Appendix R

Storm Water Data Report For the State Route 32 Widening Between State Route 99 and Yosemite Drive in the City of Chico, California

Storm Water Data Report

For the State Route 32 Widening
Between State Route 99 and Yosemite Drive
in the City of Chico, California

(PA/ED Phase)

Prepared for

California Department of Transportation

City of Chico
Department of Public Works

Mark Thomas and Company, Inc.

Prepared by

WRECO

August 2006

Dist-County-Route: 03-BUT-32
Post Mile Limits: KP 10.1/12.4
Project Type: Highway Widening
EA: 03-1E4900
RU:
Program Identification: Locally Funded
Phase: o PID X PA/ED o PS&E

Regional Water Quality Control Board(s): Central Valley Regional Water Board (Redding Office)

Is the project required to consider incorporating Treatment BMPs? Yes X No O

If yes, can Treatment BMPs be incorporated into the project? Yes X No O

If No, a Technical Data Report must be submitted to the RWQCB at least 30 days prior to Advertisement. List submittal date: _____

Total Disturbed Soil Area: 19.19 acres

Estimated: Construction Start Date: Summer 2008 Construction Completion Date: Summer 2009

Notification of Construction (NOC) Date to be submitted: Spring 2008

Notification of ADL reuse (if Yes, provide date) Yes O Date _____ No X

Separate Dewatering Permit (if Yes, permit number) Yes O Permit # _____ No X

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 data upon which recommendations, conclusions, and decisions are based. Professional Engineer or Landscape Architect stamp required at PS&E.

Han-Bin Liang, Registered Project Engineer — 9/21/2006 Date

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

John Holder, Project Manager — 10/12/2006 Date

Pat Kelley, Designated Maintenance Representative — 9/28/06 Date

Ken Murray, Designated Landscape Architect Representative — Oct. 5, 2006 Date

STAMP
[Required for PS&E only]

Wesley Faubel, Regional Storm Water Coordinator — 10/12/06 Date

Storm Water Data Information

1. Project Description

- This Storm Water Data Report is prepared for the State Route 32 (SR 32) Widening Project between State Route 99 (SR 99) and Yosemite Drive.
- The proposed project will widen and improve approximately 2.6 miles of State Route 32 (SR 32), beginning at the southbound SR 99 ramps at the west end of the project corridor and extending east past Yosemite Drive. SR 32 will be widened from two to three lanes in each direction from the SR 99 interchange to just east of the Fir Street. The roadway will then be widened from two to four lanes (two in each direction) from Fir Street to 1000 ft east of Yosemite Drive, where the roadway width would transition down from four lanes to two lanes. The project includes modifications to the ramp terminal intersections and the couplet at the SR 99/SR 32 Interchange. The intersections of SR 32 with Forest Avenue, El Monte Avenue, and Bruce Road will be widened to include separated left and right turn pockets and the existing signals will be modified. The intersections of SR 32 with Fir Street and Yosemite Drive will be widened and new traffic signals will be installed.
- Total disturbed soil area at the project site is approximately 19.19 acres. This area was calculated by adding the new impervious area (10.39 acres) and the new embankment (8.8 acres) provided by Mark Thomas & Company.
- The project limits are located in the City of Chico and County of Butte MS4 areas.

2. Define Site Data and Storm Water Quality Design Issues

- This project is under jurisdiction of the Central Valley Regional Water Quality Control Board (Redding), which is Region 5R. The project limits are from PM 10.1 to PM 12.4. The receiving waterbodies within the project limits are Dead Horse Slough and South Fork Dead Horse Slough. TMDLs or effluent limits have not been established by RWQCB within the project limits.
- The Dead Horse Slough crosses the project at PM 11.08. The South Fork Dead Horse Slough crosses the project site at PM 11.73. The project limits are located in Hydrologic Sub-Area (HSA) 504.20. HSA information according to the Caltrans *Water Quality Planning Tool* website are as follows:

  Hydrologic Unit: Tehama — Watershed Area: 672,050 acres
  Hydrologic Area: Red Bluff — Average Annual Rainfall: 21.1 inches

  The area within the project limits is rural-residential and there are no maintenance stations or rest areas. All geotechnical testing will be performed in the final design phase. Presently, the only pollutant of concern is sediment during construction, with the potential sources being the cut and fill slopes.
- There are no seasonal construction restrictions. The project lies within the Northern and Central California Rain Area (per Figure 2-1 Designation of Rainy Seasons, Caltrans *Storm Water Quality Handbooks, Construction Site Best Management Practices Manual* (March 1, 2003), which has a defined rainy season between October 15 to April 15. At this stage of the project, there are no known requirements or concerns with any local agencies.

- The project is located on the eastern side of the City of Chico in Butte County. The project area is mostly flat with an increasing slope rising to the east of the project. The project elevations along SR 32 range from 226 ft in the west to 385 ft in the east. Summers are hot and dry and winters are cool and moist. Climatic conditions include an approximate annual rainfall of 26 inches. The typical daily temperatures at the project site range from a low of 35°F in the winter to a high of 93°F in summer.
- There are three types of soil associations at the project site per NRCS Web Soil Survey 1.1: Redtough-Redswale Complex, Almendra Loam, and Doemill-Jokerst Complex. The soils are classified into Hydrologic Soil Groups (HSG) B and D. Redtough-Redswale Complex and Doemill-Jokerst Complex have very high runoff, are poorly drained, and are HSG D. Almendra Loam have moderate runoff, moderately well drained, and are HSG B. The infiltration rates range from 0.15-0.30 inches/hour for HSG B and 0-0.05 inches/hour for HSG D. Testing will be performed at PS&E to determine the exact infiltration rates.
- The widening project will have minimal impacts on the receiving waters. The cut and fill slopes will have slope ratios of 1V:4H or flatter. There are no known slope stabilization concerns. Concentrated flows will be collected in stabilized drains and channels. There will be no bridge/box culvert replacements only bridge/box culvert widenings to accommodate the proposed roadway widening. All culverts will be lengthened or modified as needed. Storm drains will be modified in the construction phase during the non-rainy season.
- In the existing condition, the impervious area is approximately 9.96 acres. The proposed project will increase the impervious area by an additional 10.39 acres for a total of approximately 20.35 acres. This area was determined using cross-sections provided by Mark Thomas & Company.
- There are no existing designated permanent Treatment BMPs along the project site. The project will propose infiltration basins and biofiltration strips/swales as Treatment BMPs. A Water Quality Volume depth of 0.91 in/area was used in the calculations and was obtained from the Caltrans *Basin Sizer* with the following assumptions: a Runoff Coefficient of 0.9 and a Basin Drainage Time of 48 hours. The calculations also used a Water Quality Flow intensity of 0.16 inches/hour, which was obtained from the Caltrans *Project Planning and Design Guide*.
- 401 Certification may be required for work on the vegetated channel of Dead Horse Slough and South Fork Dead Horse Slough.

3. Regional Water Quality Control Board Agreements

- At this stage there are no known agreements or negotiated understandings with the Central Valley (Redding Office) RWQCB. Communication between the District and RWQCB will be continued throughout the phases of the project. The Regional Storm Water Coordinator is the point of contact with the RWQCB.

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

Downstream Effects Related to Potentially Increased Flow

- The project will increase impervious areas by paving. As a result the velocity and volume of flow will increase the downstream flow. Onsite mitigation of post-project flows (which may require peak attenuation of run-off) will be provided to meet HDM

requirements. Unlined channels will be designed so that the flow velocity will be less than 4 ft/s during a 25-year storm. Sediment loading is considered minimal given the flattened slopes and the re-vegetation incorporated in the project as a permanent BMP. Culverts shall be fitted with Flared End Sections (FES). Energy dissipation in the form of Rock Slope Protection (RSP) will be provided at the outlets to prevent scour.

Slope/Surface Protection Systems

- Cut and fill slopes will be created throughout the project segment. All new slopes will be re-vegetated per the Erosion Control Plan (subject to approval by the District Landscape Architect).
- The total disturbed soil area will be 19.19 acres for the project. This area includes cut and fill slopes (8.8 acres).
- No hard surfaces will be used as slope/surface protection in this project.

Concentrated Flow Conveyance Systems

- The existing cross-culverts will be lengthened and modified for the roadway widening project. Drainage plans will be attached to the PS&E Phase SWDR.

Preservation of Existing Vegetation

- The project will involve clearing and grubbing as identified in the plan layout sheets.
- The project's alignment minimizes disturbance and preserves critical areas such as wetlands, floodplains, and steep slopes.
- Environmentally Sensitive Areas (ESAs) will be off-limits to the contractor. An ESA fence will be used to prevent any disturbance. The ESA fence shall be delineated on the plans.

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

Treatment BMP Strategy

- The Evaluation Documentation Form (see attachment) indicates that the project is not exempt from Treatment BMPs, because it is located within the MS4 areas of the City of Chico and County of Butte, and must consider Treatment BMPs. For the SR 32 Widening Project, pollutants commonly associated with construction and operation of this project are sediments, heavy metals, trash, debris, oil, and grease. According to the 303(d) list, the Dead Horse Slough and South Fork Dead Horse Slough are not impaired with any identified pollutant or stressor. Since the sloughs are not a 303(d) listed water body, the Targeted Design Constituent approach will follow the General Purpose Pollutant Removal approach in considering the Treatment BMPs. Infiltration Basins, Biofiltration Swales, and Biofiltration Strips will be used to the maximum extent practicable to treat the onsite runoffs. In order of preference, based on performance and effectiveness: Biofiltration Strips and Biofiltration Swales, will be evaluated if the currently proposed Infiltration Basin sites do not meet infiltration requirements.
- The biofiltration swale and strip treatment design that is being developed can treat approximately 54% and 12%, respectively, of the Water Quality Flow within the project limits. The infiltration basin can treat approximately 14% of the Water Quality Volume within the project limits. Approximately 80% of the WQF and WQV can be treated. The final treatment percentage will be determined after the discharge locations for the

AC dikes and curb/gutter are designed. Additional areas cannot be treated using bioswales because the slopes are too steep to allow for a 5-minute hydraulic residence time in the bioswales.

Biofiltration Strips/Swales

- Biofiltration strips will be located at three segments on the northside of SR 32 between 117+00 to 134+00, 145+00 to 150+00, and 155+00 to 160+00. The cross-sections indicate that there is no ditch along the Caltrans right-of-way at these locations. To maintain the existing flow pattern, biofiltration strips are placed at the toe of embankment to the right-of-way to maximize the HRT.
- Biofiltration swales will be designed to follow the existing and new slopes with minimal excavation required. All swale channels will be trapezoidal in section, with a minimum invert width of approximately 4 ft to 6 ft and a maximum flow velocity of 4 ft/s for the 25-year design storm. Maximum velocity at the Water Quality Flow will be less than 1 ft/s, which conforms to the ASCE/WEF Urban Runoff Quality Management Manual of Practice. Side slopes for the swales should be 1:4.
- The following table summarizes the biofiltration swale analysis. The table includes the location of the biofiltration swale, tributary area, water quality flow (WQF) and design storm flow (DSF). The flow depths, flow velocities, and hydraulic residence time are also listed.

Begin Station	End Station	Offset	Tributary Area (acres)	WQF (cfs)	WQF Depth (ft)	WQF Velocity (ft/s)	WQF HRT (min)	DSF (cfs)	DSF Depth (ft)	DSF Velocity (ft/s)
144+00	145+00	R	2.41	0.309	0.51	0.10	17	3.9	0.84	0.63
161+50	162+50	L	1.85	0.237	0.44	0.09	19	3.0	0.74	0.58
162+00	163+00	R	1.77	0.226	0.43	0.09	19	2.9	0.73	0.58
178+00	179+50	L	6.59	0.843	0.74	0.13	19	10.6	1.22	0.80
178+00	179+50	R	6.59	0.843	0.74	0.13	19	10.6	1.22	0.80

Abbreviations: WQF = Water Quality Flow
HRT = Hydraulic Residence Time
DSF = Design Storm Flow

Dry Weather Diversion

- Dry Weather Diversion is not feasible because there is no Caltrans generated dry weather flows that are present (see Checklist T-1, Part 1).

Infiltration Devices

- The information gathered from the NRCS Web Soil Survey shows that the project area contains Almendra Loam, 0% to 1% slopes, which are Hydrologic Soil Group B. Information from the Department of Water Resources' State Well Number 22N02E30C002M indicates that the depth to groundwater is approximately 106 ft. The groundwater table can be artificially lowered by water wells and the geotechnical study will provide further information on the groundwater table as well as the infiltration rate. All geotechnical testing will be performed in the final design.

- The following table summarizes the infiltration basin analysis. The table includes the location of the infiltration basin, tributary area, water quality volume (WQV) and design volume (DV).

Begin Station	End Station	Offset	Tributary Area (acres)	WQV (ft^3)	DSV (ft^3)
111+50	113+50	R	1.72	5,690	6,225
126+50	128+50	R	1.72	5,690	6,225

Abbreviations: WQV = Water Quality Volume
DSV = Design Storm Volume

- The results indicate that there is ample freeboard for the infiltration basins with the WQV. A flood control spillway must be designed for both infiltration basins. Since there appear to be no drainage systems near the proposed infiltration basins, a second ditch will need to be designed as the spillway for storms greater than the WQV.

Detention Devices

- Lined basins are not used since they are not required for the project. At this stage of the project, detention basins are infeasible because of insufficient head. The project site is too flat (longitudinal slope = 0.45%) to incorporate a detention basin. Information from the Department of Water Resources' State Well Number 22N02E30C002M indicates that the depth to groundwater is approximately 106 ft. The groundwater table can be artificially lowered by water wells and the geotechnical study will provide information on the groundwater table.

Gross Solids Removal Devices (GSRDs)

- Gross solids removal devices are not included for this project since the receiving water bodies are not listed on the 303(d) list for trash and litter.

Traction Sand Traps

- Traction sand traps are not included in this project since it is located in an area that has mild winters, which does not receive snowfall, and traction sand is not applied onto the roadway.

Media Filters

- Media Filter Treatment BMPs primarily remove Total Suspended Solid (TSS) pollutants (sediments and metals) from runoff by sedimentation and filtering, and are also effective for dissolved metals and litter. Delaware Sand Filters are infeasible since there is not a readily available source of water to maintain the required depth. At this stage of the project, Austin Sand Filters are infeasible, because there is insufficient head to operate the device. 4.5 ft is needed between the inflow and outflow to treat a WQV of 5,690 ft^3. The project is located in a flat area (longitudinal slope = 0.45%).

Multi-Chambered Treatment Trains (MCTTs)

- MCTTs are not considered for this project since the project does not include critical source areas.

Wet Basins

- Wet basins are not included in the project since there is not a readily available source of water to maintain the depth in the basin.

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

- This section will be completed at the PS&E Phase of the project. The Construction Site BMPs include the implementation of a Storm Water Pollution Prevention Plan (SWPPP). In addition, Temporary Construction Site BMPs include erosion control, cover, silt fence, drainage inlet protection, concrete washout facility, and construction entrances. The quantity of Erosion Control (Type D) was calculated using the proposed roadway embankment.

Section 1: Temporary Construction Site BMPs

Item Number	Item	Quantity	Unit	Unit Price	Item Cost
074019	SWPPP Preparation	1	LS	$5,000	$5,000
074023	Temporary Erosion Control	400,000	ft^2	$0.20	$80,000
074029	Temporary Silt Fence	750	ft	$4.00	$3,000
074038	Temporary Drainage Inlet Protection	6	EA	$750	$4,500
074032	Temporary Concrete Washout Facility	9	EA	$3,250	$29,250
074033	Temporary Construction Entrances	11	EA	$3,050	$33,550
				Subtotal	$155,300

Section 2: Permanent Treatment BMPs

Item Number	Item	Quantity	Unit	Unit Price	Item Cost
	Biofiltration strips	51,600	ft^2	$1.00	$51,600
190151	Biofiltration swale excavation	8,568	ft^3	$0.60	$5,140
---	Erosion control mat and hydro-seeding	9,690	ft^2	$1.00	$9,680
190151	Infiltration basin excavation	12,450	ft^3	$0.60	$7,470
				Subtotal	$73,890

Section 3: Design Pollution Prevention BMPs

Item Number	Item	Quantity	Unit	Unit Price	Item Cost
Concentrated Flow Conveyance Systems					
620913	600 mm Alternative Pipe Culvert	735	ft	$175	$128,625
705337	600 mm Alternative Flared End Section	10	EA	$250	$2,500
Slope/Surface Protection Systems: Vegetated Surfaces					
203016	Erosion Control (Type D)	385,500	ft^2	$2.00	$771,000
				Subtotal	$902,125

Section 4: Supplemental Funds

No items for this project are classified as supplemental funds.

Total Storm Water Cost

Temporary BMPs Subtotal	$155,300
Permanent Treatment BMPs Subtotal	$73,890
Design BMPs Subtotal	$902,125
Supplemental Funds Subtotal	$0
Subtotal	$1,131,315
Mobilization (10%)	$113,132
Contingencies (15%)	$169,698
Total	$1,414,145

Total Estimated Storm Water Quality Control Cost: **$1,414,200**

7. Maintenance BMPs (Storm Drain Inlet Stenciling)

- Refer to the Caltrans approved stenciling in State right-of-way for drainage inlet stenciling. According to the City of Chico Storm Water Management Program, newly constructed drainage inlets are required to be stenciled.

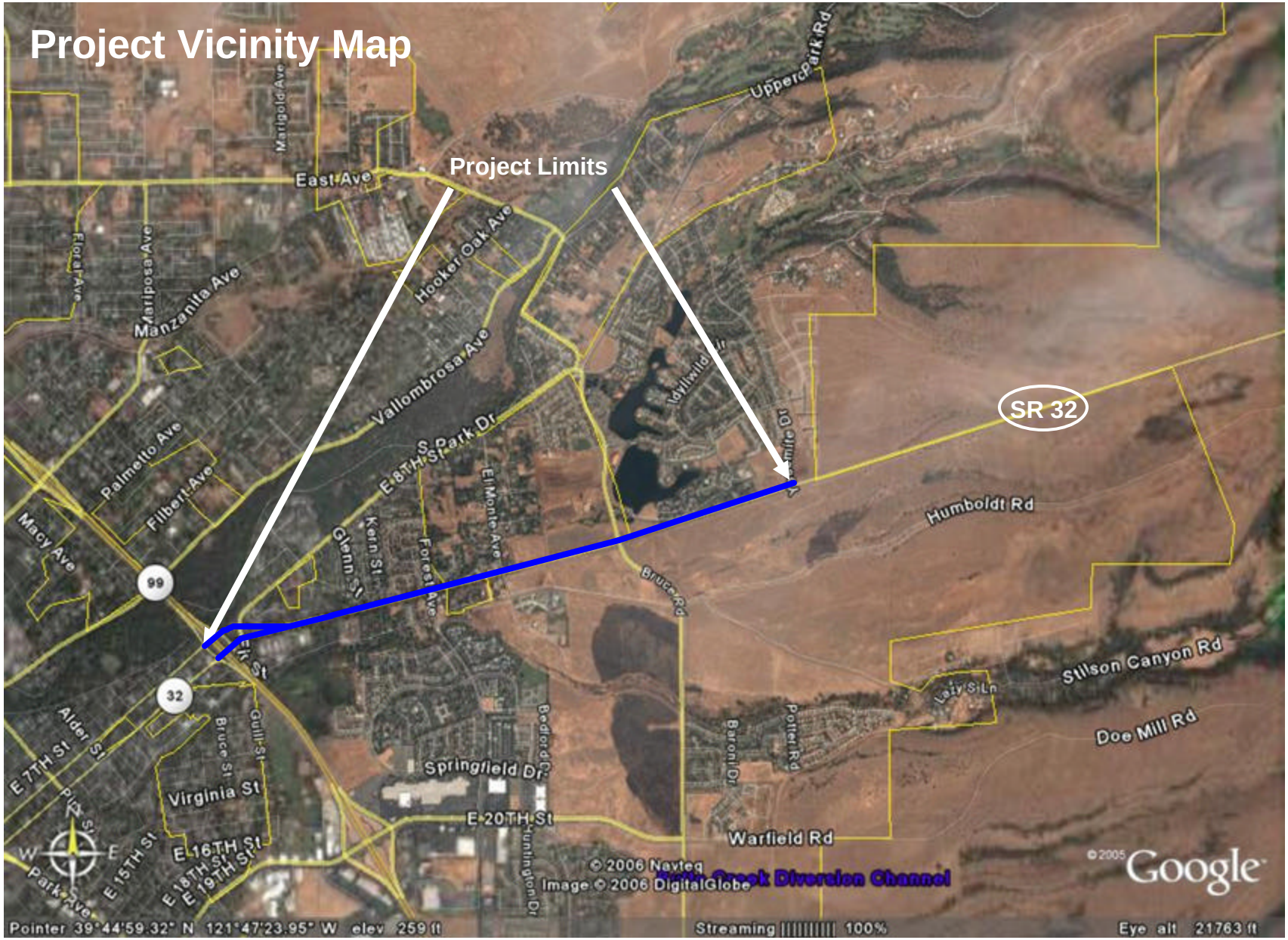
Required Attachments

- **Vicinity Map**
- **Evaluation Documentation Form (EDF)**
- **Construction Site BMP Consideration Form**
- **Treatment BMP Summary Spreadsheets**

Supplemental Attachments

Note: Supplement 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.

- 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 (Design Pollution Prevention BMPs)
- Checklists T-1, Parts 1, 2, 4, 5, and 8 (Treatment BMPs)
- Checklists CS-1, Parts 1–6 (Construction Site BMPs) – To be completed at PS&E Phase of the project


Project Vicinity Map
Project Limits
SR 32
East Ave
Upper Park Rd
Marigold Ave
Hooker Oak Ave
Floral Ave
Mariposa Ave
Manzanita Ave
Vallombrosa Ave
E 8TH St
S Park Dr
Palmetto Ave
Filbert Ave
Macy Ave
Glenn St
Kern St
El Monte Ave
Forest Ave
Bruce Rd
Humboldt Rd
Stilson Canyon Rd
Lazy S Ln
Doe Mill Rd
Potter Rd
Baroni Dr
Springfield Dr
Bedford Ct
Huntington Dr
E 20TH St
Warfield Rd
Virginia St
Gull St
Alder St
E 7TH St
Bruce St
E 15TH St
E 16TH St
E 18TH St
E 19TH St
Park Ave
99
32
© 2006 Navteq
Image © 2006 DigitalGlobe
Google
Pointer 39°44'59.32" N 121°47'23.95" W elev 259 ft
Streaming 100%
Eye alt 21763 ft

DATE: August 2006

See Figure 4-1, Project Evaluation Process for Consideration of Permanent Treatment BMPS EA: 03-1E4900

NO.	CRITERIA	YES	NO	SUPPLEMENTAL INFORMATION FOR EXEMPTION
1.	Begin Project Evaluation regarding requirement for consideration of Treatment BMPs	✓		Go to 2
2.	Is this an emergency or Safety project?		✓	If **Yes**, go to 12. (Safety Projects must be funded from the 010 SHOPP Program). If **No**, continue to 3.
3.	Have TMDLs been established for surface waters within the project limits?		✓	If **Yes**, contact the District/Regional NPDES coordinator to discuss the Department's participation in the TMDL (if Applicable), go to 11 or 4 (as determined by the NPDES Coordinator). _____ *(Dist./Reg. SW Coordinator initials*) If **No**, continue to 4.
4.	Is the project within an urban MS4?	✓		If **Yes**, continue to 5. *City of Chico and County of Butte MS4.* If **No**, go to 12.
5.	Is the project directly or indirectly discharging to surface waters?	✓		If **Yes**, continue to 6. If **No**, go to 12.
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.	Is the Disturbed Soil Area (DSA) created by the project greater than or equal to 3.0 acres?	✓		If **Yes**, continue to 11. If **No**, go to 9. *Total DSA quantity 19.19 acres*
9.	Is the project part of a Common Plan of Development?			If **Yes**, continue to 11. If **No**, go to 10.
10.	Are there any Pollution Control Requirements within the project limits? *(Contact your Dist./Reg. SW Coordinator)*			If **Yes**, continue to 11. If **No**, go to 12.
11.	Consider approved Treatment BMPs for the project.	✓	See Sections 2.4 and either Section 5.5 or 6.5 for BMP Evaluation and Selection Process. Complete Checklist T-1 in this Appendix E.	
12.	Project is not required to consider Treatment BMPs. _____*(Dist./Reg. SW Coord. Initials)* _____*(Project Engineer Initials)* _____ *(Date)*		Document for Project Files by completing this form, and attaching it to the SWDR.	
13	End of checklist	✓		

DATE: August 2006

Project Evaluation Process for the Consideration of Construction Site BMPs EA: 03-1E4900

NO.	CRITERIA	YES	NO	SUPPLEMENTAL INFORMATION
1.	Will construction of the project result in areas of disturbed soil as defined by the Project Planning and Design Guide (PPDG)?	✓		If Yes, Construction Site BMPs for Soil Stabilization (SS) will be required. Complete CS-1, Part 1. Continue to 2. If No, Continue to 3.
2.	Is there a potential for disturbed soil areas within the project to discharge to storm drain inlets, drainage ditches, areas outside the right of way, etc?	✓		If Yes, Construction Site BMPs for Sediment Control (SC) will be required. Complete CS-1, Part 2. Continue to 3.
3.	Is there a potential for sediment or construction related materials and wastes to be tracked offsite and deposited on private or public paved roads by construction vehicles and equipment?	✓		If Yes, Construction Site BMPs for Tracking Control (TC) will be required. Complete CS-1, Part 3. Continue to 4.
4.	Is there a potential for wind to transport soil and dust offsite during the period of construction?	✓		If Yes, Construction Site BMPs for Wind Erosion Control (WE) will be required. Complete CS-1, Part 4. Continue to 5.
5.	Is dewatering anticipated or will construction activities occur within or adjacent to a live channel or stream?		✓	If Yes, Construction Site BMPs for Non-Storm Water Management (NS) will be required. Complete CS-1, Part 5. Continue to 6.
6.	Will construction include saw-cutting, grinding, drilling, concrete or mortar mixing, hydro-demolition, blasting, sandblasting, painting, paving, or other activities that produce residues?	✓		If Yes, Construction Site BMPs for Non-Storm Water Management (NS) will be required. Complete CS-1, Part 5. Continue to 7.
7.	Are stockpiles of soil, construction related materials, and/or wastes anticipated?	✓		If Yes, Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Complete CS-1, Part 6. Continue to 8.
8.	Is there a potential for construction related materials and wastes to have direct contact with precipitation; storm water run-on, or stormwater runoff; be dispersed by wind; be dumped and/or spilled into storm drain systems?	✓		If Yes, Construction Site BMPs for Waste Management and Materials Pollution Control (WM) will be required. Complete CS-1, Part 6. Continue to 9.
9.	End of checklist.	✓	Document for Project Files by completing this form, and attaching it to the SWDR.	

PE to initialize after concurrence with Construction (PS&E only) *Date*

Treatment BMP Summary Spreadsheet

Dist-County-Route:	**03-But-32**
Post Mile Limits:	**10.1/12.4**
Project Type:	**Highway Widening**
EA:	**03-1E4900**
RU:	
Program Identification:	**Locally Funded**
Phase:	**PA/ED**
Date:	**08/22/06**

Infiltration Basins

District-County-Route: 03-But-32
EA: 03-1E4900

County	Route	Location Post Mile (PM)	Location KiloPost (KP)	Water Quality Volume (Cubic Feet)
But	32	10.50	16.90	5,690
But	32	10.79	17.36	5,690

Biofiltration Swales

District-County-Route: 03-But-32
EA: 03-1E4900

County	Route	From Location Post Mile (PM)	To Location Post Mile (PM)	From Location KiloPost (KP)	To Location KiloPost (KP)
But	32	11.10	11.12	17.86	17.90
But	32	11.43	11.45	18.39	18.43
But	32	11.44	11.46	18.41	18.44
But	32	11.74	11.77	18.89	18.94
But	32	11.74	11.77	18.89	18.94

Checklist SW-1, Site Data Sources

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

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	
• Chico Quad Maps	April 2006
• Project Topography from Mark Thomas & Company	April 2006
•	
Hydraulic	
• Office of Water Program Water Quality Planning Tool	April 2006
•	
•	
Soils	
• NRCS Web Soil Survey	April, 2005
•	
•	
Climatic	
• Central Valley RWQCB	December 2002
• Caltrans Construction Site BMPs Manual	March 2003
•	
Water Quality	
• Office of Water Program Water Quality Planning Tool	April 2006
• State Water Resources Control Board 303(d) List	July 2003
• Water Quality Standards Inventory Database	April 2006
Other Data Categories	
• SR 32 Cross-Sections	April 2006
• SR 32 Profile	April 2006
• DWR Groundwater Levels	May 2006
• Caltrans Project Planning and Design Guide	May 2005
•	
•	
•	

Checklist SW-2, Storm Water Quality Issues Summary

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

The following questions provide a guide to collecting critical information relevant to project storm water quality issues. Complete responses to applicable questions, consulting other Caltrans functional units (Environmental, Landscape Architecture, Maintenance, etc.) and the District/Regional NPDES 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).	**X** Complete	o NA
2.	For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.	**X** Complete	o NA
3.	Determine if there are any High Risk Areas (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.	**X** Complete	o NA
4.	Determine the RWQCB special requirements, including TMDLs, effluent limits, etc.	o Complete	**X** NA
5.	Determine regulatory agencies seasonal construction and construction exclusion dates or restrictions required by federal, state, or local agencies.	**X** Complete	o NA
6.	Determine if a 401 certification will be required.	**X** Complete	o NA
7.	List rainy season dates.	**X** Complete	o NA
8.	Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.	**X** Complete	o NA
9.	If considering Treatment BMPs, determine the soil classification, permeability, erodibility, and depth to groundwater.	**X** Complete	o NA
10.	Determine contaminated or hazardous soils within the project area.	**X** Complete	o NA
11.	Determine the total disturbed soil area of the project.	**X** Complete	o NA
12.	Describe the topography of the project site.	**X** Complete	o 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.).	**X** Complete	o 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?	o Complete	**X** NA
15.	Determine if a right-of-way certification is required.	o Complete	**X** 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.	o Complete	**X** NA
17.	Determine if project area has any slope stabilization concerns.	**X** Complete	o NA
18.	Describe the local land use within the project area and adjacent areas.	**X** Complete	o NA
19.	Evaluate the presence of dry weather flow.	**X** Complete	o NA

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

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

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?	o Yes	**X** No	o NA
2.	Can structures and bridges be designed or located to reduce work in live streams and minimize construction impacts?	**X** Yes	o No	o NA
3.	Can any of the following methods be utilized to minimize erosion from slopes:			
	a. Disturbing existing slopes only when necessary?	**X** Yes	o No	o NA
	b. Minimizing cut and fill areas to reduce slope lengths?	**X** Yes	o No	o NA
	c. Incorporating retaining walls to reduce steepness of slopes or to shorten slopes?	**X** Yes	o No	o NA
	d. Acquiring right-of-way easements (such as grading easements) to reduce steepness of slopes?	**X** Yes	o No	o NA
	e. Avoiding soils or formations that will be particularly difficult to re-stabilize?	**X** Yes	o No	o NA
	f. Providing cut and fill slopes flat enough to allow re-vegetation and limit erosion to pre-construction rates?	**X** Yes	o No	o NA
	g. Providing benches or terraces on high cut and fill slopes to reduce concentration of flows?	**X** Yes	o No	o NA
	h. Rounding and shaping slopes to reduce concentrated flow?	**X** Yes	o No	o NA
	i. Collecting concentrated flows in stabilized drains and channels?	**X** Yes	o No	o NA
4.	Does the project design allow for the ease of maintaining all BMPs?	**X** Yes	o No	
5.	Can the project be scheduled or phased to minimize soil-disturbing work during the rainy season?	o Yes	**X** 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?	**X** Yes	o No	o NA

Design Pollution Prevention BMPs
Checklist DPP-1, Part 1

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

Consideration of Design Pollution Prevention BMPs

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

(a)	Will project increase velocity or volume of downstream flow?	**X** Yes	o No	o NA
(b)	Will the project discharge to unlined channels?	**X** Yes	o No	o NA
(c)	Will project increase potential sediment load of downstream flow?	**X** Yes	o No	o NA
(d)	Will project encroach, cross, realign, or cause other hydraulic changes to a stream that may affect downstream channel stability?	**X** Yes	o No	o 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.

2. Slope/Surface Protection Systems

(a)	Will project create new slopes or modify existing slopes?	**X** Yes	o No	o NA

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

3. Concentrated Flow Conveyance Systems

(a)	Will the project create or modify ditches, dikes, berms, or swales?	**X** Yes	o No	o NA
(b)	Will project create new slopes or modify existing slopes?	**X** Yes	o No	o NA
(c)	Will it be necessary to direct or intercept surface runoff?	**X** Yes	o No	o NA
(d)	Will cross drains be modified?	**X** Yes	o No	o NA

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

4. Preservation of Existing Vegetation

a) 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. **X** Complete

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

Design Pollution Prevention BMPs
Checklist DPP-1, Part 2

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

Downstream Effects Related to Potentially Increased Flow

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

Design Pollution Prevention BMPs
Checklist DPP-1, Part 3

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

Slope / Surface Protection Systems

1. What are the proposed areas of cut and fill? (attach plan or map)	**X** Complete
2. Were benches or terraces provided on high cut and fill slopes to reduce concentration of flows?	o Yes **X** N/A
3. Were slopes rounded and/or shaped to reduce concentrated flow?	**X** Yes o No
4. Were concentrated flows collected in stabilized drains or channels?	**X** Yes o No
5. Are slopes > 1:4 vertical:horizontal (V:H))?	**X** Yes o No
If Yes, an erosion control plan must be prepared or approved by the District Landscape Architect.	
6. Are slopes > 1:2 (V:H)?	**X** Yes o 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 1:2 (V:H).	
7. Estimate the change to the impervious areas that will result from this project.	**X** Complete

VEGETATED SURFACES

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

HARD SURFACES

1. Are hard surfaces required?	o Yes **X** No
If Yes, document purpose (safety, maintenance, soil stabilization, etc.), types, and general locations of the installations.	**X** N/A
Review appropriate SSPs for Vegetated Surface and Hard Surface Protection Systems.	**X** N/A

Design Pollution Prevention BMPs
Checklist DPP-1, Part 4

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

Concentrated Flow Conveyance Systems

Ditches, Berms, Dikes and Swales

1.	Consider Ditches, Berms, Dikes, and Swales as per Chapters 813, 836, and 860 of the HDM.	**X** Complete
2.	Evaluate risks due to erosion, overtopping, flow backups or washout.	**X** Complete
3.	Consider outlet protection where localized scour is anticipated.	**X** Complete
4.	Examine the site for run-on from off-site sources.	**X** Complete
5.	Consider channel lining when velocities exceed scour velocity for soil.	**X** Complete

Overside Drains

1.	Consider downdrains, as per Index 834.4 of the HDM.	**X** Complete
2.	Consider paved spillways for side slopes flatter than 1:4 V:H.	**X** Complete

Flared Culvert End Sections

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

Review appropriate SSPs for Concentrated Flow Conveyance Systems. **X** Complete

Design Pollution Prevention BMPs
Checklist DPP-1, Part 5

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

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.	**X** Complete
2.	Has all vegetation to be retained been coordinated with Environmental, and identified and defined in the contract plans?	**X** Yes o 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?	**X** Complete
4.	Have impacts to preserved vegetation been considered while work is occurring in disturbed areas?	**X** Yes o No
5.	Are all areas to be preserved delineated on the plans?	**X** Yes o No

Treatment BMPs
Checklist T-1, Part 1

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

Consideration of Treatment BMPs

This checklist is used for projects that require the consideration of Approved Treatment BMPs, as determined from the process described in Section 4 (Project Treatment Consideration) and the Evaluation Documentation Form (EDF). This checklist will be used to determine which Treatment BMPs should be considered for each watershed and sub-watersheds within the project. Supplemental data will be needed to verify siting and design applicability for final incorporation into a project.

Complete this checklist for each phase of the project, when considering Treatment BMPs. Use the responses to the questions as the basis when developing the narrative in Section 5 of the Storm Water Data Report to document that Treatment BMPs have been appropriately considered.

Answer all questions, unless otherwise directed.

1. Dry Weather Flow Diversion

   (a) Are dry weather flows generated by Caltrans anticipated to be persistent? o Yes **X** No

   (b) Is a sanitary sewer located on or near the site? **X** Yes o No

   (c) Is the domestic wastewater treatment authority willing to accept flow? o Yes **X** No

   If Yes was answered to all of these questions consider Dry Weather Flow Diversion, complete and attach Part 3 of this checklist

2. Is the receiving water on the 303(d) list for litter/trash or has a TMDL been issued for litter/trash? o Yes **X** No

   If Yes, consider Gross Solids Removal Devices (GSRDs), complete and attach Part 6 of this checklist. Note: Biofiltration Systems, Infiltration Basins, Detention Devices, Media Filters, MCTTs, and Wet Basins also can capture litter – consult with District/Regional NPDES if these devices should be considered to meet litter/trash TMDL.

3. Is project located in an area (e.g., mountain regions) where traction sand is applied more than twice a year? o Yes **X** No
   If Yes, consider ***Traction Sand Traps***, complete and attach **Part 7** of this checklist.

4. (a) Are there local influent limits for infiltration or Basin Plan restrictions or other local agency prohibitions that would restrict the use of the infiltration devices? o Yes **X** No

   (b) Would infiltration pose a threat to local groundwater quality as determined by the District/Regional NPDES Storm Water Coordinator? o Yes **X** No

If the answer to either part of Question 4 is Yes, then Infiltration Devices are infeasible and the consideration of Infiltration Devices should not be made when completing Questions 5 through 17.

5. (a) Does the project discharge to any 303(d) listed water body? o Yes **X** No
If No, go to Question 17, General Purpose Pollutant Removal

(b) If Yes, is the identified pollutant(s) considered a Targeted Design Constituent (TDC) (check all that apply):
___ phosphorus, ___ nitrogen, ___ total copper, ___ dissolved copper,
___ total lead, ___ dissolved lead, ___ total zinc, ___ dissolved zinc,
___ sediments, ___ general metals [unspecified metals].

(c) If only one TDC is checked above, continue to Question 6. **X** N/A

(d) If more than one TDC is checked, contact your District/Regional NPDES Coordinator to determine priority before continuing with this checklist. **X** N/A

6. Consult with the District/Regional Storm Water Coordinator to determine whether Treatment BMP selection will be affected by any existing or future TMDL requirements. **X** N/A

The following questions show the approved Treatment BMPs in order of preference based on load reduction (performance) for the listed constituent and lifetime costs for the device, excluding right of way. Note that a line separates Treatment BMPs into groups of approximately equal effectiveness and within each grouping, any of the Treatment BMPs may be selected for placement if meeting site conditions. In the space provided next to the BMP, use Yes or a check mark to indicate a positive response.

For the SWDRs developed for the PID and PA/ED phases of a project: **Consider all approved Treatment BMPs listed that can be reasonably incorporated into the project for each TDC.**

For the SWDR developed for the PS&E phase: **Indicate (Yes or check mark) only those BMPs that will be incorporated into the project.**

7. Is phosphorus the TDC? [Use this constituent if "eutrophic" or "nutrients" is the TDC for the water body.] If Yes, consider: o Yes **X** N/A
____ Infiltration Devices
____ Austin Sand Filters

8. Is nitrogen the TDC? If Yes, consider: o Yes **X** N/A

____ Infiltration Devices
____ Austin Sand Filter
____ Delaware Filter
____ Detention Device
____ MCTT

9. Is copper (total) the TDC? If Yes for total Copper, consider: o Yes **X** N/A
   - ____ Infiltration Devices
   - ____ Wet Basins
   - ____ Biolfiltration Strips
   - ____ Detention Devices
   - ____ Biofiltration Swales
   - ____ Austin Sand Filter
   - ____ Delaware Filter
   - ____ MCTT

10. Is copper (dissolved) the TDC? If Yes for dissolved Copper, consider: o Yes **X** N/A
    - ____ Infiltration Devices
    - ____ Biofiltration Strips
    - ____ Wet Basin
    - ____ Biofiltration Swale

11. Is lead (total) the TDC? If Yes for total Lead, consider: o Yes **X** N/A
    - ____ Infiltration Devices
    - ____ Wet Basin
    - ____ Biofiltration Strips
    - ____ Austin Sand Filter
    - ____ Delaware Filter
    - ____ Detention Devices
    - ____ Biofiltration Swales
    - ____ MCTT

12. Is lead (dissolved) the TDC? If Yes for dissolved Lead, consider: o Yes **X** N/A
    - ____ Infiltration Devices
    - ____ Biofiltration Strips
    - ____ Wet Basin
    - ____ Detention Device
    - ____ Biofiltration Swales
    - ____ Austin Sand Filters

13. Is zinc (total) the TDC? If Yes for total Zinc, consider: o Yes **X** N/A
    - ____ Infiltration Devices
    - ____ Delaware Filter
    - ____ Wet Basin
    - ____ Biofiltration Strips
    - ____ Biofiltration Swales
    - ____ Austin Sand Filter
    - ____ MCTT
    - ____ Detention Devices

14. Is zinc (dissolved) the TDC? If Yes for dissolved Zinc, consider: o Yes **X** N/A
    - ____ Infiltration Devices
    - ____ Delaware Filter
    - ____ Biofiltration Strip
    - ____ Biofiltration Swale
    - ____ Austin Sand Filter
    - ____ MCTT

15. Is sediment (total suspended solids [TSS]) the TDC? If Yes for TSS, consider: o Yes **X** N/A
    - ____ Infiltration Devices
    - ____ Austin Sand Filter
    - ____ Delaware Filter
    - ____ Wet Basin
    - ____ Detention Device
    - ____ Biofiltration Strip
    - ____ MCTT
    - ____ Biofiltration Swale

16. Are "General Metals" or (unspecified) "Metals" the TDC? If Yes for General Metals, consider: o Yes **X** N/A
    - ____ Infiltration Devices
    - ____ Biofiltration Strips
    - ____ Wet Basin
    - ____ Biofiltration Swale
    - ____ Austin Sand Filter
    - ____ Delaware Filter
    - ____ MCTT

17. General Purpose Pollutant Removal.: When it is determined that there are no TDCs, consider the Treatment BMPs in the order listed below. **X** Yes o N/A
    - _**X**_ Infiltration Devices
    - _**X**_ Biofiltration Strips
    - ____ Wet Basin
    - _**X**_ Biofiltration Swale
    - _**X**_ Austin Sand Filter
    - _**X**_ Detention Device
    - ____ Delaware Filter
    - ____ MCTT

18. Biofiltration
    (a) Are site conditions and climate favorable to allow suitable vegetation to be established? **X** Yes o No

    (b) Have Biofiltration strips and swales been considered to the extent practicable? Note: Biofiltration BMPs should be considered for all projects, even if other Treatment BMPs are placed. **X** Yes o No

    If No to (a) or (b), document justification in Section 5 of the SWDR.

19. After completing the above, complete and attach the checklists shown below for every Treatment BMP under consideration **X** Complete
    - _**X**_ Biofiltration Strips and Biofiltration Swales: Checklist T-1, Part 2
    - ____ Dry Weather Diversion: Checklist T-1, Part 3
    - _**X**_ Infiltration Devices: Checklist T-1, Part 4
    - _**X**_ Detention Devices: Checklist T-1, Part 5
    - ____ GSRDs: Checklist T-1, Part 6
    - ____ Traction Sand Traps: Checklist T-1, Part 7
    - _**X**_ Media Filter [Austin Sand Filter]: Checklist T-1, Part 8
    - ____ Multi-Chambered Treatment Train: Checklist T-1, Part 9
    - ____ Wet Basins: Checklist T-1, Part 10

20. (a) Estimate what percentage of WQV/WQF will be treated by the preferred Treatment BMP(s): _____80_____%	**X** Complete
(b) Have Treatment BMPs been considered for use in parallel or series to increase this percentage?	**X** Yes o No
21. Prepare cost estimate, including right of way, for selected Treatment BMPs and include as supplemental information for SWDR approval.	**X** Complete

Treatment BMPs
Checklist T-1, Part 2

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

Biofiltration Swales / Biofiltration Strips

Feasibility

1.	Do the climate and site conditions allow vegetation to be established?	**X** Yes	o No
2.	Are flow velocities < 1.2 m/s (4 fps) (i.e. low enough to prevent scour of the vegetated bioswale as per HDM Table 873.3I)?	**X** Yes	o No
	If No to either question above, Biofiltration Swales and Biofiltration Strips are not feasible.		
3.	Are Biofiltration Swales proposed at sites where known hazardous soils or contaminated groundwater plumes exist? If Yes, consult with District/Regional NPDES Coordinator about how to proceed.	o Yes	**X** No
4.	Does adequate area exist within the right-of-way to place biofiltration device(s)? If Yes, continue to the Design Elements section. If No, continue to Question 5.	**X** Yes	o No
5.	If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site biofiltration devices and how much right-of way would be needed to treat WQF? _____ ha (ac) If Yes, continue to Design Elements section. If No, continue to Question 6.	o Yes	**X** N/A
6.	If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of these Treatment BMPs into the project.	**X** N/A	

Design Elements

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1.	Has the District Landscape Architect provided vegetation mixes appropriate for climate and location? *	**X** Yes	o No

2.	Can the bioswale be designed as a conveyance system under any expected flows > the WQF event, as per HDM Chapter 800? * (e.g. freeboard, minimum slope, etc.)	**X** Yes	o No
3.	Can the bioswale be designed as a water quality treatment device under the WQF while meeting the required HRT, depth, and velocity criteria? *	**X** Yes	o No
4.	Is the maximum length of a biostrip = 91 m (300 ft)? *	**X** Yes	o No
5.	Has the minimum width (in the direction of flow) of the invert of the bioswale received the concurrence of Maintenance? *	**X** Yes	o No
6.	Can bioswales be located in natural or low cut sections to reduce maintenance problems caused by animals burrowing through the berm of the swale? **	**X** Yes	o No
7.	Is the biostrip sized as long as possible in the direction of flow (HRT = 5 minutes)? **	**X** Yes	o No
8.	Has biofiltration been considered for locations upstream of other Treatment BMPs, as part of a treatment train? **	o Yes	**X** N/A

Treatment BMPs
Checklist T-1, Part 4

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

Infiltration Devices

Feasibility

1.	Does local Basin Plan or other local ordinance provide influent limits on quality of water that can be infiltrated, and would infiltration pose a threat to groundwater quality as determined by the District/Regional NPDES Storm Water Coordinator?	o Yes	o No
2.	Does infiltration at the site compromise the integrity of any slopes in the area?	o Yes	**X** No
3.	Per survey data or U.S. Geological Survey (USGS) Quad Map, are existing slopes at the proposed device site >15%?	o Yes	**X** No
4.	At the invert, does the soil type classify as NRCS Hydrologic Soil Group (HSG) D, or does the soil have an infiltration rate < 1.3 cm/hr (0.5 inches/hr)?	o Yes	**X** No
5.	Is site located over a previously identified contaminated groundwater plume?	o Yes	**X** No
	If Yes to any question above, Infiltration Devices are not feasible; stop here and consider other approved Treatment BMPs.		
6.	(a) Does site have groundwater within 3 m (10 ft) of basin invert?	o Yes	o No
	(b) Does site investigation indicate that the infiltration rate is significantly greater than 6.4 cm/hr (2.5 inches/hr)?	o Yes	o No
	If Yes to either part of Question 6, the RWQCB must be consulted, and the RWQCB must conclude that the groundwater quality will not be compromised, before approving the site for infiltration.	o Yes	o No
7.	Does adequate area exist within the right-of-way to place infiltration device(s)? If Yes, continue to Design Elements sections. If No, continue to Question 8.	**X** Yes	o No
8.	If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site infiltration devices and how much right-of way would be needed to treat WQV? _____ ha (ac)	o Yes	**X** N/A
	If Yes, continue to Design Elements section.		
	If No, continue to Question 9.		
9.	If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project.		**X** N/A

Design Elements – Infiltration Basin

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1.	Has a detailed investigation been conducted, including subsurface soil investigation, in-hole conductivity testing and groundwater elevation determination? (This report must be completed for PS&E level design.) * *All geotechnical testing will be performed in the final design phase.*	o Yes	**X** No
2.	Has a flood control spillway with scour protection been provided? * *A flood control spillway will be designed at the final design phase.*	o Yes	**X** No
3.	Is the Infiltration Basin size sufficient to capture the WQV while maintaining a 40-48 hour drawdown time? (Note: the WQV must be = 123m^3 [0.1 acre-feet]) *	**X** Yes	o No
4.	Can access be placed to the invert of the Infiltration Basin? *	**X** Yes	o No
5.	Can the Infiltration Basin be designed with adequate freeboard above the WQV elevation? *	**X** Yes	o No
6.	Can the Infiltration Basin be designed with interior side slopes no steeper than 1V:3H (with approval by District Maintenance, with 1:4 preferred)? *	**X** Yes	o No
7.	Can vegetation be established in the Infiltration Basin? **	**X** Yes	o No
8.	Can diversion be designed, constructed, and maintained to bypass flows exceeding the WQV? **	**X** Yes	o No
9.	Can a gravity-fed Maintenance/Emergency Drain be placed? **	**X** Yes	o No

Treatment BMPs
Checklist T-1, Part 5

Prepared by: WRECO Date: Aug 2006 District-Co-Route: 03-But-32

PM: 10.1/12.4 EA: 03-1E4900

RWQCB: Central Valley (Redding Office)

Detention Devices

Feasibility

1.	Is there sufficient head to prevent objectionable backwater conditions in the upstream drainage systems?	☐ Yes	☒ No
2.	2a) Is the volume of the detention device equal to at least the WQV? (Note: the WQV must be = 123m^3 [0.1 acre-feet])	☒ Yes	☐ No
	Only answer (b) if the detention device is being used also to capture traction sand.		
	2b) Is the total volume of the detention device at least equal to the WQV and the anticipated volume of traction sand, while maintaining a minimum 300 mm freeboard (1 ft)?	☐ Yes	☒ N/A
3.	Is basin invert = 3 m above seasonally high groundwater or can it be designed with an impermeable liner? (Note: If an impermeable liner is used, the seasonally high groundwater elevation must not encroach within 300 mm (12 inches) of the invert.)	☒ Yes	☐ No

If No to any question above, then Detention Devices are not feasible.

4.	Does adequate area exist within the right-of-way to place Detention Device(s)? If Yes, continue to the Design Elements section. If No, continue to Question 5.	☐ Yes	☒ N/A
5.	If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Detention Device(s) and how much right-of way would be needed to treat WQV? _____ acres If Yes, continue to the Design Elements section. If No, continue to Question 6.	☐ Yes	☒ N/A
6.	If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project.	☒ N/A	

Design Elements (does not meet feasibility requirements)

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1.	Has the geotechnical integrity of the site been evaluated to determine potential impacts to surrounding slopes due to incidental infiltration? If incidental infiltration through the invert of an unlined detention device is a concern, consider using an impermeable liner. * *All geotechnical testing will be performed in the final design phase.*	☐ Yes	☐ No
2.	Has the location of the detention device been evaluated for any effects to the adjacent roadway and subgrade? *	☐ Yes	☐ No
3.	Can a minimum freeboard of 300 mm (12 in) be provided above the WQV? *	☐ Yes	☐ No
4.	Is an emergency outlet provided? * *An emergency outlet will be provided in the final design phase.*	☐ Yes	☐ No
5.	Is the drawdown time of the detention basin within 24 to 72 hours? *	☐ Yes	☐ No
6.	Is the basin outlet designed to minimize clogging (minimum outlet orifice diameter of 13 mm (0.5 inches)? * *The basin outlet will be designed to minimize clogging in the final design phase.*	☐ Yes	☐ No
7.	Are the inlet and outlet structures designed to prevent scour and re-suspension of settled materials, and to enhance quiescent conditions? *	☐ Yes	☐ No
8.	Can vegetation be established in an earthen basin at the invert and on the side slopes for erosion control and to minimize re-suspension? *	☐ Yes	☐ No
9.	Has sufficient access for Maintenance been provided? *	☐ Yes	☐ No
10.	Is the side slope ratio of earthen berms 1V:3H or flatter? ** (Note: If No, District Maintenance must approve.)	☐ Yes	☐ No
11.	If significant sediment is expected from nearby slopes, can the detention device be designed with additional volume equal to the expected annual loading? **	☐ Yes	☐ No
12.	Is flow path as long as possible (≥ 2:1 length to width ratio is recommended)? **	☐ Yes	☐ No

Treatment BMPs
Checklist T-1, Part 8

Prepared by: WRECO Date: Aug 2006 District-Co-Route: 03-But-32

PM: 10.1/12.4 EA: 03-1E4900

RWQCB: Central Valley (Redding Office)

Media Filters

Caltrans has approved two types of Media Filter: Austin Sand Filters and Delaware Filters. Austin Sand filters are typically designed for larger drainage areas, while Delaware Filters are typically designed for smaller drainage areas. The Austin Sand Filter is constructed with an open top and may have a concrete or earthen invert, while the Delaware is always constructed in as a vault. See Appendix B, Media Filters, of the Caltrans *Project Planning and Design Guide*, for a further description of Media Filters. Delaware Sand Filters are infeasible since there is not a readily available source of water to maintain the required depth. Since the Delaware Sand Filter is infeasible, only the checklist for an Austin Sand Filter is provided below.

Feasibility – Austin Sand Filter

1. Is the volume of the Austin Sand Filter equal to at least the WQV using a 40 to 48 hour drawdown? (Note: the WQV must be = 123m^3 [0.1 acre-feet]) ☒ Yes ☐ No

2. Is there sufficient hydraulic head to operate the device (minimum 0.9 m [3 ft] between the inflow and outflow chambers)? *The proposed location of the Austin Sand Filter is flat (longitudinal slope = 0.45%).* ☐ Yes ☒ No

   If No to either question above, then an Austin Sand Filter is not feasible.

3. Does adequate area exist within the right-of-way to place an Austin Sand Filter(s)? ☐ Yes ☐ No
   If Yes, continue to Design Elements sections. If No, continue to Question 4.

4. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site the device and how much right-of way would be needed to treat WQV? _____ ha (ac) ☐ Yes ☐ No
   If Yes, continue to the Design Elements section.

   If No, continue to Question 5.

5. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. ☐ No

   If an Austin Sand Filter meets these feasibility requirements, continue to the Design Elements – Austin Sand Filter below.

Design Elements – Austin Sand Filter (does not meet feasibility requirements)

* **Required** Design Element – A "Yes" response to these questions is required to further the consideration of this BMP into the project design. Document a "No" response in Section 5 of the SWDR to describe why this Treatment BMP cannot be included into the project design.

** **Recommended** Design Element – A "Yes" response is preferred for these questions, but not required for incorporation into a project design.

1.	Is the drawdown time of the 2nd chamber between 40 and 48 hours? *	☐ Yes	☐ No
2.	Is access for Maintenance vehicles provided to the Austin Sand Filter? *	☐ Yes	☐ No
3.	Is a bypass/overflow provided for storms > WQV? *	☐ Yes	☐ No
4.	Is the flow path length to width ratio for the sedimentation chamber of the "full" Austin Sand Filter = 2:1? **	☐ Yes	☐ No
5.	Can pretreatment be provided to capture sediment and litter in the runoff (such as using biofiltration)? **	☐ Yes	☐ No
6.	Can the Austin Sand Filter be placed using an earthen configuration? ** If No, go to Question 8.	☐ Yes	☐ No
7.	Is the Austin Sand Filter invert separated from the seasonally high groundwater table by = 3m? * If No, design with an impermeable liner.	☐ Yes	☐ No
8.	Can the Austin Sand Filter be placed in an offline configuration? **	☐ Yes	☐ No

Construction Site BMPs (To be completed at PS&E Phase)
Checklist CS-1, Part 1

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

Soil Stabilization

General Parameters

1. How many rainy seasons are anticipated between begin and end of construction? _____

2. What is the total disturbed soil area for the project? (ha/ac) _____

   (a) How much of the project DSA consists of slopes 1V:4H or flatter? (ha/ac) _____

   (b) How much of the project DSA consists of 1V:4H < slopes < 1V:2H? (ha/ac) _____

   (c) How much of the project DSA consists of slopes 1V:2H and steeper? (ha/ac) _____

   (d) How much of the project DSA consists of slopes with slope lengths longer then 6 m (20 ft)? (ha/ac) _____

3. What rainfall area does the project lie within? (Refer to Table 2-1 of the Construction Site Best Management Practices Manual) _____

4. Review the required combination of temporary soil stabilization and temporary sediment controls and barriers for area, slope inclinations, rainy and non-rainy season, and active and non-active disturbed soil areas. (Refer to Tables 2-2, and 2-3 of the Construction Site Best Management Practices Manual for Rainfall Area requirements.) o Complete

Scheduling (SS-1)

5. Does the project have a duration of more then one rainy season and have disturbed soil area in excess of 10 ha (25 acres)? o Yes o No

   (a) Include multiple mobilizations (Move-in/Move-out) as a separate contract bid line item to implement permanent erosion control or revegetation work on slopes that are substantially complete. (Estimate at least 6 mobilizations for each additional rainy season. Designated Construction Representative may suggest an alternate number of mobilizations.) o Complete

   (b) Edit Order of Work specifications for permanent erosion control or revegetation work to be implemented on slopes that are substantially complete. o Complete

   (c) Edit permanent erosion control or revegetation specifications to require seeding and planting work to be performed when optimal. o Complete

Preservation of Existing Vegetation (SS-2)

6. Do Environmentally Sensitive Areas (ESAs) exist within or adjacent to the project limits? (Verify the completion of DPP-1, Part 5) o Yes o No

   (a) Verify the protection of ESAs through delineation on all project plans. o Complete

   (b) Protect from clearing and grubbing and other construction disturbance by enclosing the ESA perimeter with high visibility plastic fence or other BMP. o Complete

7. Are there areas of existing vegetation (mature trees, native vegetation, landscape planting, etc.) that need not be disturbed by project construction? Will areas designated for proposed treatment BMPs need protection (infiltration characteristics, vegetative cover, etc.)? (Coordinate with District Environmental and Construction to determine limits of work necessary to preserve existing vegetation to the maximum extent possible.) o Yes o No

   (a) Designate as outside of limits of work (or designate as ESAs) and show on all project plans. o Complete

   (b) Protect with high visibility plastic fence or other BMP. o Complete

8. If yes for 6, 7, or both, then designate ESA fencing as a separate contract bid line item, *if not already incorporated as part of design pollution prevention work (See DPP-1, Part 5).* o Complete

Slope Protection

9. Provide a soil stabilization BMP(s) appropriate for the DSA, slope steepness, slope length, and soil erodibility. (Consult with District/Regional Landscape Architect.)

   (a) Select SS-3 (Hydraulic Mulch), SS-4 (Hydroseeding), SS-5 (Soil Binders), SS-6 (Straw Mulch), SS-7 (Geotextiles, RECPs, Etc.), SS-8 (Wood Mulching), other BMPs or a combination to cover the DSA throughout the project's rainy season. o Complete

   (b) Increase the quantities by 25% for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.) o Complete

   (c) Designate as a separate contract bid line item. o Complete

Slope Interrupter Devices

10. Provide slope interrupter devices for all slopes with slope lengths equal to or greater than of 6 m (20 ft) in length. (Consult with District/Regional Landscape Architect and Designated Construction Representative.)

    (a) Select SC-5 (Fiber Rolls) or other BMPs to protect slopes throughout the project's rainy season. o Complete

    (b) For slope inclination of 1V:4H and flatter, SC-5 (Fiber Rolls) or other BMPs shall be placed along the contour and spaced 6.0 m (20 ft) on center. o Complete

    (c) For slope inclination between 1V:4H and 1V:2H, SC-5 (Fiber Rolls) or other BMPs shall be placed along the contour and spaced 4.5 m (15 ft) on center. o Complete

    (d) For slope inclination of 1V:2H and greater, SC-5 (Fiber Rolls) or other BMPs shall be placed along the contour and spaced 3.0 m (10 ft) on center. o Complete

    (e) Increase the quantities by 25% for each additional rainy season. (Designated Construction Representative may suggest alternate increase.) o Complete

    (f) Designate as a separate contract bid line item. o Complete

Channelized Flow

11. Identify locations within the project site where concentrated flow from stormwater runoff can erode areas of soil disturbance. Identify locations of concentrated flow that enters the site from outside of the right of way (off-site run-on). o Complete

    (a) Utilize SS-7 (Geotextiles, RECPs, etc.), SS-9 (Earth Dikes/Swales, Ditches), SS-10 (Outlet Protection/Velocity Dissipation), SS-11 (Slope Drains), SC-4 (Check Dams), or other BMPs to convey concentrated flows in a non-erosive manner. o Complete

    (b) Designate as a separate contract bid line item. o Complete

Construction Site BMPs (To be completed at PS&E Phase)
Checklist CS-1, Part 2

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

Sediment Control

Perimeter Controls - Run-off Control

1. Is there a potential for sediment laden sheet and concentrated flows to discharge offsite from runoff cleared and grubbed areas, below cut slopes, embankment slopes, etc.? — o Yes o No

   (a) Select linear sediment barrier such as SC-1 (Silt Fence), SC-5 (Fiber Rolls), SC-6 (Gravel Bag Berm), SC-8 (Sand Bag Barrier), SC-9 (Straw Bale Barrier), or a combination to protect wetlands, water courses, roads (paved and unpaved), construction activities, and adjacent properties. (Coordinate with District Construction for selection and preference of linear sediment barrier BMPs.) — o Complete

   (b) Increase the quantities by 25% for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.) — o Complete

   (c) Designate as a separate contract bid line item. — o Complete

Perimeter Controls - Run-on Control

2. Do locations exist where sheet flow upslope of the project site and where concentrated flow upstream of the project site may contact DSA and construction activities? — o Yes o No

   (a) Utilize linear sediment barriers such as SS-9 (Earth Dike/Drainage Swales and Lined Ditches), SC-5 (Fiber Rolls), SC-6 (Gravel Bag Berm), SC-8 (Sand Bag Barrier), SC-9 (Straw Bale Barrier), or other BMPs to convey flows through and/or around the project site. (Coordinate with District Construction for selection and preference of perimeter control BMPs.) — o Complete

   (b) Designate as a separate contract bid line item. — o Complete

Storm Drain Inlets

3. Do existing or proposed drainage inlets exist within the project limits? o Yes o No

   (a) Select SC-10 (Storm Drain Inlet Protection) to protect municipal storm drain systems or receiving waters wetlands at each drainage inlet. (Coordinate with District Construction for selection and preference of inlet protection BMPs.) o Complete

   (b) Designate as a separate contract bid line item. o Complete

4. Can existing or proposed drainage inlets utilize an excavated sediment trap as described in SC-10 (Storm Drain Inlet Protection- Type 2)? o Yes o No

   (a) Include with other types of SC-10 (Storm Drain Inlet Protection). o Complete

Sediment/Desilting Basin (SC-2)

5. Does the project lie within a Rainfall Area where the required combination of temporary soil stabilization and sediment control BMPs includes desilting basins? (Refer to Tables 2-1, 2-2, and 2-3 of the Construction Site Best Management Practices Manual for Rainfall Area requirements.) o Yes o No

   (a) Consider feasibility for desilting basin allowing for available right-of-way within the project limits, topography, soil type, disturbed soil area within the watershed, and climate conditions. Document if the inclusion of sediment/desilting basins is infeasible. o Complete

   (b) If feasible, design desilting basin(s) per the guidance in SC-2 Sediment/ Desilting Basins of the Construction Site BMP Manual to maximize capture of sediment laden runoff. o Complete

   Designate as a separate contract bid item. o Complete

6. Will the project benefit from the early implementation of proposed permanent Treatment BMPs? (Coordinate with District Construction.) o Yes o No

   (a) Edit Order of Work specifications for permanent treatment BMP work to be implemented in a manner that will allow its use as a construction site BMP. o Complete

Sediment Trap (SC-3)

7. Can sediment traps be located within collected or channelized runoff from disturbed soil areas prior to discharge? o Yes o No

   (a) Design sediment traps in accordance with the Construction Site BMP Manual. o Complete

   (b) Designate as a separate contract bid line item. o Complete

Construction Site BMPs (To be completed at PS&E Phase)
Checklist CS-1, Part 3

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

Tracking Controls

Stabilized Construction Entrance/Exit (TC-1)

1. Are there points of entrance and exit from the project site to paved roads where mud and dirt could be transported offsite by construction equipment? (Coordinate with District Construction for selection and preference of tracking control BMPs.) o Yes o No

   (a) Identify and designate these entrance/exit points as stabilized construction entrances (TC-1). o Complete

   (b) Designate as a separate contract bid line item. o Complete

Tire/Wheel Wash (TC-3)

2. Are site conditions anticipated that would require additional or modified tracking controls such as entrance/outlet tire wash? (Coordinate with District Construction.) o Yes o No

   Designate as a separate contract bid line item. o Complete

Stabilized Construction Roadway (TC-2)

3. Are temporary access roads necessary to access remote construction activity locations or to transport materials and equipment? (In addition to controlling dust and sediment tracking, access roads limit impact to sensitive areas by limiting ingress, and provide enhanced bearing capacity.) (Coordinate with District Construction.) o Yes o No

   (a) Designate these temporary access roads as stabilized construction roadways (TC-2). o Complete

   (b) Designate as a separate contract bid line item. o Complete

Street Sweeping and Vacuuming (SC-7)

1. Is there a potential for tracked sediment or construction related residues to be transported offsite and deposited on public or private roads? (Coordinate with District Construction for preference of including street sweeping and vacuuming with tracking control BMPs.) o Yes o No

   Designate as a separate contract bid line item. o Complete

Construction Site BMPs (To be completed at PS&E Phase)
Checklist CS-1, Part 4

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

Wind Erosion Controls

Wind Erosion Control (WE-1)

1. Is the project located in an area where standard dust control practices in accordance with Standard Specifications, Section 10: Dust Control, are anticipated to be inadequate during construction to prevent the transport of dust offsite by wind? *(Note: Dust control by water truck application is paid for through the various items of work. Dust palliative, if it is included, is paid for as a separate item.)* o Yes o No

   (a) Select SS-3 (Hydraulic Mulch), SS-4 (Hydroseeding), SS-5 (Soil Binders), SS-7 (Geotextiles, Plastic Covers, & Erosion Control Blankets/Mats), SS-8 (Wood Mulching) or a combination to cover the DSA subject to wind erosion year-round, especially when significant wind and dry conditions are anticipated during project construction. (Coordinate with District Construction for selection and preference of wind erosion control BMPs.) o Complete

   (b) Designate as a separate contract bid line item. o Complete

Construction Site BMPs (To be completed at PS&E Phase)
Checklist CS-1, Part 5

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

Non-Storm Water Management

Temporary Stream Crossing (NS-4) *& Clear Water Diversion* (NS-5)

1. Will construction activities occur within a waterbody or watercourse such as a lake, wetland, or stream? (Coordinate with District Construction for selection and preference for stream crossing and clear water diversion BMPs.) — o Yes o No

   (a) Select from types offered in NS-4 (Temporary Stream Crossing) to provide access through watercourses consistent with permits and agreements.[1] — o Complete

   (b) Select from types offered in NS-5 (Clear Water Diversion) to divert watercourse consistent with permits and agreements.[1] — o Complete

   (c) Designate as a separate contract bid line item(s). — o Complete

Other Non-Storm Water Management BMPs

2. Are construction activities anticipated that will generate wastes or residues with the potential to discharge pollutants? — o Yes o No

   (a) Identify potential pollutants associated with the anticipated construction activity and select the corresponding BMP such as NS-1 (Water Conservation Practices), NS-2 (Dewatering Operations), NS-3 (Paving and Grinding Operations), NS-7 (Potable Water/Irrigation), NS-8 (Vehicle and Equipment Cleaning), NS-9 (Vehicle and Equipment Fueling), NS-10 (Vehicle and Equipment Maintenance), NS-11 (Pile Driving Operations), NS-12 (Concrete Curing), NS-13 (Material and Equipment Use Over Water), NS-14 (Concrete Finishing), and NS-14 (Structure Demolition/Removal Over or Adjacent to Water).[1] — o Complete

   (b) Verify that costs for non-storm water management BMPs are identified in the contract documents. Designate BMP as a separate contract bid line item if requested by Construction. — o Complete

1. Coordinate with District Environmental for consistency with US Army Corps of Engineers 404 permit and Dept. of Fish and Game 1601 Streambed alteration Agreements.

Construction Site BMPs (To be completed at PS&E Phase)
Checklist CS-1, Part 6

Prepared by: WRECO Date: August 2006 District-Co-Route: 03-But-32
PM: 10.1/12.4 EA: 03-1E4900
RWQCB: Central Valley (Redding Office)

Waste Management & Materials Pollution Control

Concrete Waste Management (WM-8)

1. Does the project include concrete pours or mortar mixing? o Yes o No

   (a) Select from types offered in WM-8 (Concrete Waste Management) to provide concrete washout facilities. In addition, consider portable concrete washouts and vendor supplied concrete waste management services. (Coordinate with District Construction for selection and preference of waste management and materials pollution control BMPs.) o Complete

   (b) Designate as a separate contract bid line item. o Complete

Other Waste Management and Materials Pollution Controls

2. Are construction activities anticipated that will generate wastes or residues with the potential to discharge pollutants? o Yes o No

   (a) Identify potential pollutants associated with the anticipated construction activity and select the corresponding BMP such as WM-1 (Material Delivery and Storage), WM-2 (Material Use), WM-4 (Spill Prevention and Control), WM-5 (Solid Waste Management), WM-6 (Hazardous Waste Management), WM-7 (Contaminated Soil Management), WM-9 (Sanitary/Septic Waste Management) and WM-10 (Liquid Waste Management) o Complete

   (b) Verify that costs for waste management and materials pollution control BMPs are identified in the contract documents. Designate BMP as a separate contract bid line item if requested by Construction. o Complete

Temporary Stockpiles (Soil, Materials, and Wastes)

3. Are stockpiles of soil, etc. anticipated during construction? o Yes o No

   (a) Select WM-3 (Stockpile Management), SS-3 (Hydraulic Mulch), SS-4 (Hydroseeding), SS-5 (Soil Binders), SS-7 (Geotextiles, RECPs etc.), or a combination as appropriate to cover temporary stockpiles of soil, etc. o Complete

   (b) Select linear sediment barrier such as SC-1 (Silt Fence), SC-5 (Fiber Rolls), SC-6 (Gravel Bag Berm), SC-8 (Sand Bag Barrier), SC-9 (Straw Bale Barrier), or a combination to encircle temporary stockpiles of soil, etc. (Coordinate with District Construction for selection and preference of BMPs related to stockpiles.) o Complete

   (c) Designate as a separate contract bid line item. o Complete

4. Is there a potential for dust and debris from construction material (fill material, etc.) and waste (concrete, contaminated soil, etc.) stockpiles to be transported offsite by wind? o Yes o No

   (a) Select SS-7, temporary cover, plastic sheeting or other BMP to cover stockpiles subject to wind erosion year-round, especially when significant wind and dry conditions are anticipated during project construction. (Coordinate with District Construction for selection and preference of wind erosion control BMPs.) o Complete

   (b) Designate as a separate contract bid line item. o Complete