THIS REPORT IS PROVIDED AS AN EXAMPLE ONLY. ALL PROJECT INFORMATION, NAMES, AND DATES ARE FICTITIOUS. THIS IS NOT INTENDED TO BE A FINAL REPRESENTATION OF THE WORK DONE OR RECOMMENDATIONS MADE BY CALTRANS FOR AN ACTUAL PROJECT.

Long Form - Storm Water Data Report

Dist-County-Route: 03-Sac-5
Post Mile Limits: 0.0/17.2
Project Type: Pavement Rehabilitation
Project ID (or EA): 03-XXXXXX
Program Identification: 201.120
Phase: ☐ PID ☒ PA/ED ☐ PS&E

Regional Water Quality Control Board(s): Central Valley (Region 5, South)

Is the Project required to consider Treatment BMPs? Yes ☐ No ☒
If yes, can Treatment BMPs be incorporated into the project? Yes ☐ No ☐
If No, a Technical Data Report must be submitted to the RWQCB at least 30 days prior to the projects RTL date. List RTL Date:

Total Disturbed Soil Area: 11.8 acres Risk Level: 2
Estimated: Construction Start Date: January 2011 Construction Completion Date: December 2013
Notification of Construction (NOC) Date to be submitted: December 2010

Erosivity Waiver Yes ☐ Date: No ☒
Notification of ADL reuse (if Yes, provide date) Yes ☐ Date: No ☒
Separate Dewatering Permit (if yes, permit number) Yes ☐ Permit # No ☒

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

Betsy Ross 09/23/10
[Betsy Ross], Registered Project Engineer/Landscape Architect Date

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

George Washington 09/23/10
[George Washington), Project Manager *Date*

Paul Revere 09/23/10
[Paul Revere), Designated Maintenance Representative *Date*

Horatio Gates 09/23/10
[Horatio Gates), Designated Landscape Architect Representative *Date*

Friedrich Wilhelm von Steuben 09/23/10
[Stamp Required for PS&E only) *[Friedrich Wilhelm von Steuben), District/Regional Design SW Coordinator or Designee* *Date*

STORM WATER DATA INFORMATION

1. Project Description

This proposed roadway rehabilitation project is along Interstate 5 (I-5) in Sacramento County from the San Joaquin County line (PM 0.0) to the Florin Road interchange (PM 17.2). The project was divided into four segments based on the pavement rehabilitation strategy being utilized. Below is the outline of the proposed scope of work for each segment:

Segment 1 - PM 0.0 to PM 3.5

Pavement grinding, random slab replacement, dowel bar retrofit, and replacement of shoulders to remove edge drains.

Segment 2 - PM 3.5 to PM 13.0

Random slab replacements, crack and seat the existing Portland cement concrete (PCC) pavement and overlay with asphalt concrete, and replace shoulder.

Segment 3 – PM 13.0 to PM 15.7

Replace lane #2. Rehabilitate lanes #1 and 3 (grind, PCC slab replacement, overlay). Reconstruct and re-grade median and place concrete median barrier for traffic safety purposes.

Segment 4 - PM 15.7 to PM 17.2

Random slab replacements, crack and seat the existing PCC pavement and overlay with asphalt concrete. Reconstruct paved median for traffic safety.

The total disturbed soil area (DSA) will be approximately 11.8 acres. The DSA includes the added impervious areas, areas of median that are being re-graded to eliminate the need for a median ditch and construction staging areas. This calculation does not include shoulder backing or slab replacement. This project adds approximately 0.8 acres of new impervious area, resulting mainly from traffic improvements in the median. The estimated existing impervious area is 150 acres, and anticipated impervious area after the project is completed will be slightly less than 151 acres.

This project is entirely within the City and County of Sacramento Municipal Separate Storm Sewer System (MS4) permit area.

2. Site Data and Storm Water Quality Design Issues (refer to Checklists SW-1, SW-2, and SW-3)

The Central Valley Regional Water Quality Control Board (CVRWQCB) has jurisdiction within the project limits.

Hydrologic Units

The project area is located in three hydrologic sub-areas: Hydrologic Unit Number 544.00 at the Sacramento/San Joaquin county line (start of project to PM 1.0), Hydrologic Unit Number 510.00 (PM 1.0 to PM 6.0 and PM 11.0 to end of project) and Hydrologic Unit Number 519.11 (PM 6.0 to 11.0).

Receiving Water Bodies

The direct receiving water bodies are Morrison Creek and the Mokelumne River at the northern and southern ends of the project. In between, project runoff is conveyed in a series of roadway drainage channels that eventually discharge to unnamed streams, most of which ultimately discharge to the eastern portion of the Sacramento-San Joaquin Rivers' Delta. A small portion of the flow is directed to the City of Sacramento's Sump 90, located west of I-5 and Morrison Creek, where it is pumped through the levee and into the Sacramento River. This stretch of the Sacramento River, however, is downstream of the I Street Bridge in downtown Sacramento, which is defined as being part of the Delta in the Regional CVRWQCB's Basin Plan for Region 5.

Beneficial Uses

The Basin Plan for the RWQCB does not list any beneficial uses for Morrison Creek, but does provide beneficial uses for the Mokelumne River and the Delta:

- Municipal domestic supply (Delta Only)
- Agriculture irrigation and stock watering
- Industry process and service supply (Delta only)
- Contact recreation and other noncontact recreation
- Canoeing and rafting (Mokelumne only)
- Warm freshwater habitat
- Cold freshwater habitat (COLD)
- Warm and cold migration (MIGR)

- Warm spawning and Cold Spawning (SPWN)
- Wildlife habitat
- Navigation (Delta only)

Proposed 2006 CWA Section 303(d) List

Table 1 shows the project receiving water bodies on the Clean Water Act 303(d) List of Water Quality Limited Segments.

Table 1. Receiving Water Bodies on 303(d) List

Receiving Water Body	303(d) Listed Pollutant	Potential Source	TMDL Completion Date
Delta Waterways (eastern portion)	Chlorpyrifos	Agriculture, Urban Runoff/Storm Sewers	2006
	DDT	Agriculture	2011
	Diazinon	Agriculture, Urban Runoff/Storm Sewers	2006
	Exotic Species	Source Unknown	2019
	Group A Pesticides	Agriculture	2011
	Mercury	Resource Extraction	2006
	Unknown Toxicity	Source Unknown	2019
Morrison Creek	Chlorpyrifos	Source Unknown	2004
	Diazinon	Agriculture	2003
Mokelumne River	Copper	Resource Extraction	2020
	Zinc	Resource Extraction	2020

Climate

The climate is mild with temperatures ranging from lows in the upper 30s in January to highs in the low 90s in July. The rainy season has been defined by Caltrans as October 15 to April 15. The average monthly precipitation ranges from 0.04 inches in July to 3.74 inches in January. Rainfall intensities based on the Sacramento City Rain Gauge are 0.73 inches/hour for a 10-year return and 1.03 inches/hour for a 100-year return period.

Topography

Based on aerial and street view photos, the terrain is generally flat with intermittent high points at bridges. The United States Geological Survey (USGS) topographic maps identify the elevations ranging from sea level to 10 feet with no hills or mountains within the project area.

Soil Characteristics

The Natural Resources Conservation Service (NRCS) identifies the soils in the project vicinity as mainly Hydrologic Soil Group (HSG) D with a few areas of HSG C. Preliminary geotechnical studies have determined that over 85 percent of the highway along this corridor is on either cut or fill soils. Slopes associated with the construction of this project will be made as flat as possible, not exceeding 4:1 (H:V). Detailed soil characterization will be provided once geotechnical studies for the project have been completed.

Aerially Deposited Lead (ADL)

Because lead was used as an additive to gasoline prior to 1986, the surface soils along I-5 have the potential to be contaminated with aerially deposited lead (ADL) from the exhaust of cars burning lead gasoline. Further hazardous waste testing will be completed during the later phases of this project.

Groundwater Information

A review of historic Log of Test Borings for the Hood/Franklin Road overcrossing (O.C.)., Elk Grove Boulevard O.C., Beach Lake Bridge, Route 51160 S.O.H., and Florin Road O.C. show the groundwater to be from 6.0 feet to 32.5 feet below original grade.

Erosion Potential

The NRCS Web Soil Survey was used to estimate the erodibility of the site. The erosion factor K within the project area ranges from 0.24 to 0.43, with a weighted average of 0.32.

Risk Assessment

The R factor was determined from the EPA's "Rainfall Erosivity Factor Calculator" to be 85.46. The soil erodibility factor was determined by taking a weighted average of the project erosion factors from the NRCS Web Soil Survey, yielding a value of 0.32. The length-slope factor was determined using existing cross-section information considering the length and slope of all existing slopes to be disturbed, yielding a value of 0.46. These calculations can be found in the attachments.

The product of these values (R, K and LS) is 13. Because this value is less than 15, the project is classified as having a low sediment risk. See the attachments for the sediment risk factor input values.

The receiving water risk is classified as high because the Mokelumne River and the Delta both have the beneficial uses of SPWN, COLD and MIGR. A GIS map prepared by Caltrans was used to verify the high receiving water risk, which is shown in the attachments. Although the GIS map shows only portions of the project as having a high receiving water risk, Chris Allen, the District Storm Water Coordinator, confirmed on September 7, 2010 that the project team should treat the entire project as having a high receiving water risk.

The combined low sediment risk and high receiving water risk results in the project being classified as Risk Level 2.

Measures for Avoiding or Reducing Potential Storm Water Impacts

There are minimal slope stabilization concerns because most of the work proposed for this project will be contained with the existing roadway footprint, and the slopes are mild. All DSAs will consist of median re-grading areas, where both the proposed and existing surfaces will have slopes of less than 10 percent. All of these areas will ultimately be re-paved.

The project design allows for the ease of maintaining all best management practices (BMPs), and it can be scheduled or phased to minimize soil-disturbing work during the rainy season.

Land Use

The land use for the project area was determined by examining aerial photos. Between PM 0.0 and 9.4, the existing land is primarily agricultural. From PM 9.4 to 15.0, land use remains primarily agricultural on the west side of I-5, with some residential development on the east side. Beyond PM 15.0, land use consists of a mix of residential and commercial development as I-5 enters the metropolitan Sacramento area.

Right-of-Way Requirements

Currently, all work and BMPs will be within Caltrans R/W. If additional R/W is determined to be required, then the project team will work with Caltrans R/W and Design to determine the amount and cost of additional R/W.

3. Regional Water Quality Control Board Agreements

The Project team met with Chris Allen, the District Storm Water Coordinator, and Rose Lorenzo, the CVRWQCB representative on September 21, 2010 to discuss the Project. Ms. Lorenzo informed the Project team that there are no negotiated understandings or agreements required with the CVRWQCB pertaining to this project.

4. Proposed Design Pollution Prevention BMPs to be used on the Project.

Downstream Effects Related to Potentially Increased Flow, Checklist DPP-1, Parts 1 and 2

The proposed improvements will increase the impervious area within the project limits. This increase should have a negligible impact on downstream flow due to the small addition of impervious area compared with the drainage areas of the receiving water bodies (0.8 acres compared with 138,559 acres for Morrison Creek and 289,458 acres for the Delta). Segments 1 and 2 will not change velocity or volume of downstream flows because the work in these areas involves only roadway rehabilitation and replacement of impervious area.

Segments 3 and 4 will not increase the velocity and volume of downstream flows, but will slightly modify the local drainage along the roadway. Currently, stormwater from the

traveled way in these areas sheet flows to the outside shoulders and into roadside ditches. The median areas outside the traveled way drain to inlets along the median and discharge to the same roadside ditches. To allow for proper staging, the median areas for segments 3 and 4 will be overlaid or reconstructed to conform to the traveled way elevations and allow for stormwater from the median to sheet flow to the outside shoulders. While the direction of flow along the median will be modified, it does not change the overall drainage watershed because all flows from the roadway (traveled way and median) still combine at the roadside ditches.

This project will incorporate low impact development (LID) efforts to maintain or restore pre-project hydrology, as well as provide overall water quality improvement of discharges. These LID efforts will be incorporated in the development and placement of permanent best management practices (BMPs) during the design phase to the maximum extent practicable. Potential LID measures that will be considered for this project to improve water quality include:

- Minimizing impervious surface area and using pervious material for hardened surfaces outside of the roadway prism;
- Grading slopes to blend with the natural terrain and decrease the need for dikes, promoting sheet flow to vegetated areas that can provide water quality benefits and promote infiltration;
- Designing permanent drainage facilities that mimic the existing drainage pattern of the area through the use of permanent check dams for attenuation of flow and disconnected drainage facilities;
- Constructing permanent vegetated drainage ditches to decrease the velocity of discharge, plus decreasing the volume of discharge by promoting infiltration and allowing for pollutant removal; and
- Maintaining existing vegetated areas.

This project will only result in work within the existing roadway footprint and will not encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability.

Slope/Surface Protection Systems, Checklist DPP-1, Parts 1 and 3

While the project will result in a soil disturbance of 11.8 acres, no significant slope disturbance is anticipated for this project. The soil disturbed for segments 3 and 4 is mainly a result of the reconstruction of median areas extending from the median edge of the traveled way to the concrete median barrier, and no slopes steeper than 5 percent will be added. The proposed shoulder backing slopes to accommodate the overlay thickness are 4:1 (H:V) or flatter, as are all existing slopes.

At this phase of the project, the cost of design pollution prevention measures is estimated based on the size and complexity of the project. Individual design pollution prevention measures, including slope stabilization measures, will be identified during the design phase. At this stage of the project, design pollution prevention items are anticipated to include hydroseed and move in/move out.

Concentrated Flow Conveyance Systems, Checklist DPP-1, Parts 1 and 4

For segments 1 and 2, the drainage pattern will not be altered. Runoff along the traveled way will continue to sheet flow to the outside shoulders. The median area drainage will remain the same as the existing condition, with flow from median drain inlets periodically conveyed through culverts to the roadside drainage ditches and channels (PM 0.0 to PM 13.0, south of Morrison Creek). For segments 3 and 4, from north of Morrison Creek to the end of the project limits, the drainage pattern will be altered. The median will be reconstructed to allow for sheet flow along the traveled way to the edge of shoulder, and the median drainage inlets will be capped and abandoned.

This project will propose to cap and abandon existing drainage inlets. Existing cross drains that will no longer receive runoff will also be abandoned. There are currently no known existing areas of erosion or slope failures at existing culvert crossings, so additional installation of flared end sections, rock slope protection or other outlet protection/velocity dissipation devices may not be required for the project. However, because the runoff will be draining to existing or proposed roadway ditches, calculations to be conducted during the design phase should show that the increase in volume can be contained within the ditches and that the increase in flow and velocity will not result in erosion or scour if the ditches are only vegetated and lined with rock or other hard material.

Preservation of Existing Vegetation, Checklist DPP-1, Parts 1 and 5

Existing vegetation will be preserved to the maximum extent practicable. ESA fencing will be installed where necessary and will be shown in the Contract Plans with consultation from the Environmental Coordinator. Access by the Contractor is prohibited for the preservation of existing vegetation or protection of biological habitat. The project will have minimum clearing and grubbing because the majority of the project is currently paved. A 5 foot wide swath will be graded 4:1 (H:V) with shoulder backing material for newly placed asphalt concrete overlay.

5. Proposed Permanent Treatment BMPs to be used on the Project

This project is not required to consider treatment BMPs because the added impervious area is less than 1 acre; see the attached Evaluation Documentation Form.

6. Proposed Temporary Construction Site BMPs to be used on Project

As presented in Section 2 of this Report, this project is classified as Risk Level 2. This section presents the temporary construction site BMP strategy to be implemented for this project to meet both current Caltrans criteria and the requirements presented in the CGP.

Storm Water Pollution Prevention Plan

The project has a DSA of 11.8 acres. Because this project disturbs more than one acre of soil, a Storm Water Pollution Prevention Plan (SWPPP) must be submitted for this project by the Contractor prior to the start of construction. The SWPPP shall include a Construction Site Monitoring Program (CSMP) that presents procedures and methods related to the visual monitoring and sampling and analysis plans for non-visible pollutants, sediment and turbidity, and pH.

Rain Event Action Plan

Risk Level 2 projects are required to prepare a Rain Event Action Plan (REAP). The number of REAPs anticipated for this project is shown in Table 2. The quantities for REAPs are based on precipitation data from a National Oceanic and Atmospheric Administration station in Sacramento. Calculations are included in the attachments of this report.

Construction Site BMP Strategy

The construction work for this project is scheduled to cover three years. Whenever possible, the scheduling of earth-disturbing construction activities should not be made during anticipated rain events. To mitigate any potential runoff or run-on within the project area, construction site BMPs should be installed prior to the start of construction or as early as feasibly possible during construction.

Erosion control BMPs such as temporary hydraulic mulch should be placed when staging requires the protection of newly graded slopes. Temporary cover should be placed for quick and short-term stabilization of DSAs in preparation for an approaching storm or in the interim between staged soil disturbances.

Sediment control measures such as temporary silt fences will minimize sediment-laden sheet flows from discharging off-site. Temporary fiber rolls should also be utilized where necessary as a sediment control measure to intercept sheet and concentrated flow runoff and minimize the run-on upslope of the project. Temporary drainage inlet protection should be utilized to prevent sediment from entering the current or proposed storm drains.

The project will involve the movement of dirt, by construction equipment, adjacent to public roadways. In order to prevent the tracking of mud and dirt off-site, stabilized construction entrances/exits should be placed at multiple points throughout the project area. Street sweeping should also be utilized to remove tracked sediment. These tracking control items will be specified as separate bid line items during the design phase.

Concrete wastes shall be managed through the use of concrete washout facilities.

Various waste management, materials handling, and other housekeeping items shall be used throughout the duration of the project. Stockpiles of various kinds are anticipated and shall be maintained with the appropriate BMPs.

A meeting with Jake Luby, the Caltrans Construction Storm Water Coordinator, was held on September 10 to discuss the BMP approach for this project. From this meeting a general guidance of the minimal BMPs required for this project were determined. Costs have been estimated per the Unit Cost method outlined in Appendix F of the PPDG using quantities estimated based on the disturbed soil area and other parameters. The estimated costs can be found in the supplemental attachments, and the quantities are shown below.

Storm Water Sampling and Analysis

The project is required to perform stormwater sampling at all discharge locations. Numeric Action Levels are applicable to this project because the project is Risk Level 2.

Based on available existing drainage information, at this phase of the project it is assumed that there are 12 discharge locations. The actual number of discharge points will be refined during the design phase and the proposed quantities and costs will be adjusted accordingly.

Table 2: Quantities of Construction Site BMPs

BEES	Temporary BMPs - PPDG Appendix C	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit
	Temporary Soil Stabilization				
074037	Move-In/Move-out (Temporary Erosion Control)	07-485	No	6	EA
074051	Temp. Hydraulic Mulch	07-351	No	20,000	ft^2
074034	Temporary Cover	07-395	Yes	20,000	ft^2
BEES	***Temporary Sediment Control***	**SSP/nSSP (#, Y or N)**	**STD. Det. (Y or N)**	**Quantity**	**Unit**
074029	Temp. Silt Fence	07-430	Yes	3000	ft
074028	Temporary Fiber Roll	07-420	Yes	5000	ft
074031	Temporary Gravel Bag Berm	07-470	No	1500	ft
074041	Street Sweeping	07-360	No	1	LS
074038	Temp. Drainage Inlet Protection	07-490	Yes	64	EA
BEES	***Temporary Tracking Control***	**SSP/nSSP (#, Y or N)**	**STD. Det. (Y or N)**	**Quantity**	**Unit**
074033	Stabilized Constr. Entrance/Exit	07-480	Yes	6	EA

Quantities of Construction Site BMPs (cont'd)

BEES	*Temporary Waste Management Control*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit
CSM*	Material Delivery and Storage	07-346	No		LS
CSM*	Material Use	07-346	No		LS
CSM*	Stockpile Management	07-346	No		LS
CSM*	Spill Prevention and Control	07-346	No		LS
CSM*	Solid Waste Management	07-346	No		LS
CSM*	Hazardous Waste Management	07-346	No		LS
CSM*	Contaminated Soil Management	07-346	No		LS
	Concrete Waste Management	07-346	No		LS
074043	Temp. Concrete Washout Bin	07-407	No	6	EA
	Grinding PCC (Displ of PCC Pavemt Grooving & Grinding Residues)	42-600	No		LS
CSM*	Sanitary/Septic Waste Managemt	07-346	No		LS
CSM*	Liquid Waste Management	07-346	No		LS

BEES	*Temporary Non-Storm Water Management*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit
CSM*	Water Conservation Practices	07-346	No		LS
CSM*	Paving & Grinding Operations				LS
	Pavements	S5-250	No		ft^2
CSM*	Illicit Connection/Illegal Discharge Detection and	07-346	No		LS
CSM*	Potable Water/Irrigation	07-346	No		LS
CSM*	Vehicle and Equipment Cleaning	07-346	No		LS
CSM*	Vehicle and Equipment Fueling	07-346	No		LS
CSM*	Vehicle and Equipmt Maintenance	07-346	No		LS
CSM*	Concrete Curing	07-346	No		LS
CSM*	Concrete Finishing	07-346	No		LS
CSM*	***Construction Site Management**	07-346	No	1	LS

BEES	*Miscellaneous Items*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit
074019	Water Pollution Control (SWPPP)	07-345	No	1	LS
066595	Water Pollution Control Maintenance Sharing			1	LS
066596	Additional Water Pollution Control			1	LS
066597	Storm Water Sampling and Analysis		No	1	LS
074056	Rain Event Action Plan			109	EA
074057	Storm Water Annual Report			3	EA
074058	Storm Water Sampling and Analysis Day			0	EA

7. Maintenance BMPs (Drain Inlet Stenciling)

Drain inlet stenciling is not required because pedestrian traffic is prohibited within the project limits. Aubrey Griffin, the Caltrans Maintenance Area Manager, was contacted on September 20, 2010 for input on other maintenance BMPs that should be considered. Ms. Griffin stated that no additional maintenance BMPs are required based on the proposed layout.

Required Attachments

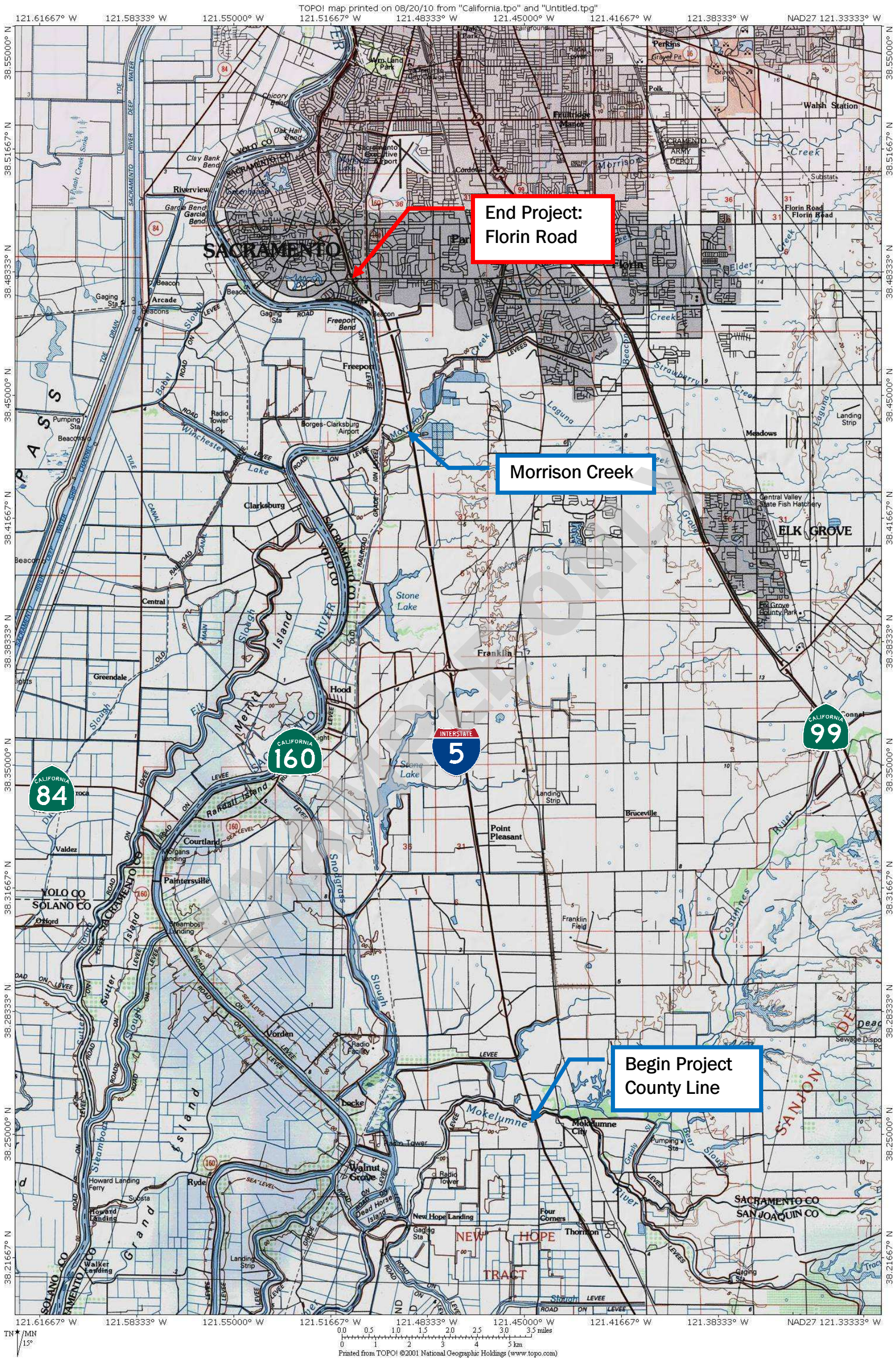
- Vicinity Map
- Evaluation Documentation Form (EDF)
- Risk Level Determination Documentation
- SWDR Tracking Form

Supplemental Attachments

Note: Supplemental Attachments are to be supplied during the SWDR approval process; where noted, some of these items may only be required on a project-specific basis.

- Storm Water BMP Cost Summary
- Checklist SW-1, Site Data Sources
- Checklist SW-2, Storm Water Quality Issues Summary
- Checklist SW-3, Measures for Avoiding or Reducing Potential Storm Water BMPs
- Checklists DPP-1, Parts 1–5

Vicinity Map



Source: United States Geological Survey (USGS)

DATE: September 2010

Project ID (or EA): 03-XXXXXX

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. FWS *(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**. *(Sacramento County)*, 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. *0.8 acres (Net Increase New Impervious Surface)*
9.	Project is required to consider approved Treatment BMPs.			See Sections 2.4 and either Section 5.5or 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. FWS *(Dist./Reg. Design SW Coord. Initials)* BR *(Project Engineer Initials)* 09/23/10 *(Date)*	✓		Document for Project Files by completing this form, and attaching it to the SWDR.

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

Risk Level Determination Documentation

Rainfall Erosivity Factor Calculator for Small Construction Sites

Facility Information

Facility Name: I-5 Rehabilitation (PM 0.0/17.2)
Start Date: 01/01/2011
End Date: 12/31/2013
Latitude: 38.3754
Longitutde: -121.4756

Erosivity Index Calculator Results

AN EROSIVITY INDEX VALUE OF **85.46** HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF **01/01/2011 - 12/31/2013**.

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**.

Source: EPA < http://cfpub.epa.gov/npdes/stormwater/lew/lewcalculator.cfm>

K Factor, Rock Free

K Factor, Rock Free— Summary by Map Unit — Sacramento County, California				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
114	Clear Lake clay, partially drained, 0 to 2 percent slopes, frequently flooded	.32	239.2	3.3%
115	Clear Lake clay, hardpan substratum, drained, 0 to 1 percent slopes	.32	789.3	10.9%
116	Columbia sandy loam, partially drained, 0 to 2 percent slopes	.32	19.0	0.3%
127	Cosumnes silt loam, partially drained, 0 to 2 percent slopes	.43	85.7	1.2%
133	Dierssen sandy loam, drained, 0 to 2 percent slopes	.32	53.4	0.7%
134	Dierssen sandy clay loam, drained, 0 to 2 percent slopes	.32	981.8	13.6%
135	Dierssen clay loam, deep, drained, 0 to 2 percent slopes	.32	692.1	9.6%
137	Durixeralfs, 0 to 1 percent slopes	.24	5.2	0.1%
138	Durixeralfs-Galt complex, 0 to 2 percent slopes	.24	442.6	6.1%
141	Egbert clay, partially drained, 0 to 2 percent slopes	.28	557.1	7.7%
142	Egbert clay, partially drained, 0 to 2 percent slopes, frequentl y flooded	.28	211.0	2.9%
143	Egbert-Urban land complex, partially drained, 0 to 2 percent slo pes	.28	114.9	1.6%
150	Fluvaquents, 0 to 2 percent slopes, frequently flooded		17.7	0.2%
151	Galt clay, leveled, 0 to 1 percent slopes	.24	119.3	1.6%
152	Galt clay, 0 to 2 percent slopes	.24	320.0	4.4%
154	Galt-Urban land complex, 0 to 2 percent slopes	.24	60.0	0.8%
169	Laugenour loam, partially drained, 0 to 2 percent slopes	.37	12.0	0.2%
190	Pits		10.4	0.1%
206	Sailboat silt loam, partially drained, 0 to 2 percent slopes	.43	38.2	0.5%
213	San Joaquin silt loam, leveled, 0 to 1 percent slopes	.37	601.9	8.3%
214	San Joaquin silt loam, 0 to 3 percent slopes	.37	520.9	7.2%
217	San Joaquin-Galt complex, leveled, 0 to 1 percent slopes	.37	166.3	2.3%
218	San Joaquin-Galt complex, 0 to 3 percent slopes	.37	22.6	0.3%

K Factor, Rock Free–Sacramento County, California, San Joaquin County, California, and Yolo County, California

K Factor, Rock Free— Summary by Map Unit — Sacramento County, California				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
219	San Joaquin-Urban land complex, 0 to 2 percent slopes	.37	118.4	1.6%
222	Scribner clay loam, partially drained, 0 to 2 percent slopes	.32	194.0	2.7%
225	Tinnin loamy sand, 0 to 2 percent slopes	.17	24.4	0.3%
230	Valpac loam, partially drained, 0 to 2 percent slopes	.37	78.3	1.1%
238	Xerarents-San Joaquin complex, 0 to 1 percent slopes		66.6	0.9%
247	Water		191.3	2.6%
Subtotals for Soil Survey Area			**6,753.8**	**93.2%**
Totals for Area of Interest			**7,244.7**	**100.0%**

K Factor, Rock Free— Summary by Map Unit — San Joaquin County, California				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
138	Cosumnes silty clay loam, drained, 0 to 2 percent slopes	.37	228.6	3.2%
148	Dello clay loam, drained, 0 to 2 percent slopes, overwashed	.28	22.1	0.3%
153	Egbert silty clay loam, partially drained, 0 to 2 percent slopes	.28	6.3	0.1%
222	Reiff fine sandy loam, 0 to 2 percent slopes, occasionally flooded	.37	21.0	0.3%
234	Sailboat silt loam, drained, 0 to 2 percent slopes	.43	104.5	1.4%
243	Scribner clay loam, partially drained, 0 to 2 percent slopes	.32	108.0	1.5%
Subtotals for Soil Survey Area			**490.5**	**6.8%**
Totals for Area of Interest			**7,244.7**	**100.0%**

K Factor, Rock Free— Summary by Map Unit — Yolo County, California				
Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
W	Water		0.7	0.0%
Subtotals for Soil Survey Area			**0.7**	**0.0%**
Totals for Area of Interest			**7,244.7**	**100.0%**

K Factor Calculations
Source: Web Soil Survey

Map Unit Symbol	Rating	Acres in AOI	Rating*AOI
114	0.32	239.2	76.544
115	0.32	789.3	252.576
116	0.32	19	6.08
127	0.43	85.7	36.851
133	0.32	53.4	17.088
134	0.32	981.8	314.176
135	0.32	692.1	221.472
137	0.24	5.2	1.248
138	0.24	442.6	106.224
141	0.28	557.1	155.988
142	0.28	211	59.08
143	0.28	114.9	32.172
151	0.24	119.3	28.632
152	0.24	320	76.8
154	0.24	60	14.4
169	0.37	12	4.44
206	0.43	38.2	16.426
213	0.37	601.9	222.703
214	0.37	520.9	192.733
217	0.37	166.3	61.531
218	0.37	22.6	8.362
219	0.37	118.4	43.808
222	0.32	194	62.08
225	0.17	24.4	4.148
230	0.37	78.3	28.971
	Total	6467.6	2044.533

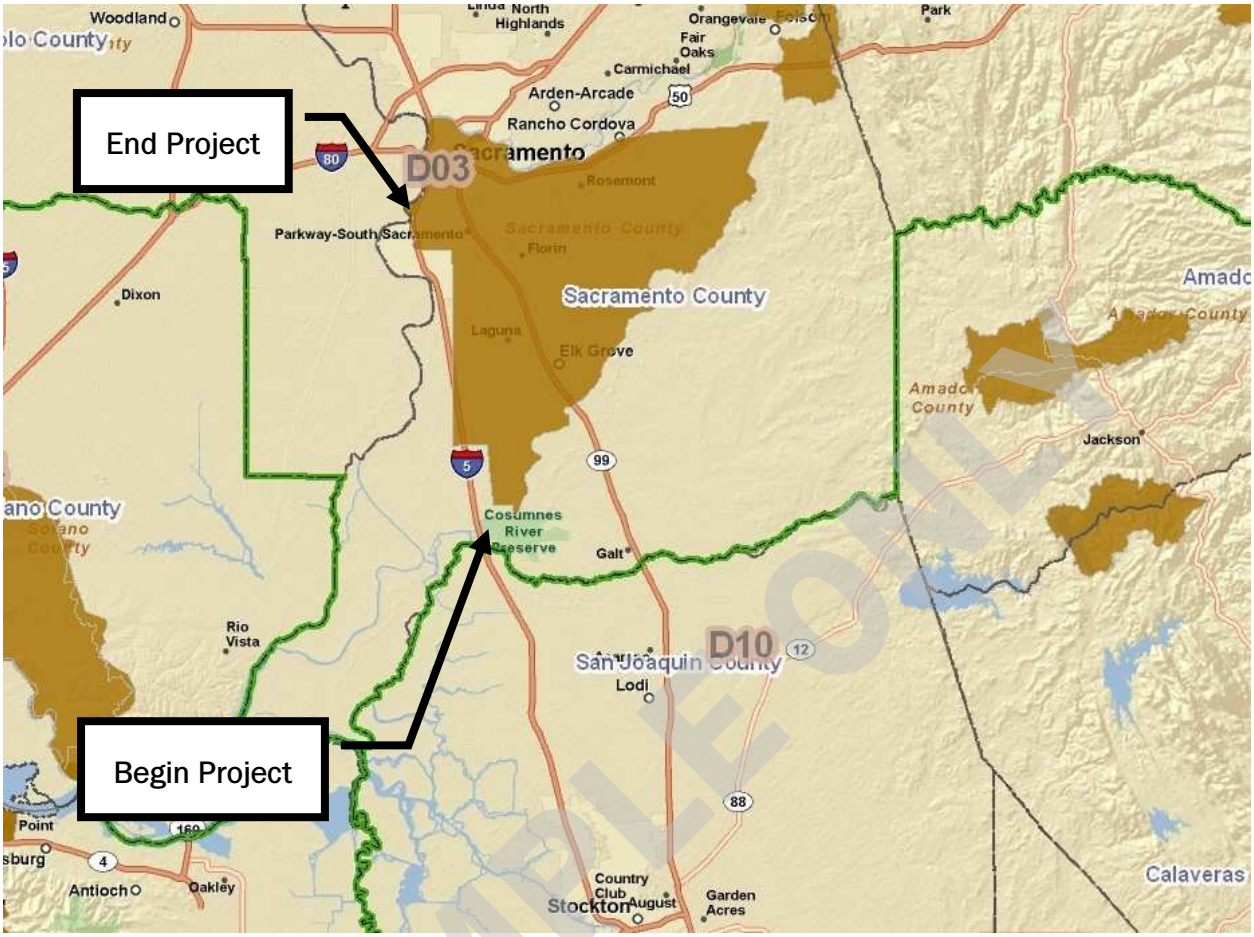
Average **0.32**

Alignment	Station	Length - L (ft)	Slope - S (ft/ft)	L x S	Length - L (ft)	Slope - S (ft/ft)	L x S	Total L (ft)	Avg S (ft/ft)
"B1"	800+00	20	0.05	1.000	20	0.05	1.000	40	0.05
"B1"	810+00	20	0.06	1.200	20	0.05	1.000	40	0.06
"B1"	820+00	20	0.04	0.800	20	0.06	1.200	40	0.05
"B1"	830+00	20	0.05	1.000	20	0.05	1.000	40	0.05
"B1"	840+00	20	0.05	1.000	20	0.05	1.000	40	0.05
"B1"	850+00	20	0.05	1.000	20	0.05	1.000	40	0.05
"B1"	860+00	20	0.05	1.000	20	0.05	1.000	40	0.05
"B1"	870+00	20	0.06	1.200	20	0.07	1.400	40	0.07
"B1"	880+00	20	0.04	0.800	20	0.05	1.000	40	0.05
"B1"	890+00	20	0.05	1.000	20	0.05	1.000	40	0.05
"B1"	900+00	20	0.05	1.000	20	0.04	0.800	40	0.05
"B1"	910+00	20	0.05	1.000	20	0.06	1.200	40	0.06
"B1"	920+00	20	0.07	1.400	20	0.05	1.000	40	0.06
"B1"	930+00	20	0.05	1.000	20	0.05	1.000	40	0.05
"B1"	940+00	20	0.04	0.800	20	0.04	0.800	40	0.04
"B1"	950+00	18	0.04	0.720	18	0.06	1.080	36	0.05
"B1"	960+00	16	0.05	0.800	16	0.05	0.800	32	0.05
"B1"	970+00	14	0.04	0.560	14	0.05	0.700	28	0.05
"B1"	980+00	12	0.04	0.480	12	0.04	0.480	24	0.04
"B1"	990+00	10	0.06	0.600	10	0.06	0.600	20	0.06
							Average:	**37.00**	**0.0505**

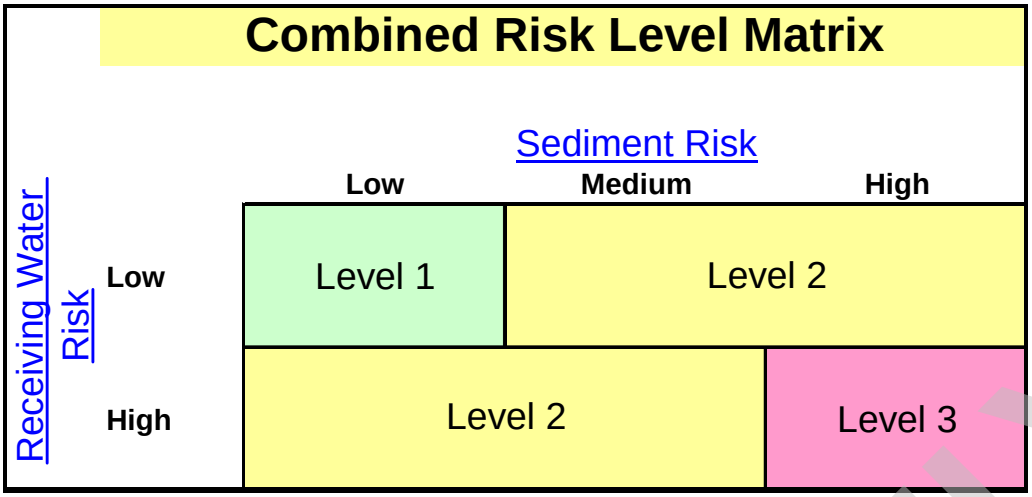
Sheet Flow Length (ft)	**Average Watershed Slope (%)**							
	0.2	**0.5**	**1.0**	**2.0**	**3.0**	**4.0**	**5.0**	**6.0**
<3	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26
6	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26
9	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26
12	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26
15	0.05	0.07	0.09	0.13	0.17	0.20	0.23	0.26
25	0.05	0.07	0.10	0.16	0.21	0.26	0.31	0.36
50	0.05	0.08	0.13	0.21	0.30	0.38	0.46	0.54
75	0.05	0.08	0.14	0.25	0.36	0.47	0.58	0.69
100	0.05	0.09	0.15	0.28	0.41	0.55	0.68	0.82

	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**		85.46
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**		0.46
14			
15	**Watershed Erosion Estimate (=RxKxLS) in tons/acre**		12.579712
16	**Site Sediment Risk Factor**		**Low**
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 Risk GIS Map



Source: Caltrans



Project Sediment Risk: **Low**

Project RW Risk: **High**

Project Combined Risk: **Level 2**

Source: State Water Resources Control Board

Report_Date	Dist_EA	District	EA	County	Route	Beg_PM	End_PM	Descrip	Phase	LongSWDR	PhaseRptDate	Exempt	TBMP	Pollution_Program	Land Disturbance Acreage	AddImpArea	PercentTreated	MS4Area	MS4CiCo	Water Bodies Affected	Criteria	BioStrip	BioSwale	Detention	Infiltration	InfilTrench	GSRD	TST	DryWeath	MedFilter	MCTT	WetBasin	Const_Start	Const_Comp	SWComment
9/23/2010	03-XXXX	3	XXXXXX	Sac	5	0	17.2	Pavemei	PA/ED	TRUE	9/23/2010	FALSE	FALSE	SWPPP	11.8	0.8	0	TRUE	Sacramen	Morrison Creek, Mokelu	N/A	0	0	0	0	0	0	0	0	0	0	0	1/1/2011	12/31/2013	

Storm Water BMP Cost Summary - PID Phase Only
THIS INFORMATION IS FOR CALTRANS INTERNAL USE ONLY

Temporary Construction Site BMPs

BEES	Temporary BMPs - PPDG Appendix C	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost ($)
	Temporary Soil Stabilization						
074037	Move-In/Move-out (Temporary Erosion Control)	07-485	No	6	EA	100	$ 600
074051	Temp. Hydraulic Mulch	07-351	No	20,000	ft^2	0.20	$ 4,000
074034	Temporary Cover	07-395	Yes	20,000	ft^2	1	$ 12,000
						Subtotal Soil Stabilization BMPs	**$ 16,600**

BEES	*Temporary Sediment Control*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
074029	Temp. Silt Fence	07-430	Yes	3000	ft	$5	$ 15,000
074028	Temporary Fiber Roll	07-420	Yes	5000	ft	$6	$ 30,000
074031	Temporary Gravel Bag Berm	07-470	No	2000	ft	$6	$ 12,000
074041	Street Sweeping	07-360	No	1	LS	$10,000	$ 10,000
074038	Temp. Drainage Inlet Protection	07-490	Yes	75	EA	$200	$ 15,000
						Subtotal Sediment Control BMPs	**$ 82,000**

BEES	*Temporary Wind Erosion Control*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
							$ -
						Subtotal Wind Erosion Control BMPs	**$ -**

BEES	*Temporary Tracking Control*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
074033	Stabilized Constr. Entrance/Exit	07-480	Yes	6	EA	2,500	$ 15,000
						Subtotal Tracking Control BMPs	**$ 15,000**

BEES	*Temporary Waste Management Control*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
CSM*	Material Delivery and Storage	07-346	No		LS		$ -
CSM*	Material Use	07-346	No		LS		$ -
CSM*	Stockpile Management	07-346	No		LS		$ -
CSM*	Spill Prevention and Control	07-346	No		LS		$ -
CSM*	Solid Waste Management	07-346	No		LS		$ -
CSM*	Hazardous Waste Management	07-346	No		LS		$ -
CSM*	Contaminated Soil Management	07-346	No		LS		$ -
	Concrete Waste Management	07-346	No		LS		$ -
074043	Temp. Concrete Washout Bin	07-407	No	6	EA	2,000	$ 12,000
	Grinding PCC (Displ of PCC Pavemt Grooving & Grinding Residues)	42-600	No		LS		$ -
CSM*	Sanitary/Septic Waste Managemt	07-346	No		LS		$ -
CSM*	Liquid Waste Management	07-346	No		LS		$ -
						Subtotal Waste Management & Materials Handling BMPs	$ 12,000

Temporary Construction Site BMPs (cont'd)

BEES	*Temporary Non-Storm Water Management*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
CSM*	Water Conservation Practices	07-346	No		LS		$ -
CSM*	Paving & Grinding Operations				LS		$ -
	Pavements	S5-250	No		ft^2		$ -
CSM*	Illicit Connection/Illegal Discharge Detection and	07-346	No		LS		$ -
CSM*	Potable Water/Irrigation	07-346	No		LS		$ -
CSM*	Vehicle and Equipment Cleaning	07-346	No		LS		$ -
CSM*	Vehicle and Equipment Fueling	07-346	No		LS		$ -
CSM*	Vehicle and Equipmt Maintenance	07-346	No		LS		$ -
CSM*	Concrete Curing	07-346	No		LS		$ -
CSM*	Concrete Finishing	07-346	No		LS		$ -
CSM*	***Construction Site Management**	07-346	No	1	LS	15,000	$ 15,000
						Subtotal Non-Storm Water Management	$ 15,000

BEES	*Miscellaneous Items*	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost
074019	Water Pollution Control (SWPPP)	07-345	No	1	LS	24,000	$ 24,000
066595	Water Pollution Control Maintenance Sharing			1	LS	40,000	$ 40,000
066596	Additional Water Pollution Control			1	LS	3,200	$ 3,200
066597	Storm Water Sampling and Analysis		No	1	LS	3,200	$ 3,200
074056	Rain Event Action Plan			109	EA	500	$ 54,500
074057	Storm Water Annual Report			3	EA	2,000	$ 6,000
074058	Storm Water Sampling and Analysis Day			72	EA	2,040	$ 146,880
						Subtotal Miscellaneous Items	**$ 277,780**

Total Construction Site BMP Costs	**$ 418,380**

Notes:
Refer to calculations on following page for breakdown of cost estimate
Estimate is based on $10M total project cost.

Routine Quarterly Monitoring (Equation 1)

36	months	/	3	+	1		13	inspections
12	discharges	+	4	additional discharges			16	discharges
							$ 100	/hour
						Total	$ 20,800	

Prepare Storm Water Pollution Prevention Plan (Table F-6)

Total Estimated Construction Cost		$ 10,000,000
Prepare SWPPP Base Cost		$ 3,200
Routine Quarterly Monitoring Cost		$ 20,800
	Total	$ 24,000

Prepare Storm Water Pollution Prevention Plan (Table F-6)

Prepare WPCP Cost	$ -

Storm Water Annual Report

1	report/year	x	3	years	x	$2000/ea	$ 6,000

REAP (Storms Generating ≥ 0.10 inches)

36.2	rainy days/year	x	3	years			109	days
36.2	rainy days/year	x	0	subsequent months	÷	12 subsequent months/year	0	days
							109	days
							109	REAPs
						$500 per REAP	$ 54,500	

Storm Water Monitoring Cost (Equation 3)

M Value							2	
23.9	rainy days/year	x	3	years			72	days
23.9	rainy days/year	x	0	subsequent months	÷	12 subsequent months/year	0	days
							72	days
Daily cost to perform sampling and analysis							$ 2,000	
Equipment Maintenance Cost							$ 2,600	
							$ 146,000	
						Unit Price:	$ 2,036.26	

Source: Project Planning and Design Guide, Appendix F.6.3

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data,
and Information Service

Climatography of the United States No. 20 1971-2000

National Climatic Data Center
Federal Building
151 Patton Avenue
Asheville, North Carolina 28801
www.ncdc.noaa.gov

Station: SACRAMENTO AP, CA **COOP ID: 047630**

Climate Division: CA 2 **NWS Call Sign: SAC** **Elevation: 15 Feet** **Lat: 38°30N** **Lon: 121°30W**

Precipitation (inches)

Precipitation Totals — Means/Medians(1)

Month	Mean	Median
Jan	3.84	3.63
Feb	3.54	3.13
Mar	2.80	2.43
Apr	1.02	.85
May	.53	.25
Jun	.20	.04
Jul	.05	.00
Aug	.06	.00
Sep	.36	.08
Oct	.89	.72
Nov	2.19	1.66
Dec	2.45	2.51
Ann	17.93	16.17

Precipitation Totals — Extremes

Month	Highest Daily(2)	Year	Day	Highest Monthly(1)	Year	Lowest Monthly(1)	Year
Jan	3.05	1967	21	9.14	1978	.16	1984
Feb	2.63	1986	17	9.95	1998	.20	1995
Mar	1.85	1982	31	8.13	1995	.05	1994
Apr	2.17	1958	2	4.21	1983	.00	1985
May	1.35	1990	27	2.98	1998	.00+	1992
Jun	1.14	1993	4	1.26	1993	.00+	1996
Jul	.77	1974	8	.79	1974	.00+	2000
Aug	.65	1965	11	.65	1976	.00+	2000
Sep	1.79	1989	16	2.78	1989	.00+	1999
Oct	3.77	1962	13	2.61	1982	.00+	1995
Nov	2.42	1970	28	6.27	1973	.00	1995
Dec	2.87	1955	19	6.39	1996	.00	1989
Ann	3.77	Oct 1962	13	9.95	Feb 1998	.00+	Aug 2000

Mean Number of Days (3) — Daily Precipitation

Month	>= 0.01	>= 0.10	>= 0.50	>= 1.00
Jan	10.5	6.8	2.4	.8
Feb	9.1	6.3	2.6	.8
Mar	9.4	6.2	1.9	.3
Apr	4.9	2.8	.6	.1
May	2.9	1.3	.3	.1
Jun	1.2	.5	.1	@
Jul	.2	.1	@	.0
Aug	.4	.2	.0	.0
Sep	1.5	.9	.2	@
Oct	3.6	1.8	.7	.2
Nov	7.2	4.5	1.6	.5
Dec	8.2	4.8	1.9	.4
Ann	59.1	36.2	12.3	3.2

Precipitation Probabilities (1)

Probability that the monthly/annual precipitation will be equal to or less than the indicated amount

Monthly/Annual Precipitation vs Probability Levels
These values were determined from the incomplete gamma distribution

Month	.05	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95
Jan	.28	.53	1.02	1.55	2.14	2.82	3.63	4.67	6.10	8.52	10.92
Feb	.35	.61	1.09	1.58	2.12	2.72	3.43	4.32	5.54	7.56	9.55
Mar	.22	.40	.76	1.15	1.58	2.07	2.66	3.41	4.44	6.18	7.89
Apr	.06	.16	.31	.46	.62	.80	1.00	1.25	1.60	2.16	2.71
May	.00	.00	.00	.03	.10	.21	.36	.58	.90	1.51	2.14
Jun	.00	.00	.00	.00	.01	.06	.12	.21	.35	.58	.82
Jul	**	**	**	**	**	**	**	**	**	**	**
Aug	.00	.00	.00	.00	.00	.00	.00	.00	.05	.20	.37
Sep	.00	.00	.00	.00	.00	.07	.21	.39	.65	1.10	1.55
Oct	.00	.00	.11	.24	.39	.57	.79	1.08	1.48	2.18	2.89
Nov	.04	.16	.43	.73	1.08	1.50	2.00	2.65	3.57	5.13	6.69
Dec	.13	.36	.73	1.09	1.48	1.90	2.40	3.02	3.86	5.25	6.60
Ann	8.04	9.63	11.84	13.63	15.31	16.99	18.80	20.87	23.47	27.42	30.98

+ Also occurred on an earlier date(s)
# Denotes amounts of a trace
@ Denotes mean number of days greater than 0 but less than .05
** Statistics not computed because less than six years out of thirty had measurable precipitation

36.2 - 12.3 = 23.9

(1) From the 1971-2000 Monthly Normals
(2) Derived from station's available digital record: 1941-2001
(3) Derived from 1971-2000 serially complete daily data

Complete documentation available from:
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

Checklist SW-1, Site Data Sources

Prepared by: B. Ross Date: September 2010 District-Co-Route: 03-Sac-5

PM : 0.0/17.2 Project ID (or EA): 03-XXXXXX RWQCB: Central Valley (5S)

Information for the following data categories should be obtained, reviewed and referenced as necessary throughout the project planning phase. Collect any available documents pertaining to the category and list them and reference your data source. For specific examples of documents within these categories, refer to Section 5.5 of this document. Example categories have been listed below; add additional categories, as needed. Summarize pertinent information in Section 2 of the SWDR.

DATA CATEGORY/SOURCES	Date
Topographic	
• Florin, CA Map, Contour Interval 5 ft, Elevation Data USGS 1 arc-second NED, 1 meter vertical precision.	Version 1978, Current as of 1980
Hydraulic	
• California State University, Sacramento. *Water Quality Planning Tool.* <http://stormwater.water-programs.com/>	Accessed September 2010
Soils	
• US Dept. of Agriculture (USDA), Natural Resources Conservation Service (NRCS). Web Soil Survey. http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx	Accessed October 2009
• Caltrans. *Draft Geotechnical and Material Memorandum.*	September 2010
Climatic	
• California Department of Transportation. *Statewide Storm Water Management Plan.* CTSW-RT-02-008	May 2003
Water Quality	
• State Water Resources Control Board. *2006 State Water Resources Control Board 303(d) List for Water Quality Limited Segments.*	USEPA Approval Date June 28, 2007
• California Department of Transportation. *Storm Water Management Program District 3 Work Plan, Fiscal Year 2010-2011.* CTSW-RT-10-182-42.1	April 1, 2010
• California State Water Resources Control Board (SWRCB). *National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities.* NPDES Number CAS000002.	September 2, 2009
Other Data Categories	
• California Department of Transportation. *Storm Water Quality Handbooks–Construction Site Best Management Practices (BMPs) Manual.*	March 2003
• Project Planning Design Guide, Storm Water Quality Handbooks. Caltrans State of California, Department of Transportation.	July 2010

Checklist SW-2, Storm Water Quality Issues Summary

Prepared by: B. Ross Date: September 2010 District-Co-Route: 03-Sac-5

PM : 0.0/17.2 Project ID (or EA): 03-XXXXXX RWQCB: Central Valley (5S)

The following questions provide a guide to collecting critical information relevant to project stormwater quality issues. Complete responses to applicable questions, consulting other Caltrans functional units (Environmental, Landscape Architecture, Maintenance, etc.) and the District/Regional Storm Water Coordinator as necessary. Summarize pertinent responses in Section 2 of the SWDR.

1.	Determine the receiving waters that may be affected by the project throughout the project life cycle (i.e., construction, maintenance and operation).	☒ Complete	☐ NA
2.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.	☒ Complete	☐ NA
3.	Determine if there are any municipal or domestic water supply reservoirs or groundwater percolation facilities within the project limits. Consider appropriate spill contamination and spill prevention control measures for these new areas.	☐ Complete	☒ NA
4.	Determine the RWQCB special requirements, including TMDLs, effluent limits, etc.	☒ Complete	☐ NA
5.	Determine regulatory agencies seasonal construction and construction exclusion dates or restrictions required by federal, state, or local agencies.	☐ Complete	☒ NA
6.	Determine if a 401 certification will be required.	☐ Complete	☒ NA
7.	List rainy season dates.	☒ Complete	☐ NA
8.	Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.	☒ Complete	☐ NA
9.	If considering Treatment BMPs, determine the soil classification, permeability, erodibility, and depth to groundwater.	☐ Complete	☒ NA
10.	Determine contaminated soils within the project area.	☒ Complete	☐ NA
11.	Determine the total disturbed soil area of the project.	☒ Complete	☐ NA
12.	Describe the topography of the project site.	☒ Complete	☐ NA
13.	List any areas outside of the Caltrans right-of-way that will be included in the project (e.g. contractor's staging yard, work from barges, easements for staging, etc.).	☐ Complete	☒ NA
14.	Determine if additional right-of-way acquisition or easements and right-of-entry will be required for design, construction and maintenance of BMPs. If so, how much?	☐ Complete	☒ NA
15.	Determine if a right-of-way certification is required.	☐ Complete	☒ NA
16.	Determine the estimated unit costs for right-of-way should it be needed for Treatment BMPs, stabilized conveyance systems, lay-back slopes, or interception ditches.	☒ Complete	☐ NA
17.	Determine if project area has any slope stabilization concerns.	☒ Complete	☐ NA
18.	Describe the local land use within the project area and adjacent areas.	☒ Complete	☐ NA
19.	Evaluate the presence of dry weather flow.	☐ Complete	☒ NA

Checklist SW-3, Measures for Avoiding or Reducing Potential Storm Water Impacts

Prepared by: B. Ross Date: September 2010 District-Co-Route: 03-Sac-5

PM : 0.0/17.2 Project ID (or EA): 03-XXXXXX RWQCB: Central Valley (5S)

The PE must confer with other functional units, such as Landscape Architecture, Hydraulics, Environmental, Materials, Construction and Maintenance, as needed to assess these issues. Summarize pertinent responses in Section 2 of the SWDR.

Options for avoiding or reducing potential impacts during project planning include the following:

1.	Can the project be relocated or realigned to avoid/reduce impacts to receiving waters or to increase the preservation of critical (or problematic) areas such as floodplains, steep slopes, wetlands, and areas with erosive or unstable soil conditions?	☐Yes	☒No	☐NA
2.	Can structures and bridges be designed or located to reduce work in live streams and minimize construction impacts?	☐Yes	☐No	☒NA
3.	Can any of the following methods be utilized to minimize erosion from slopes:			
	a. Disturbing existing slopes only when necessary?	☒Yes	☐No	☐NA
	b. Minimizing cut and fill areas to reduce slope lengths?	☒Yes	☐No	☐NA
	c. Incorporating retaining walls to reduce steepness of slopes or to shorten slopes?	☐Yes	☐No	☒NA
	d. Acquiring right-of-way easements (such as grading easements) to reduce steepness of slopes?	☐Yes	☐No	☒NA
	e. Avoiding soils or formations that will be particularly difficult to re-stabilize?	☒Yes	☐No	☐NA
	f. Providing cut and fill slopes flat enough to allow re-vegetation and limit erosion to pre-construction rates?	☒Yes	☐No	☐NA
	g. Providing benches or terraces on high cut and fill slopes to reduce concentration of flows?	☐Yes	☐No	☒NA
	h. Rounding and shaping slopes to reduce concentrated flow?	☒Yes	☐No	☐NA
	i. Collecting concentrated flows in stabilized drains and channels?	☒Yes	☐No	☐NA
4.	Does the project design allow for the ease of maintaining all BMPs?	☒Yes	☐No	
5.	Can the project be scheduled or phased to minimize soil-disturbing work during the rainy season?	☒Yes	☐No	
6.	Can permanent storm water pollution controls such as paved slopes, vegetated slopes, basins, and conveyance systems be installed early in the construction process to provide additional protection and to possibly utilize them in addressing construction storm water impacts?	☒Yes	☐No	☐NA

Design Pollution Prevention BMPs

Checklist DPP-1, Part 1

Prepared by: B. Ross Date: September 2010 District-Co-Route: 03-Sac-5

PM : 0.0/17.2 Project ID (or EA): 03-XXXXXX RWQCB: Central Valley (5S)

Consideration of Design Pollution Prevention BMPs

Consideration of Downstream Effects Related to Potentially Increased Flow [to streams or channels]

Will project increase velocity or volume of downstream flow?	☒ Yes	☐ No	☐ NA
Will the project discharge to unlined channels?	☒ Yes	☐ No	☐ NA
Will project increase potential sediment load of downstream flow?	☒ Yes	☐ No	☐ NA
Will project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability?	☐ Yes	☒ No	☐ NA

If Yes was answered to any of the above questions, consider ***Downstream Effects Related to Potentially Increased Flow***, complete the DPP-1, Part 2 checklist.

Slope/Surface Protection Systems

Will project create new slopes or modify existing slopes?	☒ Yes	☐ No	☐ NA

If Yes was answered to the above question, consider ***Slope/Surface Protection Systems***, complete the DPP-1, Part 3 checklist.

Concentrated Flow Conveyance Systems

Will the project create or modify ditches, dikes, berms, or swales?	☐ Yes	☒ No	☐ NA
Will project create new slopes or modify existing slopes?	☒ Yes	☐ No	☐ NA
Will it be necessary to direct or intercept surface runoff?	☒ Yes	☐ No	☐ NA
Will cross drains be modified?	☐ Yes	☒ No	☐ NA

If Yes was answered to any of the above questions, consider ***Concentrated Flow Conveyance Systems***, complete the DPP-1, Part 4 checklist.

Preservation of Existing Vegetation

It is the goal of the Storm Water Program to maximize the protection of desirable existing vegetation to provide erosion and sediment control benefits on all projects. ☒ Complete

Consider ***Preservation of Existing Vegetation***, complete the DPP-1, Part 5 checklist.

Design Pollution Prevention BMPs

Checklist DPP-1, Part 2

Prepared by: B. Ross Date: September 2010 District-Co-Route: 03-Sac-5

PM : 0.0/17.2 Project ID (or EA): 03-XXXXXX RWQCB: Central Valley (5S)

Downstream Effects Related to Potentially Increased Flow

1.	Review total paved area and reduce to the maximum extent practicable.	☒Complete
2.	Review channel lining materials and design for stream bank erosion control.	☒Complete
	(a) See Chapters 860 and 870 of the HDM.	☒Complete
	(b) Consider channel erosion control measures within the project limits as well as downstream. Consider scour velocity.	☒Complete
3.	Include, where appropriate, energy dissipation devices at culvert outlets.	☒Complete
4.	Ensure all transitions between culvert outlets/headwalls/wingwalls and channels are smooth to reduce turbulence and scour.	☒Complete
5.	Include, if appropriate, peak flow attenuation basins or devices to reduce peak discharges.	☒Complete

Design Pollution Prevention BMPs

Checklist DPP-1, Part 3

Prepared by: B. Ross Date: September 2010 District-Co-Route: 03-Sac-5

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Slope / Surface Protection Systems

1.	What are the proposed areas of cut and fill? (attach plan or map)	☒Complete	
2.	Were benches or terraces provided on high cut and fill slopes to reduce concentration of flows?	☐Yes	☒No
3.	Were slopes rounded and/or shaped to reduce concentrated flow?	☒Yes	☐No
4.	Were concentrated flows collected in stabilized drains or channels?	☒Yes	☐No
5.	Are new or disturbed slopes > 4:1 horizontal:vertical (h:v)?	☐Yes	☒No
	If Yes, District Landscape Architect must prepare or approve an erosion control plan, at the District's discretion.		
6.	Are new or disturbed slopes > 2:1 (h:v)?	☐Yes	☒No
	If Yes, Geotechnical Services must prepare a Geotechnical Design Report, and the District Landscape Architect should prepare or approve an erosion control plan. Concurrence must be obtained from the District Maintenance Storm Water Coordinator for slopes steeper than 2:1 (h:v).		
7.	Estimate the net new impervious area that will result from this project. 0.8 acres	☒Complete	

VEGETATED SURFACES

1.	Identify existing vegetation.	☒Complete
2.	Evaluate site to determine soil types, appropriate vegetation and planting strategies.	☒Complete
3.	How long will it take for permanent vegetation to establish?	☒Complete
4.	Minimize overland and concentrated flow depths and velocities.	☒Complete

HARD SURFACES

1.	Are hard surfaces required?	☒Yes	☐No
	If Yes, document purpose (safety, maintenance, soil stabilization, etc.), types, and general locations of the installations.	☒Complete	

Review appropriate SSPs for Vegetated Surface and Hard Surface Protection Systems. ☒Complete

Design Pollution Prevention BMPs

Checklist DPP-1, Part 4

Prepared by: B. Ross Date: September 2010 District-Co-Route: 03-Sac-5

PM : 0.0/17.2 Project ID (or EA): 03-XXXXXX RWQCB: Central Valley (5S)

Concentrated Flow Conveyance Systems

Ditches, Berms, Dikes and Swales

1. Consider Ditches, Berms, Dikes, and Swales as per Topics 813, 834.3, and 835, and Chapter 860 of the HDM. ☒Complete
2. Evaluate risks due to erosion, overtopping, flow backups or washout. ☒Complete
3. Consider outlet protection where localized scour is anticipated. ☒Complete
4. Examine the site for run-on from off-site sources. ☒Complete
5. Consider channel lining when velocities exceed scour velocity for soil. ☒Complete

Overside Drains

1. Consider downdrains, as per Index 834.4 of the HDM. ☒Complete
2. Consider paved spillways for side slopes flatter than 4:1 h:v. ☒Complete

Flared Culvert End Sections

1. Consider flared end sections on culvert inlets and outlets as per Chapter 827 of the HDM. ☒Complete

Outlet Protection/Velocity Dissipation Devices

1. Consider outlet protection/velocity dissipation devices at outlets, including cross drains, as per Chapters 827 and 870 of the HDM. ☒Complete

Review appropriate SSPs for Concentrated Flow Conveyance Systems. ☒Complete

Design Pollution Prevention BMPs

Checklist DPP-1, Part 5

Prepared by: B. Ross Date: September 2010 District-Co-Route: 03-Sac-5

PM : 0.0/17.2 Project ID (or EA): 03-XXXXXX RWQCB: Central Valley (5S)

Preservation of Existing Vegetation

1. Review Preservation of Property, Standard Specifications 16.1.01 and 16-1.02 (Clearing and Grubbing) to reduce clearing and grubbing and maximize preservation of existing vegetation. ☒Complete
2. Has all vegetation to be retained been coordinated with Environmental, and identified and defined in the contract plans? ☒Yes ☐No
3. Have steps been taken to minimize disturbed areas, such as locating temporary roadways to avoid stands of trees and shrubs and to follow existing contours to reduce cutting and filling? ☒Complete
4. Have impacts to preserved vegetation been considered while work is occurring in disturbed areas? ☒Yes ☐No
5. Are all areas to be preserved delineated on the plans? ☒Yes ☐No