ben Lomond-Felton complex, 50 to 75 percent slopes	.32	3.8	61.4%
117	Bonnydoon loam, 30 to 50 percent slopes	.28	0.1	1.7%
Totals for Area of Interest			**6.2**	**100.0%**

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: *None Specified*

Tie-break Rule: Higher

Layer Options: Surface Layer

September 5, 2011

Preliminary Environmental Analysis Report

Project Information

District	5	County	SCR	Route	17	Post Mile	0.74-2.2	EA	0Q600K

Project ID#:	0500020290		
Project Title:	Route 17 – San Lorenzo River Valley Sediment Source Control Project		
Project Manager:	Steve DiGrazia	Phone #:	805-549-3437
Design Manager:	Martin Nishikawa	Phone #:	559-230-3122
Design Engineer:	Pete Petrakis	Phone #:	559-230-3117
Environmental Manager:	Matt Fowler	Phone #:	805-542-4603
Environmental Planner:	Michael H. Thomas	Phone #:	805-549-3023

PSR Summary Statement

The anticipated environmental document for this project will be a Mitigated Negative Declaration/Categorical Exclusion. This document level has been selected based on potential impacts to endangered species and visual impacts which are anticipated to be mitigated below the threshold of significance as defined by CEQA. The California Department of Transportation (Caltrans) would act as the lead agency under NEPA/CEQA (National Environmental Policy Act/California Environmental Quality Act). Caltrans will serve as the NEPA lead agency under its assumption of responsibility pursuant to 23 U.S. Code 327. The estimated time to obtain environmental approval is 20 months from the start of environmental studies. Assuming a start date of July 1, 2012 environmental studies would begin October 2012 after project preliminary maps and permits to enter are completed. Final environmental document would be anticipated by June 1, 2014.

It is anticipated multiple environmental studies and reports will be required for this project including (but not limited to): archaeology survey report, historic property survey report, natural environment study, paleontology study, hazardous waste studies and visual impact assessment. It is currently estimated that biology will be the critical path for the delivery of the environmental document.

Project Description

Caltrans proposes to stabilize eroded slopes on Highway 17 in Santa Cruz County (PM 0.74-1.38) by installation of drainage improvements, tree maintenance, and erosion control, biotechnical erosion control, earthwork, horizontal drains and retaining walls. Some work will likely require single lane traffic control for some of the work. Several of the sites will require work above the highway.

Purpose and Need

This project is needed to comply with the Central Coast Regional Water Quality Control Board's regulatory order to reduce the Total Maximum Daily Load for all rivers in the San Lorenzo River Watershed. The purpose of the project is to reduce the amount of sediment deposited in Carbonero Creek which is part of the San Lorenzo River watershed. The project will assist Caltrans in not exceeding the pollutant (sediment) load allocated for this river.

ATTACHMENT G

Description of Work

Caltrans proposes to assess mitigation alternatives for the reduction of sedimentation during storm events in Santa Cruz county, along southbound Highway 17 between (PM 0.74-1.38). North and south bound lanes at this location are separated by an approximate twenty two-foot wide median with concrete barrier. The southbound shoulder varies between one to eight feet with an AC-dike at the base of the existing cut slope The existing cut slopes within the project limitis are very steep with dense trees and vegetation. The existing slopes have consistently failed due to erosion caused by surface and ground water. Storm damage has displaced the drainage system consisting of concrete valley gutters and downdrains. This location, which lies between the Pasatiempo Rd. O.C and Beulah Park U.C., is considered the most critical for sediment control of several locations along the length of Highway 17, because of significant amounts of erosion on and above the existing cut slopes. A portion of this sediment flows into Carbonero Creek (near the Pasatiempo O.C.), a tributary of the San Lorenzo watershed.

Alternatives

Alternative 1: Build

A retaining wall alternative may be used both as a barrier to the influx of sediment migration from erosion upslope and/or support for slopes which have failed or are susceptible to failure. The selection of retaining wall type and the design, should consider drainage and access for maintenance, for removal of sediment accumulation behind the wall. The length, height, and location of the wall would be determined from site specific characteristics, including ground and surface water conditions, anticipated sediment volumes, and topography. In the Project Report stage of this project, an Advance Planning Study (APS) will be requested from the Headquarters (HQ) Division of Structures. Horizontal drain (H-Drain) would serve as an additional drainage system for augmenting removal of subsurface water flow. Reduction of subsurface flow through the local formation material would both diminish saturation potential of the loose overlying soils, and reduce spring flow along the steep faces at highway elevation. The H-drains would be placed strategically, in areas where existing spring activity occurs, and/or erosion is most problematic.

Alternative 2: Build

A combination alternative should be considered to address location-specific treatment needs. This would include 4 retaining walls to be constructed at each severe wash-out locations, or 2 lengthier retaining walls to be placed at two of the wash-out locations each. A bio-retention basin would be constructed to retain upstream flows. Construction of this retention basin will require the relocation/removal of existing acacia, tan bark oak, and Douglas fir trees. A drainage system that may include new drainage inlets (DIs) and downdrains would need to be constructed

Alternative 5: No-Build

Caltrans, is subject to the Central Coast Regional Water Quality Control Board's TMDL regulation, and is required to reduce sedimentation on the highway adjacent to protected drainages during storm events. If the project is not constructed it would continue to contribute to the TMDL violations to the San Lorenzo River Water Watershed and Carbonaro Creek.

Funding

☒**State** ☒**Federal**

This is a Category 5 project funded from the SHOPP Storm Water Mitigation Program 20.10.201.335, in the 2015/2016 fiscal year.

Anticipated Environmental Approval

CEQA	NEPA
☐**Categorical Exemption/Statutory Exemption**	☐**Categorical Exclusion (☒6004/☐6005)**
☒**Negative Declaration/Mitigated ND**	☐**Finding of No Significant Impact**
☐**Environmental Impact Report**	☐**Environmental Impact Statement**

Anticipated Environmental Schedule

Total Time for Environmental Approval	20 months
Start Date	7/1/2012
Begin Environmental	10/1/2012
Final Environmental Document	6/1/2014
PA&ED*	7/1/2014

**PA&ED is generally 1 month following the FED date*

Assumptions and Risks

Risks to the project have been defined in accordance with the Project Risk Management Handbook, May 2, 2007, Second Edition, Rev 0:

Assumptions:

- There will be no Visual Impacts that cannot be reduced to a level of less than significant by mitigation
- No Archeological, Paleontological or Historic Resources are discovered
- No presence of Hazardous Waste
- There are no significant impacts to Endangered, Threatened or Special Status species
- Approved and Adequate Mapping is submitted by October 1st, 2012
- Permits to Enter are granted for any Private Property, Construction Easement or R/W Acquisition for Environmental Studies to capture any constrained survey windows

Risks:

- Visual Impacts cannot be reduced to a level of less than significant requiring a CEQA Environmental Impact Report extending project schedule by 12 months
- Archeological, Paleontological or Historic Resources are discovered requiring further studies extending project schedule by 12-24 months
- Presence of Hazardous Waste requiring mitigation and notification to the public increasing costs by $200 per cubic yd of export
- Presence and/or impacts of Endangered, Threatened or Special Status Species requiring consultation with resource agencies extending project schedule by 12 months and/or additional mitigation costs
- Permits to Enter are not granted to capture survey windows extending schedule up to 12 months
- Approved and Adequate Mapping is not submitted to capture survey windows extending schedule up to 12 months

Mitigation

Known mitigation costs, which were determined during the creation of this document, are listed in the respective categories below. Further studies may reveal the need for additional mitigation, which would be added to the cost of the project and included in an updated Mitigation Cost Compliance Estimate Form.

Right of Way Capital (050)

- None at this time.

Construction Capital (042)

- Aesthetic Treatments and Supplemental Biological Planting $120,000
- Lead Compliance Plan $ 2,000
- Disposal Fee-ADL export @ $200 per yd.

Disclaimer

This report is not an environmental document. Preliminary analysis, determinations, and estimates of mitigation costs are based on the project description provided in this report. The estimates and

conclusions provided are approximate and are based on cursory analysis of probable effects. This report is to provide a preliminary level of environmental analysis to supplement the Project Initiation Document. Changes in project scope, alternatives, or environmental laws will require a reevaluation of this report.

Review and Approval

I confirm that environmental cost, scope, and schedule have been satisfactorily completed and that the PEAR meets all Caltrans requirements. Also, if the project is scoped as a routine EA, complex EA, or EIS, I verify that the HQ DEA Coordinator has concurred in the Class of Action.

Approved by:

Environmental Manager Date: 09/13/11

Environmental Office Chief Date: 9/13/11

Project Manager Date: 9/13/11

Environmental Technical Reports or Studies Required

Required–requires analysis including field surveys, database searches, report, or memo to file and brief explanation in the environmental document.
Not Required–Issue is not applicable to the proposed project.
Possible Critical Path–Major issue that has the potential to drive the schedule and determine the length of time to reach PA&ED (can be more than one major issue).

	Required	Clearance Memo Received	Not Required	Possible Critical Path
Biology		☐		☒
Endangered Species (Federal)	☐		☒	
Endangered Species (State)	☐		☒	
Species of Concern (CNPS, USFS, BLM, S, F)	☒		☐	
Wetland Delineation	☐		☒	
Natural Environment Study	☒		☐	
Biological Assessment (USFWS, NMFS, State)	☐		☒	
Cultural Resources				☐
ASR	☒		☐	
HRER	☐		☒	
HPSR/HRCR	☒		☐	
Screening Memo	☒	☐	☐	
SHPO Concurrence	☐		☒	
Native American Coordination	☐		☒	
Finding of Effect Document	☐		☒	
Treatment Plan & MOA	☐		☒	
Hazardous Waste		☐		☐
ISA	☒		☐	
PSI	☒		☐	
ADL	☒		☐	
Air Quality Analysis		☒		☐
Hot Spot Analysis	☐		☒	
MSAT	☐		☒	
Noise Study	☐	☒	☒	☐
Water Quality	☐	☒	☐	☐
Community Impact Assessment				☐
Environmental Justice	☐		☒	
Growth Related Impacts	☐		☒	
Cumulative Impacts	☐		☒	☐
Farmland	☐		☒	☐
Visual Resources		☐		☐
Scenic Resource Evaluation	☒		☐	
Visual Impact Assessment	☒		☐	
Floodplain Evaluation	☐		☒	☐
Paleontology	☒		☐	☐
Section 4(f) Evaluation	☐		☒	☐
Wild and Scenic River Consistency	☐		☒	☐
Geology	☒		☐	☐
Topology	☒		☐	☐
Soils	☒		☐	☐
Greenhouse Emissions	☐		☒	☐

Permits Anticipated for Construction

	Required	Not Required
401 Permit Coordination (discharge into navigable waters)	☐	☒
404 Permit Coordination (discharge into waters of the US including wetlands)	☐	☒
☐ - Nationwide		
☐ - Individual		
1600 Permit (Streambed Alteration)	☐	☒
City/County Coastal Permit Coordination	☐	☒
State Coastal Permit Coordination	☐	☒
NPDES Coordination	☐	☒
US Coast Guard (Section 10)	☐	☒
State 2081 Permit (State only incidental take of threatened or endangered species)	☐	☒

Discussion of Technical Review

Biology

Due to the potential for impacts to Endangered, Threatened or Special Status Species, plant surveys during the appropriate season will be required. Field studies and additional research will have to be conducted to assess the types of impact and what action would be required. A Natural Environment Study will be required.

Cultural Resources

Cultural resources studies supporting the project will be conducted in accordance with the January 1, 2004 *Programmatic Agreement Among the Federal Highway Administration, the Advisory Council for Historic Preservation, the California State Historic Preservation Officer and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (hereafter, the Programmatic Agreement). There are not any known cultural resources and Phase I and Phase II studies and not foreseen

As presented in the project description and mapping, an archaeological and historic resource assessment will need to be conduction to confirm the presence or absence of any potentially eligible cultural resources in the study area. Project cultural resources studies will be summarized in a Historic Property Survey Report or Programmatic Agreement Screen Undertaking depending upon the results of the pre-field and field surveys.

Hazardous Waste

The proposed project involves soil disturbance and possible export. A Initial Site Assessment and Preliminary Site Investigation will be needed for Aerially Deposited Lead.

Air Quality Analysis

The proposed project is located within the North Central Coast Air Basin. According to 40 CFR Section 93.126 Table 2, this project is exempt from the requirement that a conformity determination be made. No further study is needed.

Noise Study

The proposed project would either increase traffic or alter the location of the highway and is not considered a Type 1 project. No further study is required.

Water Quality

The proposed project has the potential of having short-term water quality impact, however by incorporating proper and accepted engineering practices and BMP's the proposed project will not have significant impacts to water quality. No further study is required.

Community Impact Assessment

No communities within the project limits will be affected by the project

Cumulative Impacts

A Cumulative Impacts analysis will not be required for this project.

Farmland

The project will not be acquiring any farmland or be impacting any farmland.

Visual Resources

State Highway 17 is an eligible "Designated Scenic Highway" and there is a potential to impact scenic resources. A Visual Impact Analysis is will be required.

Floodplain Evaluation

The project is not located in a 100 year floodplain.

Paleontology

A Paleontology Study will be required, the project site is shown as having High to No potential for encountering sensitive paleontological resources and the probability of encountering sensitive fossil remains is unknown based on the nature of the work. Additional information is need about the project site geology and details of excavation/drilling to be precise about anticipating impacts to the resource.

Section 4(f) Evaluation

There are no Section 4(f) resources within the project limits.

Wild and Scenic River Consistency

There are no Wild and Scenic Rivers within the project limits.

Geology

A geotechnical investigation will be required at the site to determine engineering properties of local soil and rock, including depth of soil profile, hydraulic conductivity, and relative density.

Topology

A geotechnical investigation will be required at the site to determine engineering properties of local soil and rock, including depth of soil profile, hydraulic conductivity, and relative density.

Soils

A geotechnical investigation will be required at the site to determine engineering properties of local soil and rock, including depth of soil profile, hydraulic conductivity, and relative density.

Greenhouse Emissions

A Greenhouse Emissions analysis is not required for this project.

Permits.

No permits are anticipated at this time.

List of Preparers

Biology by Paul Holmes	8/24/11
Visual by Bob Carr	8/25/11
Paleontology by Isaac Leyva	8/23/11
Hazardous Waste by Jim Tkach	8/29/11
Soils, Topography, Geology by Mike Juriasus	8/16/11
Cultural by Krista Kiaha	8/22/11
Air, Noise, Water by Rajeev Dwivedi	8/29/11
Preliminary Environmental Analysis Report by Michael H. Thomas	8/31/11

State of California Business, Transportation and Housing Agency

Memorandum

To: PETE PETRAKIS

Date: 9/15/2011

File: CD 05 EA 0Q6000K Alt EA

Co SLO RTE 17

Attn: MARTIN NISHIKAWA

DESCRIPTION:
Storm Water Mitigation

From: Department of Transportation
Division of Right of Way Central Region

Subject: RIGHT OF WAY DATA SHEET

We have completed an estimate of the right of way costs for the above-referenced project based on the Right of Way Data Sheet Request form dated 8/22/2011

The following assumptions and limiting conditions were identified:

Appraisal
TCE was assumed to be for a 2 year period. Any access denial fencing that is removed will be replaced.

Utility
Pete Petrakis, Project Engineer states in his Right of Way Data Sheet Request Form: 1). Utility permit search completed: NO 2). Utility involvement and /or relocation: NOT REQUIRED 3). Potholing required: NO. It is assumed that construction plans, specifications and activities will be adjusted as needed to avoid and protect in place all utility facilities in the project area. Comply with USA alert requirements at all project locations, including at construction sign locations.

Right of Way Lead Time will require a minimum of 12 months after we receive Certified Appraisal Maps and/or Utility Conflict Plans, obtained necessary environmental clearance and applicable freeway agreements have been approved.

for CONNIE SHELLOOE, Sr. Right of Way Agent
San Luis Obispo Field Office
(805) 549-3471

ATTACHMENT H

EA: 05-0Q600K CO/RTE/PM-PM (Rte 1 and Rte 2) : SCr17/0.74-2.2 & #-
ALT: NA

Request Date: 8/22/2011
Revised Date:

Right Of Way Cost Estimate

	Current Year 2011	Contingency Rate	Right of Way Escalation Rate	Escalated Year 2015
Acquisition:	$138,025	25%	5%	$167,770
Mitigation:	$0	25%	5%	$0
State Share of Utilities:	$0	25%	5%	$0
Expert Witness:	$0	25%	5%	$0
Relocation Assistance:	$0	25%	5%	$0
Demolition and Clearance:	$0	25%	5%	$0
Title and Escrow:	$11,224	25%	5%	$13,643
Ad Signs:	$0	25%	5%	$0
Total Current Value:	$149,249			$181,413

If RW Cost Est fields are blank, Costs = $0

Estimated Construction Contract Work (CCW): 0 R/W LEAD TIME/Mo. 12

Cost Break Down

Pot Hole

Mitigation

Land	0
Bank	0
Permit Fee	0

RR Involvement

Railroad Facilities or Right of Way Affected?	no
Const/Maint Agreement:	no
Service Contract:	no
Right of Entry:	no
Clauses:	no
Estimated Lead-time	0 mon

Parcel Data

# of Parcel Type X:	0		
# of Parcel Type A less than $10,000 non-complex	9		
# of Parcel Type B: more than $10,000 non-complex	0		
# of Parcel Type C: complex, special valuation	0		
# of Parcel Type D: most complex and time consuming	0	# of Duals Needed:	0
Totals:	0	Totals:	0

# of Excess Parcels: 0

Utilities

U4-1:
Owner Expense

U4-2:
State Expense, Conventional no Fed Aid

U4-3:
State Expense, Freeway no Fed Aid

U4-4:
State Expense, both with Fed Aid

U5-7:
Utility verification, no relocation/potholing

U5-8:
Utility verification, w/ some relocation/potholing

U5-9:
Utility verifications, relocation/potholing required

Misc R/W Work

# of RAP Displacements:	0
# of Clearance/Demos:	0
# of Const Permits:	0
# of Condemnations:	0

EA: 05-0Q600K ALT: NA

Parcel Area	
Total RW Required	0
Total Excess Area:	0

General Description of R/W and Excess Lands Required (zoning, use, major improvements, critical or sensitive parcels, etc.):
9 residential properties- 4 vacant. Some landscaping. Thickly forested- may be additional improvements that are not visible from Highway or aerials. Probably minor such as fencing and sprinklers.

General Description of Utility Involvement:
Highway 17 is designated a freeway in the project area. The original project included four potential sites for storm water mitigation. The project has been reduced to one location adjacent to the westbound lanes of Highway 17 approximately between the Pasatiempo Overcrossing and the Bouleh Park Undercrossing. The existing Westbound slope has failed due to erosion caused by surface and ground water. Storm damage has displaced the drainage systems consisting of concrete valley gutters and downdrains. The project will consist of placing retaining walls along with subsurface drains, enhancing the drainage system, removing trees, landscaping and erosion control mitigation measures.

Is there a significant effect on assessed valuation: No

Were any previously unidentified sites with hazardous waste or material found: No

Are RAP displacements required: No

# of single family: 0 # of multi-family: 0 # of business/nonprofit: 0 # of farms: 0

Sufficient replacement housing will be available without last resort housing: N/A

Are material borrow or disposal sites required: No

Are there potential relinquishments or abandonments: No

Are there any existing or potential airspace sites: No

Are environmental mitigation parcels required: No

Data for evaluation provided by:

Estimator	Jim Gentry	9/8/2011
Railroad Liaison Agent:	sah	8/29/2011
Utility Relocation Coordinator:	John T. Magolian	9/13/2011

I have personally reviewed this Right of Way Sheet and all supporting information. I find this Data Sheet complete and current, subject to the limiting conditions set forth.

Nicholas C. Dumas

Date
ENTERED PMCS 9/15/2011
BY: R TABAREZ

CONNIE SHELLOOE
Sr. Right of Way Agent, Right of Way

DISTRICT 5
TRAFFIC MANAGEMENT PLAN DATA SHEET/CHECKLIST

District / EA: 05-0Q600K
Project Engineer: Pete Petrakis
Date Prepared: 9/6/2011

Co.-Rte-KP: SCr-17-0.74/1.38
Description: Sediment Control Source
Working Days: 130 days

Check each box and reference your attachments to the item(s) number(s) shown on the list.

	Required	Not required	Not Applicable	COMMENTS
1.0 Public Information				
1.1 Public Awareness Campaign	x			Include $7500. Contact Susana Zavala for
1.2 Other Strategies		x		cost & content.
2.0 Motorist Information Strategies				
2.1 Changeable Message Signs - Portable	x			Provide one CMS per lane or shoulder closure.
2.2 Construction Area Signs	x			
2.3 Highway Advisory Radio (fixed and mobile)		x		
2.4 Planned Lane Closure Web Site	x			Construction to provide information to TMC
2.5 Caltrans Highway Information Network (CHIN)		x		Construction to provide information to TMC
3.0 Incident Management				
3.1 COZEEP	x			Include $100/hour days; $200/hour nights
3.2 Freeway Service Patrol		x		
4.0 Traffic Management Strategies				
4.1 Lane/Ramp Closures Charts	x			Provided during PS&E
4.2 Total Facility Closure		x		
4.3 Coordination with adjacent construction		x		
4.4 Contingency Plan	x			Standard SSP
4.4.1 Material/Equipment Standby			x	Contruction/Contractor to provide
4.4.2 Emergency Detour Plan			x	Contruction/Contractor to provide
4.4.3 Emergency Notification Plan	x			Contruction/Contractor to provide
4.5 SSP 12-220 and Others	x			
4.6 Other Strategies:	x			
Provide information to District 4 TMC				
	x			
Include $500/day for CMS and supplemental costs.				
	x			
Special Days include the Wharf to Wharf 10K				
	x			
5.0 Anticipated Delays				
5.1 Lane Closure Review Committee (for anticipated delays over 30 minutes)				
5.2 Planned freeway closures				
5.3 Minimal delay anticipated - no further action required	☐ yes	☐ no		If no, explain additional measures on attached sheet.
6.0 Placement of CMS	x			Placement at discretion of RE.

Shayne Sandeman
Prepared by:

ATTACHMENT 1

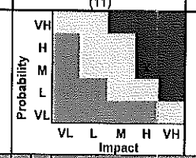
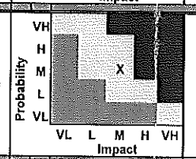
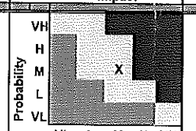
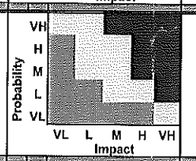
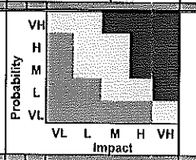
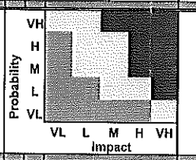
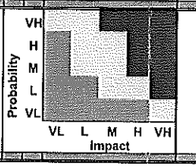
Dist - E.A 05-0Q600K 500020290 **Project Name** SCr 17 San Lorenzo River Valley Sediment Source Control Project

Co-Rte-PM SCr-17-0.74/2.2

Date 9/12/2011

Project Mngr S. DiGrazia **Telephone Number** 805-549-3437

PROJECT RISK MANAGEMENT PLAN

	Identification						Qualitative Analysis				OPTIONAL Quantitative Analysis			Risk Response Plan		Monitoring and Control	
Priority	Status	ID #	Date Identified Project Phase	Functional Assignment	Threat/Opportunity Event	Risk Trigger	Type	Probability	Impact	Risk Matrix	Probability (%)	Impact ($ or days)	Effect ($ or days)	Strategy	Response Actions Including advantages and disadvantages	Responsibility (Risk Manager)	Last date changes made to risk and Comments
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14) =(12)x(13)	(15)	(16)	(17)	(18)
##	Active	1	9/12/2011	PM, DM,EM,Right of Way Manager	24 month Environmental duration based on MND. This duration along with 19 months for 10 TCEs creates a fourth quarter delivery. IF 19 months is not adequate for ROW acquisitions, delivery delay will result.	ROW establishes acquisition duration longer than 19 months.	Schedule	Moderate	High		50%			Mitigation	If possible, after start of environmental studies, shorten environmental duration. If not possible execute PCR for schedule delay.	PM, EM,DM	9/12/2011
##	Active	2	9/12/2011	EM, Landscape Architect	Significant degree of community involvement. If this occurs, impact to the schedule could be significant creating a compressed ROW acquisition phase.	Public Comment Period.	Schedule	Moderate	Moderate					Mitigation	The team should remain aware of the possibility of the need for community involvement as early in the project as possible.	PM, EM, DM, Landscape Architect	9/12/2011
##	Active	3	9/16/2011	PM, DM, EM, Landscape Architect	Due to the construction cost and durtaion of plant establishement period, a separate landscape planting PS&E may need to be developed.	Evaluation by Landscape Architect.	Cost	Moderate	Moderate					Mitigation	If the team determines that a separate landscape PS&E is required, the project support budget will need to be evaluated and revised if necessary.	PM, EM, DM, Landscape Architect	9/16/2011