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*Long Form - Storm Water Data Report*



Dist-County-Route: 04-SCI-101, 05-SBt-101,04, 04-SCL-25  
 Post Mile Limits: 0.0/5.0, 4.9/7.5, 1.6/2.5  
 Project Type: Highway Widening  
 Project ID (or EA): 04-XXXXXX  
 Program Identification: \_\_\_\_\_  
 Phase:  PID  
 PA/ED  
 PS&E

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

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 Distributed Soil Area: 411.7 acres Risk Level: 3  
 Estimated: Construction Start Date: 01/31/2013 Construction Completion Date: 12/03/2014  
 Notification of Construction (NOC) Date to be submitted: 12/31/2012

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 # 12345 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 10/08/10  
 [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:*



[Stamp Required for PS&E only]

George Washington 10/08/10  
 [George Washington], Project Manager Date  
Paul Revere 10/08/10  
 [Paul Revere], Designated Maintenance Representative Date  
Horatio Gates 10/08/10  
 [Horatio Gates], Designated Landscape Architect Representative Date  
Friedrich Wilhelm von Steuben 10/08/10  
 [Friedrich Wilhelm von Steuben], District/Regional Design SW Coordinator or Designee Date

## STORM WATER DATA INFORMATION

### 1. Project Description

The California Department of Transportation (Caltrans), in cooperation with the Santa Clara Valley Transportation Authority (VTA), proposes to construct improvements to a 7.6-mile segment of United States Highway 101 (US 101) that is located in southern Santa Clara County/northern San Benito County. The primary improvements consist of the following:

- Widen and upgrade US 101 to a six-lane freeway between the Monterey Road interchange in Gilroy and the State Route (SR) 129 interchange in northern San Benito County.
- Reconstruct the US 101/SR 25 interchange.
- Construct an auxiliary lane in each direction on US 101 between the Monterey Road and SR 25 interchanges.
- Extend Santa Teresa Boulevard approximately 0.5 miles from Castro Valley Road to the new US 101/SR 25 interchange.
- Construct improvements at the southbound US 101 off-ramp to SR 129.
- Construct frontage roads, as needed, to replace existing access to US 101 from adjacent properties.
- Grade-separate the Union Pacific Railroad (UPRR) crossing on SR 25 just west of Bloomfield Avenue.
- Construct bicycle facilities, as needed, to replace access that is lost when US 101 is upgraded to a freeway and to improve bicycle access in the project area.

The project reconstructs the US 101/SR 25 interchange at approximately the same location as the existing interchange. The interchange includes a new bridge to convey SR 25 over US 101. It also includes ramps to allow all traffic movements between US 101 and SR 25. The proposed work at the reconstructed US 101/SR 25 interchange includes a minor realignment of SR 25 to a location just east of the UPRR crossing, at which point it either transitions to the existing SR 25 or ties into an upgraded four-lane SR 25.

#### Disturbed Soil Area and Net Additional Impervious Area

The total disturbed soil area (DSA) is 411.7 acres, with 305.5 acres within Santa Clara and 106.2 within San Benito County. The DSA was calculated by subtracting the overlay impervious area from the proposed total construction area, including staging areas. This includes any soil that is exposed through the removal of pavement. There is approximately 60 acres of existing impervious area. The net additional impervious area (AIA) is 73.6 acres, with 60.6 within Santa Clara County and 13.0 within San Benito County. The AIA was calculated by subtracting the total existing impervious area intended to be removed from the total new impervious area.

From post mile (PM) 3.7 to PM 5.0 along US 101 in Santa Clara County, the project is within the combined City of Gilroy, City of Morgan Hill and County of Santa Clara Phase II Municipal



Separate Storm Sewer System (MS4) area. All other areas within the project are not within an MS4 area.

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

The project is located within the jurisdiction of Caltrans Districts 4 and 5, and within the jurisdiction of the Central Coast Regional Water Quality Control Board-Region 3 (RWQCB).

### Hydrologic Units

The entire project is within the Pajaro River hydrologic unit. The South Santa Clara Valley Hydrologic Area (sub-area 305.30) covers all the areas within the Santa Clara portion of the project and the project areas between US 101 PM 4.9 and PM 5.2 in San Benito County. The project areas between US 101 PM 5.2 and PM 7.5 in San Benito County are within the Santa Cruz Mountains Hydrologic Area (sub-area 305.20).

### Receiving Water Bodies

Nine waterways are adjacent to or cross the roadways within the project limits. Seven of the crossings are direct receiving water bodies for US 101 and SR 25. From north to south, the receiving water bodies are: Uvas-Carnadero Creek, Gavilan Creek, Tick Creek, Tar Creek, Pajaro River, San Benito River, and San Juan Creek. The United States Geological Survey (USGS) topographic map for the project area (see Vicinity Maps in the attachments) identifies three unnamed streams that cross the project, located between San Benito River and Pajaro River. An unnamed crossing approximately 900 feet south of the Pajaro River crossing along US 101 has been previously identified as Murphy Creek on available as-builts; however, current USGS and Federal Emergency Management Agency (FEMA) data do not provide a name for this crossing. These three unnamed waterways are tributaries of Pajaro River. Via Pajaro River, the flows ultimately reach the Pacific Ocean at Monterey Bay, which is approximately 23 miles west of US 101.

Uvas Creek flows northwest to southeast as it crosses US 101. Gavilan Creek flows from the west to east of the project. Uvas Creek eventually becomes Carnadero Creek after crossing US 101. Carnadero Creek merges with Pajaro River to the east of US 101. Pajaro River flows northeast to southwest, and crosses US 101 south of Tar Creek. Pajaro River continues parallel to US 101 from this crossing until it merges with the San Benito River. Tick Creek is located south of Gavilan Creek and flows from west to east of US 101. A tributary then merges with Tick Creek, which merges with Carnadero Creek east of US 101. San Benito River flows from southeast to northwest as it crosses US 101 and merges with Pajaro River after the crossing. San Juan Creek flows almost parallel to San Benito River, crosses US 101, and then merges with San Benito River upstream of the confluence of San Benito River and Pajaro River.

### 2006 Clean Water Act 303(d) List

The RWQCB has listed Pajaro River as an impaired water body for the following pollutants: boron, fecal coliform, nitrate, nutrients and sedimentation/siltation in the 2006 Clean Water Act 303(d) List of Water Quality Limited Segments. The list also shows that San Benito River is impaired by fecal coliform and sedimentation/siltation.

### Total Maximum Daily Loads

TMDLs were approved by the United States Environmental Protection Agency (EPA) for sediment and nitrates for Pajaro River on May 3, 2007 (effective November 27, 2006) and October 13, 2006, respectively.

On December 2, 2005, the RWQCB amended the Water Quality Control Plan for the Central Coast Basin (Basin Plan) and adopted the TMDL for sediment for Pajaro River including the San Benito River. The Pajaro River sediment TMDL also applies to San Benito River. The sources of impairment are indicated as agriculture, silviculture, urban/residential, stream bank erosion, sand and gravel mining, range land/grazing, unpaved roads, and landslides.

### Beneficial Uses

The RWQCB Basin Plan lists the identified beneficial uses of inland surface waters for the project's receiving water bodies as follows:

- Uvas Creek, downstream (as identified on the Basin Plan of RWQCB): Municipal and Domestic Supply (MUN), Agricultural Supply (AGR), Industrial Service Supply (IND), Ground Water Recharge (GWR), Water Contact Recreation (REC1), Non-Contact Water Recreation (REC2), Wildlife Habitat (WILD), Cold Fresh Water Habitat (COLD), Warm Fresh Water Habitat (WARM), Migration of Aquatic Organisms (MIGR), Spawning, Reproduction and/or Early Development (SPWN), Rare, Threatened, or Endangered Species (RARE), Commercial and Sporting Fish (COMM).
- Carnadero Creek: MUN, GWR, REC1, REC2, WILD, COLD, WARM, MIGR, RARE, COMM.
- Pajaro River: MUN, AGR, IND, GWR, REC1, REC2, WILD, COLD, WARM, MIGR, SPWN, Fresh Replenishment (FRESH), COMM
- San Benito River: MUN, AGR, IND, GWR, REC1, REC2, WILD, WARM, SPWN, FRESH, COMM
- Gavilan Creek, Tick Creek, Tar Creek, and San Juan Creek have no listed beneficial uses.

### CWA Section 401 Water Quality Certification

Because there is widening at the creek crossings, a Clean Water Act 401 Water Quality Certification is required from the RWQCB. The 401 Certification has been prepared for the project and was approved by the RWQCB on September 30, 2010.



### Sensitive Issues

There are environmentally sensitive areas (ESAs) within the project that are protected through the use of ESA fencing. These sensitive areas include identified wetlands, Waters of the United States and existing vegetation that can not be disturbed or removed. All ESAs are identified on the Contract Plans.

There are areas where the disturbance or removal of existing sensitive vegetation and impacts to wetlands are unavoidable. To mitigate for these impacts, a separate mitigation project is currently under review by Caltrans and the RWQCB.

### Local Agency Requirements/Concerns

Stormwater from the project discharges to both the Santa Clara Valley Water District and San Benito County Water District's jurisdiction. The drainage and treatment design have been reviewed and approved by the water districts.

### Climate

The climate in Santa Clara County and San Benito County is warm and dry in the summers and cool and rainy in the winters. The average annual temperature ranges from 56°F to 58°F. The mean freeze-free period is between 250 and 300 days. The normal temperatures for summer and winter are 73°F and 46°F, respectively. Temperatures may rise above 100°F in the summer and may fall below 40°F in the winter. The average annual precipitation is about 18 inches, with most of the precipitation during the rainy season from October 15 to April 15. Extreme weather conditions, such as thunderstorms and snowfalls, are rare.

### Topography

The project is located in the Santa Clara Valley, adjacent to the Santa Cruz Mountains in the west. The San Benito River Valley is located on the south side of the project site. Creeks originate from both the Diablo Range and the Santa Cruz Mountains.

Pajaro River approaches the site from the northeast, flowing south along the project site before flowing west through the Chittenden Pass. Eventually, the river flows into the Monterey Bay and the Pacific Ocean.

### Soil Characteristics

Geotechnical studies show that the soils are rich in alluvial deposits, originating from the erosion of the Diablo Range and the Santa Cruz Mountains. The alluvial and sedimentary soil deposits consist of alternating layers of loam, clay, gravel, sand and mixtures of these elements.

Hydrologic Soil Groups (HSGs) on-site consist mostly of Groups B and C, with small sections of HSG D adjacent to the Uvas-Carnadero Creek and scattered throughout the area from Tick Creek to SR 129.

A Geotechnical Report was completed for this project. General locations of soils were identified on the maps in the Geotechnical Report. The soils identified were: artificial fill (af), active stream deposits (Qg), alluvium (Qal), older alluvium (QoA), unnamed tertiary-aged foundation (Tn), ethegoin formation (Te), Franciscan assemblage-greenstone (fg) and Franciscan assemblage-limestone (fl). According to these geologic maps, the project is mainly located on artificial fill. Active stream deposits, ethegoin formation and older alluvium are located on the east and west sides of the project.

### Hazardous Waste Material

The Hazardous Soil Report found areas of adverse environmental conditions; these areas are located where the three railroads intersect. The railroads used petroleum hydrocarbons for the maintenance of trains. There are also herbicides and pesticides along the railroad tracks from the train maintenance. Detailed studies found that the levels of groundwater contamination from the Chevron Service Station, located in the northern portion of the alignment, were within allowable ranges. Asbestos Containing Materials (ACMs) are present on the existing bridges, particularly in the caulking, which separates the bridge sections and attachments for bridge guard-rails. Procedures for the handling and disposal of all hazardous waste are included in the Contract Specifications.

### Aerially Deposited Lead (ADL)

The Hazardous Soil Report determined that the soils within the project can be classified non-hazardous. Based on the findings presented in the report, the soil can be reused without any restrictions and the soil can be disposed of without any restrictions.

### Groundwater Information

The Geotechnical Report states that shallow groundwater conditions will be encountered during drilling operations on the Pajaro River structure, as demonstrated by the small depths of 1.28 feet at creek and river crossings. In all other areas where boring was conducted, groundwater was generally encountered to be 5 feet below existing grade within the vicinity of the creek crossings and 10 feet below existing grade in all other areas.

### Slope Failures

According to the Geotechnical Report, two relatively large slope failures have been observed in the drainage courses east of US 101 and southeast of the Lomerias overcrossing. The slope failures are mainly from slump/debris flows and are considered unstable to the frontage road and US 101. To improve existing slope failure concerns and prevent future slope failures, either from existing or proposed slopes, the project utilizes retaining walls and

permanent erosion control measures. These measures are discussed in detail in Section 4 of this report.

### Erosion Potential

The soil erodibility factor, K, for the soils adjacent to US 101 ranges from 0.10 to 0.37, with a weighted average of 0.33. The soil is generally more susceptible to erosion toward the northern end of US 101 and less susceptible toward the southern end. The soils closest to the US 101 and SR 25 interchange were found to be more erodible than the soils in the outlying areas.

### Risk Assessment

The R factor was determined from the EPA “Rainfall Erosivity Factor Calculator” to be 51.92; the K, as previously stated is 0.33; the LS factor was determined by examining the existing slopes and calculated to be 4.59. The product of these values is 79. Because this value is larger than 75, the project is classified as having a high sediment risk. See the attachments for the sediment risk factor input values.

The receiving water risk is classified as high because Pajaro River has approved TMDLs for sediment. Some water bodies within the project limits also have the beneficial uses of SPWN, COLD and MIGR. A GIS map prepared by Caltrans was used to confirm that the entire project is high risk and is included in the attachments.

The combined high sediment risk and high receiving water risk results in the project being classified as Risk Level 3 (see Required Attachments). Furthermore, bioassessment is required for this project because the project has a DSA greater than 30 acres and discharges to freshwater wadeable streams.

### Measures for Avoiding or Reducing Potential Storm Water Impacts

All work in creeks and waterways are scheduled per regulatory requirements and are detailed in the project’s special provisions. Maintenance pullouts are proposed at multiple locations throughout the project. Side slopes are specified to be as flat as possible, for easy maintenance. Concentrated flows are collected into stabilized drains and channels.

There are no known existing treatment Best Management Practices (BMPs) within the project limits.

### Land Use

In Santa Clara County, the land on the west side of US 101 is used as ranchland, and on the east side, it is used as agriculture. In San Benito County, land use on the west side of US 101 is mostly agricultural, whereas on the east side it is composed of natural vegetation.

### Right-of-Way (R/W) Requirements

Temporary easements for areas outside of Caltrans R/W that are utilized during construction are: the Y Road north of the Lomerias overcrossing and US 101 overcrossing, and the Pajaro River Access Road at Pajaro River. The areas required for access to frontage roads during construction are the PG&E Access Road and the access road adjacent to the Union Pacific Rail Road (UPRR), south of Tar Creek.

### 3. Regional Water Quality Control Board Agreements

On September 29, 2010 the project team along with Solomon Cruz, the Caltrans Storm Water Coordinator, met with Thomas Sanchez from the RWQCB for a final discussion of the permits and agreements required for this project. The following permits have been obtained for the project:

- A CWA Section 401 Water Quality Certification from the RWQCB. Approved on September 30, 2010.
- A CWA Section 404 from the U.S. Army Corps of Engineers for wetlands. Approved on September 25, 2010.
- A 1602 Agreement from the California Department of Fish and Game. Approved October 1, 2010

Coordination with Stella Yu from the National Marine Fisheries Services and Heath Peters from the United States Fish and Wildlife Service was conducted September 25, 2010 to discuss necessary permits for aquatic and wildlife habitats within the projects limits.

### Treatment of Impervious Area

The project team met with Solomon Cruz, the Caltrans Storm Water Coordinator, on September 15, 2010 to discuss the treatment design approach for the project. During this meeting it was recommended that the project be designed to treat 100% of the added impervious area. Caltrans staff set up a meeting with the Regional Board on September 29, 2010 to discuss this approach. At this meeting the RWQCB agreed that the project should treat 100% of the net added impervious area.

### 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 Project results in an increase in impervious surface. The net additional impervious area for the project is 73.6 acres. Additional impervious areas proposed for the project may increase the volume and velocity of the stormwater discharge. This Project utilizes 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 are incorporated in the development and placement of permanent best management practices (BMPs) to the

maximum extent practicable. LID measures incorporated into this Project that improve water quality include:

- Vegetated drainage ditches (see Drainage Plans for specific locations) to decrease the velocity of discharge plus decrease the volume of discharge by promoting infiltration and allowing for pollutant removal, and
- Graded slopes to blend with the natural terrain at 4:1 (H:V) slopes and decreasing quantities of dikes for sheet flow to vegetated areas which provide water quality benefits and promote infiltration,
- Check dams within drainage ditches and swales (see Drainage Details) to increase time of concentrations and designing disconnected drainage facilities to mimic the existing drainage pattern of the area,
- Maintaining existing vegetated areas with ESA fencing

To examine the effectiveness of these LID efforts, the pre and post project hydrology was compared; these calculations include determining changes in the runoff coefficient, time of concentration and discharge to downstream water bodies.

Table 1 examines the flow control calculations for the proposed vegetated ditches and swales. The establishment of vegetation in these systems increases the roughness coefficient to 0.24 from 0.05 in the existing condition. Thus, the time of concentration increases and the rainfall intensity decreases. The intensity from a 2-year, 24-hour storm from WinIDF was used to compare the pre-project and post-project flows; a 5 minute duration was used for pre-project and a 6 minute duration was used for post-project analysis. Due to the length of the project multiple IDF curves were developed based on area being analyzed.

Due to the addition of these LID features and based on the comparison of the pre-construction flows versus the post-construction flows, negligible changes or effects to existing downstream flows is anticipated.

Table 1. Summary of Flow Control Calculations

System No.	Pre-Construction				Post-Construction			
	C	i (in/hr)	A (ac)	Q (cfs)	C	i (in/hr)	A (ac)	Q (cfs)
1	0.87	1.39	1.30	1.57	0.93	1.312	1.30	1.59
2	0.87	1.39	0.50	0.60	0.93	1.312	0.50	0.61
3	0.87	1.39	0.20	0.24	0.93	1.312	0.20	0.24
4	0.87	1.39	0.60	0.73	0.93	1.312	0.60	0.73
5	0.87	1.39	0.90	1.09	0.93	1.312	0.90	1.10
6	0.87	1.39	1.10	1.33	0.93	1.312	1.10	1.34
7	0.87	1.39	1.40	1.69	0.93	1.312	1.40	1.71
8	0.87	1.39	1.70	2.06	0.93	1.312	1.70	2.07
9	0.87	1.39	1.70	2.06	0.93	1.312	1.70	2.07
10	0.87	1.39	2.20	2.66	0.93	1.312	2.20	2.68
11	0.87	1.39	3.40	4.11	0.93	1.312	3.40	4.15
12	0.87	1.39	0.50	0.60	0.93	1.312	0.50	0.61
13	0.87	1.39	0.30	0.36	0.93	1.312	0.30	0.37
14	0.87	1.39	0.70	0.85	0.93	1.312	0.70	0.85
15	0.87	1.39	0.70	0.85	0.93	1.312	0.70	0.85
16	0.87	1.436	0.20	0.25	0.93	1.354	0.20	0.25
17	0.87	1.436	1.10	1.37	0.93	1.354	1.10	1.39
18	0.87	1.436	1.40	1.75	0.93	1.354	1.40	1.76
19	0.87	1.436	1.40	1.75	0.93	1.354	1.40	1.76
20	0.87	1.436	0.50	0.62	0.93	1.354	0.50	0.63
21	0.87	1.436	2.20	2.75	0.93	1.354	2.20	2.77
22	0.87	1.436	0.40	0.50	0.93	1.354	0.40	0.50
23	0.87	1.436	0.60	0.75	0.93	1.354	0.60	0.76
24	0.87	1.436	3.40	4.25	0.93	1.354	3.40	4.28
25	0.87	1.436	0.60	0.75	0.93	1.354	0.60	0.76
26	0.87	1.436	1.40	1.75	0.93	1.354	1.40	1.76
27	0.87	1.436	0.70	0.87	0.93	1.354	0.70	0.88
28	0.87	1.436	5.70	7.12	0.93	1.354	5.70	7.18
29	0.87	1.436	0.50	0.62	0.93	1.354	0.50	0.63
30	0.87	1.436	0.30	0.37	0.93	1.354	0.30	0.38
31	0.87	1.436	0.50	0.62	0.93	1.354	0.50	0.63
32	0.87	1.436	1.80	2.25	0.93	1.354	1.80	2.27
33	0.87	1.436	0.10	0.12	0.93	1.354	0.10	0.13
34	0.87	1.436	0.10	0.12	0.93	1.354	0.10	0.13
35	0.87	1.414	0.20	0.25	0.93	1.335	0.20	0.25
36	0.87	1.414	0.20	0.25	0.93	1.335	0.20	0.25
37	0.87	1.414	2.10	2.58	0.93	1.335	2.10	2.61
38	0.87	1.414	0.70	0.86	0.93	1.335	0.70	0.87
39	0.87	1.414	9.60	11.81	0.93	1.335	9.60	11.92
40	0.87	1.414	1.40	1.72	0.93	1.335	1.40	1.74
41	0.87	1.414	1.40	1.72	0.93	1.335	1.40	1.74
42	0.87	1.414	3.50	4.31	0.93	1.335	3.50	4.35
43	0.87	1.414	1.30	1.60	0.93	1.335	1.30	1.61
44	0.87	1.414	0.50	0.62	0.93	1.335	0.50	0.62
45	0.87	1.414	0.40	0.49	0.93	1.335	0.40	0.50
46	0.87	1.414	1.40	1.72	0.93	1.335	1.40	1.74
47	0.87	1.414	0.50	0.62	0.93	1.335	0.50	0.62
48	0.87	1.414	2.30	2.83	0.93	1.335	2.30	2.86
49	0.87	1.414	4.40	5.41	0.93	1.335	4.40	5.46
50	0.87	1.414	2.30	2.83	0.93	1.335	2.30	2.86
51	0.87	1.414	1.10	1.35	0.93	1.335	1.10	1.37
52	0.87	1.414	0.60	0.74	0.93	1.335	0.60	0.74
53	0.87	1.414	0.40	0.49	0.93	1.335	0.40	0.50

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

Areas of cut and fill are required throughout the Project to satisfy the proposed project geometry. All disturbed slopes are revegetated through the use of erosion control measures. Because this project includes slopes steeper than 4:1 (H:V), erosion control plans and specifications were developed detailing the placement of the necessary erosion control measures to ensure slope stability; these plans have been reviewed and approved by the Halbert Jones, the District Landscape Architect. Areas with slopes between 4:1 (H:V) and 2:1 (H:V) are designed in coordination with DES Geotechnical Design unit. Because this project includes new slope ratios steeper than 2:1 (H:V), a Geotechnical Design Report has been approved and maintenance concurrence has been obtained. There is an 80-foot cut slope, from approximately Sta 255+00 to Sta. 260+00, with slopes as steep as but not greater than, 1.5:1 (H:V). To ensure slope stability in this area, non-standard reinforced erosion control measures are proposed and have been designed in coordination with the District Erosion Control unit and have received geotechnical concurrence. Retaining walls are proposed at multiple locations throughout the project where geotechnical studies have indicated that 1.5:1 (H:V) are not allowed or slopes cannot be graded at 1.5:1 (H:V) or flatter. The locations and types of the retaining walls for this project are shown in the Contract Plans.

To minimize erosion, fiber rolls and erosion control (hydroseed) is placed on disturbed soils to remain unpaved or unlined. Erosion control (hydroseed) and rolled erosion control product (netting) is placed in all proposed drainage ditches. Erosion control (hydroseed), rolled erosion control product (netting), liner plants and imported topsoil are used in the design of the proposed biofiltration swales. Biofiltration swales are utilized to promote infiltration and pollutant removal and prevent scour and erosion from the conveyed stormwater. The effectiveness of the proposed erosion control materials is verified by using the Revised Universal Soil Loss Equation 2 (RUSLE2); the results are included in the attachments. Due to the non-standard reinforcement methods to be used for slopes 1.5:1 (H:V), these slopes could not be examined using RUSLE2, but have been reviewed and approved by Angela Tan from the Caltrans Erosion Control Unit on October 1, 2010.

Unlined gutters and dikes are placed in areas where concentrated flow collects, redirecting flow away from side slopes in order to reduce gullyng.

Hard surfaces for the project drainage design consist of rock slope protection at the end of pipe outlets. Rock slope protection is also proposed on the northeast slope of the Parajo River Access Road Bridge to prevent scour from the change in flow direction at this location.

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

Concentrated flow conveyance systems, such as ditches, berms, dikes, swales, overside drains, flared end sections and outlet protection/velocity dissipation devices are proposed for this project to intercept and divert surface flows and convey these flows to minimize soil erosion. Dikes route the runoff to existing and proposed drainage inlets. Outlet

protection/velocity dissipation BMPs are placed at all outlets of drainage systems that discharge into earthen areas. These drainage features are shown on the Drainage Plans, and the drainage design efforts and impacts are discussed in detail in the project Drainage Report.

#### [Preservation of Existing Vegetation, Checklist DPP-1, Parts 1 and 5](#)

It is the goal of the project to maximize the protection of desirable existing vegetation for erosion and sediment control. This involves the identification of desirable vegetation capable of providing erosion and sediment control benefits. The Biotic Habitat plans identify the existing vegetation in the project area as primarily agriculture, annual grassland (foothills), baccharis scrub, eucalyptus, oak woodland, ornamental (pines, cypress, juniper), riparian, seasonal wetland and willow, according to. Vegetation to remain is identified on the Contract Plans and is protected with temporary ESA fencing.

Existing wetlands are preserved through the use of retaining walls and ESA fencing. These wetlands are also delineated in the Biotic Habitat plans. A separate wetland mitigation project to address the impacts created by this project is scheduled to be completed prior to the start of this project.

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

##### [Treatment BMP Strategy, Checklist T-1](#)

The project is required to consider treatment BMPs because it involves major reconstruction with direct discharges to surface water bodies and the creation of more than one acre of impervious area. It was determined during the earlier phases of this project that the preferred treatment method is biofiltration. Concurrence for the sole use of biofiltration devices was received from Solomon Cruz, the District Stormwater Coordinator, during the PA/ED phase. The preferred biofiltration treatment method for this project is biofiltration swales because the project drainage can not be designed to meet the current criteria for biofiltration strips (primarily that strips be 15 feet long with a 3 foot clearance). However, at areas where sheet flow is permissible, compost and vegetation is used as a LID approach to achieve water quality benefits.

The proposed BMPs treat 74.3 acres. The BMPs treat over 100% of the added impervious of 73.6 acres. For a list of all the proposed treatment BMPs, see Table 2.

##### [Biofiltration Swales/Strips, Checklist T-1, Parts 1 and 2](#)

Biofiltration swales are proposed throughout the project to provide permanent stormwater treatment. Due to the presence of steep slopes, adjacent river crossings, and limited space in some locations, it is not feasible to drain all project areas to these devices. The project has already acquired additional right-of way for BMPs. Table 2 lists the locations of the proposed biofiltration swales; details are included in the Contract Plans and are summarized below.



The biofiltration swales are generally designed with a 4:1 (H:V) side slope to provide maintenance access. The minimum bottom width of the proposed swales is 5 feet and the maximum longitudinal slope is 2% to prevent velocities that could result in downstream scour or creation of rills and gullies. Erosion is further minimized through application of erosion control (hydroseed) and placement of rolled erosion control product (netting) along the entire length and width of the swale. Liner planting is placed along the bottom width of the swale to prevent erosion and establish vegetation growth. An 18" layer of soil amendment is utilized to increase the permeability of the swale.

The PPDG requires that the expected infiltration of proposed biofiltration swales be calculated. These calculations are included in the attachments.

EXAMPLE ONLY

Table 2. Treatment BMP Summary

BMP Sheet No.	BMP #	Proposed Preferred Treatment BMP	Begin Station	End Station	Offset	Treated Impervious Area (ac)	WQF (cfs)
BMP-2 - BMP-3	1	Biofiltration Swale	"M" Line 91+10	"M" Line 98+50	Lt	1.3	0.26
BMP-3 - BMP-4	2	Biofiltration Swale	"M" Line 101+45	"M" Line 106+00	Lt	0.5	0.10
BMP-4	3	Biofiltration Swale	"M" Line 106+00	"M" Line 107+40	Lt	0.2	0.03
BMP-3 - BMP-4	4	Biofiltration Swale	"M" Line 101+45	"M" Line 106+00	Rt	0.6	0.12
BMP-3 - BMP-5	5	Biofiltration Swale	"M" Line 106+00	"M" Line 115+00	Rt	0.9	0.19
BMP-4 - BMP-5	6	Biofiltration Swale	"M" Line 107+30	"M" Line 115+00	Lt	1.1	0.23
BMP-5 - BMP-6	7	Biofiltration Swale	"M" Line 123+00	"M" Line 134+00	Rt	1.4	0.28
BMP-5 - BMP-6	8	Biofiltration Swale	"M" Line 123+00	"M" Line 134+60	Lt	1.7	0.34
BMP-6 - BMP-7	9	Biofiltration Swale	"M" Line 135+00	"M" Line 151+00	Lt	1.7	0.34
BMP-6 - BMP-10	10	Biofiltration Swale	"M" Line 151+00	End of SB on-ramp	Lt	2.2	0.43
BMP-7	11	Biofiltration Swale	"M" Line 139+92	"M" Line 168+00	Rt	3.4	0.67
BMP-9	12	Biofiltration Swale	"M" Line 172+18	"M" Line 175+80	Rt	0.5	0.10
BMP-9	13	Biofiltration Swale	"M" Line 172+71	"M" Line 175+90	Lt	0.3	0.06
BMP-9 -BMP-10	14	Biofiltration Swale	"M" Line 175+90	"M" Line 182+78	Lt	0.7	0.14
BMP-10	15	Biofiltration Swale	"M" Line 176+50	"M" Line 182+74	Rt	0.7	0.13
BMP-10 - BMP-11	16	Biofiltration Swale	"M" Line 183+10	"M" Line 184+60	Lt	0.2	0.04
BMP-10 - BMP-12	17	Biofiltration Swale	"M" Line 183+21	"M" Line 194+07	Rt	1.1	0.23
BMP-11 - BMP-12	18	Biofiltration Swale	"M" Line 185+21	"M" Line 196+20	Lt	1.4	0.27
BMP-12 - BMP-13	19	Biofiltration Swale	"M" Line 195+70	"M" Line 206+00	Rt	1.4	0.28
BMP-12 - BMP-13	20	Biofiltration Swale	"M" Line 199+00	"M" Line 203+00	Lt	0.5	0.11
BMP-12 - BMP-13	21	Biofiltration Swale	"M" Line 203+00	"M" Line 220+00	Lt	2.2	0.45
BMP-13	22	Biofiltration Swale	"M" Line 206+00	"M" Line 210+00	Rt	0.4	0.09
BMP-13 - BMP-14	23	Biofiltration Swale	"M" Line 215+00	"M" Line 220+30	Lt	0.6	0.11
BMP-13 - BMP-14	24	Biofiltration Swale	"M" Line 210+00	"M" Line 236+50	Rt	3.4	0.68
BMP-15	25	Biofiltration Swale	"M" Line 232+00	"M" Line 236+40	Lt	0.6	0.11
BMP-15 - BMP-16	26	Biofiltration Swale	"M" Line 240+00	"M" Line 247+00	Rt	1.4	0.28
BMP-15 - BMP-16	27	Biofiltration Swale	"M" Line 240+00	"M" Line 246+00	Lt	0.7	0.13
BMP-16 - BMP-18	28	Biofiltration Swale	"M" Line 246+80	"M" Line 269+00	Rt	5.7	1.14
BMP-16	29	Biofiltration Swale	"M" Line 246+00	"M" Line 252+50	Lt	0.5	0.10
BMP-17	30	Biofiltration Swale	"M" Line 257+70	"M" Line 260+50	Lt	0.3	0.05
BMP-17	31	Biofiltration Swale	"M" Line 260+50	"M" Line 266+00	Lt	0.5	0.10
BMP-18	32	Biofiltration Swale	"M" Line 266+70	"M" Line 269+00	Lt	1.8	0.36
BMP-20	33	Biofiltration Swale	"F1" Line 22+00	"F1" Line 26+30	Lt	0.1	0.02
BMP-20	34	Biofiltration Swale	"F1" Line 22+00	"F1" Line 26+30	Rt	0.1	0.02
BMP-23	35	Biofiltration Swale	"SJH" Line 33+20	"SJH" Line 38+00	Lt	0.2	0.04
BMP-23	36	Biofiltration Swale	"SJH" Line 33+20	"SJH" Line 38+00	Rt	0.2	0.04
BMP-25 - BMP-26, BMP-28	37	Biofiltration Swale	"A" Line 66+00	"A" Line 85+30	Lt	2.1	0.37
BMP-25	38	Biofiltration Swale	"A" Line 60+50	"A" Line 65+80	Rt	0.7	0.12
BMP-25 - BMP-34	39	Biofiltration Swale	"A" Line 66+06	"A" Line 141+05	Rt	9.6	1.73
BMP-28, BMP-30	40	Biofiltration Swale	"A" Line 86+40	"A" Line 100+00	Lt	1.4	0.26
BMP-30, BMP-32	41	Biofiltration Swale	"A" Line 100+00	"A" Line 113+00	Lt	1.4	0.25
BMP-32 - BMP-34	42	Biofiltration Swale	"A" Line 114+50	"A" Line 139+20	Lt	3.5	0.63
BMP-35 - BMP-36	43	Biofiltration Swale	"A" Line 155+00	"A" Line 161+20	Lt	1.3	0.23
BMP-36	44	Biofiltration Swale	"A" Line 160+10	"A" Line 164+50	Lt	0.5	0.10
BMP-36	45	Biofiltration Swale	"B" Line 659+50	"B" Line 669+90	Lt	0.4	0.07
BMP-38	46	Biofiltration Swale	"A" Line 170+80	"A" Line 179+00	Lt	1.4	0.25
BMP-38 - BMP-39	47	Biofiltration Swale	"A" Line 182+00	"A" Line 187+00	Lt	0.5	0.09
BMP-40 - BMP-41	48	Biofiltration Swale	"A" Line 196+00	"A" Line 208+50	Lt	2.3	0.42
	49	Biofiltration Swale	"A" Line 210+00	"A" Line 231+00	Lt	4.4	0.79
BMP-41, BMP-43, BMP-44	50	Biofiltration Swale	"A" Line 212+70	"A" Line 230+00	Rt	2.3	0.41
BMP-44 - BMP-45	51	Biofiltration Swale	"A" Line 237+50	"A" Line 245+00	Lt	1.1	0.20
	52	Biofiltration Swale	"R4" Line 37+70	"R4" Line 47+00	Lt	0.6	0.10
	53	Biofiltration Swale	"F6" Line 190+50	"F6" Line 194+00	Lt	0.4	0.07
Total Area						74.3	ac

## 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 3. Jean Barker, the Caltrans Construction Stormwater Coordinator, has reviewed and approved the BMP approach and specifications for this project on October 5, 2010.

### Storm Water Pollution Prevention Plan

The project has a DSA of 411.7 acres. A Storm Water Pollution Prevention Plan (SWPPP) must be prepared by the Contractor and approved by Caltrans prior to the start of construction. The SWPPP also includes the development of a Construction Site Monitoring Program that presents procedures and methods related to the visual monitoring and sampling and analysis plans for non-visible pollutants, sediment and turbidity, pH, and receiving waters.

### Rain Event Action Plan

Risk Level 3 projects are required to prepare a Rain Event Action Plan (REAP). The number of REAPs anticipated for this Project is shown in Table 3. The quantities for REAPs are based on precipitation data from a National Oceanic and Atmospheric Administration station in Gilroy. Calculations are included in the attachments of this report.

### Construction Site BMP Strategy

The project is scheduled to cover approximately two years. To mitigate any potential runoff or run-on within the project area, the Contract Special provisions are edited so that construction site BMPs are installed prior to the start of construction.

Disturbed soil areas (DSAs) are protected in accordance with the project's pollution control measures. The construction site BMP strategy for this project consists of the following:

- Soil Stabilization Measures
- Sediment Control Measures
- Tracking Control
- Non-stormwater Management Measures
- General Construction Site Management
- Stormwater Sampling and Analysis

The quantities for construction site BMPs were determined based on the proposed staging shown on the Staging Plans. Table 3 lists the construction site BMP quantities determined during the design phase. Costs are estimated per the Unit Cost method outlined in Appendix F of the PPDG using a quantity takeoff of the Water Pollution Control Plans. The costs for those items related to the CGP were calculated based on the "Estimating Guidance for CGP." The estimated costs can be found in the attachments.

Table 3 Construction Site BMP Quantities

**Temporary Construction Site BMPs**

ID	BEES	Temporary BMPs - PPDG Appendix C	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit
		<b>Temporary Soil Stabilization</b>				
SS-1	074037	Move-In/Move-out (Temporary Erosion Control)	07-485	No	12	EA
SS-2	071325	Temporary Fence (Type ESA)	07-446	Yes	45,000	LF
SS-3	074040	Temp. Hydraulic Mulch (Bonded Fiber Matrix)	07-381	No	30,000	SQYD
SS-7	074034	Temporary Cover	07-395	Yes	15,000	SQYD

**Subtotal Soil Stabilization BMPs**

ID	BEES	Temporary Sediment Control	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit
SC-1	074029	Temp. Silt Fence	07-430	Yes	67,000	LF
SC-5	074028	Temporary Fiber Roll	07-420	Yes	8,000	LF
SC-7	074041	Street Sweeping	07-360	No	1	LS
SC-10	074038	Temp. Drainage Inlet Protection	07-490	Yes	200	EA

**Subtotal Sediment Control BMPs**

ID	BEES	Temporary Tracking Control	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit
TC-1	074033	Temp. Construction Entrance	07-480	Yes	50	EA

**Subtotal Tracking Control BMPs**

ID	BEES	Temporary Waste Management Control	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit
WM-1	CSM*	Material Delivery and Storage	07-346	No		LS
WM-2	CSM*	Material Use	07-346	No		LS
WM-3	CSM*	Stockpile Management	07-346	No		LS
WM-4	CSM*	Spill Prevention and Control	07-346	No		LS
WM-5	CSM*	Solid Waste Management	07-346	No		LS
WM-6	CSM*	Hazardous Waste Management	07-346	No		LS
WM-7	CSM*	Contaminated Soil Management	07-346	No		LS
WM-8	074043	Temp. Concrete Washout Bin	07-047	No	15	EA
WM-9	CSM*	Sanitary/Septic Waste Managemt	07-346	No		LS
WM-10	CSM*	Liquid Waste Management	07-346	No		LS

**Subtotal Waste Management & Materials Handling BMPs**

ID	BEES	Temporary Non-Storm Water Management	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit
NS-1	CSM*	Water Conservation Practices	07-346	No		LS
NS-2	CSM*	Dewatering Operations	07-341	No		LS
NS-3	CSM*	Paving & Grinding Operations				LS
NS-4		Temporary Stream Crossing	07-495	No		LS
NS-5		Clear Water Diversion		No		LS
NS-6	CSM*	Illicit Connection/Illegal Discharge Detection and Reporting	07-346	No		LS
NS-7	CSM*	Potable Water/Irrigation	07-346	No		LS
NS-8	CSM*	Vehicle and Equipment Cleaning	07-346	No		LS
NS-9	CSM*	Vehicle and Equipment Fueling	07-346	No		LS
NS-10	CSM*	Vehicle and Equipmt Maintenance	07-346	No		LS
NS-11	CSM*	Pile Driving Operations	07-346	No		LS
NS-12	CSM*	Concrete Curing	07-346	No		LS
NS-13	CSM*	Material & Equipmt use over water	07-346	No		LS
NS-14	CSM*	Concrete Finishing	07-346	No		LS
NS-15	CSM*	Structure Demolition/Removal Over or Adjacent to Water	07-346	No		LS
NS-16		Temporary Batch Plants				LS
	<b>CSM*</b>	<b>*Construction Site Management</b>	07-346	No	1	LS

**Subtotal Non-Storm Water Management**

ID	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
	066596	Additional Water Pollution Control	07-345	No	1	LS
	066597	Storm Water Sampling and Analysis	07-345	No	1	LS
	074056	Rain Event Action Plan	07-345	No	83	EA
	074057	Storm Water Annual Report	07-345	No	2	EA
	074058	Storm Water Sampling and Analysis Day	07-345	No	46	LS
		Receiving Water Bioassessment	07-345	No	1	LS

**Subtotal Miscellaneous Items**

Soil Stabilization Measures

The following soil stabilization measures are considered for this project and are included as separate bid line items in the Basic Engineering Estimating System (BEES) of this project:

- Temporary Move-In/Move-Out (Erosion Control)
- Temporary Mulch (Bonded Fiber Matrix)

- Temporary Cover
- Temporary Fence (Type ESA)

Since construction is scheduled cover approximately two years and the DSA is greater than 25 acres, Move-In/Move-Out locations are proposed for BMP implementation.

Temporary mulch (bonded fiber matrix) and temporary cover are placed on any exposed disturbed soils, stockpiles of soils and unprotected slopes. Locations of potential stockpiles were discussed with the Ralph Walters, the Construction Resident Engineer, on October 3, 2010.

Temporary fence (Type ESA) locations are shown on all plan sheets to designate areas outside the limits of work.

### Sediment Control Measures

The following sediment control measures are considered for this project and are included as separate bid line items:

- Temporary Fiber Rolls
- Temporary Silt Fence
- Temporary Drainage Inlet Protection

The temporary fiber rolls are placed on all graded slopes. Temporary silt fence is placed along the project R/W and around temporary stockpiles to prevent sediment runoff. During construction, temporary silt fences will be placed around proposed treatment BMPs to protect them from construction related activities.

Temporary drainage inlet protection is placed at all existing and proposed inlet locations.

A desilting basin is proposed for this Project at the area between Sta. 255+00 and 260+00 where the 1.5:1 (H:V) slope is proposed. The desilting basin is sized according to the following equation from the *Construction Site Best Management Practices (BMPs) Manual*.

#### *Equation 1. Desilting Basin Sizing Equation*

$$A_s = \frac{1.2 * Q}{V_s}$$

Where:

$A_s$  = Minimum surface area (ft<sup>2</sup>)

1.2 = Safety factor recommended by EPA

$Q$  = Discharge using Rational Equation (ft<sup>3</sup>/sec) for a 10-year, 6-hour rain event

$V_s$  = 0.00028 ft/sec for design particle size

Based on the level of grading required and the area available for placement of the desilting basin, it is assumed that no more than one acre of runoff enters the desilting basin at any given time and any excess flows are bypassed. Based on a receiving area of one acre, a runoff coefficient of 0.6, and an interpolated 10-year, 6-hour intensity of 0.322 inches per hour, the discharge (Q) to the desilting basin is 0.2 cubic feet per second. Based on this discharge rate the minimum surface area of the desilting basin is 857.1 square feet or 0.02 acres. The actual in-field dimensions of the desilting basin (length and width) will be developed by Contractor based on the stage construction within the area and to meet the criteria shown in the *Construction Site Best Management Practices (BMPs) Manual*.

Active treatment systems are not proposed for this project because pre-treatment of storm water flows generated during construction is not required.

### Tracking Controls

Tracking control measures are required for this project and are included as separate bid line items. Offsite tracking of sediment is limited by placing stabilized construction entrances in combination with regular street sweeping and vacuuming.

### Wind Erosion Control

The project has medium wind erosion potential. To prevent the transport of dust off-site by wind, temporary cover and temporary mulch can be utilized; these items are previously discussed in the "Soil Stabilization Measures" section. The proposed quantities for these items as soil stabilization measures are adequate to satisfy both soil stabilization and wind erosion control needs. All other dust control measures are included under the roadway costs.

### Dewatering and Non-Storm Water Management

The project includes work on bridges for widening, and the upsizing or extending cross culverts located within the project limits. Some of these waterways are perennial and require dewatering operations or temporary creek diversions during construction to protect water quality. A dewatering permit from the RWQCB was obtained in September 2010 for the proposed work near these perennial waterways. Dewatering for deep excavation for retaining wall footings and pilings are also necessary. A non-standard specification is included in the Contract Special Provisions detailing dewatering and non-stormwater management requirements.

### Waste Management and Materials Pollution Control

This project involves work and activities using concrete materials. Therefore, temporary concrete washout bins are included as a separate bid line item in the BEEs. All other waste management and materials pollution control measures are covered under the Construction Site Management lump sum.

### Construction Site Management

The project Construction Site Management lump sum consists of controlling potential sources of water pollution before they enter stormwater systems or water courses. The measures covered under Construction Site Management are specified in Contract Special Provisions.

### Storm Water Sampling and Analysis

This project is required to perform stormwater sampling at all discharge locations. Numeric Action Levels and Numeric Effluent Limitations are applicable to this project because the project is Risk Level 3. Storm water sampling and analysis requirements are specified in the Contract Special Provisions. This project is required to incorporate bioassessment monitoring for impaired receiving waters. Bioassessment monitoring is required both upstream and downstream of the impacted areas, before and after the project; these requirements are specified in the Contract Special Provisions.

### 7. Maintenance BMPs (Drain Inlet Stenciling)

Drain inlet stenciling is anticipated to be required for this project because inlets are placed in areas accessible to pedestrians and bicycle traffic; generally at the ramps and frontage roads. The locations and quantities for the inlet stenciling are included in the Contract Plans. The drain inlet stenciling will be constructed according to the Caltrans Standard Plans.

Cayla Rae, the Caltrans Maintenance Area Manager, has identified the need for additional maintenance vehicle pullouts and maintenance areas. These pullouts and maintenance areas are included in the roadway design.

### Required Attachments

- Vicinity Map
- Evaluation Documentation Form (EDF)
- Construction Site BMP Consideration Form
- RUSLE2 Summary Sheet
- Risk Level Determination Documentation
- SWDR Tracking Form

### Supplemental Attachments

- 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 (Design Pollution Prevention BMPs)
- Checklists T-1, Parts 1–2 (Treatment BMPs)
- Checklists CS-1, Parts 1–6
- Calculations and cross sections related to BMPs
- Plans showing BMP Deployment

EXAMPLE ONLY



**EXAMPLE ONLY**

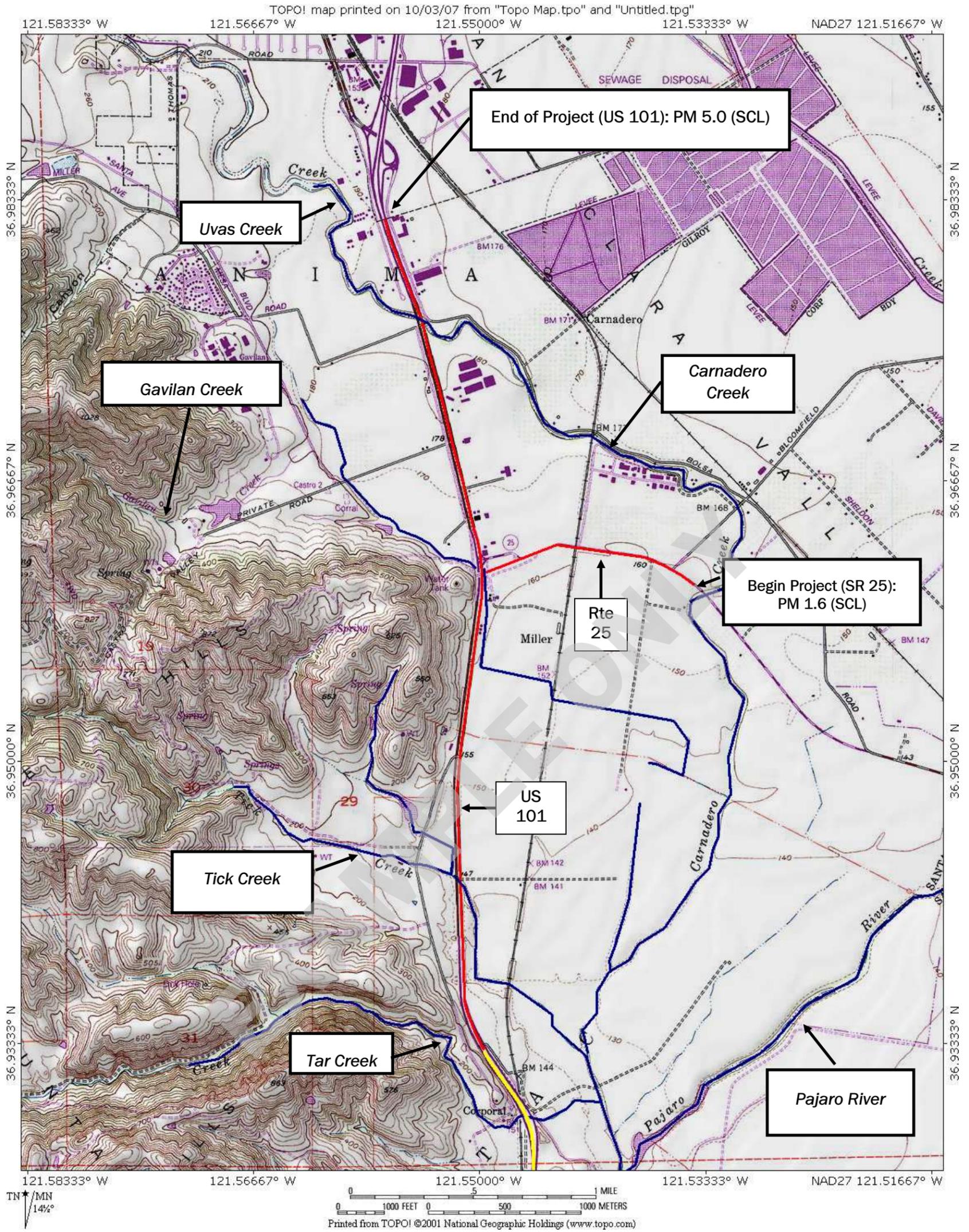


Figure 1. Vicinity Map-North Half of Project

Source: USGS

**EXAMPLE ONLY**

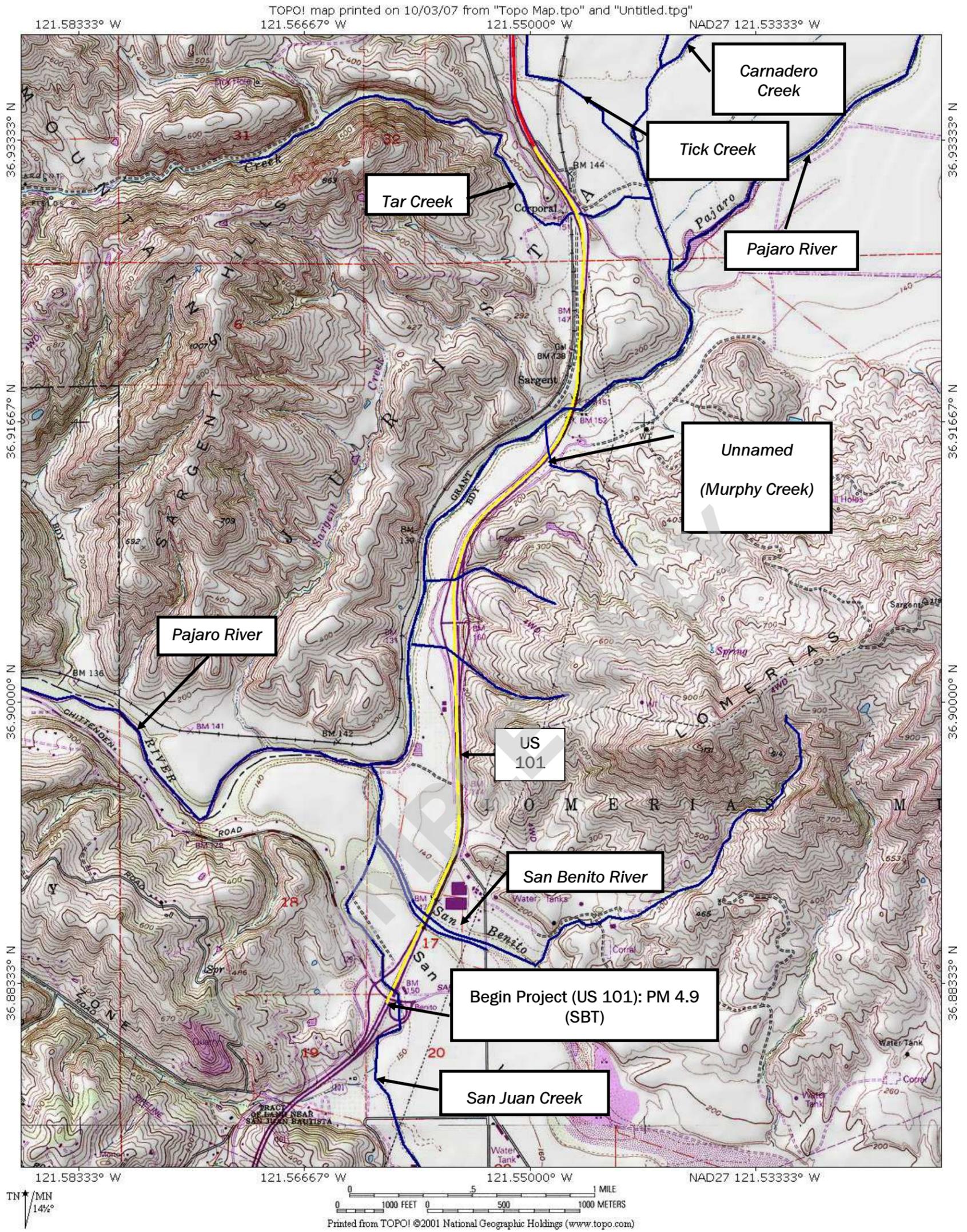


Figure 2. Vicinity Map-South Half of Project

Source: USGS

**EXAMPLE ONLY**

## Evaluation Documentation Form

DATE: October 2010

Project ID ( or EA): XX-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. <i>FWS</i> (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. ( <i>Gilroy, Morgan Hill, Santa Clara County</i> ), 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 <u>net increase of one acre or more of new impervious surface</u> ?	✓		If Yes, continue to 9. If No, go to 10. <i>73.6 acres</i>
9.	Project is required to consider approved Treatment BMPs.	✓		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.
10.	Project is not required to consider Treatment BMPs.  _____ (Dist./Reg. Design SW Coord. Initials)  _____ (Project Engineer Initials)  _____ (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

## Construction Site BMP Consideration Form

DATE: October 2010

Project ID ( or EA): XX-XXXXXX

Project Evaluation Process for the Consideration of Construction Site BMPs

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, Parts 5 & 6. 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; stormwater 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.

*Betsy Potts*

10/08/10

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

Date

## Long Form - Storm Water Data Report

**Project:** 04-SCI-101, 05-SBt-101.04, 04-SCL-25 – Highway Widening

**Location:** PM 0.0/2.9

### Site Characteristics

CLIMATE		SOIL		TOPOGRAPHY	
Rainfall Erosivity (R):  18-20	USA\California\DIST-04\SantaClara County\CA_Santa Clara_R18-20	Soil type:	Eastern Santa Clara Area, Ca\YaA YOLO LOAM, 0 TO 2 PERCENT SLOPES\YOLO loam 85%	Slope % factor (S):	25 (pre-project) 50 (post-project)
		Soil erodibility (K):	0.33 (weighted average for entire project length)	Slope length factor (L):	100 (pre-project) 50 (post-project)

### RUSLE2 Program Runs

PROJECT PHASE	RUSLE2 Run no.	COVER (C) and PRACTICE (P)		OUTPUT	
		Management (Vegetation type / % cover / BMP)	Permeable Barrier	Soil loss (t/ac/yr)	Sediment delivery (t/ac/yr)
Pre-Project	1	Existing Undisturbed Vegetative Cover\Mixed Grass and shrubs, existing, 35 to 70pct Canopy Cover	N/A	5.03	5.03
Construction with no BMPs	2	Highly disturbed\Construction With Temporary Practices\Construction With No Practices\bare fill slope, track walked	N/A	42.0	42.0
Construction with BMPs	3	Highly disturbed\Construction With Temporary Practices\Erosion Control Blankets and Mulch Materials\Hydraulic Mulch 2500 lbs	Silt Fence - SE-1	3.57	3.57
Post-Construction	4	Highly disturbed\Post Construction Cut / Fill Surfaces\Practices With Vegetation\Hydroseeding + fiber + tackifier + blown straw (Type-D)	Fiber roll, wattle 12 inch	2.16	2.16

Figure 3 . R Factor

### Rainfall Erosivity Factor Calculator for Small Construction Sites

**Facility Information**

Facility Name: 101/25 Highway Widening  
 Start Date: 01/31/2013  
 End Date: 12/03/2014  
 Latitude: 36.9620  
 Longitude: -121.5501

**Erosivity Index Calculator Results**

AN EROSIIVITY INDEX VALUE OF **51.92** HAS BEEN DETERMINED FOR THE CONSTRUCTION PERIOD OF 01/31/2013 - 12/03/2014.

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

Figure 4 . LS Factor

Sheet Flow Length (ft)	Average Watershed Slope (%)							
	0.2	5.0	10.0	20.0	25.0	30.0	40.0	50.0
<3	0.05	0.23	0.35	0.41	0.45	0.48	0.53	0.58
6	0.05	0.23	0.37	0.56	0.64	0.72	0.85	0.97
9	0.05	0.23	0.38	0.67	0.80	0.91	1.13	1.31
12	0.05	0.23	0.39	0.76	0.93	1.08	1.37	1.62
15	0.05	0.23	0.40	0.84	1.04	1.24	1.59	1.91
25	0.05	0.31	0.57	1.24	1.56	1.86	2.41	2.91
50	0.05	0.46	0.91	2.10	2.67	3.22	4.24	5.16
75	0.05	0.58	1.20	2.86	3.67	4.44	5.89	7.20
100	0.05	0.68	1.46	3.57	4.59	5.58	7.44	9.13
150	0.05	0.86	1.92	4.85	6.30	7.70	10.35	12.75

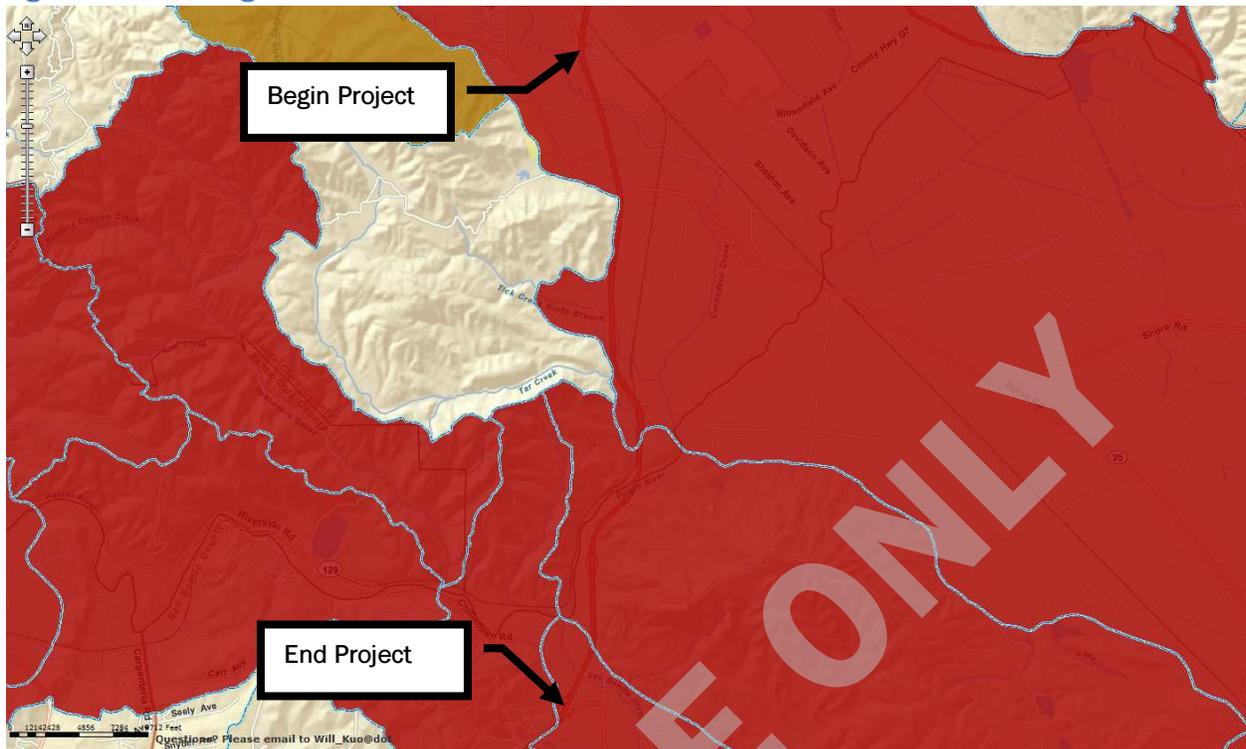
Source: State Water Resources Control Board

Figure 5 . Sediment Risk (High)

	A	B	C
1	<b>Sediment Risk Factor Worksheet</b>		<b>Entry</b>
2	<b>A) R Factor</b>		
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	<a href="http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm">http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm</a>		
5	<b>R Factor Value</b>		51.92
6	<b>B) K Factor (weighted average, by area, for all site soils)</b>		
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	<a href="#">Site-specific K factor guidance</a>		
9	<b>K Factor Value</b>		0.33
10	<b>C) LS Factor (weighted average, by area, for all slopes)</b>		
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	<a href="#">LS Table</a>		
13	<b>LS Factor Value</b>		4.59
14			
15	<b>Watershed Erosion Estimate (=RxKxLS) in tons/acre</b>		79
16	<b>Site Sediment Risk Factor</b>		<b>High</b>
17	Low Sediment Risk: < 15 tons/acre		
18	Medium Sediment Risk: >=15 and <75 tons/acre		
19	High Sediment Risk: >= 75 tons/acre		
20			

Source: State Water Resources Control Board

Figure 6 . Receiving Water Risk



Source: Caltrans

Figure 7 . Receiving Water Risk

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

Source: State Water Resources Control Board

Figure 8 . Risk Level Determination

		Sediment Risk		
		Low	Medium	High
Receiving Water Risk	Low	Level 1	Level 2	
	High	Level 2		Level 3

Project Sediment Risk: **High**  
 Project RW Risk: **High**  
 Project Combined Risk: **Level 3**

EXAMPLE ONLY

**EXAMPLE ONLY**

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	MCTI	WetBasin	Const_Start	Const_Comp	SWComment		
10/8/2010	04-XXXX	4	XXXXXX	4	101	0	5	Highway PS&E	TRUE	TRUE	10/8/2010	FALSE	TRUE	SWPPP	305.5	60.6	100	TRUE	Gilroy, Mui Uvas-Camadero Creek,	401	0	53	0	0	0	0	0	0	0	0	0	0	0	1/31/2013	12/3/2014		
10/8/2010	04-XXXX	4	XXXXXX	4	25	1.6	2.5	Highway PS&E	TRUE	TRUE	10/8/2010	FALSE	TRUE	SWPPP	305.5	60.6	100	TRUE	Gilroy, Mui Uvas-Camadero Creek,	401	0	53	0	0	0	0	0	0	0	0	0	0	0	0	1/31/2013	12/3/2014	
10/8/2010	05-XXXX	5	XXXXXX	5	101	4.9	7.5	Highway PS&E	TRUE	TRUE	10/8/2010	FALSE	TRUE	SWPPP	106.2	13	100	TRUE	Gilroy, Mui Uvas-Camadero Creek,	401	0	53	0	0	0	0	0	0	0	0	0	0	0	0	1/31/2013	12/3/2014	

EXAMPLE ONLY

**EXAMPLE ONLY**

Storm Water BMP Cost Summary  
 THIS INFORMATION IS FOR **CALTRANS INTERNAL USE ONLY**

**Temporary Construction Site BMPs**

ID	BEES	Temporary BMPs - PPDG Appendix C	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost (\$/Unit)	Cost (\$)
<b>Temporary Soil Stabilization</b>								
SS-1	074037	Move-In/Move-out (Temporary Erosion Control)	07-485	No	12	EA	500	\$ 6,000
SS-2	071325	Temporary Fence (Type ESA)	07-446	Yes	45,000	LF	8	\$ 360,000
SS-3	074040	Temp. Hydraulic Mulch (Bonded Fiber Matrix)	07-381	No	30,000	SQYD	0.90	\$ 27,000
SS-7	074034	Temporary Cover	07-395	Yes	15,000	SQYD	4	\$ 60,000
<b>Subtotal Soil Stabilization BMPs</b>								<b>\$ 453,000</b>

ID	BEES	Temporary Sediment Control	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost (\$/Unit)	Cost
SC-1	074029	Temp. Silt Fence	07-430	Yes	67,000	LF	2	\$ 134,000
SC-5	074028	Temporary Fiber Roll	07-420	Yes	8,000	LF	4	\$ 32,000
SC-7	074041	Street Sweeping	07-360	No	1	LS	180,000	\$ 180,000
SC-10	074038	Temp. Drainage Inlet Protection	07-490	Yes	200	EA	50	\$ 10,000
<b>Subtotal Sediment Control BMPs</b>								<b>\$ 356,000</b>

ID	BEES	Temporary Tracking Control	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost (\$/Unit)	Cost
TC-1	074033	Temp. Construction Entrance	07-480	Yes	50	EA	2,500	\$ 125,000
<b>Subtotal Tracking Control BMPs</b>								<b>\$ 125,000</b>

ID	BEES	Temporary Waste Management Control	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost (\$/Unit)	Cost
WM-1	CSM*	Material Delivery and Storage	07-346	No		LS		\$ -
WM-2	CSM*	Material Use	07-346	No		LS		\$ -
WM-3	CSM*	Stockpile Management	07-346	No		LS		\$ -
WM-4	CSM*	Spill Prevention and Control	07-346	No		LS		\$ -
WM-5	CSM*	Solid Waste Management	07-346	No		LS		\$ -
WM-6	CSM*	Hazardous Waste Management	07-346	No		LS		\$ -
WM-7	CSM*	Contaminated Soil Management	07-346	No		LS		\$ -
WM-8	074043	Temp. Concrete Washout Bin	07-047	No	15	EA	1,000	\$ 15,000
WM-9	CSM*	Sanitary/Septic Waste Managemt	07-346	No		LS		\$ -
WM-10	CSM*	Liquid Waste Management	07-346	No		LS		\$ -
<b>Subtotal Waste Management &amp; Materials Handling BMPs</b>								<b>\$ 15,000</b>

Long Form - Storm Water Data Report

ID	BEES	Temporary Non-Storm Water Management	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost (\$/Unit)	Cost
NS-1	CSM*	Water Conservation Practices	07-346	No		LS		\$ -
NS-2	CSM*	Dewatering Operations	07-341	No		LS		\$ -
NS-3	CSM*	Paving & Grinding Operations				LS		\$ -
NS-4		Temporary Stream Crossing	07-495	No		LS		\$ -
NS-5		Clear Water Diversion		No		LS		\$ -
NS-6	CSM*	Illicit Connection/Illegal Discharge Detection and Reporting	07-346	No		LS		\$ -
NS-7	CSM*	Potable Water/Irrigation	07-346	No		LS		\$ -
NS-8	CSM*	Vehicle and Equipment Cleaning	07-346	No		LS		\$ -
NS-9	CSM*	Vehicle and Equipment Fueling	07-346	No		LS		\$ -
NS-10	CSM*	Vehicle and Equipmt Maintenance	07-346	No		LS		\$ -
NS-11	CSM*	Pile Driving Operations	07-346	No		LS		\$ -
NS-12	CSM*	Concrete Curing	07-346	No		LS		\$ -
NS-13	CSM*	Material & Equipmt use over water	07-346	No		LS		\$ -
NS-14	CSM*	Concrete Finishing	07-346	No		LS		\$ -
NS-15	CSM*	Structure Demolition/Removal Over or Adjacent to Water	07-346	No		LS		\$ -
NS-16		Temporary Batch Plants				LS		\$ -
	CSM*	*Construction Site Management	07-346	No	1	LS	200,000	\$ 200,000
<b>Subtotal Non-Storm Water Management</b>								<b>\$ 200,000</b>

ID	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	398,400	\$ 398,400
	066596	Additional Water Pollution Control	07-345	No	1	LS	6,000	\$ 6,000
	066597	Storm Water Sampling and Analysis	07-345	No	1	LS	6,000	\$ 6,000
	074056	Rain Event Action Plan	07-345	No	83	EA	500	\$ 41,500
	074057	Storm Water Annual Report	07-345	No	2	EA	2,000	\$ 4,000
	074058	Storm Water Sampling and Analysis Day	07-345	No	46	LS	3,157	\$ 145,200
		Receiving Water Bioassessment	07-345	No	1	LS	30,000	\$ 30,000
<b>Subtotal Miscellaneous Items</b>								<b>\$ 631,100</b>

<b>Total Construction Site BMP Costs</b>								<b>\$ 1,780,100</b>
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**Treatment BMPs**

BEES	Pollution Prevention BMPs PPDG Appendix A	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost (\$/Unit)	Cost (\$)
	<b>Biofiltration Swale</b>				EA		\$ -
204013	Plant (Group M)	20-502	No	30,000	EA	3	\$ 90,000
200101	Imported Topsoil	20-160	No	1,500	CY	\$45	\$ 67,500
<b>Total Treatment BMP Costs</b>							<b>\$ 157,500</b>

**Design Pollution Prevention BMPs**

BEES	Pollution Prevention BMPs PPDG Appendix A	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost (\$/Unit)	Cost (\$)
	<b>Downstream Effects/Increased Flow Mitigation</b>						
705311	- 18" Alternative Flared End Section	No	Yes	50	EA	550	\$ 27,500
705315	- 24" Alternative Flared End Section	No	Yes	20	EA	650	\$ 13,000
	<b>Slope/Surface Protection Systems-Hard Surfaces</b>						
721007	- Rock Slope Protection (1/4 Ton, Method B)	72-010	No	350	CY	190	\$ 66,500
721008	- Rock Slope Protection (Light, Method B)	72-010	No	1,000	CY	65	\$ 65,000
721023	- Rock Slope Protection (1/2 Ton, Method B)	72-010	No	50	CY	250	\$ 12,500
729010	- Rock Slope Protection Fabric	72-150	No		SQYD		\$ -
	<b>Slope/Surface Protection Systems-Vegetated Surfaces</b>						
203021	Fiber Rolls	20-060	Yes	60000	LF	2.00	\$ 120,000
203031	Erosion Control (Hydroseed)	20-040	No	1,500,000	SQFT	0.25	\$ 375,000
203018	Rolled Erosion Control Product (Netting)	20-015	No	250,000	SQFT	0.40	\$ 100,000
204099	Plant Establishment Work	20-550	No	1	LS	100,000	\$ 100,000
203026	Move-In/Move-Out (Erosion Control)	20-020	No	20	EA	500.00	\$ 10,000
	<b>Concentrated Flow Conveyance Systems</b>						
194001	- Ditch Excavation	No	No	6,000	CY	\$25	\$ 150,000
<b>Total Design Pollution Prevention BMP Costs</b>							<b>\$ 1,039,500</b>

<b>Total Permanent Storm Water BMP Costs</b>	<b>\$ 1,197,000</b>
--	---------------------

## Long Form - Storm Water Data Report

### Routine Quarterly Monitoring

24 months	/	3	+	1	9 inspections
432 discharges	+	4 additional discharges			436 discharges
					\$ 100 /hour
Total					\$ 392,400

### Prepare Storm Water Pollution Prevention Plan

Prepare SWPPP Base Cost	\$ 6,000
Routine Quarterly Monitoring Cost	\$ 392,400
Total	\$ 398,400

### Prepare Storm Water Pollution Prevention Plan

Prepare WPCP Cost	\$ -
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### Storm Water Annual Report

2 years	2 SWA Reports
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### REAP (Storms Generating $\geq 0.10$ inches)

36.6 rainy days/year	x	2 years		73 days	
36.6 rainy days/year	x	3 subsequent months	÷	12 subsequent months/year	9 days
					83 days
					83 REAPs

### Storm Water Monitoring Cost

M Value		3			
22.9 rainy days/year	x	2 years	46 days		
22.9 rainy days/year	x	0 subsequent months	÷	12 subsequent months/year	0 days
					46 days
Daily Cost to perform sampling and analysis	\$ 1,000				
Equipment Maintenance Cost	\$ 2,400				
	\$ 145,200				



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

**Climatography  
of the United States  
No. 20  
1971-2000**

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

COOP ID: 043417

Station: GILROY, CA

Elevation: 194 Feet Lat: 37° 00N Lon: 121° 34W

Climate Division: CA 4

NWS Call Sign:

		Precipitation Totals										Precipitation (inches)										Precipitation Probabilities (1)																			
		Extremes										Daily Precipitation										Monthly/Annual Precipitation vs Probability Levels										Probability that the monthly/annual precipitation will be equal to or less than the indicated amount									
Means/ Medians(t)		Highest Daily(t)	Year	Day	Highest Monthly(t)	Year	Lowest Monthly(t)	Year	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	These values were determined from the incomplete gamma distribution										Probability that the monthly/annual precipitation will be equal to or less than the indicated amount																	
Month	Mean	Med- Jan	Year	Day	Highest Monthly(t)	Year	Lowest Monthly(t)	Year	Year	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.10	.20	.30	.40	.50	.60	.70	.80	.90	.95																		
Jan	4.30	3.11	4.55	1963	31	11.89	1997	2.1	1976	10.5	7.1	3.1	1.3	.29	.55	1.09	1.68	2.34	3.11	4.03	5.21	6.85	9.62	12.36																	
Feb	4.10	3.01	3.21	1963	1	13.18	1998	.16	1997	8.6	5.7	2.6	1.1	.30	.56	1.08	1.65	2.28	3.00	3.87	4.98	6.52	9.10	11.66																	
Mar	3.64	2.86	2.82	1991	4	13.22	1991	.02	1972	9.9	6.6	2.7	.8	.21	.42	.87	1.36	1.92	2.58	3.38	4.40	5.84	8.28	10.71																	
Apr	1.16	.71	3.65	1958	3	4.68	1982	.00	1977	5.3	3.1	.5	.2	.03	.11	.27	.44	.62	.84	1.10	1.42	1.88	2.64	3.39																	
May	.41	.13	1.87	1996	16	2.34	1996	.00+	1992	2.7	1.0	.1	.1	.00	.00	.00	.01	.06	.14	.26	.43	.69	1.18	1.69																	
Jun	.10	.00	.77	1967	2	.76	1993	.00+	1999	.8	.5	.0	.0	.00	.00	.00	.00	.00	.00	.03	.09	.18	.34	.50																	
Jul	.06	.00	.66	1974	9	.80	1974	.00+	2000	.3	.2	.1	.0	.00	.00	.00	.00	.00	.00	.00	.00	.01	.15	.38																	
Aug	.05	.00	.68	1976	19	1.00	1976	.00+	2000	.4	.2	@	.0	.00	.00	.00	.00	.00	.00	.00	.00	.00	.11	.35																	
Sep	.33	.02	5.97	1959	19	2.67	1976	.00+	1998	1.3	.7	.2	@	.00	.00	.00	.00	.00	.01	.07	.21	.47	.94	1.55																	
Oct	.93	.57	1.97	1981	28	3.18	2000	.00+	1999	3.1	1.8	.7	.2	.00	.00	.03	.16	.32	.52	.78	1.11	1.59	2.41	3.27																	
Nov	2.52	1.59	2.54	1972	15	7.50	1972	.00	1992	7.4	4.3	1.8	.7	.03	.14	.41	.74	1.13	1.61	2.22	3.01	4.14	6.11	8.09																	
Dec	3.00	2.88	2.81	1995	12	9.15	1996	.01	1989	8.9	5.4	1.9	.8	.18	.35	.72	1.12	1.59	2.13	2.79	3.63	4.81	6.82	8.82																	
Ann	20.60	21.39	5.97	Sep 1959	19	13.22	Mar 1991	.00+	Aug 2000	59.2	36.6	13.7	5.2	9.07	10.92	13.48	15.57	17.53	19.50	21.61	24.03	27.09	31.73	35.92																	

+ Also occurred on an earlier date(s)  
# Denotes amount 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

(1) From the 1971-2000 Monthly Normals  
(2) Derived from station's available digital record: 1957-2001  
(3) Derived from 1971-2000 serially complete daily data  
Complete documentation available from:  
www.ncdc.noaa.gov/oa/climate/normals/usnormals.html

36.6 - 13.7 = 22.9

### Checklist SW-1, Site Data Sources

Prepared by: B. Ross Date: 10/8/10 District-Co-Route: 04-SCI-101, 05-SBT-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB: Central Coast

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
<b>Topographic</b>	
<ul style="list-style-type: none"> <li>United States Geological Survey. (2001). California: Seamless U.S.G.S. Topographic Maps (CDROM, Version 2.6.8, Part Number: 113-100-004). National Geographic Holdings, Inc</li> </ul>	
<ul style="list-style-type: none"> <li>Caltrans. Location Hydraulic Study Report. US 101 Improvement Project: Monterey Road to SR 129 Santa Clara and San Benito Counties, California.</li> </ul>	September 2010
<b>Hydraulic</b>	
<ul style="list-style-type: none"> <li>CA Department of Water Resources, Planning and Local Assistance, Available on website at : <a href="http://www.landwateruse.water.ca.gov">www.landwateruse.water.ca.gov</a></li> </ul>	Access Date: September 2010
<ul style="list-style-type: none"> <li>San Benito County Water District. Available on website at: <a href="http://www.sbcwd.com">www.sbcwd.com</a></li> </ul>	Access Date: September 2010
<ul style="list-style-type: none"> <li>Santa Clara Valley Water District. Available on website at: <a href="http://www.valleywater.org/">http://www.valleywater.org/</a></li> </ul>	Access Date: September 2010
<b>Soils</b>	
<ul style="list-style-type: none"> <li>Santa Clara County Flood Insurance Studies. Unincorporated Areas. Community Number 060337</li> </ul>	Revised August 17, 1998
<ul style="list-style-type: none"> <li>San Benito County Flood Insurance Studies. Incorporated Areas.</li> </ul>	September 27, 1991
<ul style="list-style-type: none"> <li>Michigan State University, RUSLE On-Line Soil Erosion Assessment Tool. Available on website at: <a href="http://www.iwr.msu.edu/rusle/">http://www.iwr.msu.edu/rusle/</a></li> </ul>	Access Date: September 2010
<ul style="list-style-type: none"> <li>Caltrans. Geotechnical Report</li> </ul>	January 28, 2008
<ul style="list-style-type: none"> <li>United States Department of Agriculture-Natural Resources Conservation Service Web Soil Survey. Available on website at: NRCS WSS &lt;<a href="http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm">http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm</a>&gt;</li> </ul>	Access Date: September 2010
<b>Climatic</b>	
<ul style="list-style-type: none"> <li>SCAS PRISM mapping data (Spatial Climate Analysis [SCAS] Oregon State University, 2003).</li> </ul>	Access Date: September 2010
<ul style="list-style-type: none"> <li>Ecological Subregions of California Watsonville Plain-Salinas Valley. Subsection 261Ah. Available on website at:</li> </ul>	Access Date: September 2010



www.fs.fed.us/r5/projects/ecoregions/261ah.htm	
<b>Water Quality</b>	
<ul style="list-style-type: none"> <li>California State University Sacramento, Office of Water Programs, Water Quality Planning Tool. Available on website at: <a href="http://www.water-programs.com/wqpt.htm">http://www.water-programs.com/wqpt.htm</a></li> </ul>	Access Date: September 2010
<ul style="list-style-type: none"> <li>State Water Resources Control Board, CWA Section 303(d) List. Available on website at: <a href="http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml">http://www.waterboards.ca.gov/water_issues/programs/tmdl/303d_lists2006_epa.shtml</a></li> </ul>	Access Date: September 2010
<ul style="list-style-type: none"> <li>Central Coast RWQCB. Basin Plan. Beneficial Uses. Table 2-1. Identified Uses of Inland Surface Waters. Available on website at: <a href="http://www.swrcb.ca.gov/rwqcb3/publications_forms/publications/basin_plan/chapter_2/figs/table_2_1.doc">http://www.swrcb.ca.gov/rwqcb3/publications_forms/publications/basin_plan/chapter_2/figs/table_2_1.doc</a></li> </ul>	Access Date: September 2010
<ul style="list-style-type: none"> <li>Central Coast Regional Water Quality Control Board, 303(d) &amp; TMDL Projects Pajaro River Total Maximum Daily Loads for Sediment (including Llagas Creek, Rider Creek, and San Benito River). Available on website at: <a href="http://www.waterboards.ca.gov/centralcoast/water_issues/programs/tmdl/303d_and_tmdl_projects.shtml">http://www.waterboards.ca.gov/centralcoast/water_issues/programs/tmdl/303d_and_tmdl_projects.shtml</a></li> </ul>	Access Date: September 2010
<ul style="list-style-type: none"> <li>California State Water Resources Control Board. Storm Water Panel Recommendations to the California SWRCB, the Feasibility of Numeric Effluent Limits Applicable to Discharges of Storm Water Associated with Municipal, Industrial and Construction Activities.</li> </ul>	June 19, 2006
<b>Other Data Categories</b>	
<ul style="list-style-type: none"> <li>Environmental Buried Site Sensitivity from Far Western Plans</li> </ul>	Last Revision Date: March 1, 2007
<ul style="list-style-type: none"> <li>State Water Resources Control Board. Available on website at: <a href="http://www.waterboards.ca.gov/water_issues/programs/ocean/asbs_areas.shtml">http://www.waterboards.ca.gov/water_issues/programs/ocean/asbs_areas.shtml</a></li> </ul>	Access Date: September 2010
<ul style="list-style-type: none"> <li>California Department of Transportation, Division of Environmental Analysis. Statewide Stormwater Management Plan (SWMP) CTSW-RT-07-182-1.1</li> </ul>	June 2007
<ul style="list-style-type: none"> <li>Caltrans. Geotechnical Report</li> </ul>	January 28, 2008

### Checklist SW-2, Storm Water Quality Issues Summary

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 04-SCI-101, 05-SBt-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB: Central Coast

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).   | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 2. For the project limits, list the 303(d) impaired receiving water bodies and their constituents of concern.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> 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. | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 4. Determine the RWQCB special requirements, including TMDLs, effluent limits, etc.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 5. Determine regulatory agencies seasonal construction and construction exclusion dates or restrictions required by federal, state, or local agencies.   | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 6. Determine if a 401 certification will be required.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 7. List rainy season dates.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 8. Determine the general climate of the project area. Identify annual rainfall and rainfall intensity curves.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 9. If considering Treatment BMPs, determine the soil classification, permeability, erodibility, and depth to groundwater.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 10. Determine contaminated soils within the project area.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 11. Determine the total disturbed soil area of the project.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 12. Describe the topography of the project site.   | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> 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.).  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> 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?   | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 15. Determine if a right-of-way certification is required.   | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> 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.   | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 17. Determine if project area has any slope stabilization concerns.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 18. Describe the local land use within the project area and adjacent areas.  | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |
| 19. Evaluate the presence of dry weather flow.   | <input checked="" type="checkbox"/> Complete | <input type="checkbox"/> NA |

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

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 04-SCI-101, 05-SBt-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB: Central Coast

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: 10/08/10 District-Co-Route: 04-SCI-101, 05-SBT-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB: Central Coast

#### 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: 10/08/10 District-Co-Route: 04-SCI-101, 05-SBT-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB: Central Coast

#### 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: 10/08/10 District-Co-Route: 04-SCI-101, 05-SBt-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB: Central Coast

#### 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).

Estimate the net new impervious area that will result from this project.  Complete  
 60.6 acres (SCI), 13.0 acres (SBt)

#### 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: 10/08/10 District-Co-Route: 04-SCI-101, 05-SBt-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB: Central Coast

#### 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: 10/08/10 District-Co-Route: 04-SCI-101, 05-SBt-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB: Central Coast

**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

EXAMPLE ONLY



<b>Treatment BMPs</b>		
<b>Checklist T-1, Part 1</b>		
Prepared by: <u>J. Doe</u>	Date: <u>09/23/10</u>	District-Co-Route: <u>04-SCI-101, 05-SBt-101, 04-SCI-25</u>
PM : <u>0.0/5.0, 4.9/7.5, 1.6/2.5</u>	Project ID (or EA): <u>XX-XXXXXX</u>	RWQCB: <u>Central Coast</u>

**Consideration of Treatment BMPs**

**Note: For areas not with City of Gilroy, City of Morgan Hill and County of Santa Clara MS4.**

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-watershed 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. Questions 14 through 16 should be answered after all subwatershed (drainages) are considered using this checklist.**

1. Is the project in a watershed with prescriptive TMDL treatment BMP requirements in an adopted TMDL implementation plan?  Yes  No

If Yes, consult the District/Regional Storm Water Coordinator to determine whether the T-1 checklist should be used to propose alternative BMPs because the prescribed BMPs may not be feasible or other BMPs may be more cost-effective. Special documentation and regulatory response may be necessary.

2. Dry Weather Flow Diversion

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

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

If Yes to both 2 (a) and (b), continue to (c). If No to either, skip to question 3.

- (c) Is connection to the sanitary sewer possible without extraordinary plumbing, features or construction practices?  Yes  No

- (d) Is the domestic wastewater treatment authority willing to accept flow?  Yes  No

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

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

If Yes, consider **Gross Solids Removal Devices (GSRDs)**, complete and attach **Part 6** of this checklist. Note: Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins also can capture litter. Before considering GSRDs for stand-alone installation or in sequence with other BMPs, consult with District/Regional NPDES Storm Water Coordinator to determine whether Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins should be considered instead of GSRDs to meet litter/trash TMDL.

4. Is project located in an area (e.g., mountain regions) where traction sand is applied more than twice a year? Yes No

If Yes, consider **Traction Sand Traps**, complete and attach **Part 7** of this checklist.

5. Maximizing Biofiltration Strips and Swales Yes No

Objectives:

- 1) Quantify infiltration from biofiltration alone
- 2) Identify highly infiltrating biofiltration (i.e. > 90%) and skip further BMP consideration.
- 3) Identify whether amendments can substantially improve infiltration.

- (a) Have biofiltration strips and swales been designed for runoff from all project areas, including sheet flow and concentrated flow conveyance? If no, document justification in Section 5 of the SWDR. Yes No

(b) Based on site conditions, estimate what percentage of the WQV can be infiltrated. Use the 12-hour WQV for Type A and B soils, the 24-hour WQV for Type C soils, and the 48-hour WQV for Type D soil.

- < 20%  Complete
- 20 % - 50%
- 50% - 90%
- > 90%

- (c) Is infiltration greater than 90 percent? If Yes, skip to question 13. Yes No

- (d) Can the infiltration ranking in question 5(b) above be increased by using soil amendments? Use the 'drain time' associated with the amended soil (the 12-hour WQV for Type A and B soils, the 24-hour WQV for Type C soils<sup>1</sup>). Yes No

If Yes, consider including soil amendments; increasing the infiltration ranking allows more flexibility in the selection of BMPs (strips and swales will show performance comparable to other BMPs). Record the new infiltration estimate below:

- < 20% (skip to 6)  Complete  
 20% - 50% (skip to 6)  
 50% - 90% (skip to 6)  
 >90%

- (e) Is infiltration greater than 90 percent? If Yes, skip to question 13. Yes No

6. Biofiltration in Rural Areas

- Is the project in a rural area (outside of urban areas that is covered under an NDPES Municipal Stormwater Permit<sup>2</sup>). If Yes proceed to question 13. Yes No

<sup>1</sup> Type D soils are not expected where amendments are incorporated

<sup>2</sup> See pages 39 and 40 of the Fact Sheets for the CGP.

[http://www.waterboards.ca.gov/water\\_issues/programs/stormwater/docs/constpermits/wqo\\_2009\\_0009\\_factsheet.pdf](http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_factsheet.pdf)

13. After completing the above, identify and attach the checklists shown below for every Treatment BMP under consideration. (use one checklist every time the BMP is considered for a different drainage within the project)  Complete
- Biofiltration Strips and Biofiltration Swales: Checklist T-1, Part 2
  - Dry Weather Diversion: Checklist T-1, Part 3
  - Infiltration Devices: Checklist T-1, Part 4
  - Detention Devices: Checklist T-1, Part 5
  - GSRDs: Checklist T-1, Part 6
  - Traction Sand Traps: Checklist T-1, Part 7
  - Media Filter [Austin Sand Filter and Delaware Filter]: Checklist T-1, Part 8
  - Multi-Chambered Treatment Train: Checklist T-1, Part 9
  - Wet Basins: Checklist T-1, Part 10
14. Estimate what percentage of WQV (or WQF, depending upon the Treatment BMP selected) will be treated by the preferred Treatment BMP(s): 100 %  Complete
- (a) Have Treatment BMPs been considered for use in parallel or series to increase this percentage?  Yes  No
15. Estimate what percentage of the net WQV (for all new impervious surfaces within the project) that will be treated by the preferred treatment BMP(s): 100 %  Complete
16. Prepare cost estimate, including right-of-way, and site specific determination of feasibility (Section 2.4.2.1) for selected Treatment BMPs and include as supplemental information for SWDR approval.  Complete

<b>Treatment BMPs</b>	
<b>Checklist T-1, Part 1</b>	
Prepared by: <u>B. Ross</u>	Date: <u>08/26/10</u> District-Co-Route: <u>04-SCI-101, 05-SBt-101, 04-SCI-25</u>
PM : <u>0.0/5.0, 4.9/7.5, 1.6/2.5</u>	Project ID (or EA): <u>04-XXXXXX</u> RWQCB: <u>Central Coast</u>

**Consideration of Treatment BMPs**

**Note: For areas with City of Gilroy, City of Morgan Hill and County of Santa Clara MS4.**

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-watershed 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. Questions 14 through 16 should be answered after all subwatershed (drainages) are considered using this checklist.**

1. Is the project in a watershed with prescriptive TMDL treatment BMP requirements in an adopted TMDL implementation plan?  Yes  No

If Yes, consult the District/Regional Storm Water Coordinator to determine whether the T-1 checklist should be used to propose alternative BMPs because the prescribed BMPs may not be feasible or other BMPs may be more cost-effective. Special documentation and regulatory response may be necessary.

2. Dry Weather Flow Diversion

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

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

If Yes to both 2 (a) and (b), continue to (c). If No to either, skip to question 3.

- (c) Is connection to the sanitary sewer possible without extraordinary plumbing, features or construction practices?  Yes  No

- (d) Is the domestic wastewater treatment authority willing to accept flow?  Yes  No

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

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

If Yes, consider **Gross Solids Removal Devices (GSRDs)**, complete and attach **Part 6** of this checklist. Note: Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins also can capture litter. Before considering GSRDs for stand-alone installation or in sequence with other BMPs, consult with District/Regional NPDES Storm Water Coordinator to determine whether Infiltration Devices, Detention Devices, Media Filters, MCTTs, and Wet Basins should be considered instead of GSRDs to meet litter/trash TMDL.

4. Is project located in an area (e.g., mountain regions) where traction sand is applied more than twice a year?  Yes  No

If Yes, consider **Traction Sand Traps**, complete and attach **Part 7** of this checklist.

5. Maximizing Biofiltration Strips and Swales  Yes  No

Objectives:

- 1) Quantify infiltration from biofiltration alone
- 2) Identify highly infiltrating biofiltration (i.e. > 90%) and skip further BMP consideration.
- 3) Identify whether amendments can substantially improve infiltration.

- (a) Have biofiltration strips and swales been designed for runoff from all project areas, including sheet flow and concentrated flow conveyance? If no, document justification in Section 5 of the SWDR.  Yes  No

(b) Based on site conditions, estimate what percentage of the WQV can be infiltrated. Use the 12-hour WQV for Type A and B soils, the 24-hour WQV for Type C soils, and the 48-hour WQV for Type D soil.

- < 20%  Complete  
 20% - 50%  
 50% - 90%  
 > 90%

- (c) Is infiltration greater than 90 percent? If Yes, skip to question 13.  Yes  No

- (d) Can the infiltration ranking in question 5(b) above be increased by using soil amendments? Use the 'drain time' associated with the amended soil (the 12-hour WQV for Type A and B soils, the 24-hour WQV for Type C soils<sup>1</sup>). Yes No

If Yes, consider including soil amendments; increasing the infiltration ranking allows more flexibility in the selection of BMPs (strips and swales will show performance comparable to other BMPs). Record the new infiltration estimate below:

- < 20% (skip to 6)  
 20 % - 50% (skip to 6)  
 50% - 90% (skip to 6)  
 >90%
- Complete

- (e) Is infiltration greater than 90 percent? If Yes, skip to question 13. Yes No

6. Biofiltration in Rural Areas

- Is the project in a rural area (outside of urban areas that is covered under an NDPES Municipal Stormwater Permit<sup>2</sup>). If Yes proceed to question 13. Yes No

7. Estimating Infiltration for BMP Combinations

Objectives:

- 1) Identify high-infiltration biofiltration or biofiltration and infiltration BMP combinations and skip further BMP consideration.
- 2) If high infiltration is infeasible, then identify the infiltration level of all feasible BMP combinations for use in the subsequent BMP selection matrices

- (a) Has concentrated infiltration (i.e., via earthen basins or earthen filters) been prohibited? Consult your District/Regional Storm Water Coordinator and/or environmental documents. Yes No

<sup>1</sup> Type D soils are not expected where amendments are incorporated

<sup>2</sup> See pages 39 and 40 of the Fact Sheets for the CGP.  
[http://www.waterboards.ca.gov/water\\_issues/programs/stormwater/docs/constpermits/wqo\\_2009\\_0009\\_factsheet.pdf](http://www.waterboards.ca.gov/water_issues/programs/stormwater/docs/constpermits/wqo_2009_0009_factsheet.pdf)

If No proceed to 7 (b); if Yes skip to question 8 and do not consider earthen basin-type BMPs

(b) Assess infiltration of an infiltration BMP that is used in conjunction with biofiltration. Include infiltration losses from biofiltration, if biofiltration is feasible. **Note: Infiltration devices are prohibited.**  Complete

(use 24 hr WQV)

\_\_\_ < 20% (do not consider this BMP combination, skip to 7d)

\_\_\_ 20% - 50% (skip to 7d)

\_\_\_ 50% - 90% (skip to 7d)

\_\_\_ >90%

Is at least 90 percent infiltration estimated? If Yes proceed to 13. If No proceed to 7(c).  Yes  No

(c) Assess infiltration of biofiltration with combinations with remaining approved earthen BMPs using water quality volumes based on the drain time of those BMPs. This assessment will be used in subsequent BMP selection matrices.

Earthen Detention Basin  
(use 48 hr WQV)

\_\_\_ < 20%

\_\_\_ 20% - 50%

\_\_\_ > 50%

Earthen Austin SF  
(use 48 hr WQV)

\_\_\_ < 20%

\_\_\_ 20% - 50%

\_\_\_ > 50%

Complete

**Note: Detention devices are not feasible. Austin Sand Filters are not proposed per direction of Caltrans Maintenance.**

Continue to Question 8

8. Identifying BMPs based on the Target Design Constituents

(a) Does the project discharge to a water body that has been placed on the 303-d list or has had a TMDL adopted? If "No," use Matrix A to select BMPs, consider designing to treat 100% of the WQV, then skip to question 12.  Yes  No

If Yes, is the identified pollutant(s) considered a Targeted Design Constituent (TDC) (check all that apply below)?

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> sediments | <input type="checkbox"/> copper (dissolved or total)                      |
| <input type="checkbox"/> phosphorus           | <input type="checkbox"/> lead (dissolved or total)                        |
| <input checked="" type="checkbox"/> nitrogen  | <input type="checkbox"/> zinc (dissolved or total)                        |
|   | <input type="checkbox"/> general metals (dissolved or total) <sup>3</sup> |

(b) Treating Sediment. Is sediment the only TDC? If Yes, use Matrix A to select BMPs, then skip to question 12. Otherwise, proceed to question 9.  Yes  No

<sup>3</sup> General metals include cadmium, nickel, chromium, and other trace metals. Note that selenium and arsenic are not metals. Mercury is a metal, but is considered later during BMP selection, under Question 12 below.

<b>BMP Selection Matrix A: General Purpose Pollutant Removal</b>			
Consider approaches to treat 100% of the WQV with combinations of the BMPs in this table. The highest preference is for Tier 1, followed by Tier 2. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs that infiltrate should be highlighted in the infiltration category summarized in question 7 (f) and listings of BMPs that infiltrate in other categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Strip: HRT > 5 Austin filter (concrete) Austin filter (earthen) Delaware filter MCTT Wet basin	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* Biofiltration Strip	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* Biofiltration Strip Biofiltration Swale
Tier 2	Strip: HRT < 5 Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Swale MCTT Wet basin	Austin filter (concrete) Delaware filter MCTT Wet basin
HRT = hydraulic residence time (min)			
*Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			

9. Treating both Metals and Nutrients.

Is copper, lead, zinc, or general metals AND nitrogen or phosphorous a TDC? If Yes use Matrix D to select BMPs, then skip to question 12. Otherwise, proceed to question 10.  Yes  No

10. Treating Only Metals.

Are copper, lead, zinc, or general metals listed TDCs? If Yes use Matrix B below to select BMPs, and skip to question 12. Otherwise, proceed to question 11.  Yes  No

<b>BMP Selection Matrix B: Any metal is the TDC, but not nitrogen or phosphorous</b>			
Consider approaches to treat 100% of the WQV with combinations of the BMPs in this table. The highest preference is for Tier 1, followed by Tier 2. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs that infiltrate should be highlighted in the infiltration category summarized in question 7 (f) and listings of BMPs that infiltrate in other categories should be ignored.			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	MCTT Wet basin Austin filter (earthen) Austin filter (concrete) Delaware filter	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* MCTT Wet basin	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* MCTT Biofiltration Strip Biofiltration Swale Wet basin
Tier 2	Strip: HRT > 5 Strip: HRT < 5 Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
HRT = hydraulic residence time (min) *Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			

11. Treating Only Nutrients.

Are nitrogen and/or phosphorus listed TDCs? If "Yes," use Matrix C to select BMPs. If "No", please check your answer to 8(a). At this point one of the matrices should have been used for BMP selection for the TDC in question, unless no BMPs are feasible.  Yes  No

<b>BMP Selection Matrix C: Phosphorous and / or nitrogen is the TDC, but no metals are the TDC</b>			
<p>Consider approaches to treat 100% of the WQV with combinations of the BMPs in this table. The highest preference is for Tier 1, followed by Tier 2. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs that infiltrate should be highlighted in the infiltration category summarized in question 7 (f) and listings of BMPs that infiltrate in other categories should be ignored.</p>			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Austin filter (earthen) Austin filter (concrete) Delaware filter**	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches*	Austin filter (earthen) Detention (unlined) Infiltration basins* Infiltration trenches* Biofiltration Strip Biofiltration Swale
Tier 2	Wet basin Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale Wet basin	Austin filter (concrete) Delaware filter Wet basin
<p>* Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.</p>			
<p>** Delaware filters would be ranked in Tier 2 if the TDC is nitrogen only, as opposed to phosphorous only or both nitrogen and phosphorous.</p>			

<b>BMP Selection Matrix D: Any metal, plus phosphorous and / or nitrogen are the TDCs</b>			
<p>Consider approaches to treat 100% of the WQV with combinations of the BMPs in this table. The highest preference is for Tier 1, followed by Tier 2. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs that infiltrate should be highlighted in the infiltration category summarized in question 7 (f) and listings of BMPs that infiltrate in other categories should be ignored.</p>			
	BMP ranking for infiltration category:		
	Infiltration < 20%	Infiltration 20% - 50%	Infiltration > 50%
Tier 1	Wet basin* Austin filter (earthen) Austin filter (concrete) Delaware filter**	Wet basin* Austin filter (earthen) Detention (unlined) Infiltration basins*** Infiltration trenches***	Wet basin* Austin filter (earthen) Detention (unlined) Infiltration basins*** Infiltration trenches*** Biofiltration Strip Biofiltration Swale
Tier 2	Biofiltration Strip Biofiltration Swale Detention (unlined)	Austin filter (concrete) Delaware filter Biofiltration Strip Biofiltration Swale	Austin filter (concrete) Delaware filter
* The wet basin should only be considered for phosphorus			
** In cases where earthen BMPs can infiltrate, Delaware filters are ranked in Tier 2 if the TDC is nitrogen only, but they are Tier 1 for phosphorous only or both nitrogen and phosphorous.			
*** Infiltration BMPs that infiltrate the water quality volume were considered previously, so only undersized infiltration BMPs or hybrid designs are considered where infiltration is less than 90% of the water quality volume.			

12. Does the project discharge to a waterbody that has been placed on the 303-d list or has had a TMDL adopted for mercury or low dissolved oxygen? Yes No  
 If Yes contact the District/Regional NPDES Storm Water Coordinator to determine if standing water in a Delaware filter, wet basin, or MCTT would be a risk to downstream water quality.
13. After completing the above, identify and attach the checklists shown below for every Treatment BMP under consideration. (use one checklist every time the BMP is considered for a different drainage within the project) Complete  
 X  Biofiltration Strips and Biofiltration Swales: Checklist T-1, Part 2  
 \_\_\_ Dry Weather Diversion: Checklist T-1, Part 3  
 \_\_\_ Infiltration Devices: Checklist T-1, Part 4  
 \_\_\_ Detention Devices: Checklist T-1, Part 5  
 \_\_\_ GSRDs: Checklist T-1, Part 6  
 \_\_\_ Traction Sand Traps: Checklist T-1, Part 7  
 \_\_\_ Media Filter [Austin Sand Filter and Delaware Filter]: Checklist T-1, Part 8  
 \_\_\_ Multi-Chambered Treatment Train: Checklist T-1, Part 9  
 \_\_\_ Wet Basins: Checklist T-1, Part 10
14. Estimate what percentage of WQV (or WQF, depending upon the Treatment BMP selected) will be treated by the preferred Treatment BMP(s):  100  % Complete  
 (b) Have Treatment BMPs been considered for use in parallel or series to increase this percentage? Yes No
15. Estimate what percentage of the net WQV (for all new impervious surfaces within the project) that will be treated by the preferred treatment BMP(s):  100  % Complete
16. Prepare cost estimate, including right-of-way, and site specific determination of feasibility (Section 2.4.2.1) for selected Treatment BMPs and include as supplemental information for SWDR approval. Complete

<b>Treatment BMPs</b>	
<b>Checklist T-1, Part 2</b>	
Prepared by: <u>B. Ross</u>	Date: <u>10/08/10</u> District-Co-Route: <u>04-SCI-101, 05-SBT-101, 04-SCI-25</u>
PM : <u>0.0/5.0, 4.9/7.5, 1.6/2.5</u>	Project ID (or EA): <u>XX-XXXXXX</u> RWQCB: <u>Central Coast</u>

**Biofiltration Swales / Biofiltration Strips**

Feasibility

1. Do the climate and site conditions allow vegetation to be established?  Yes  No
2. Are flow velocities from a peak drainage facility design event < 4 fps (i.e. low enough to prevent scour of the vegetated biofiltration swale as per HDM Table 873.3E)?  Yes  No  
 If "No" to either question above, Biofiltration Swales and Biofiltration Strips are not feasible.
3. Are Biofiltration Swales proposed at sites where known contaminated soils or groundwater plumes exist?  Yes  No  
 If "Yes", consult with District/Regional NPDES Coordinator about how to proceed.
4. Does adequate area exist within the right-of-way to place Biofiltration device(s)?  Yes  No  
 If "Yes", continue to Design Elements section. If "No", continue to Question 5.
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? \_\_\_\_\_ acres  Yes  N/A No  
 If "Yes", continue to Design Elements section. If "No", continue to Question 6.
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.  N/A Complete

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? \*  Yes  No
2. Can the biofiltration swale be designed as a conveyance system under any expected flows > the WQF event, as per HDM Chapter 800? \* (e.g. freeboard, minimum slope, etc.)  Yes  No

3. Can the biofiltration swale be designed as a water quality treatment device under the WQF while meeting the required HRT, depth, and velocity criteria? (Reference Appendix B, Section B.2.3.1)\*  Yes  No
4. Is the maximum length of a biofiltration strip  $\leq$  300 ft? \*  Yes  N/A No
5. Has the minimum width (in the direction of flow) of the invert of the biofiltration swale received the concurrence of Maintenance? \*  Yes  No
6. Can biofiltration swales be located in natural or low cut sections to reduce maintenance problems caused by animals burrowing through the berm of the swale? \*\*  Yes  No
7. Is the biofiltration strip sized as long as possible in the direction of flow? \*\*  Yes  N/A No
8. Have Biofiltration Systems been considered for locations upstream of other Treatment BMPs, as part of a treatment train? \*\*  Yes  No

EXAMPLE ONLY

**Construction Site BMPs**

**Checklist CS-1, Part 1**

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 04-SCI-101, 05-SBt-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB: Central Coast

**Soil Stabilization**

General Parameters

1. How many rainy seasons are anticipated between begin and end of construction? 3
2. What is the total disturbed soil area for the project? (ac) 411.7
  - (a) How much of the project DSA consists of slopes 4:1 (h:v) or flatter? (ac) 269.9
  - (b) How much of the project DSA consists of 4:1 (h:v) < slopes < 2:1 (h:v)? (ac) 115.7
  - (c) How much of the project DSA consists of slopes 2:1 (h:v) and steeper? (ac) 26.1
  - (d) How much of the project DSA consists of slopes with slope lengths longer than 20 ft? (ac) 234.5
3. What rainfall area does the project lie within? (Refer to Table 2-1 of the Construction Site Best Management Practices Manual ) 2
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.)  Complete

Scheduling (SS-1)

5. Does the project have a duration of more than one rainy season and have disturbed soil area in excess of 25 acres?  Yes  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.)  Complete
  - (b) Edit Order of Work specifications for permanent erosion control or revegetation work to be implemented on slopes that are substantially complete.  Complete

- (c) Edit permanent erosion control or revegetation specifications to require seeding and planting work to be performed when optimal.  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)  Yes  No
- (a) Verify the protection of ESAs through delineation on all project plans.  Complete
- (b) Protect from clearing and grubbing and other construction disturbance by enclosing the ESA perimeter with high visibility plastic fence or other BMP.  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 practicable.)  Yes  No
- (a) Designate as outside of limits of work (or designate as ESAs) and show on all project plans.  Complete
- (b) Protect with high visibility plastic fence or other BMP.  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).  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, Mats, Plastic Covers, and Erosion Control Blankets), SS-8 (Wood Mulching), other BMPs or a combination to cover the DSA throughout the project's rainy season.  Complete
- (b) Increase the quantities by 25% for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.)  Complete
- (c) Designate as a separate contract bid line item.  Complete

Slope Interrupter Devices

10. Provide slope interrupter devices for all slopes with slope lengths equal to or greater than of 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.  Complete
  - (b) For slope inclination of 4:1 (h:v) and flatter, SC-5 (Fiber Rolls) or other BMPs shall be placed along the contour and spaced 20 ft on center.  Complete
  - (c) For slope inclination between 4:1 (h:v) and 2:1 (h:v), SC-5 (Fiber Rolls) or other BMPs shall be placed along the contour and spaced 15 ft on center.  Complete
  - (d) For slope inclination of 2:1 (h:v) and greater, SC-5 (Fiber Rolls) or other BMPs shall be placed along the contour and spaced 10 ft on center.  Complete
  - (e) Increase the quantities by 25% for each additional rainy season. (Designated Construction Representative may suggest alternate increase.)  Complete
  - (f) Designate as a separate contract bid line item.  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).
- (a) Utilize SS-7 (Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets), 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.  Complete
  - (b) Designate as a separate contract bid line item.  Complete

**Construction Site BMPs**

**Checklist CS-1, Part 2**

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 04-SCI-101, 05-SBT-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB: Central Coast

**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.?  Yes  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.)  Complete
  - (b) Increase the quantities by 25% for each additional rainy season. (Designated Construction Representative may suggest an alternate increase.)  Complete
  - (c) Designate as a separate contract bid line item.  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?  Yes  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.)  Complete
  - (b) Designate as a separate contract bid line item.  Complete

Storm Drain Inlets

3. Do existing or proposed drainage inlets exist within the project limits?  Yes  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.)  Complete
- (b) Designate as a separate contract bid line item.  Complete
4. Can existing or proposed drainage inlets utilize an excavated sediment trap as described in SC-10 (Storm Drain Inlet Protection- Type 2)?  Yes  No
- (a) Include with other types of SC-10 (Storm Drain Inlet Protection).  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.)  Yes  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.  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.  Complete
- Designate as a separate contract bid item.  Complete
6. Is ATS to be used for controlling sediment?  Yes  No
- (a) If "yes", then will desilting basin or other means of natural storage be used?  Yes  N/A No
- (b) If "no", then plan for storage tanks sufficient to hold treatment volume.  Complete
7. Will the project benefit from the early implementation of proposed permanent Treatment BMPs? (Coordinate with District Construction.)  Yes  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.  Complete

Sediment Trap (SC-3)

8. Can sediment traps be located to collect channelized runoff from disturbed soil areas prior to discharge?  Yes  No
- (a) Design sediment traps in accordance with the Construction Site BMP Manual.  N/A Complete
- (b) Designate as a separate contract bid line item.  N/A Complete

**Construction Site BMPs**

**Checklist CS-1, Part 3**

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 04-SCI-101, 05-SBt-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB Central Coast

**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.)  Yes  No
- (a) Identify and designate these entrance/exit points as stabilized construction entrances (TC-1).  Complete
- (b) Designate as a separate contract bid line item.  Complete

Tire/Wheel Wash (TC-3)

1. Are site conditions anticipated that would require additional or modified tracking controls such as entrance/outlet tire wash? (Coordinate with District Construction.)  Yes  No
- Designate as a separate contract bid line item.  N/A 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.)  Yes  No
- (a) Designate these temporary access roads as stabilized construction roadways (TC-2).  N/A Complete
- (b) Designate as a separate contract bid line item.  N/A 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.)  Yes  No
- Designate as a separate contract bid line item.  Complete

**Construction Site BMPs  
Checklist CS-1, Part 4**

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 04-SCI-101, 05-SBt-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB: Central Coast

**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.)  Yes  No
- (a) Select SS-3 (Hydraulic Mulch), SS-4 (Hydroseeding), SS-5 (Soil Binders), SS-7 (Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets), 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.)  Complete
- (b) Designate as a separate contract bid line item.  Complete

**Construction Site BMPs  
Checklist CS-1, Part 5**

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 04-SCI-101, 05-SBt-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB: Central Coast

**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.)  Yes  No
- (a) Select from types offered in NS-4 (Temporary Stream Crossing) to provide access through watercourses consistent with permits and agreements.<sup>1</sup>  Complete
- (b) Select from types offered in NS-5 (Clear Water Diversion) to divert watercourse consistent with permits and agreements.<sup>1</sup>  Complete
- (c) Designate as a separate contract bid line item(s).  Complete

**Other Non-Storm Water Management BMPs**

2. Are construction activities anticipated that will generate wastes or residues with the potential to discharge pollutants?  Yes  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-15 (Structure Demolition/Removal Over or Adjacent to Water).<sup>1</sup>  Complete
- (b) Verify that costs for non-stormwater management BMPs are identified in the contract documents. Designate BMP as a separate contract bid line item if the requirements in Construction Site Management (SSP 07-346) are anticipated to be inadequate or if requested by Construction.  Complete

<sup>1</sup> Coordinate with District Environmental for consistency with US Army Corps of Engineers 404 and 401 permits and Dept. of Fish and Game 1601 Streambed alteration Agreements.

**Construction Site BMPs  
Checklist CS-1, Part 6**

Prepared by: B. Ross Date: 10/08/10 District-Co-Route: 04-SCI-101, 05-SBt-101, 04-SCI-25

PM : 0.0/5.0, 4.9/7.5, 1.6/2.5 Project ID (or EA): XX-XXXXXX RWQCB: Central Coast

**Waste Management & Materials Pollution Control**

Concrete Waste Management (WM-8)

1. Does the project include concrete placement or mortar mixing?  Yes  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.)  Complete
- (b) Designate as a separate contract bid line item if the quantity of concrete waste and washout are anticipated to exceed 5.2 yd<sup>3</sup> or if requested by Construction.  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?  Yes  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)  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 the requirements in Construction Site Management (SSP 07-346) are anticipated to be inadequate or if requested by Construction.  Complete

Temporary Stockpiles (Soil, Materials, and Wastes)

3. Are stockpiles of soil, etc. anticipated during construction?  Yes  No
- (a) Select WM-3 (Stockpile Management), SS-3 (Hydraulic Mulch), SS-4 (Hydroseeding), SS-5 (Soil Binders), SS-7 (Geotextiles, Mats, Plastic Covers, and Erosion Control Blankets), or a combination as appropriate to cover temporary stockpiles of soil, etc.  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.)  Complete
- (c) Designate as a separate contract bid line item if the requirements in Construction Site Management (SSP 07-346) are anticipated to be inadequate or if requested by Construction.  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?  Yes  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.)  Complete
- (b) Designate as a separate contract bid line item.  Complete

Note: All biofiltration swales are designed to the exact same dimensions; calculation shown is for BMP-39, which has the largest watershed area. Therefore, all other swales with smaller watershed areas also pass the necessary design criteria.

**Normal Depth Calculations for Channels using Manning's Equation**

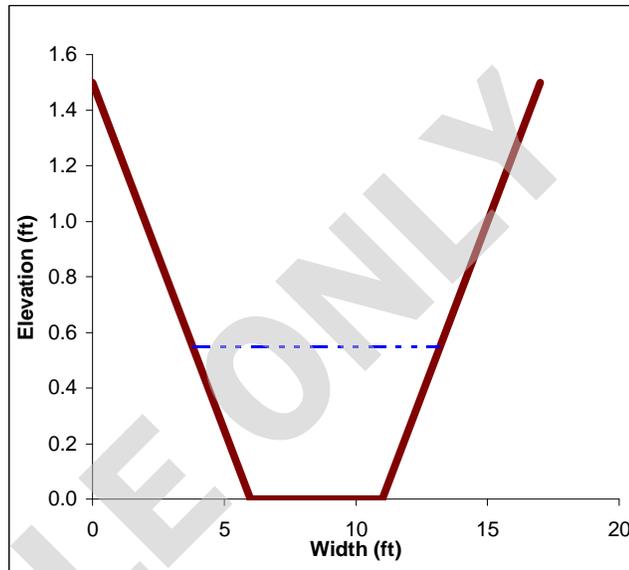
**Water Quality Flow Intensity = 0.2 in/hr**

**Input Values**

Height	1.5	ft
Width	5	ft
LT Side Slope	4	:1 (h:v)
Rt Side Slope	4	:1 (h:v)
Mannings	0.24	
Slope	0.02	ft/ft
Design Flow	1.92	cfs

**Normal Depth for Channel**

Depth	0.5	ft
Area	3.95	ft <sup>2</sup>
Perimeter	9.52	ft
Rh	0.41	ft
V	0.49	ft/s
Q	1.92	cfs
Goal Seek	0.00	



On-Site (C=1.00)  
Tributary area: 9.60 ac

Design Flow: (0.2 in/hr)(9.60 ac)(1.0)  
**Q= 1.92 cfs**

**HRT= L/(60xV)**  
200 ft/(60x0.18)  
**7 minutes**

Freeboard: 0.2 x He  
**He= D+((V^2)/(2xG))**  
**0.55**

**Freeboard= 0.11 ft**

**Passing? yes**

Note: All biofiltration swales are designed to the exact same dimensions; calculation shown is for BMP-39, which has the largest watershed area. Therefore, all other swales with smaller watershed areas also pass the necessary design criteria.

**Normal Depth Calculations for Channels using Manning's Equation**

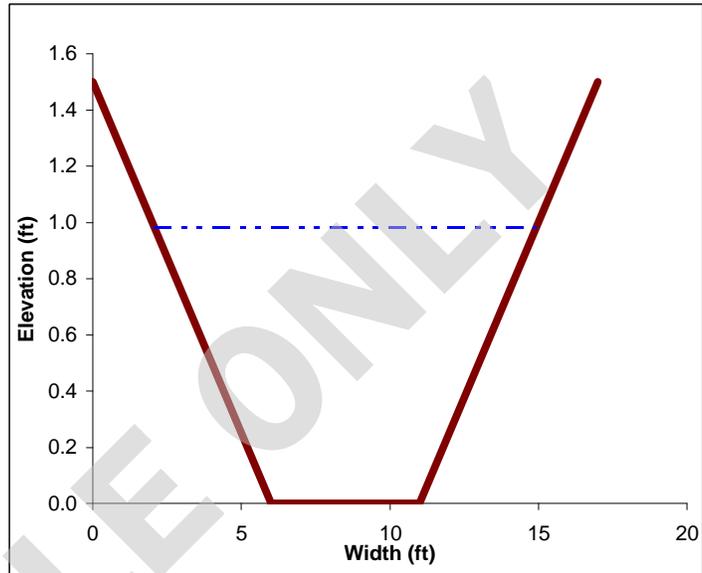
**Q25 Intensity = 2.95 in/hr**

**Input Values**

Height	1.5	ft
Width	5	ft
LT Side Slope	4	:1 (h:v)
Rt Side Slope	4	:1 (h:v)
Mannings	0.05	
Slope	0.02	ft/ft
Design Flow	28.32	cfs

**Normal Depth for Channel**

Depth	0.984	ft
Area	8.79	ft <sup>2</sup>
Perimeter	13.12	ft
Rh	0.67	ft
V	3.22	ft/s
Q	28.32	cfs
Goal Seek	0.00	



On-Site (C=1.00)  
Tributary area: 9.60 ac

Design Flow: (2.95 in/hr)(9.60 ac)(1.0)  
**Q= 28.32 cfs**

Freeboard: 0.2 x He  
**He=**  $D + \frac{(V^2)}{(2 \times G)}$   
**1.15**  
**Freeboard= 0.23 ft**

Passing? yes

# Strip and Swale Infiltration Tool

(and existing pervious surfaces with low residence time and no flow restriction)

## KEY

User input

Linked to yellow cell do not change

Optional Input

Warning: Assumption has been violated - See Reality Check (below)

Output

## PROJECT INFORMATION

Project	101/25
Sub-watershed	Average Sized
Free-Flow BMP type	Swale

## USER INPUT: Area and Rainfall

*NOTE: This is the user input section. All GREEN cells must be filled by the user. If a box is red, a sizing assumption has been violated.	Final	Iteration 2	Iteration 3	Units
Unit Basin Storage Volume from Basin Sizer, where C=1.0	0.63	0.63	0.63	in
Drawdown time used in Basin Sizer	24	24	24	hr
Rainfall rate from Basin Sizer "Caltrans Water Quality Flows"	0.2	0.2	0.2	in/hr
Contributing drainage area	0.44	0.44	0.44	ac
Contributing drainage area runoff coefficient	1	1	1	
BMP area: strip area or swale invert area	1000	1000	1000	ft <sup>2</sup>
BMP area/contributing drainage area	5%	5%	5%	%

## USER INPUT: Native Soil or Fill

*NOTE: This is the user input section. All GREEN cells must be filled by the user. If a box is red, a sizing assumption has been violated.	Final	Iteration 2	Iteration 3	units
Native or fill (underlying) HSG soil type	C	C	C	
Bulk density	1.9	1.9	1.9	g/cm <sup>3</sup>
Depth of incorporation, below FG	4	4	4	in

## Soil Infiltration Properties

\*NOTE: This section estimates the infiltration without soil amendment. All GREY cells passed this point are optional. Key in the grey cells if the information is available. Otherwise, click the button to accept OWP's best professional judgement.

Infiltration rate of native soil or fill	0.15	0.15	0.15	in/hr
Pervious area for non-amended infiltration (may be different than BMP area)	1000.00	1000.00	1000.00	ft <sup>2</sup>

## RESULT: Native Soil or Fill

C factor for downstream BMP with no amendment	0.96	0.96	0.96	
<b>WQV infiltrated with native soil or fill (use for T-1, 5b, %)</b>	<b>0%</b>	<b>0%</b>	<b>0%</b>	
*NOTE: If this satisfies your needs for the T-1 Checklist you are done there is no need to consider soil amendment.				

## USER INPUT: Amended Soil

\*NOTE: This section estimates the infiltration with soil amendment. All GREY cells passed this point are optional. Key in the GREY cells if the information is available. Otherwise, click the button to accept OWP's best professional judgement.

Bulk density (of compost)	0.50	0.50	0.50	g/cm <sup>3</sup>
Specific gravity of compost particles	0.80	0.80	0.80	
Depth of placement	4.0	4.0	4.0	in
Final bulk density	1.18	1.18	1.18	g/cm <sup>3</sup>
Final depth with compaction	8.1	8.1	8.1	in
Bulk density: weighted average of native soil and compost without a volume change (no compaction, no fluffing due to incorporation)	1.20	1.20	1.20	

**RESULTS: Amended Soil**

\*NOTE: This section presents the results of soil amendment

C factor for downstream BMP after amendment	0.78	0.78	0.78	
<b>WQV infiltrated with amended soil (use for T-1, 5d, %)</b>	<b>18%</b>	<b>18%</b>	<b>18%</b>	
*NOTE: After infiltration of direct rainfall, As-constructed pore volume ft <sup>3</sup>				

**REALITY CHECKS:**

\*NOTE: This section checks the assumptions of infiltration to the soil not being rate limited. The second check is for if the strip can recover by the desired Draw Down Time

**Minimum area of BMP for instantaneous infiltration assumption**

	Final	Iteration 2	Iteration 3	Units
Infiltration rate of amended soil (in/hr)	4.08	4.08	4.08	
Rainfall rate (in/hr)	0.2	0.2	0.2	
Loading rate (in/hr)	4.033	4.033	4.033	
Minimum BMP area for instantaneous infiltration (ft <sup>2</sup> )	989.234	989.234	989.234	
Minimum BMP area/contributing area (%)	5.2%	5.2%	5.2%	
<b>Selected Drawdown Time and Actual Drawdown Time</b>				
	Final	Iteration 2	Iteration 3	
Infiltration rate of native soil or fill	0.15	0.15	0.15	
Target drawdown time time used in Basin Sizer (hr)	24	24	24	
Actual drawdown time (hr)	19	19	19	
Maximum Final depth with compaction for draining within drawdown time (in)	10.3	10.3	10.3	
Will it recover for user input soil depth?	Yes	Yes	Yes	

**EXAMPLE ONLY**

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- LEGEND:**
- PROPOSED TREATMENT BEST MANAGEMENT PRACTICE (BMP) LOCATIONS. REFER TO STORM WATER DATA REPORT FOR TREATMENT BMP TYPE
  - WATERSHED CONTRIBUTING TO BMP
  - INLET AND PIPE CONNECTING TO BMP
  - WATERSHED FLOW DIRECTION
  - SAMPLING LOCATION

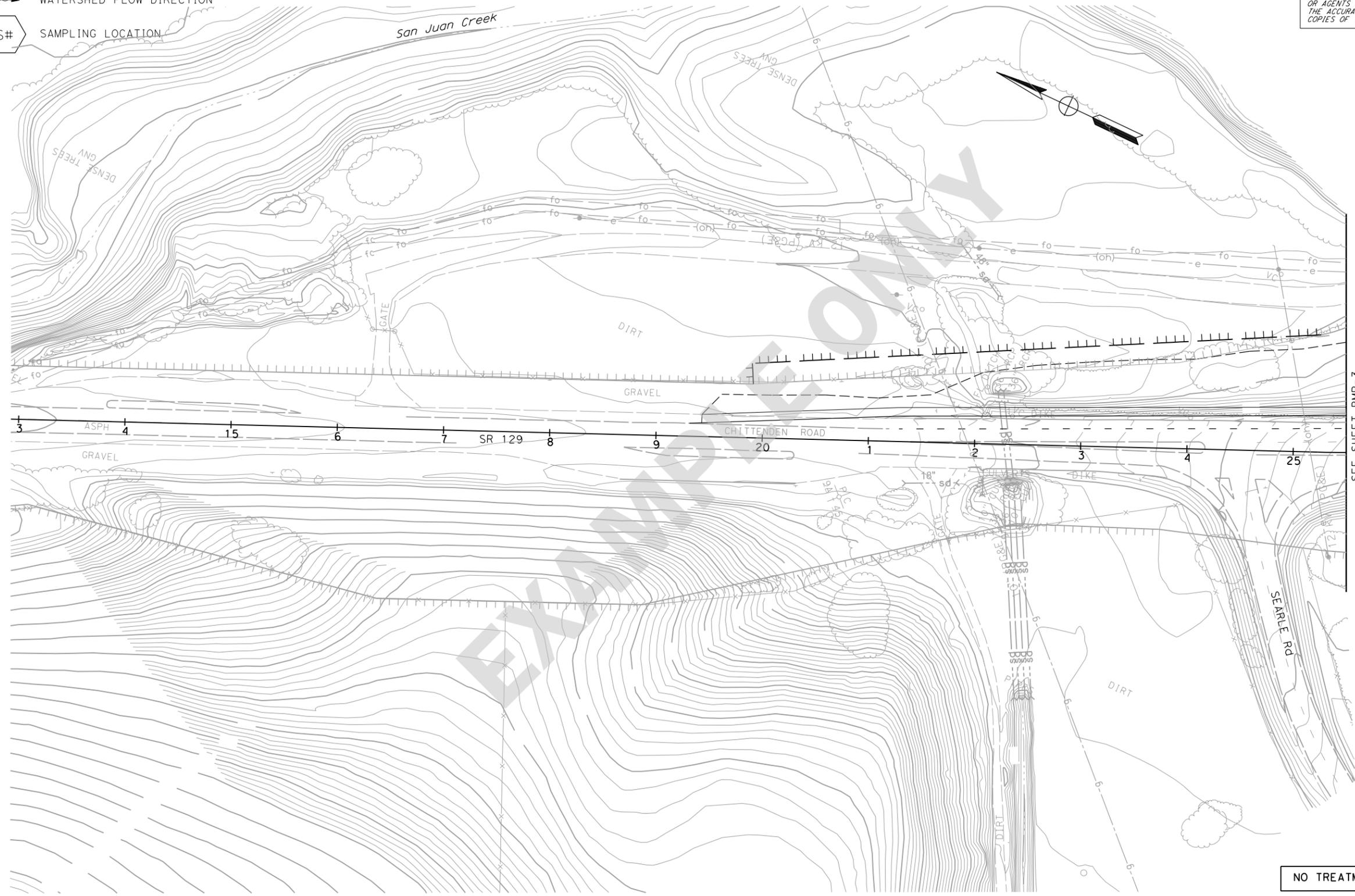
**NOTE:**  
 PLANS SHOWING NO TREATMENT BMP WORK ARE OMITTED, FOR FULL PROJECT LAYOUT SEE LAYOUT SHEETS.

**ABREVIATION:**  
 BMP BEST MANAGEMENT PRACTICE  
 WS WATERSHED

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		

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SEE SHEET BMP-3

NO TREATMENT BMP WORK ON THIS SHEET

**TREATMENT BMPS AND MONITORING LOCATION MAP**

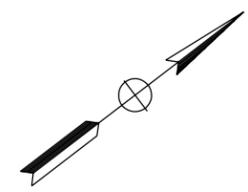
SCALE 1"=50' **BMP-1**

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REGISTERED CIVIL ENGINEER			DATE		
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**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP-2**

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 REVISED BY: B. ROSS  
 DATE REVISED: G. WASHINGTON

DIST	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		

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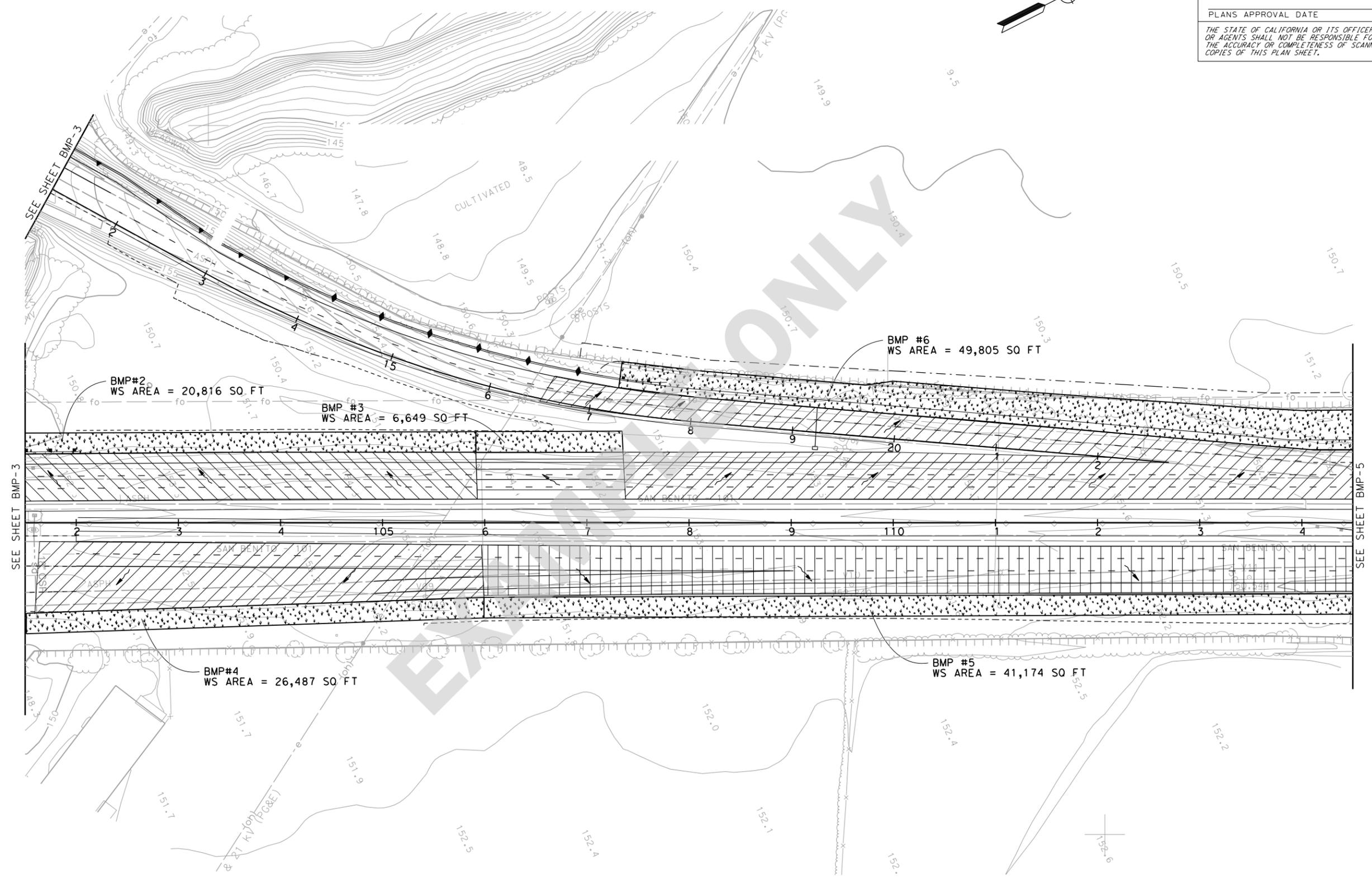
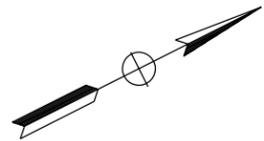
FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
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**TREATMENT BMPS AND  
 MONITORING LOCATION MAP**  
 SCALE 1"=50' **BMP-3**

**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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REGISTERED CIVIL ENGINEER			DATE		
PLANS APPROVAL DATE					
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			DATE REVISED

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

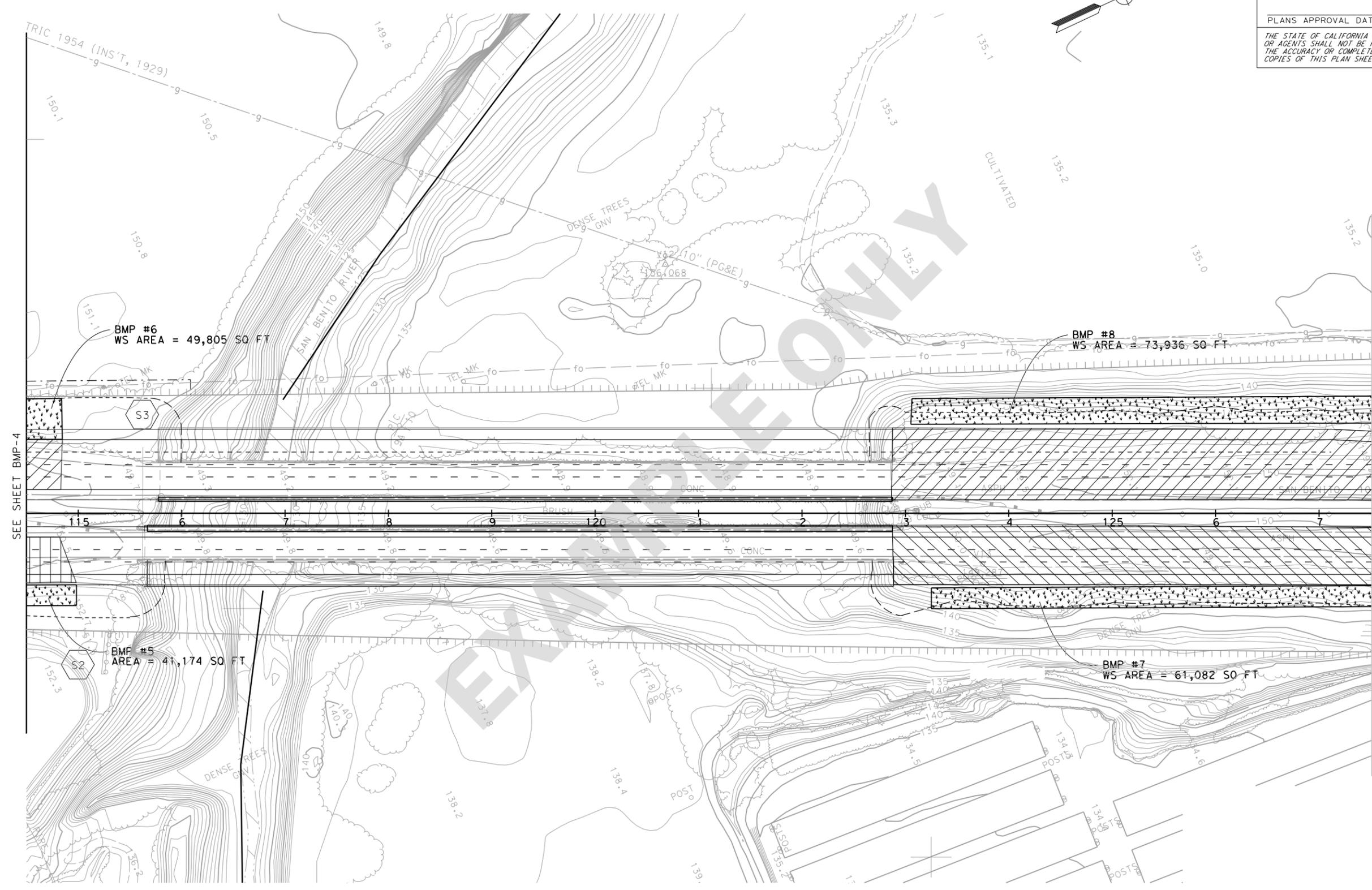
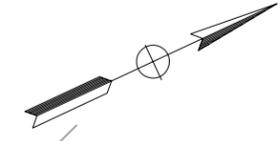
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**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP-4**

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Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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SEE SHEET BMP-4

SEE SHEET BMP-6

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
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**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP-5**

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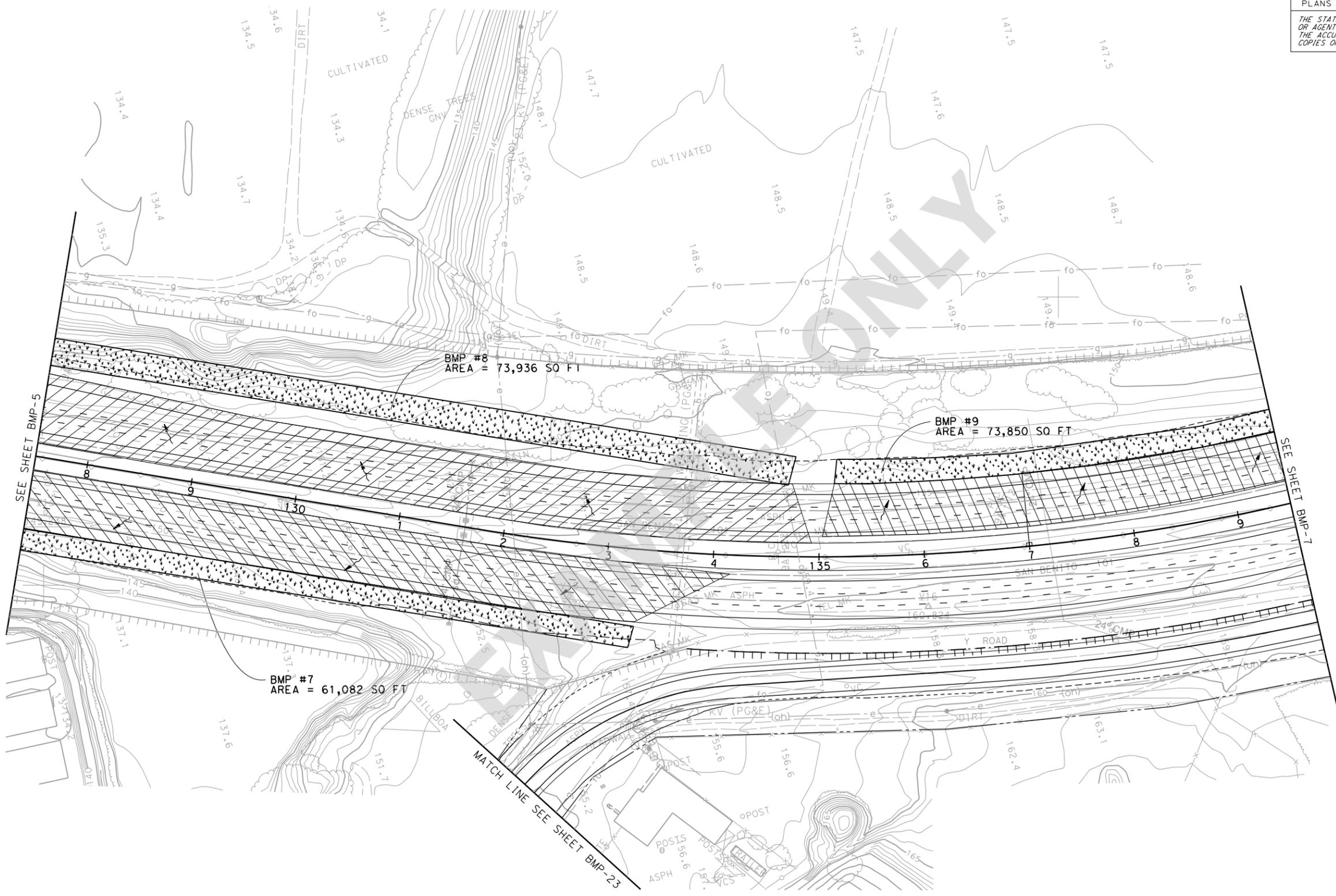
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Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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**TREATMENT BMPs AND  
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SCALE 1"=50' **BMP-6**

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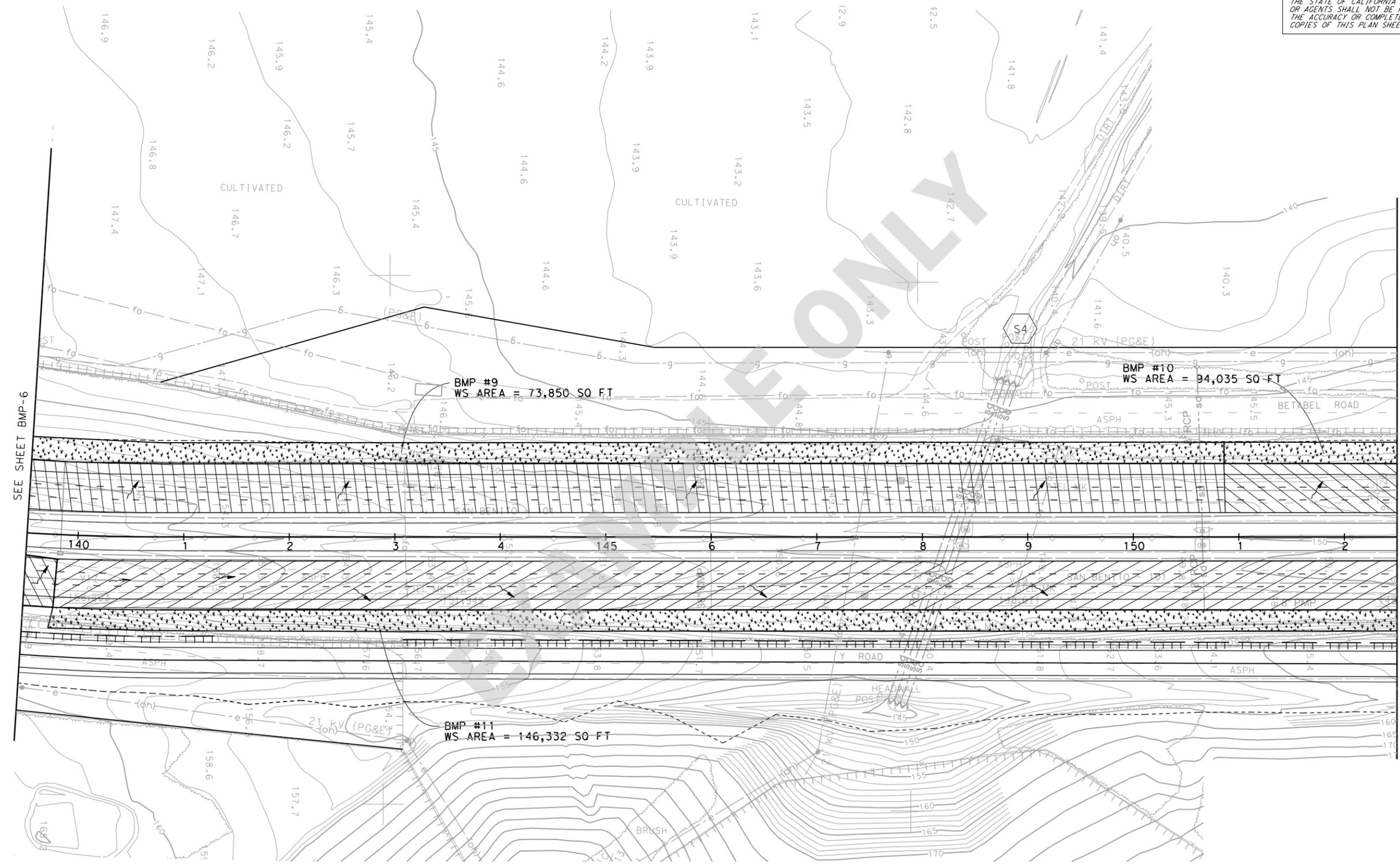
Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		

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SEE SHEET BMP-6

SEE SHEET BMP-8

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
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**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP-7**

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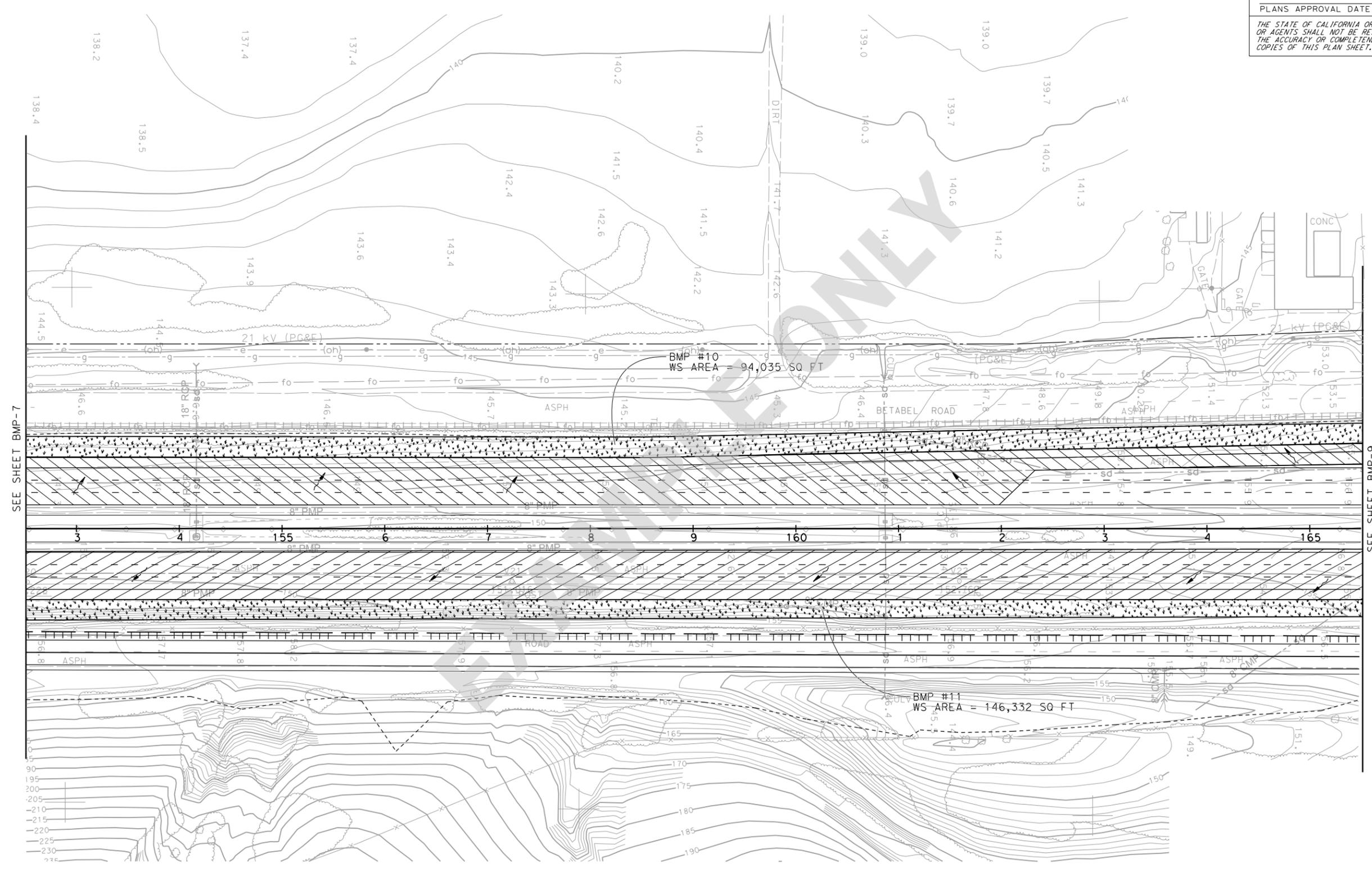
Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		

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CIVIL  
STATE OF CALIFORNIA



SEE SHEET BMP-7

SEE SHEET BMP-9

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP-8**

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UNIT XXXX

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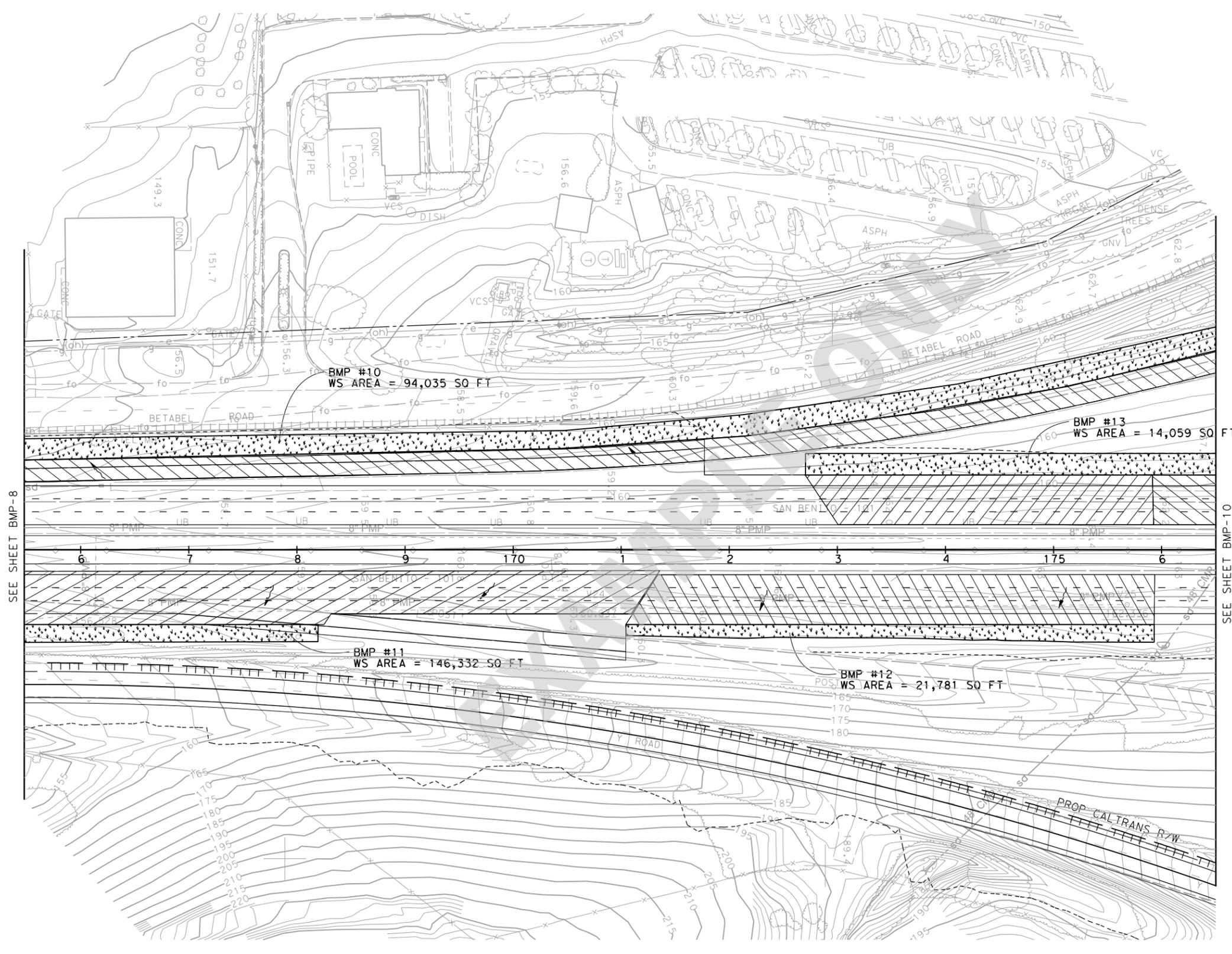
Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
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SEE SHEET BMP-8

SEE SHEET BMP-10

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPs AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP-9**

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UNIT XXXX

PROJECT NUMBER & PHASE

XXXXXXXXXX

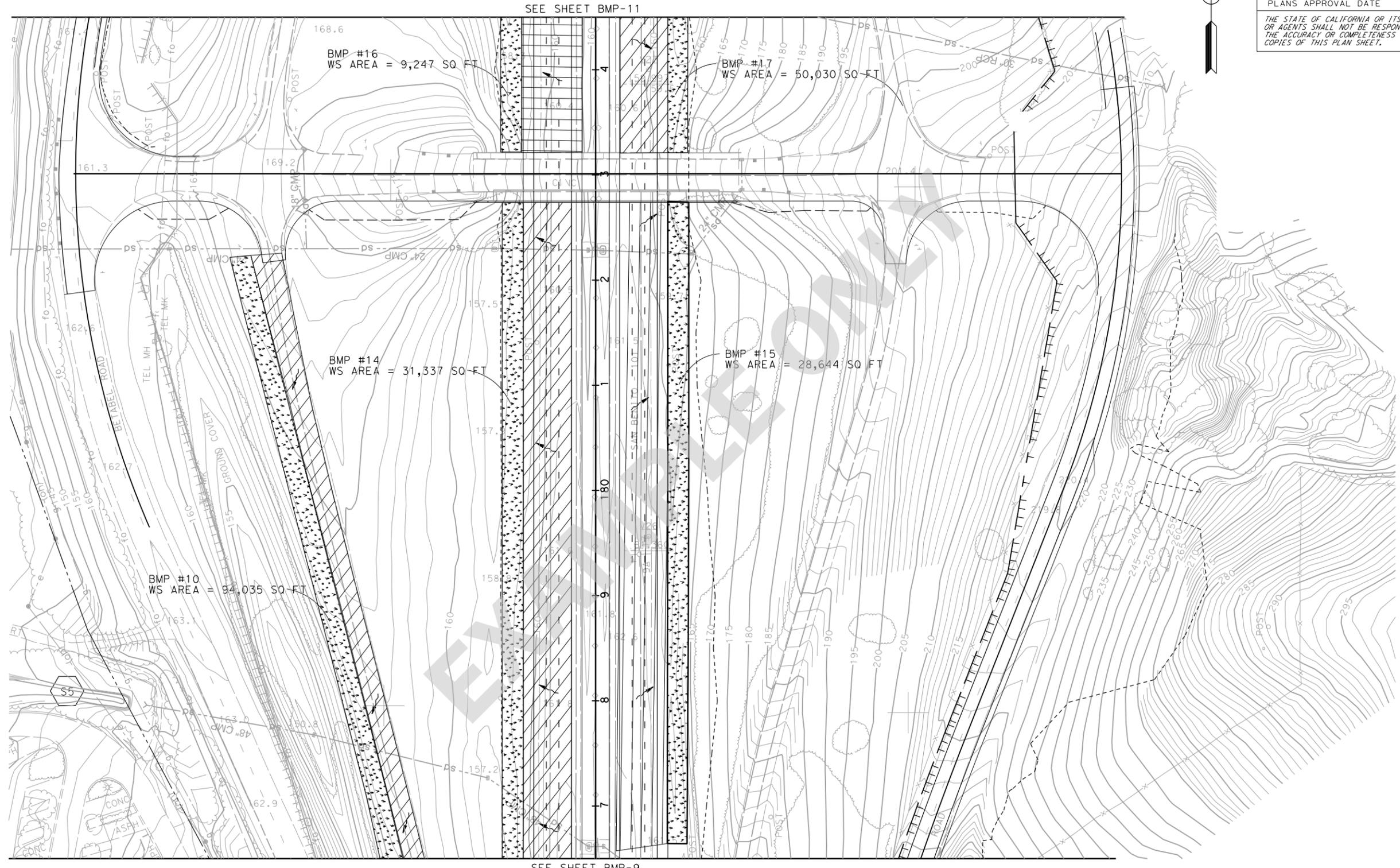
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**EXAMPLE ONLY**

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Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 PLANS APPROVAL DATE \_\_\_\_\_  
 THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



**TREATMENT BMPS AND MONITORING LOCATION MAP**  
 SCALE 1"=50'  
**BMP-10**

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

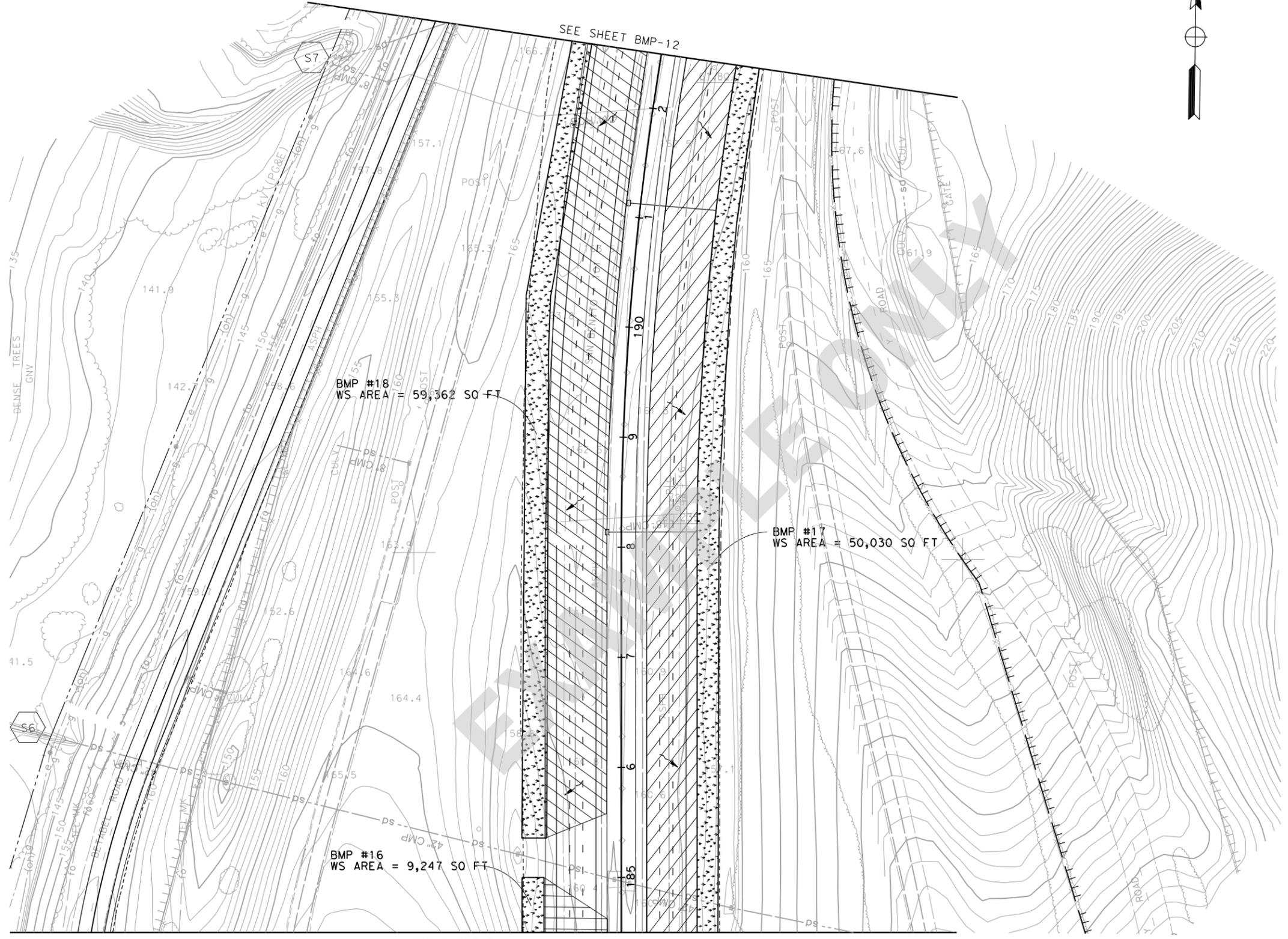
**PRELIMINARY PLANS, SUBJECT TO REVISION**

LAST REVISION DATE PLOTTED => 11/30/2010  
 00-00-00 TIME PLOTTED => 10:31:33 AM

**EXAMPLE ONLY**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
	T. PAINE	CHECKED BY	DATE REVISED
Caltrans	B. ROSS	G. WASHINGTON	

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		
REGISTERED CIVIL ENGINEER DATE					
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					



FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP-11**

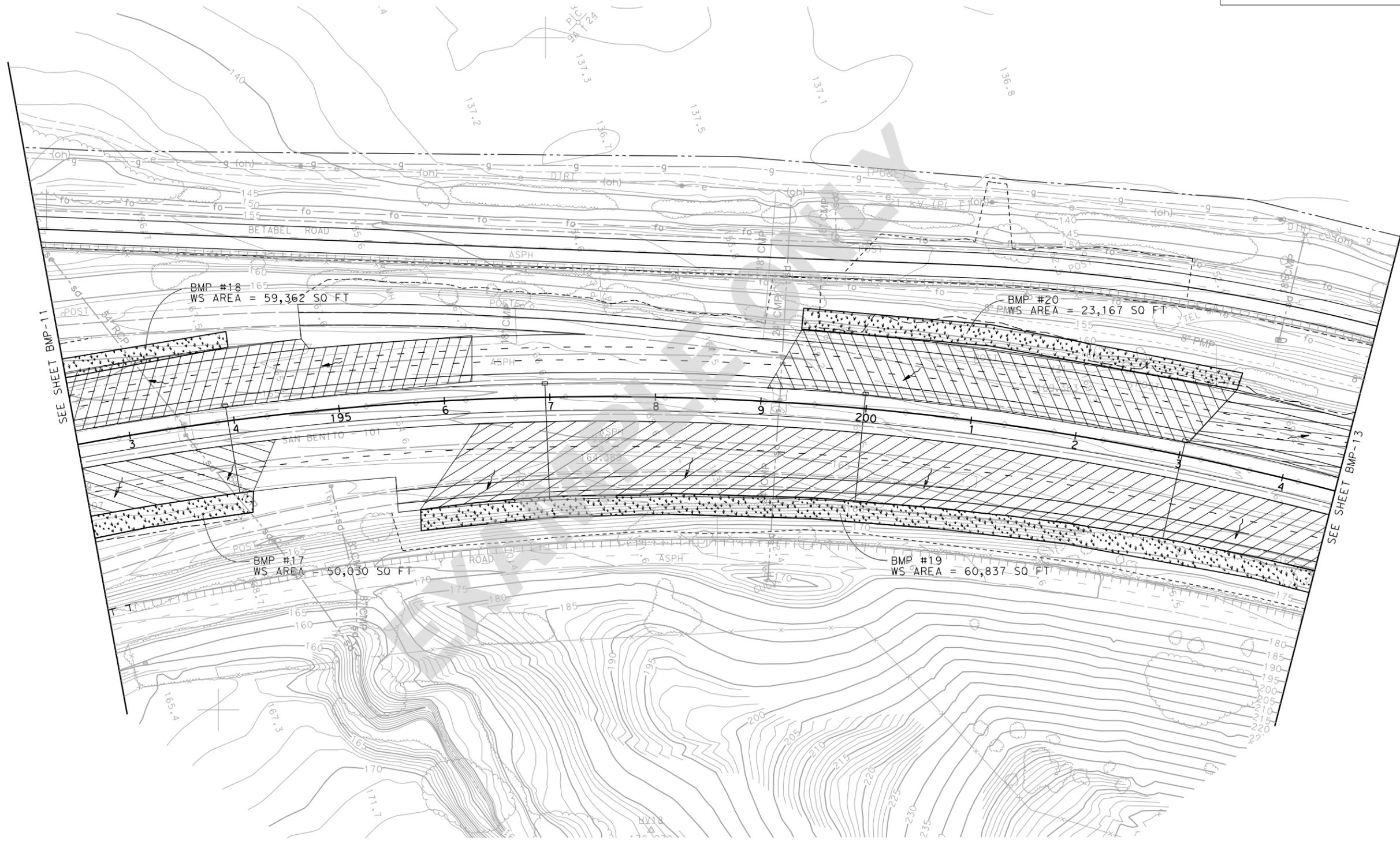
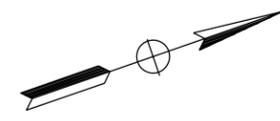
**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
<b>Caltrans</b>	T. PAINE	G. WASHINGTON	B. ROSS
		CHECKED BY	DATE REVISED

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

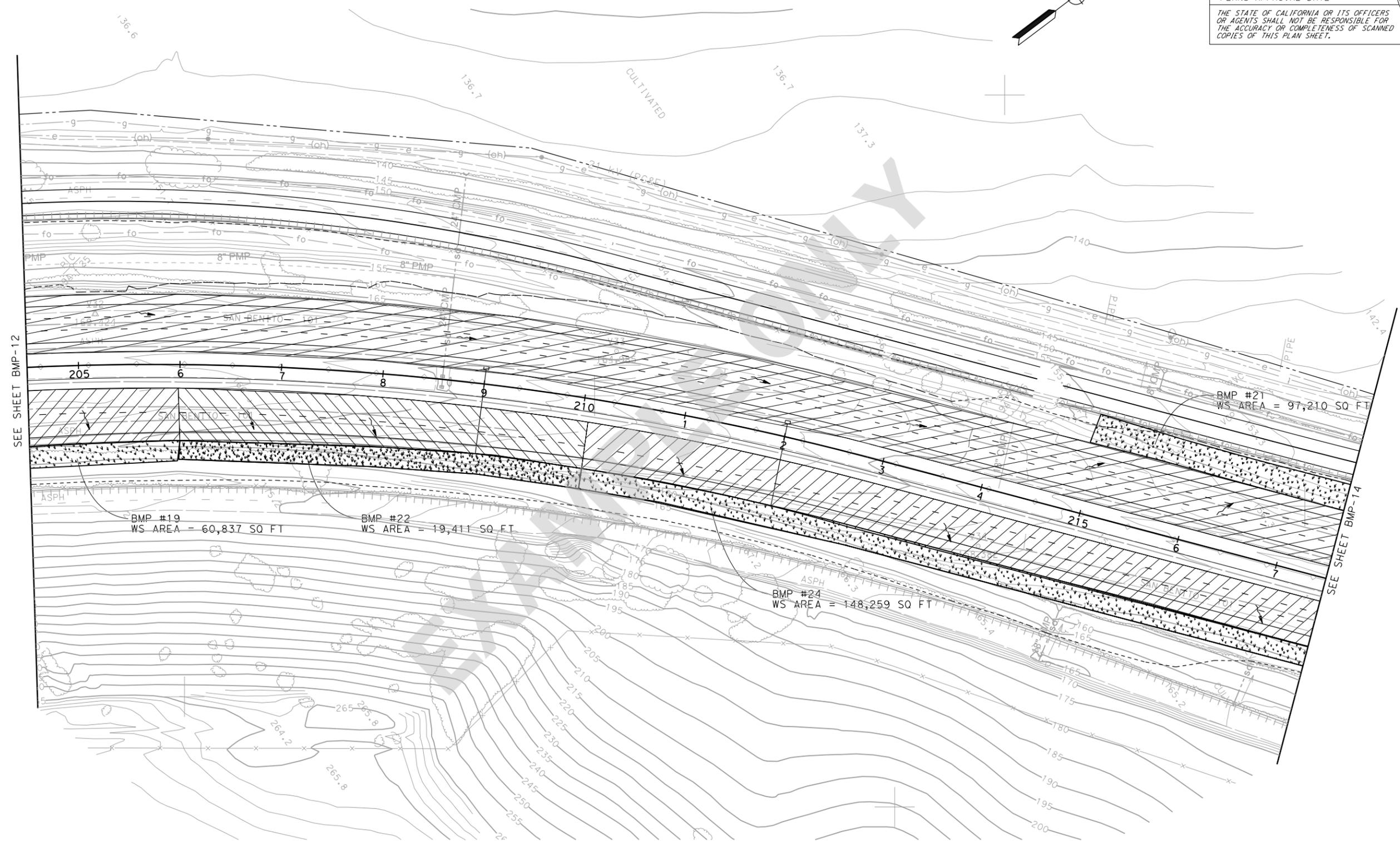
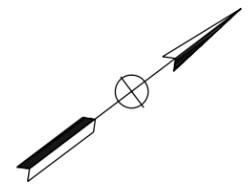
**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP-12**

LAST REVISION      DATE PLOTTED => 11/30/2010  
00-00-00      TIME PLOTTED => 10:32:22 AM

**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		
REGISTERED CIVIL ENGINEER			DATE		
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					



SEE SHEET BMP-12

SEE SHEET BMP-14

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP-13**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
<b>Caltrans</b>	T. PAINE	G. WASHINGTON	B. ROSS
		CHECKED BY	DATE REVISED

LAST REVISION    DATE PLOTTED => 11/30/2010    00-00-00    TIME PLOTTED => 10:32:45 AM

**EXAMPLE ONLY**

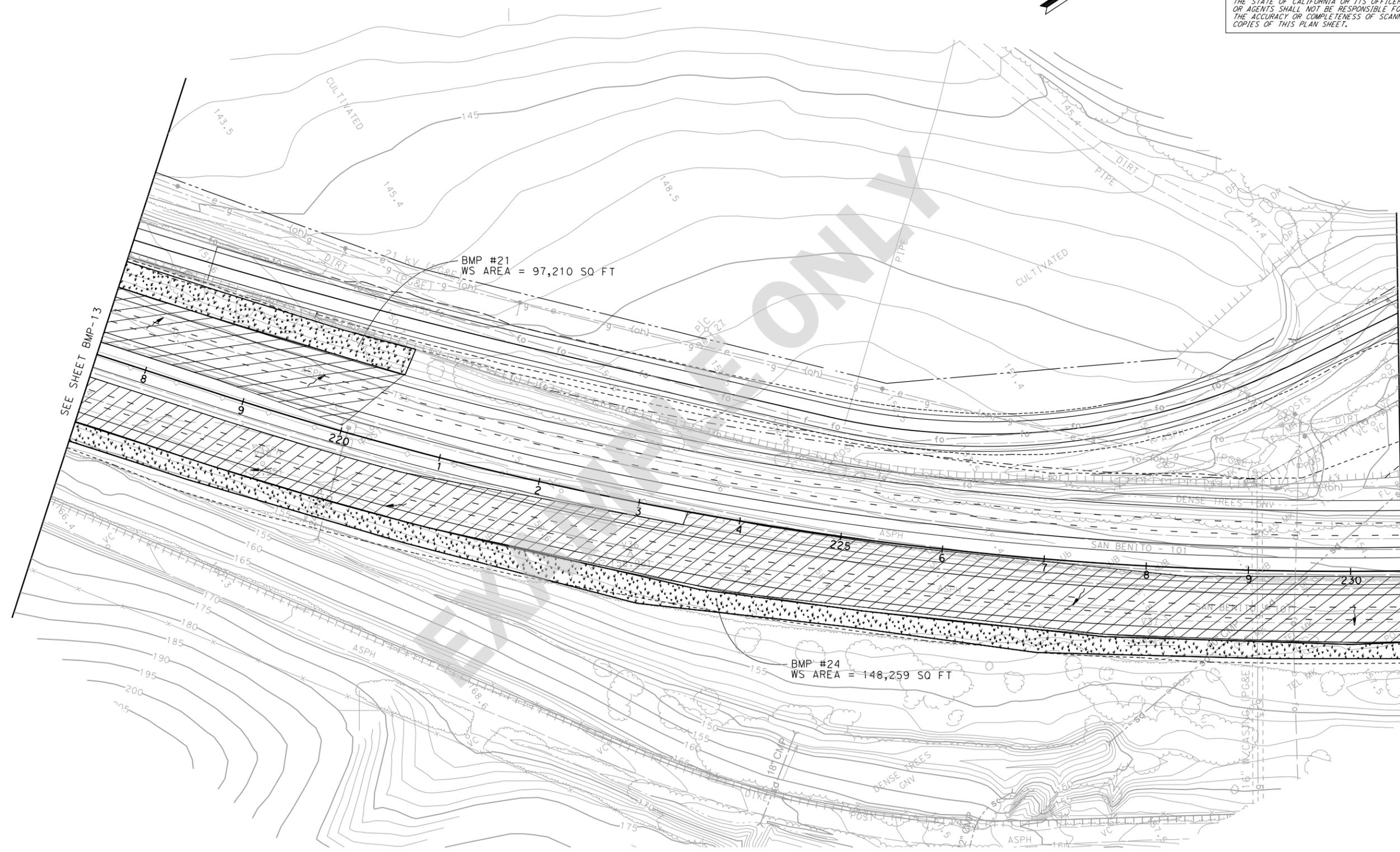
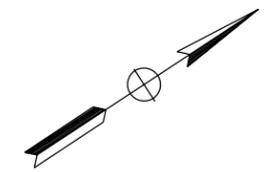
Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



SEE SHEET BMP-13

SEE NOTE ON BMP-1

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**

SCALE 1"=50' **BMP-14**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
<b>Caltrans</b>	T. PAINE	G. WASHINGTON	B. ROSS
		CHECKED BY	DATE REVISED

BORDER LAST REVISED 7/2/2010

USERNAME => hongchao\_yu  
DGN FILE => ... \Nwg\SWDR12\BMP-14.dgn

RELATIVE BORDER SCALE IS IN INCHES



UNIT XXXX

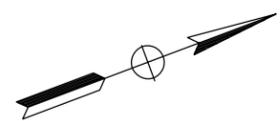
PROJECT NUMBER & PHASE

XXXXXXXXXX

LAST REVISION DATE PLOTTED => 11/30/2010  
00-00-00 TIME PLOTTED => 10:33:08 AM

**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		
REGISTERED CIVIL ENGINEER			DATE		
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					



SEE SHEET BMP-14

SEE SHEET BMP-16

NO TREATMENT BMP WORK ON THIS SHEET

# TREATMENT BMPS AND MONITORING LOCATION MAP

SCALE 1"=50' **BMP-15**

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS, SUBJECT TO REVISION**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
<b>Caltrans</b>	T. PAINE	CHECKED BY	B. ROSS
			G. WASHINGTON
			DATE REVISED

LAST REVISION DATE PLOTTED => 11/30/2010 00:00:00 TIME PLOTTED => 10:33:27 AM

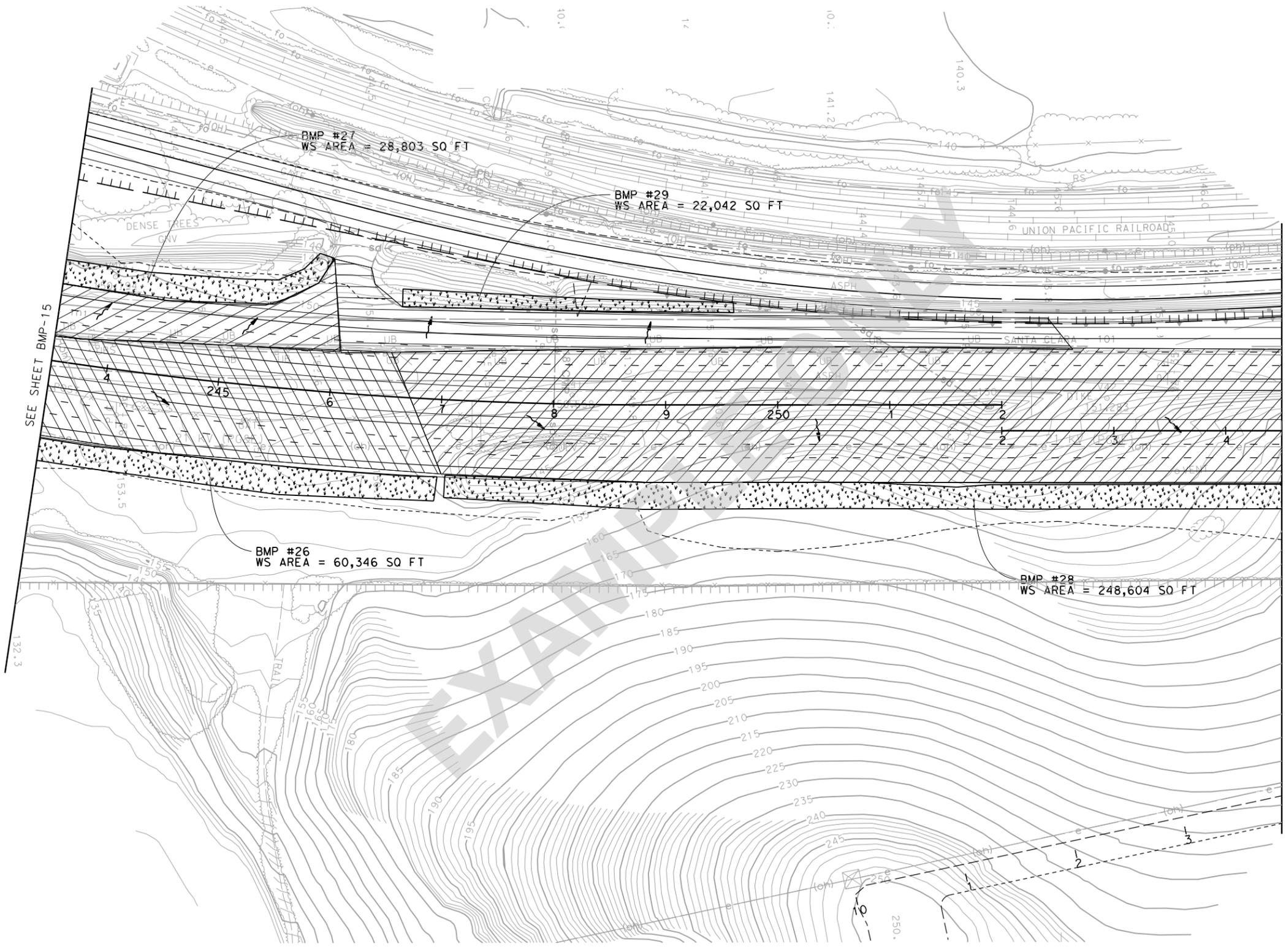
**EXAMPLE ONLY**

DIST	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



SEE SHEET BMP-15

SEE SHEET BMP-17

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
Caltrans	T. PAINE	CHECKED BY	B. ROSS
			G. WASHINGTON
			DATE REVISED

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP-16**



**EXAMPLE ONLY**



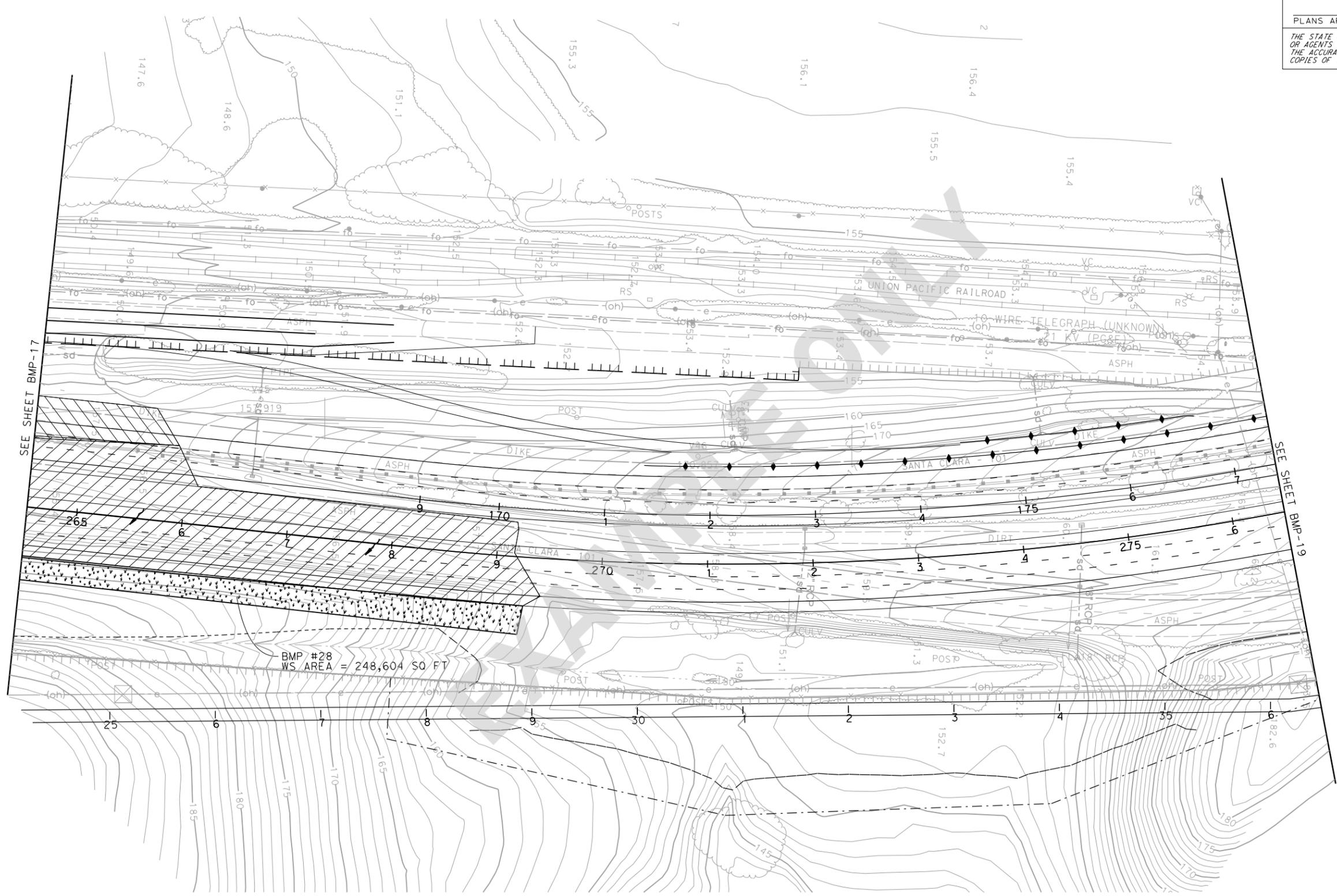
**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
<b>Caltrans</b>	T. PAINE	G. WASHINGTON	B. ROSS
		CHECKED BY	DATE REVISED

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPs AND  
MONITORING LOCATION MAP**

SCALE 1"=50' **BMP-18**

LAST REVISION DATE PLOTTED => 11/30/2010 10:35:05 AM

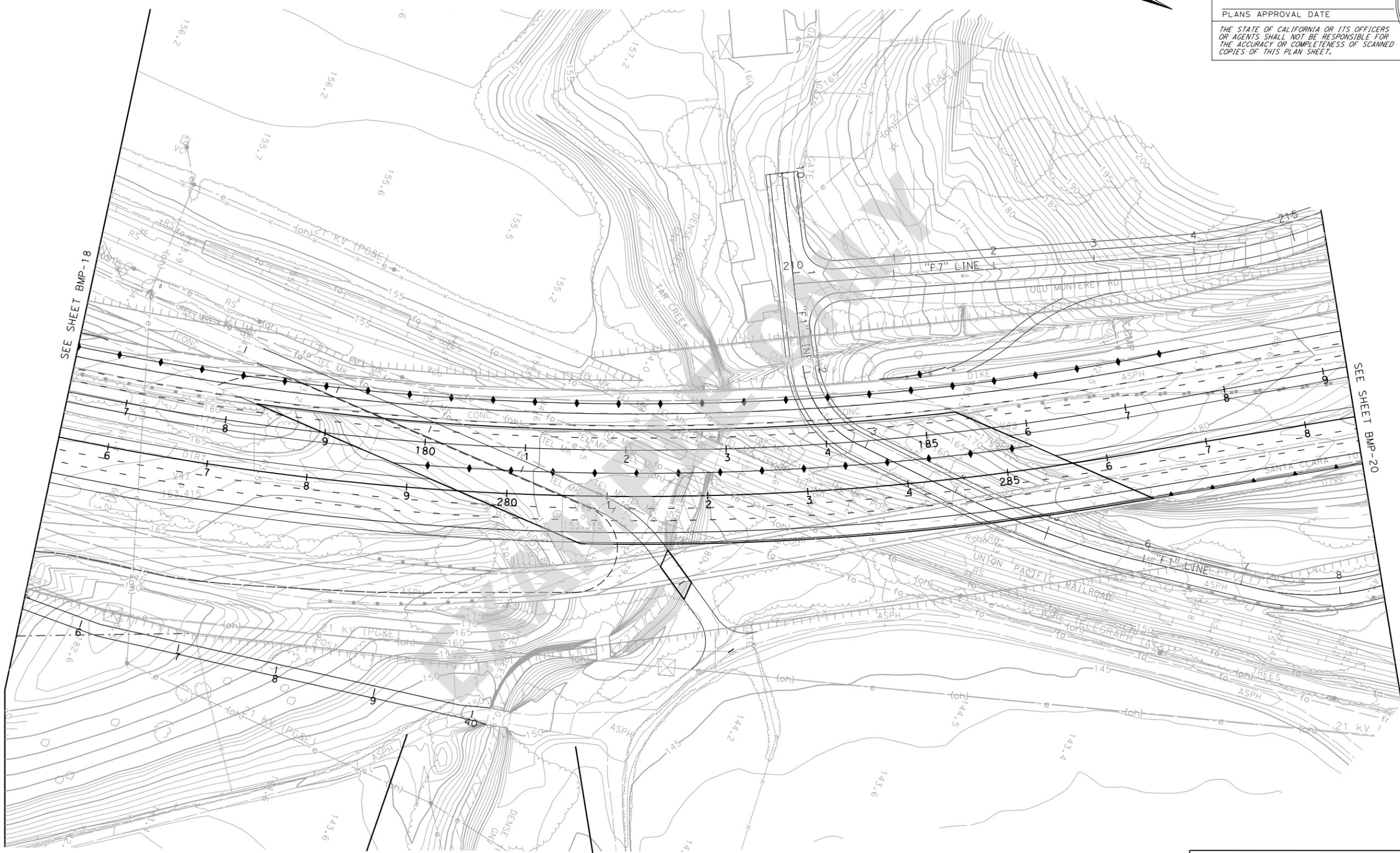
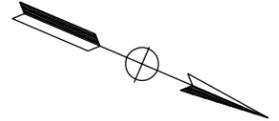
**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_

PLANS APPROVAL DATE \_\_\_\_\_

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SEE SHEET BMP-18

SEE SHEET BMP-20

NO TREATMENT BMP WORK ON THIS SHEET

**TREATMENT BMPS AND MONITORING LOCATION MAP**

SCALE 1"=50' **BMP-19**

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS, SUBJECT TO REVISION**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
<b>Caltrans</b>	T. PAINE	G. WASHINGTON	B. ROSS
BORDER LAST REVISED 7/2/2010			DATE REVISED

USERNAME => hongchao\_yu  
DGN FILE => ... \Dwg\SWDR12\BMP-19.dgn

RELATIVE BORDER SCALE IS IN INCHES



UNIT XXXX

PROJECT NUMBER & PHASE

XXXXXXXXXX

LAST REVISION: 00-00-00 DATE PLOTTED => 11/30/2010 TIME PLOTTED => 10:35:27 AM

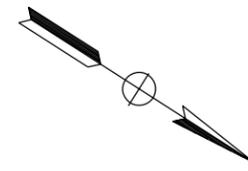
**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		

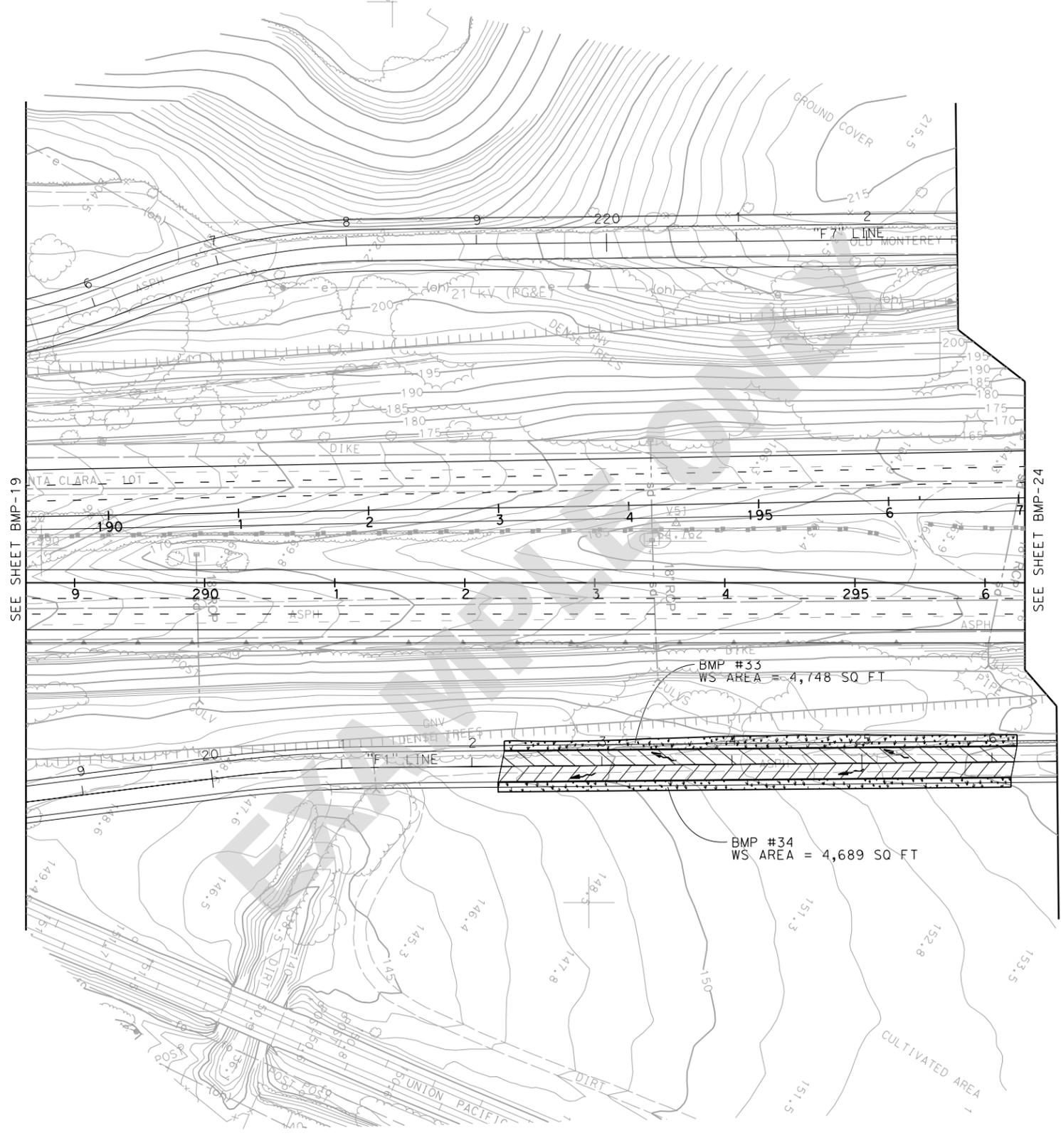
REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISED BY
<b>Caltrans</b>	T. PAINE	CHECKED BY	B. ROSS
			G. WASHINGTON
			DATE REVISED



FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPs AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP-20**

LAST REVISION    DATE PLOTTED => 11/30/2010  
00-00-00    TIME PLOTTED => 10:35:46 AM

**EXAMPLE ONLY**



**EXAMPLE ONLY**

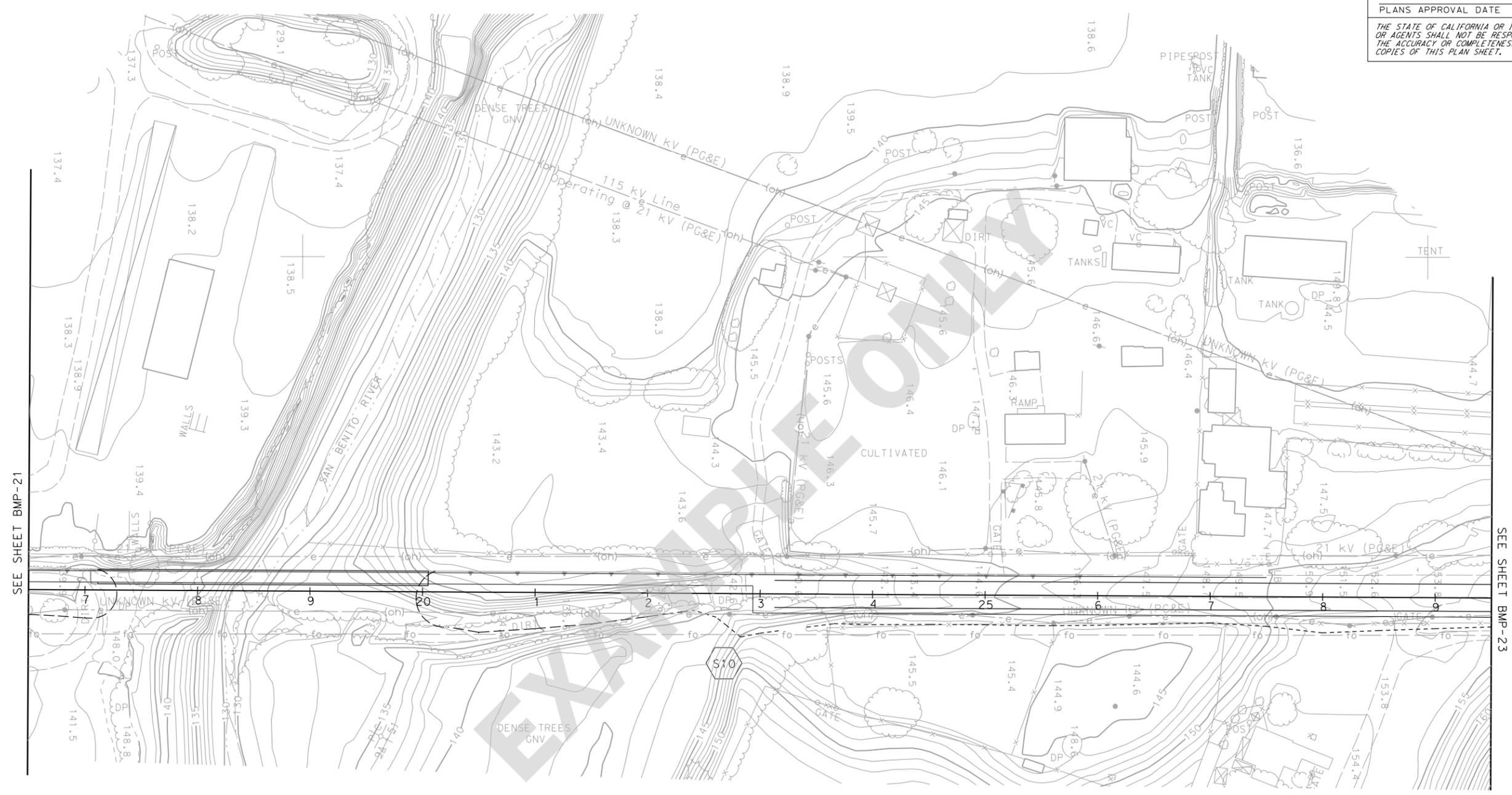
Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_

PLANS APPROVAL DATE \_\_\_\_\_

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

REGISTERED PROFESSIONAL ENGINEER  
No. \_\_\_\_\_  
Exp. \_\_\_\_\_  
CIVIL  
STATE OF CALIFORNIA



SEE SHEET BMP-21

SEE SHEET BMP-23

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CHECKED BY	REVISOR BY	DATE REVISED
Caltrans	T. PAINE	G. WASHINGTON	B. ROSS	
BORDER LAST REVISED 7/2/2010				

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

NO TREATMENT BMP WORK ON THIS SHEET

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**

SCALE 1"=50' **BMP-22**

USERNAME => hongchao\_yu  
DGN FILE => ... \Dwg\SWDR12\BMP-22.dgn

RELATIVE BORDER SCALE IS IN INCHES



UNIT XXXX

PROJECT NUMBER & PHASE

XXXXXXXXXX

DATE PLOTTED => 11/11/11 10:36:46 AM  
TIME PLOTTED => 10:36:46 AM

**EXAMPLE ONLY**

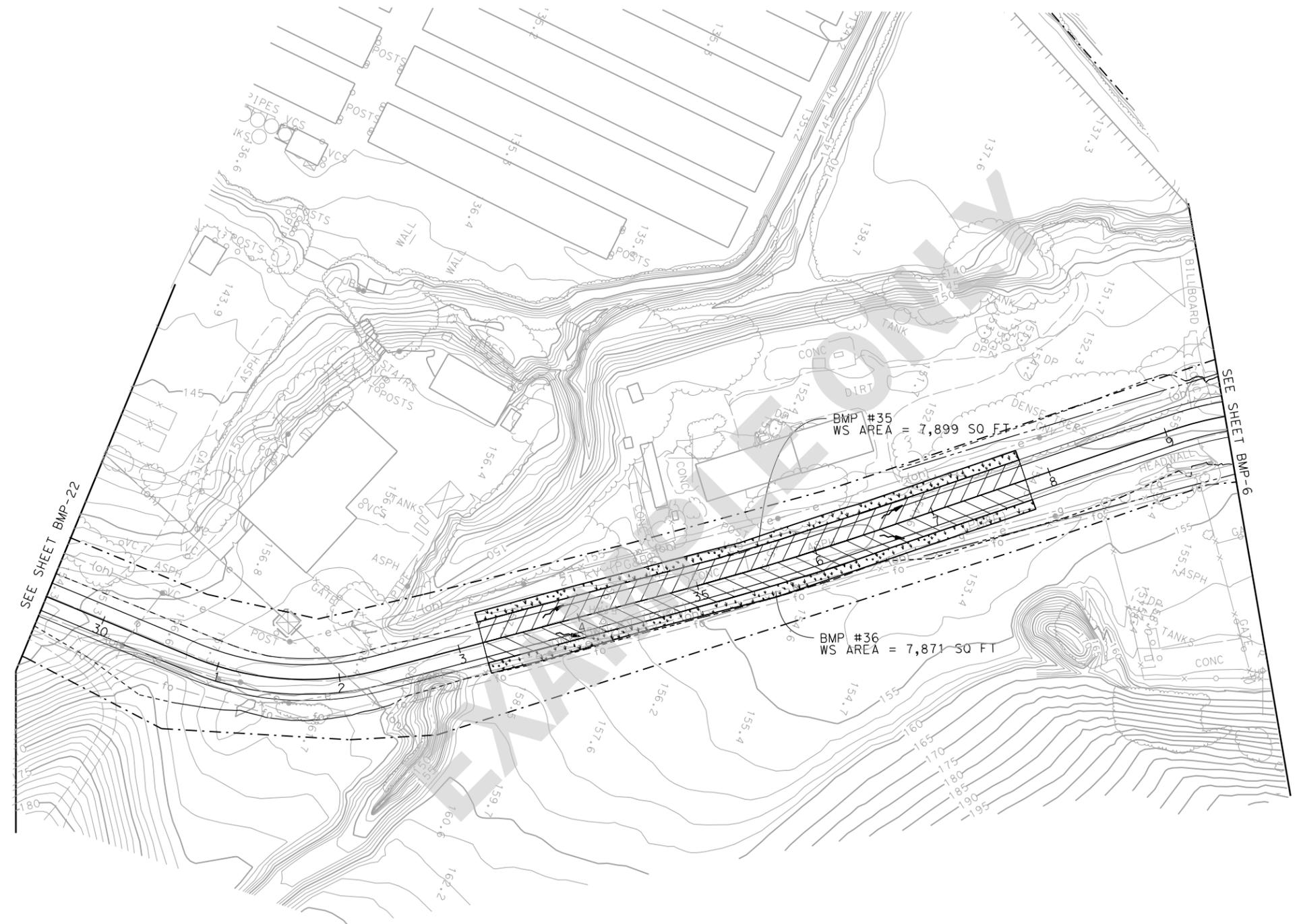
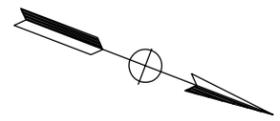
Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI, SBT	101	0.0-5.0, 4.9-7.5		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR
Caltrans	T. PAINE	CHECKED BY	B. ROSS
			G. WASHINGTON
			DATE REVISOR

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP-23**

LAST REVISION | DATE PLOTTED => 11/30/2010  
00-00-00 | TIME PLOTTED => 10:37:04 AM

**EXAMPLE ONLY**



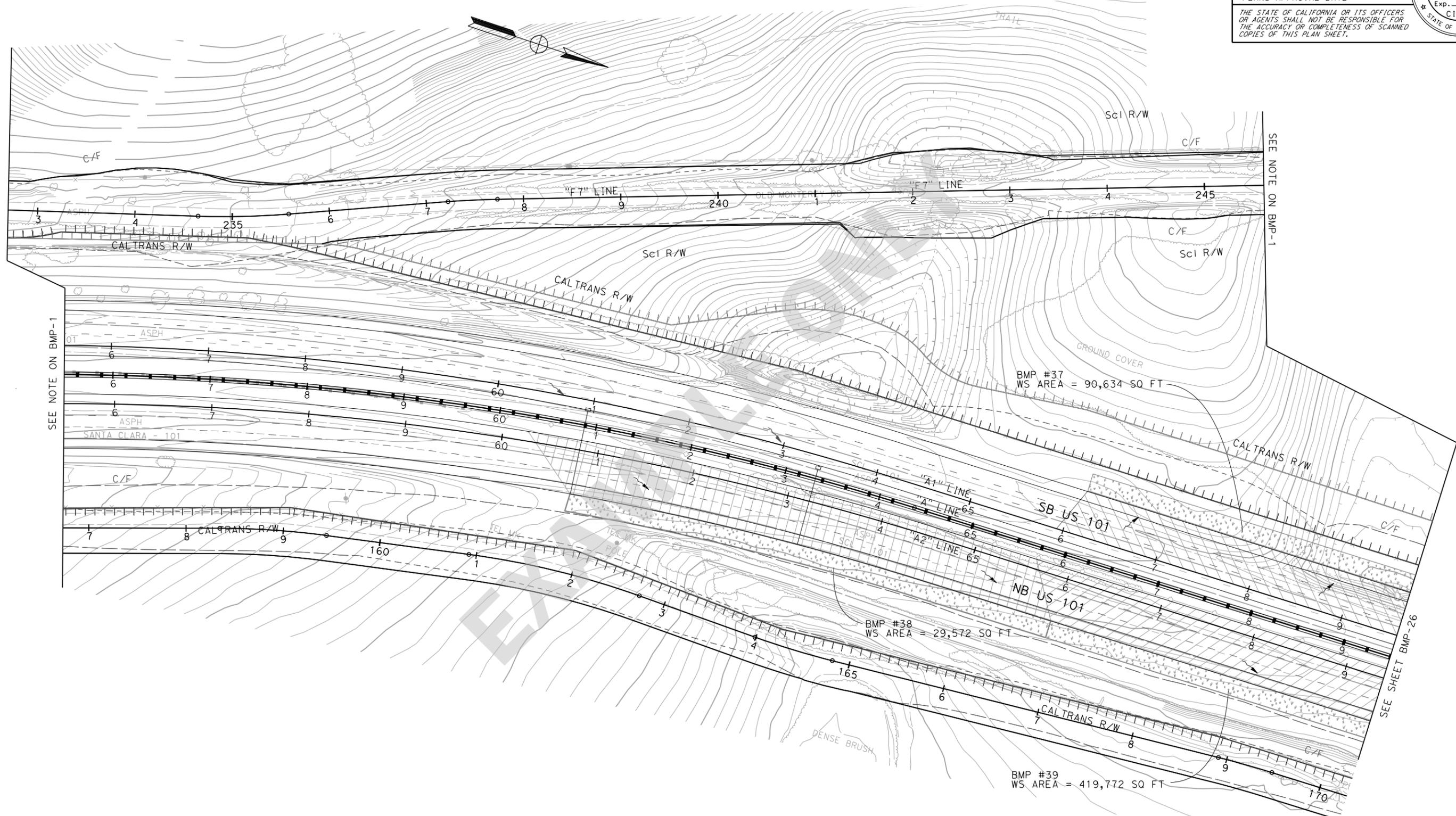
**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

FUNCTIONAL SUPERVISOR

CHECKED BY

CALCULATED/DESIGNED BY

REVISOR BY

DATE REVISED

SEE NOTE ON BMP-1

SEE NOTE ON BMP-1

SEE SHEET BMP-26

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

PRELIMINARY PLANS, SUBJECT TO REVISION

TREATMENT BMPS AND MONITORING LOCATION MAP

SCALE 1"=50'

BMP-25

**EXAMPLE ONLY**



**EXAMPLE ONLY**

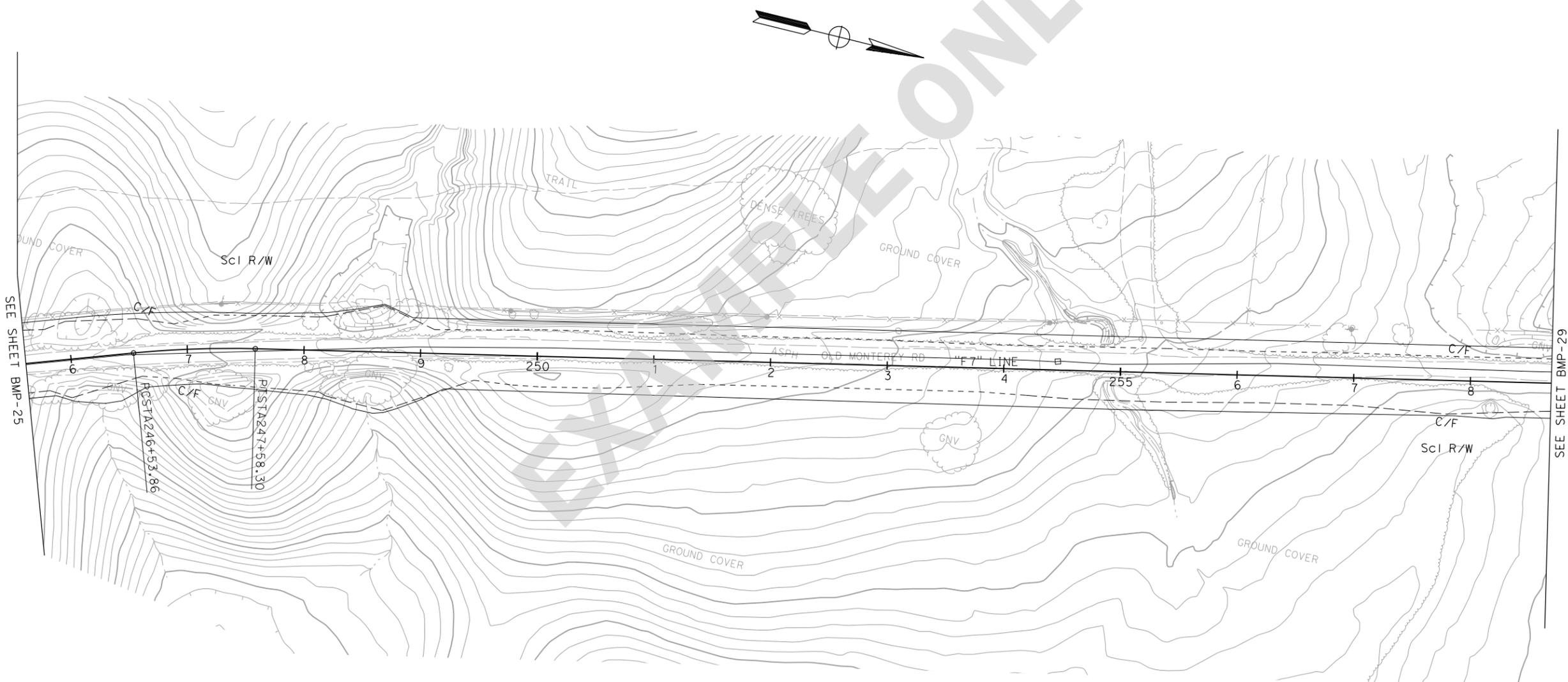
Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_  
 PLANS APPROVAL DATE \_\_\_\_\_



THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR	REVISOR
<b>Caltrans</b>		CHECKED BY	DATE	DATE



NO TREATMENT BMP WORK ON THIS SHEET

**TREATMENT BMPs AND MONITORING LOCATION MAP**  
 SCALE 1"=50' **BMP-27**

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS, SUBJECT TO REVISION**

**EXAMPLE ONLY**



**EXAMPLE ONLY**



**EXAMPLE ONLY**

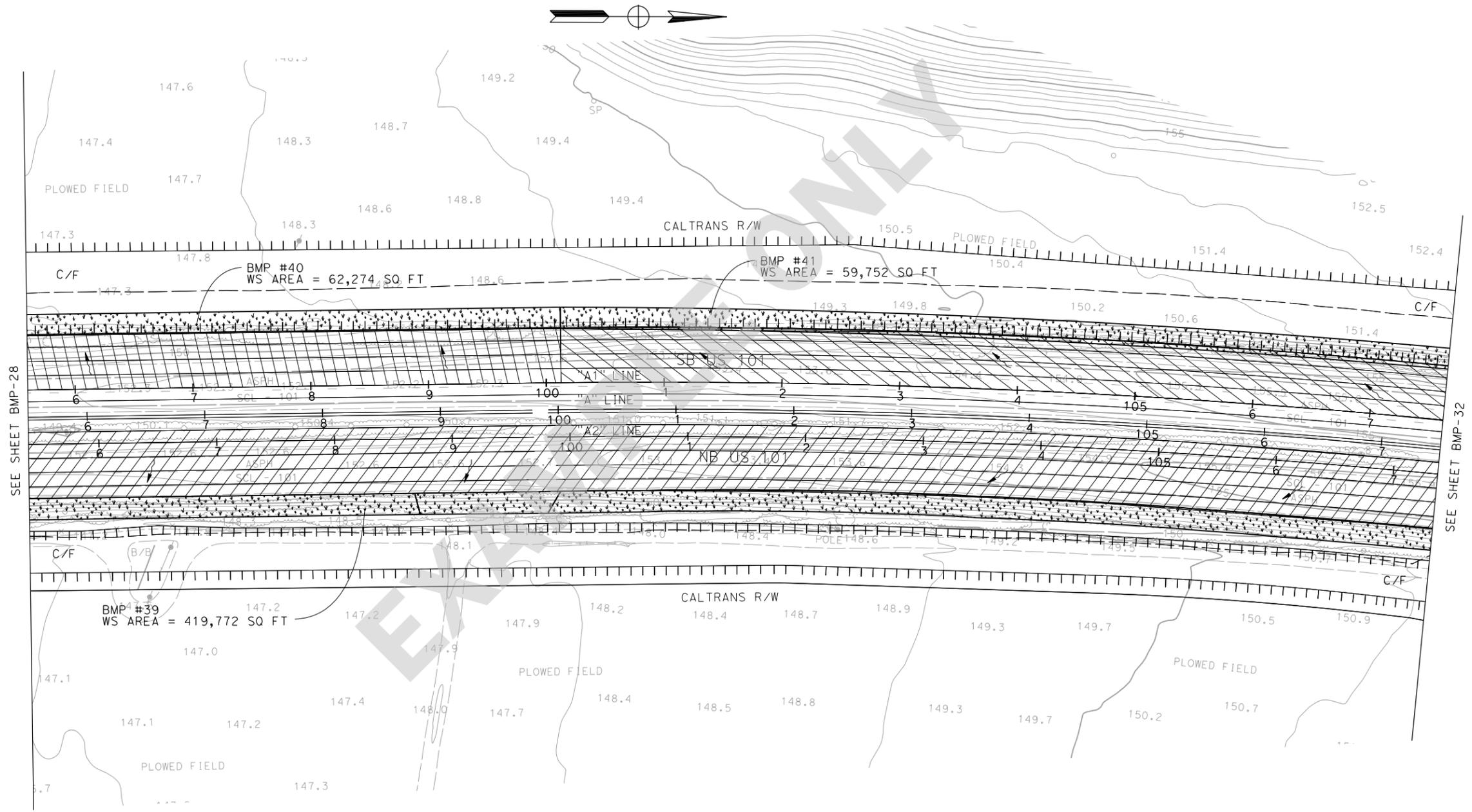
Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

REGISTERED PROFESSIONAL ENGINEER  
 No. \_\_\_\_\_  
 Exp. \_\_\_\_\_  
 CIVIL  
 STATE OF CALIFORNIA

THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.



FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50'  
**BMP-30**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION
FUNCTIONAL SUPERVISOR
CALCULATED-DESIGNED BY
CHECKED BY
REVISED BY
DATE REVISED

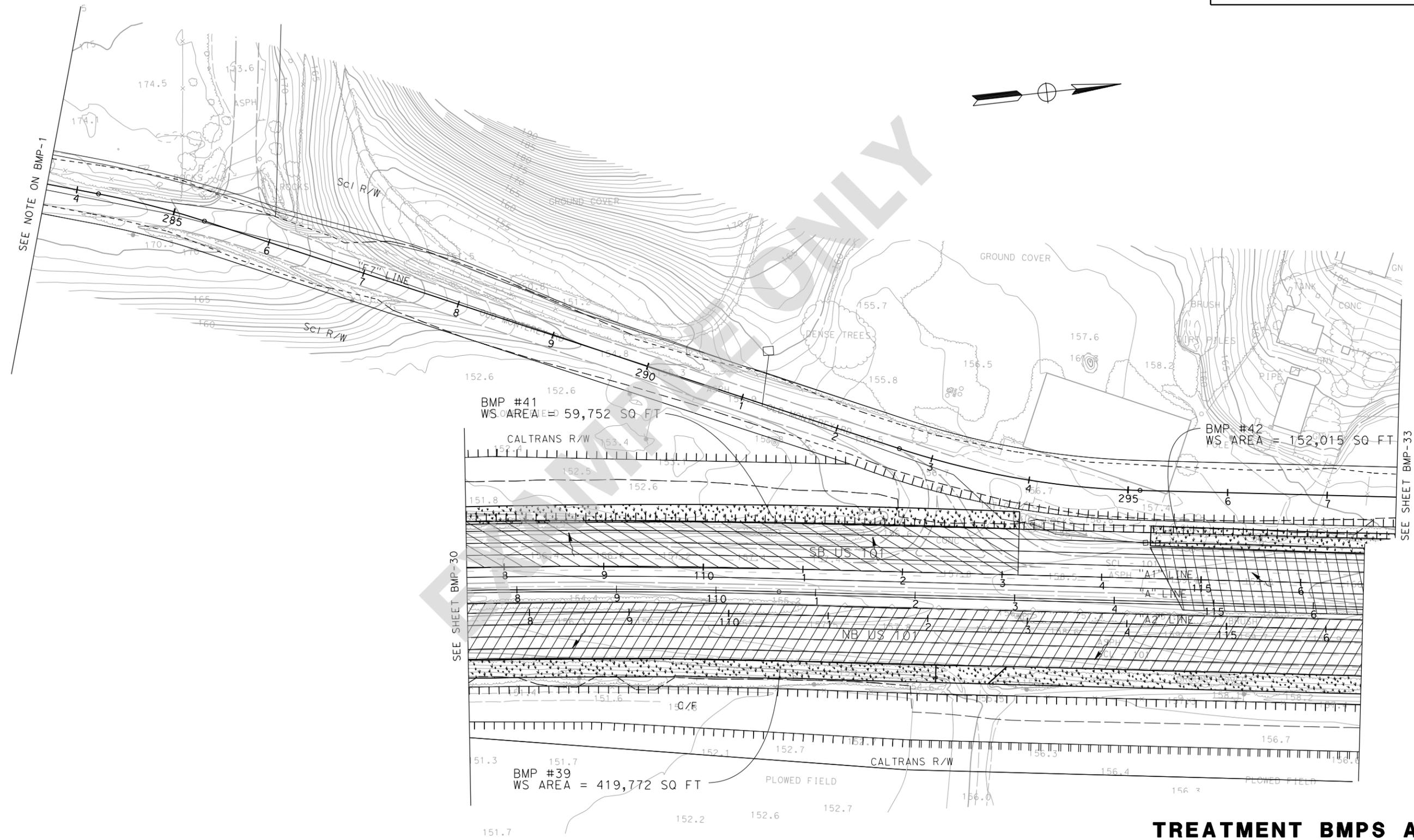
LAST REVISION DATE PLOTTED => 11/30/2010  
00-00-00 TIME PLOTTED => 11:42:07 AM

**EXAMPLE ONLY**



**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		
REGISTERED CIVIL ENGINEER				DATE	
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					



SEE NOTE ON BMP-1

SEE SHEET BMP-30

SEE SHEET BMP-33

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50'  
**BMP- 32**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR BY
<b>Caltrans</b>		CHECKED BY	DATE REVISED

BORDER LAST REVISED 7/2/2010

USERNAME => hongchao\_yu  
DGN FILE => ... \Dwg\SWDR12\BMP-032.dgn

RELATIVE BORDER SCALE IS IN INCHES



UNIT XXXX

PROJECT NUMBER & PHASE

XXXXXXXXXX

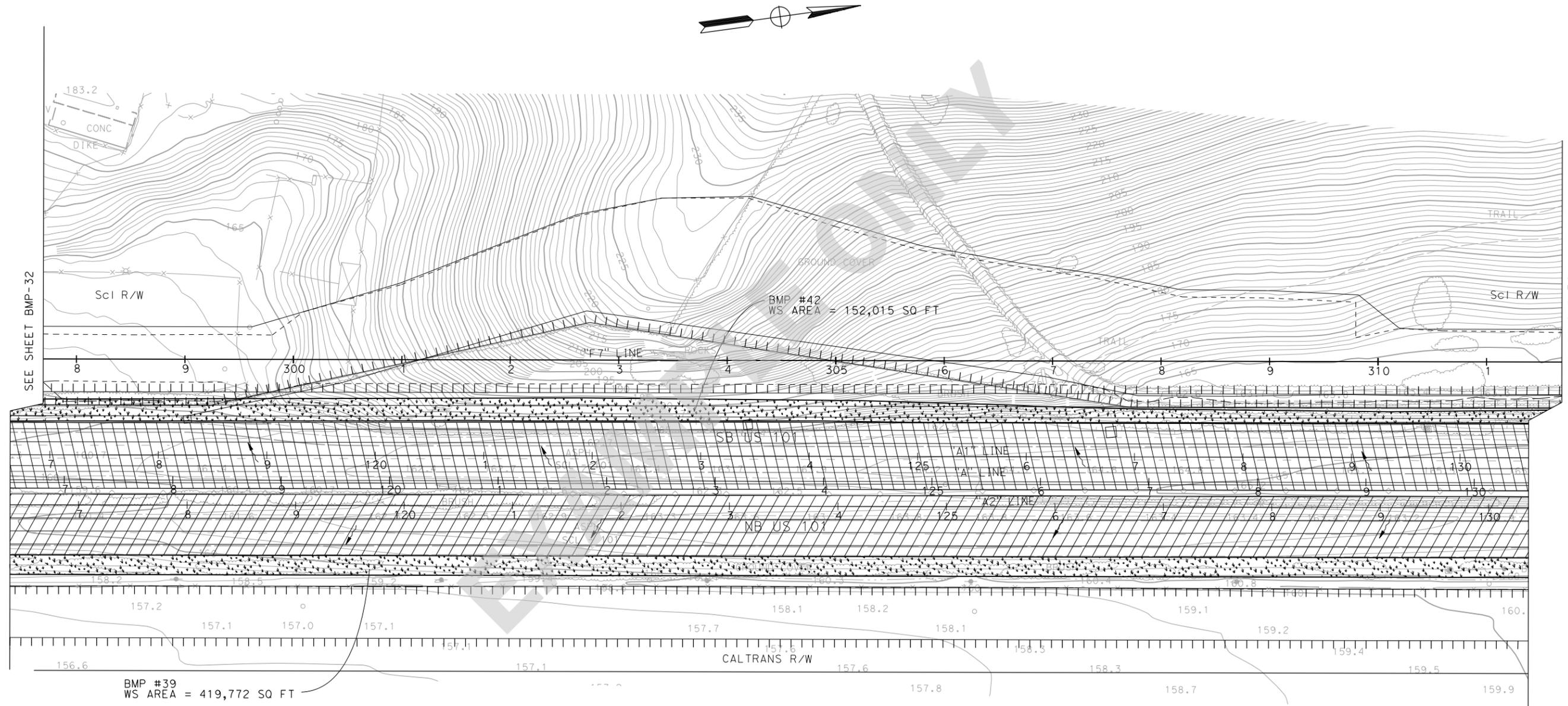
LAST REVISION DATE PLOTTED => 11/30/2010  
00-00-00 TIME PLOTTED => 11:43:08 AM

**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		
REGISTERED CIVIL ENGINEER				DATE	
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION  
**Caltrans**  
 FUNCTIONAL SUPERVISOR  
 CALCULATED/DESIGNED BY  
 CHECKED BY  
 REVISED BY  
 DATE REVISED



FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
 SUBJECT TO REVISION**

**TREATMENT BMPS AND  
 MONITORING LOCATION MAP**  
 SCALE 1"=50'  
**BMP - 33**

LAST REVISION: DATE PLOTTED => 11/30/2010  
 00-00-00 TIME PLOTTED => 11:43:35 AM

**EXAMPLE ONLY**



**EXAMPLE ONLY**



**EXAMPLE ONLY**

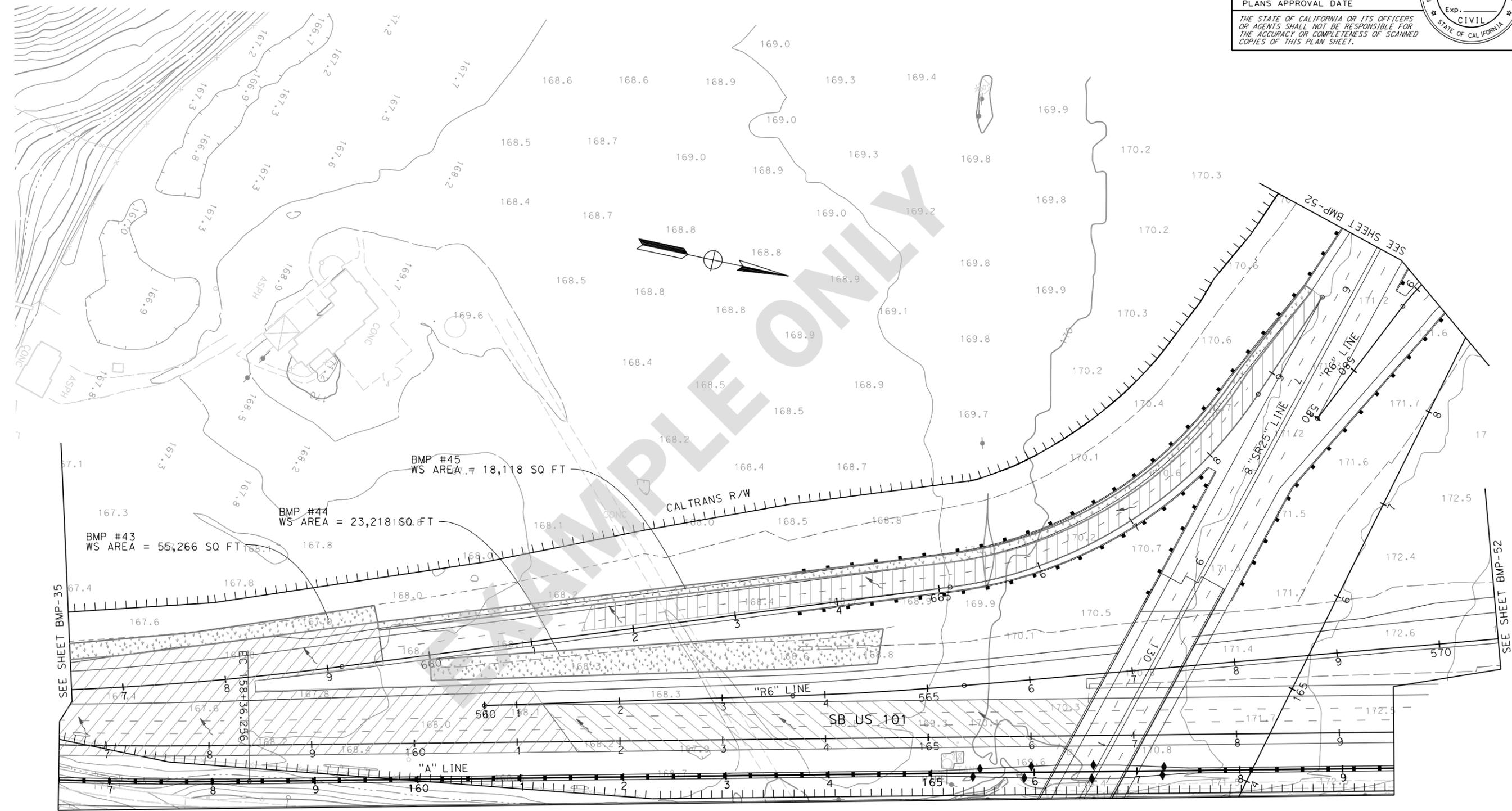
Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR BY
<b>Caltrans</b>		CHECKED BY	DATE REVISED

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50'  
**BMP-36**

LAST REVISION: DATE PLOTTED => 11/30/2010 00:00:00 TIME PLOTTED => 11:45:41 AM

**EXAMPLE ONLY**



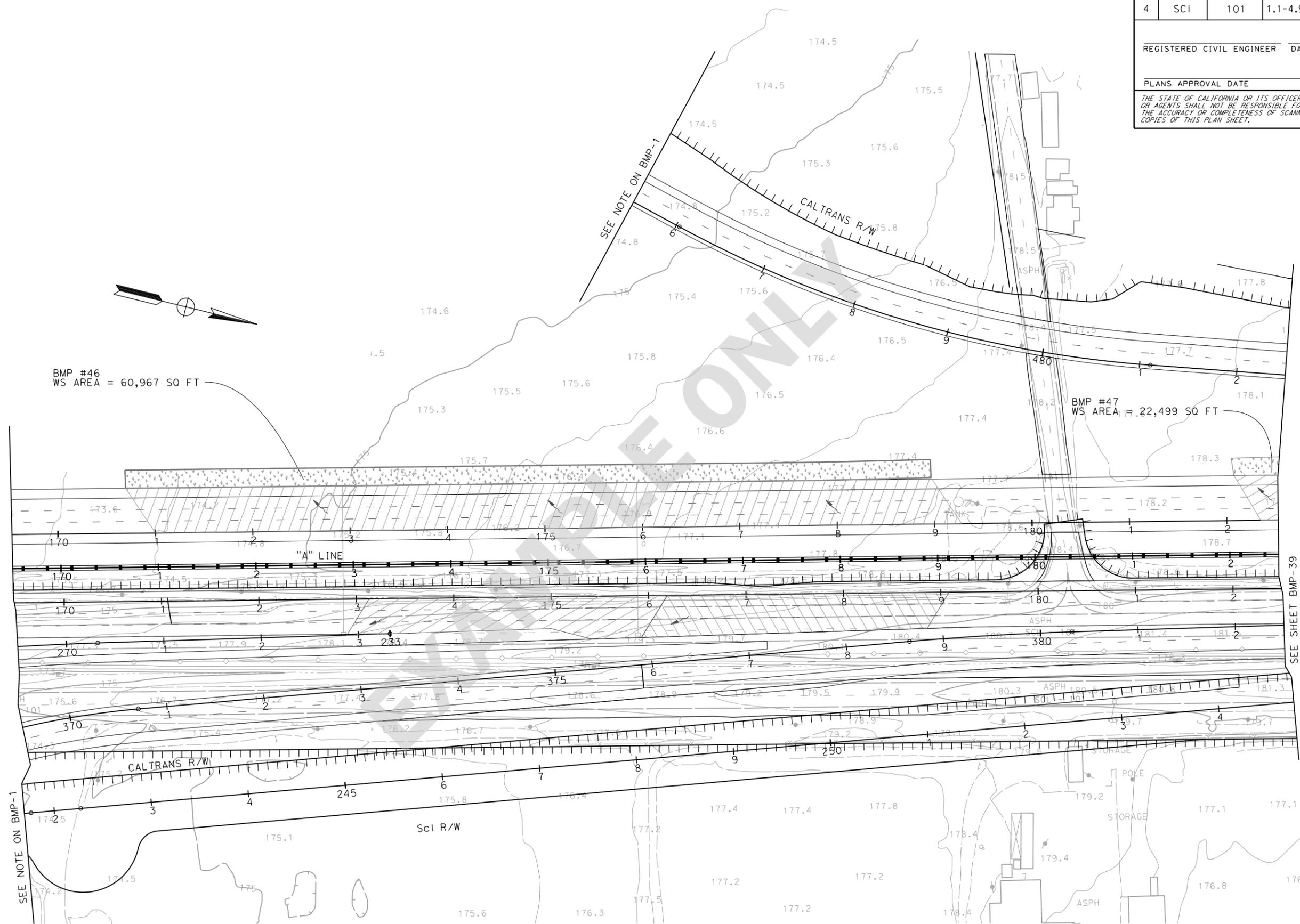
**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP- 38**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR BY
		CHECKED BY	DATE REVISED

LAST REVISION DATE PLOTTED => 11/30/2010 00:00:00 TIME PLOTTED => 11:46:54 AM

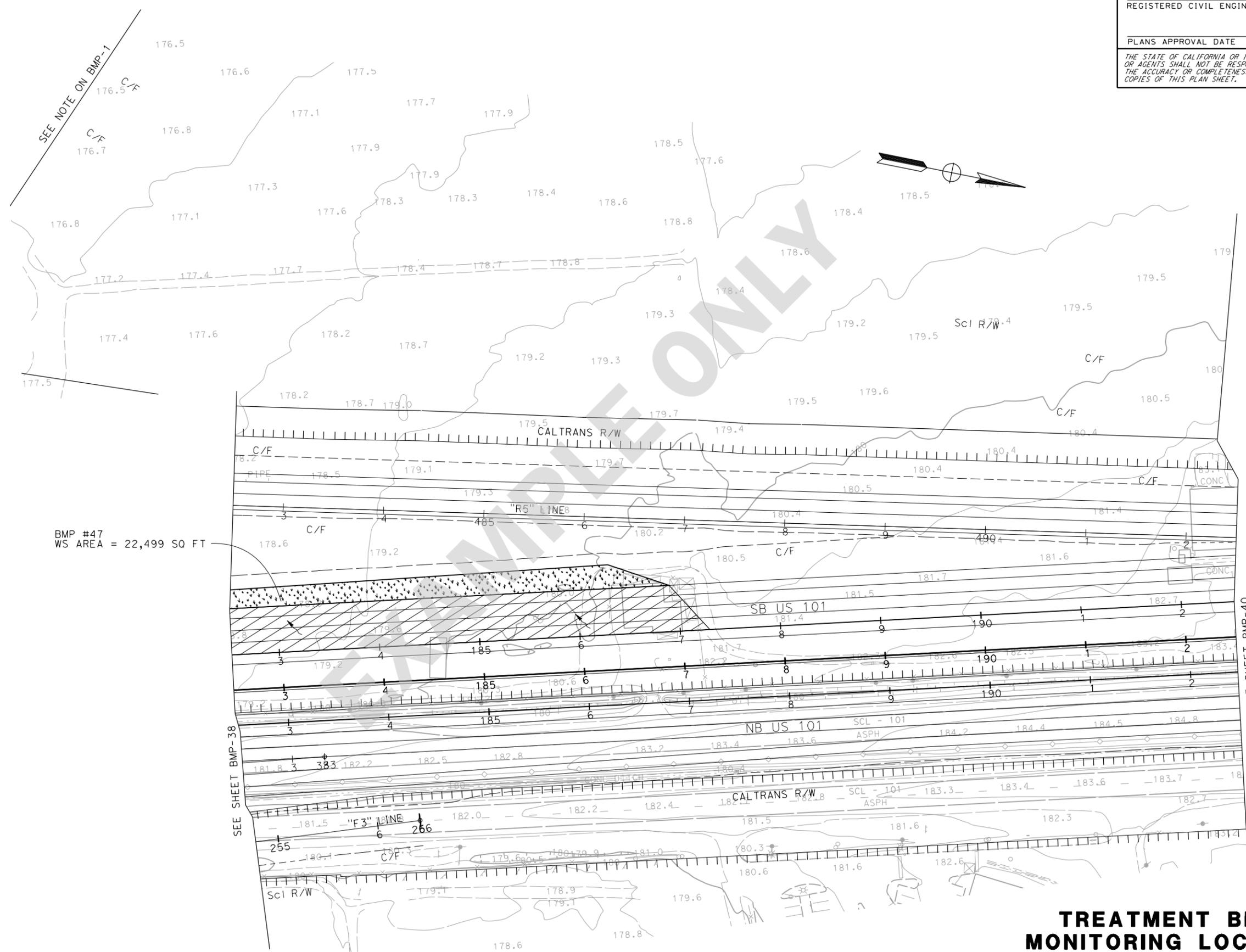
**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		

REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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BMP #47  
WS AREA = 22,499 SQ FT

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50'  
**BMP-39**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR BY
		CHECKED BY	DATE REVISED

**EXAMPLE ONLY**



**EXAMPLE ONLY**



**EXAMPLE ONLY**



**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		

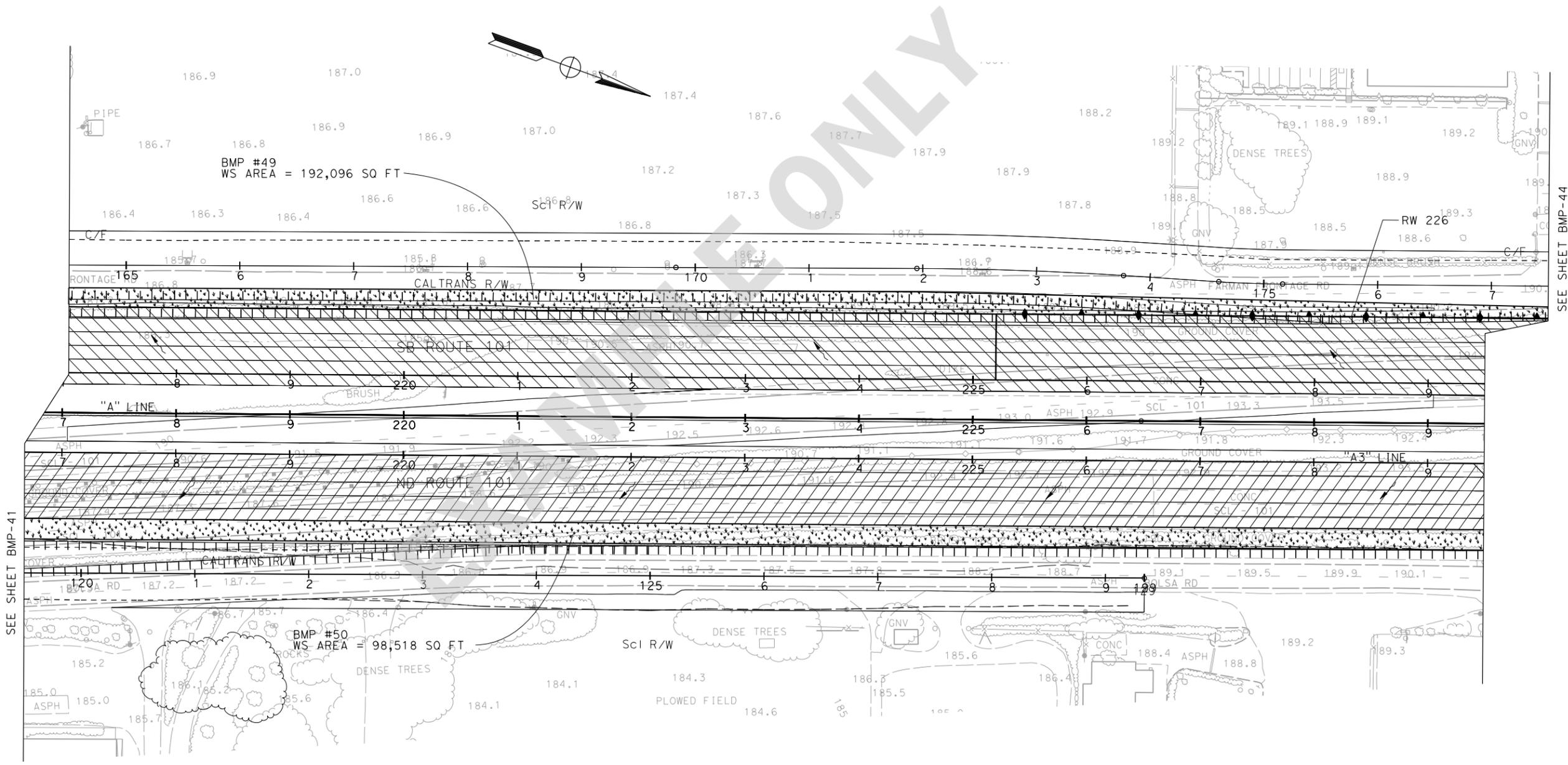
REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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DESIGNED BY	REVISOR	REVISION
CHECKED BY	DATE	REVISION
FUNCTIONAL SUPERVISOR		
DEPARTMENT OF TRANSPORTATION		



FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50'  
**BMP- 43**

LAST REVISION: 00-00-00      DATE PLOTTED => 11/30/2010      TIME PLOTTED => 12:01:42 PM

**EXAMPLE ONLY**



**EXAMPLE ONLY**

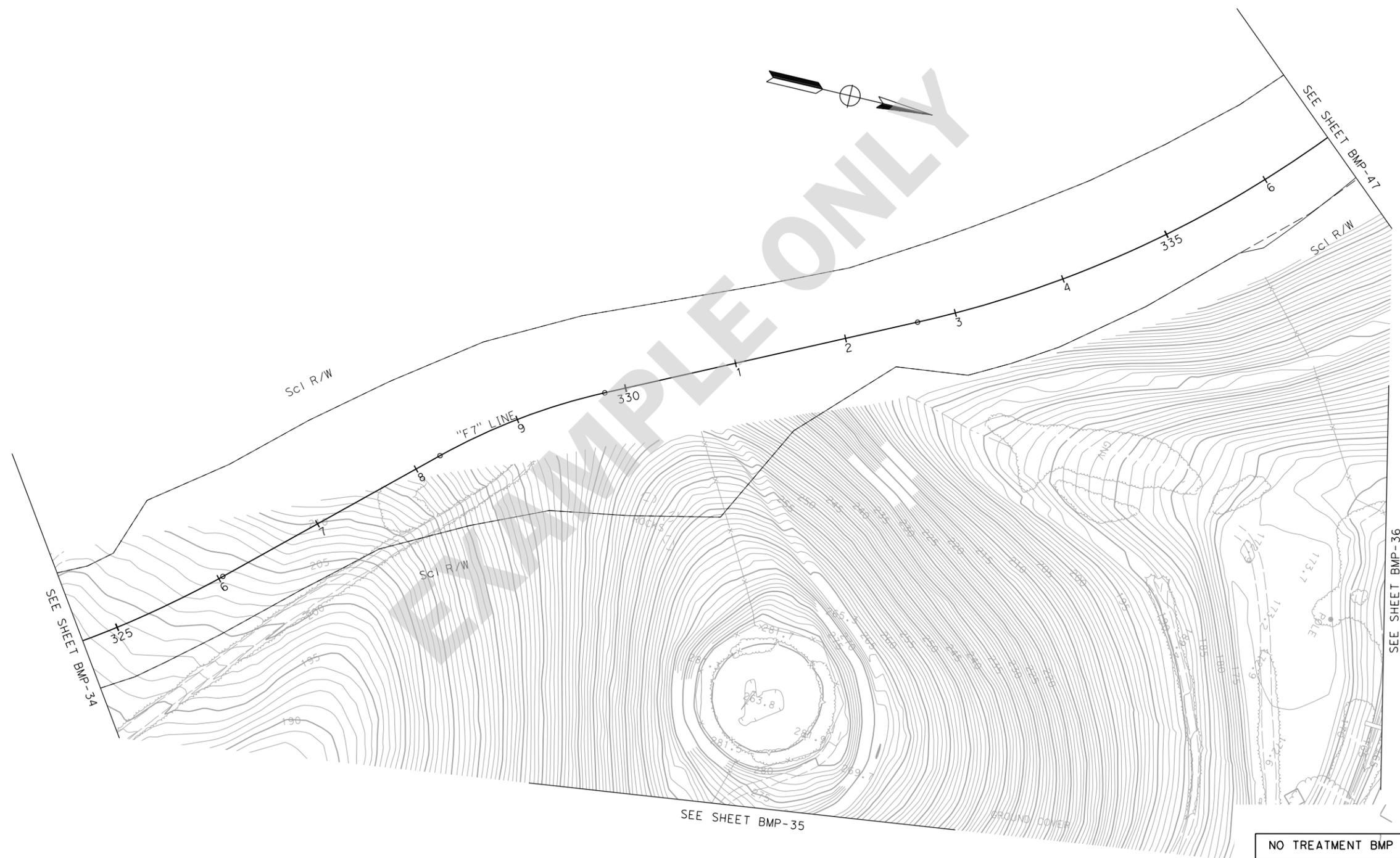


**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		
REGISTERED CIVIL ENGINEER				DATE	
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR BY
<b>Caltrans</b>		CHECKED BY	DATE REVISED



SEE SHEET BMP-34

SEE SHEET BMP-47

SEE SHEET BMP-36

SEE SHEET BMP-35

NO TREATMENT BMP WORK ON THIS SHEET

**TREATMENT BMPS AND MONITORING LOCATION MAP**  
 SCALE 1"=50' **BMP-46**

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS, SUBJECT TO REVISION**



**EXAMPLE ONLY**

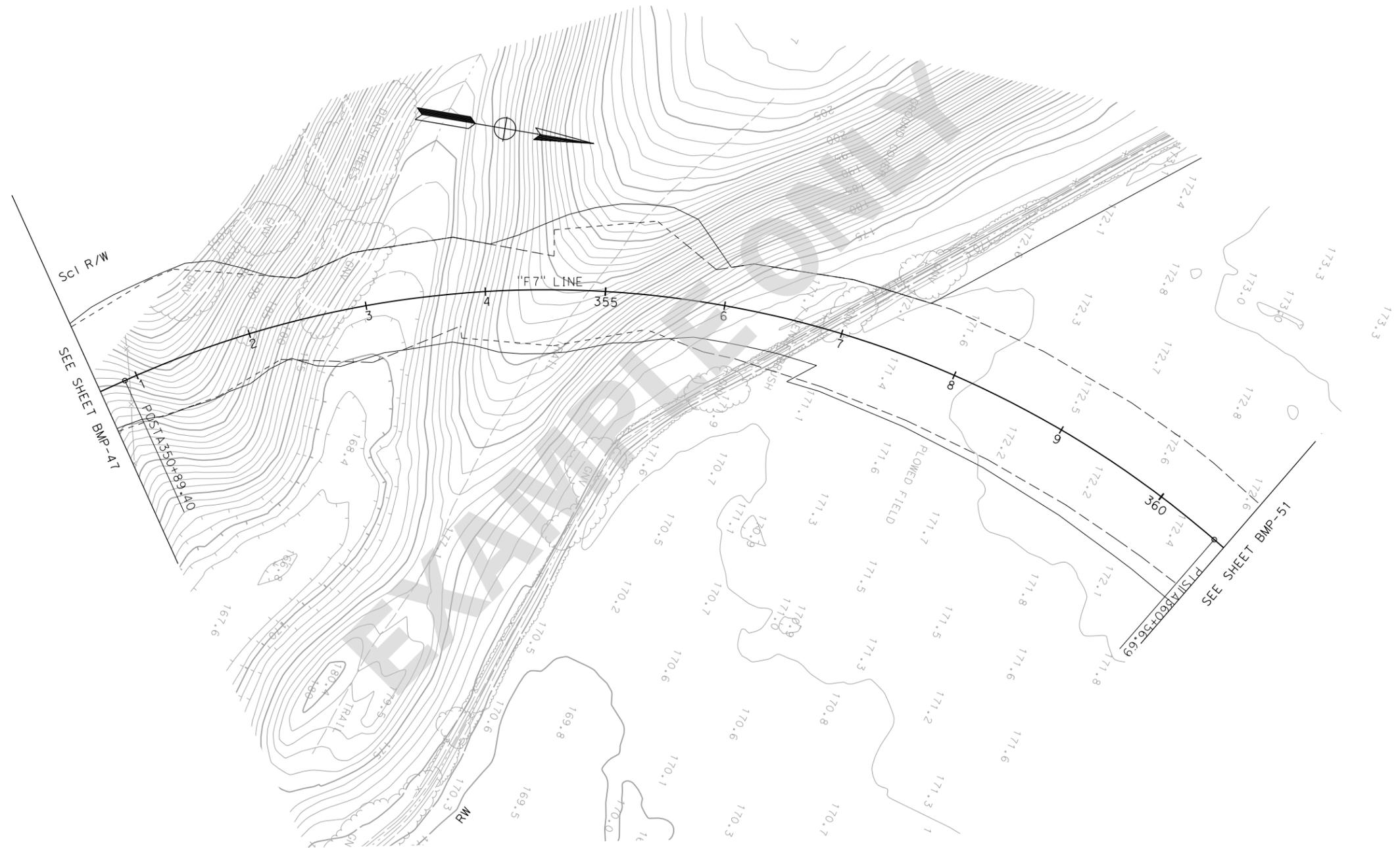


**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		
REGISTERED CIVIL ENGINEER				DATE	
PLANS APPROVAL DATE					
<small>THE STATE OF CALIFORNIA OR ITS OFFICERS OR AGENTS SHALL NOT BE RESPONSIBLE FOR THE ACCURACY OR COMPLETENESS OF SCANNED COPIES OF THIS PLAN SHEET.</small>					



STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED-DESIGNED BY	REVISOR BY
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FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

NO TREATMENT BMP WORK ON THIS SHEET

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**

SCALE 1"=50' **BMP-48**

LAST REVISION      DATE PLOTTED => 11/30/2010      00-00-00      TIME PLOTTED => 12:10:20 PM

**EXAMPLE ONLY**



**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		

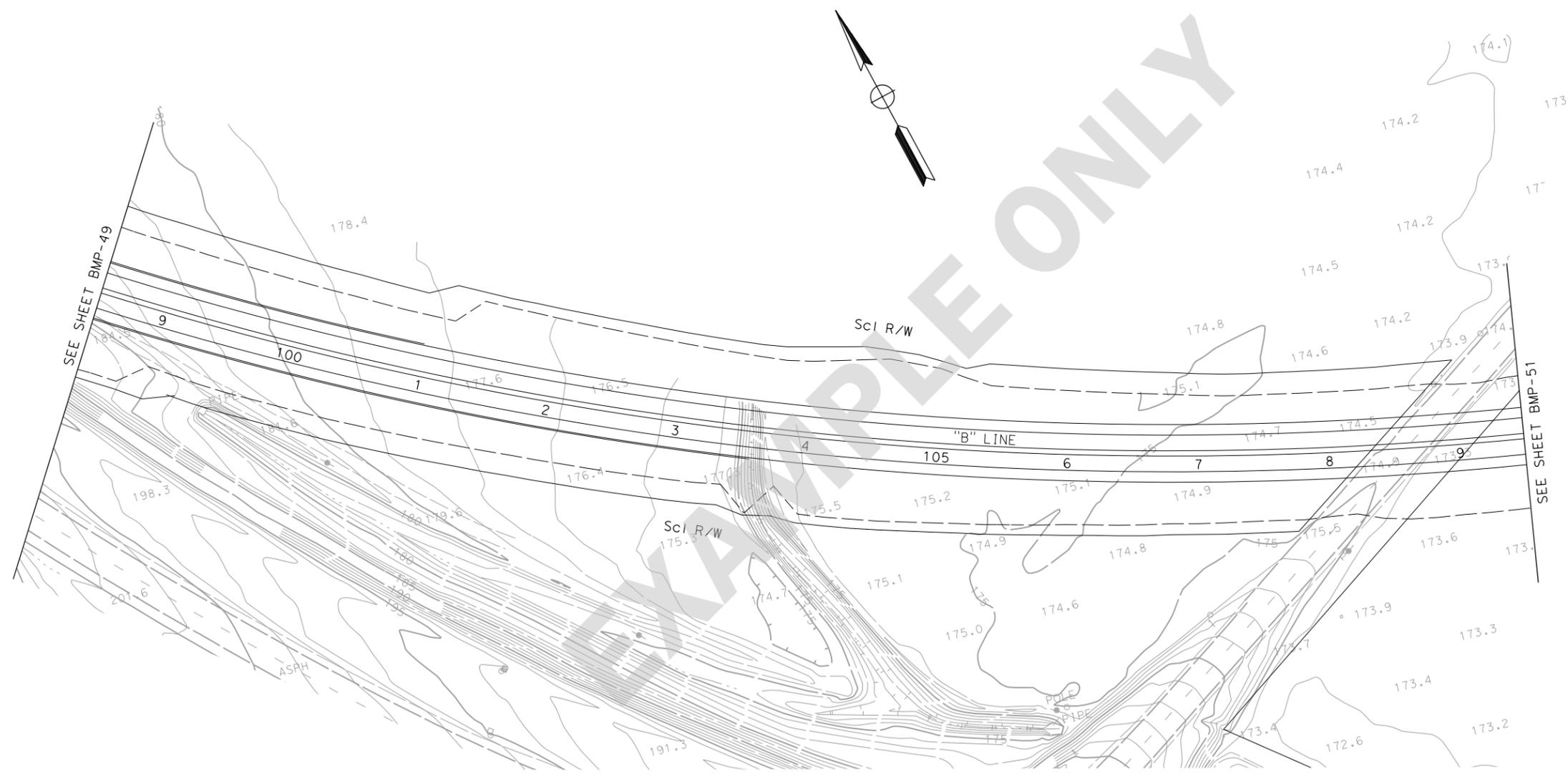
REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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NO TREATMENT BMP WORK ON THIS SHEET

**TREATMENT BMPS AND MONITORING LOCATION MAP**

SCALE 1"=50' **BMP-50**

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS, SUBJECT TO REVISION**

**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		

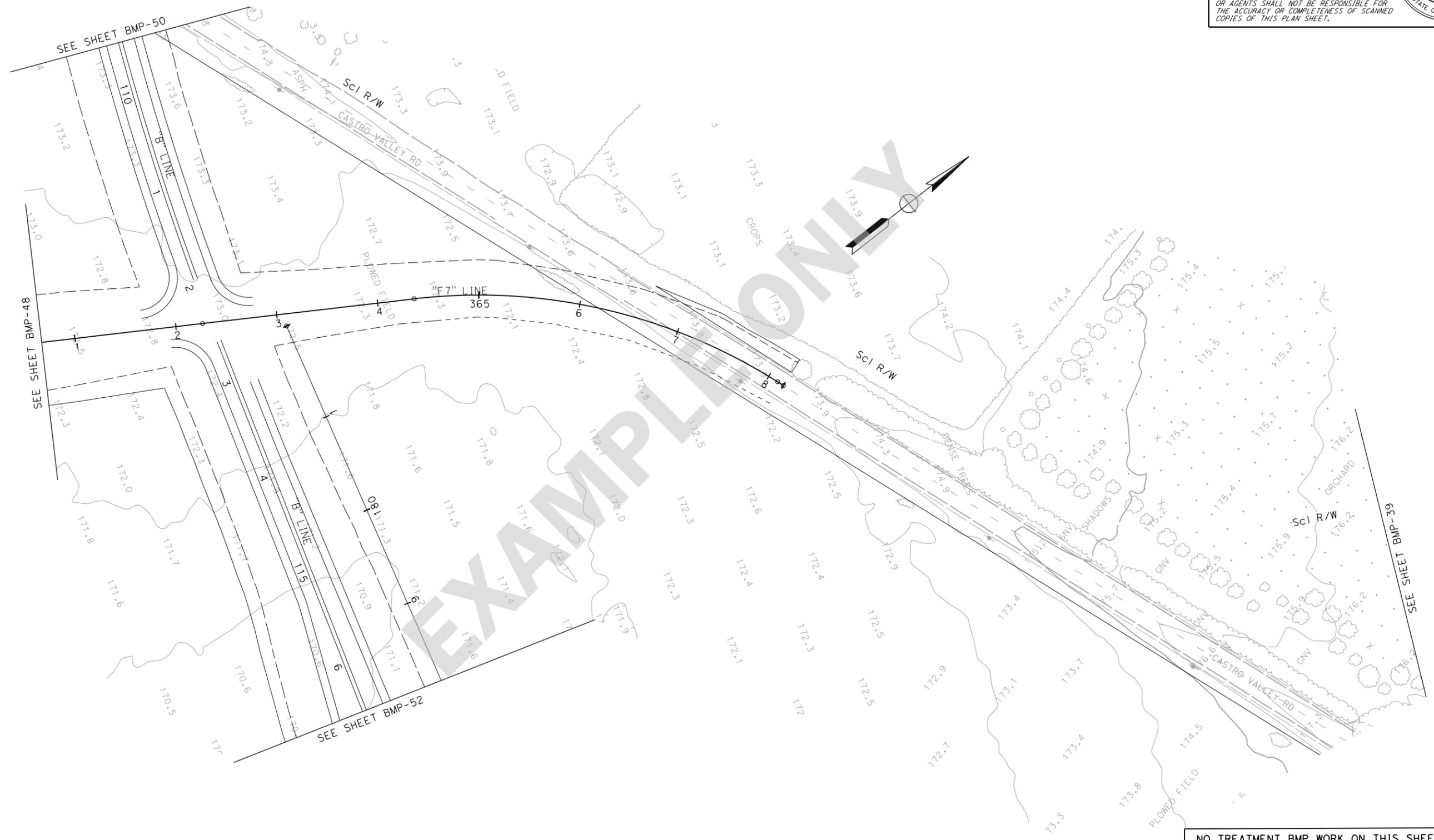
REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

NO TREATMENT BMP WORK ON THIS SHEET

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP- 51**

LAST REVISION: 00-00-00    DATE PLOTTED => 11/30/2010    TIME PLOTTED => 12:11:32 PM

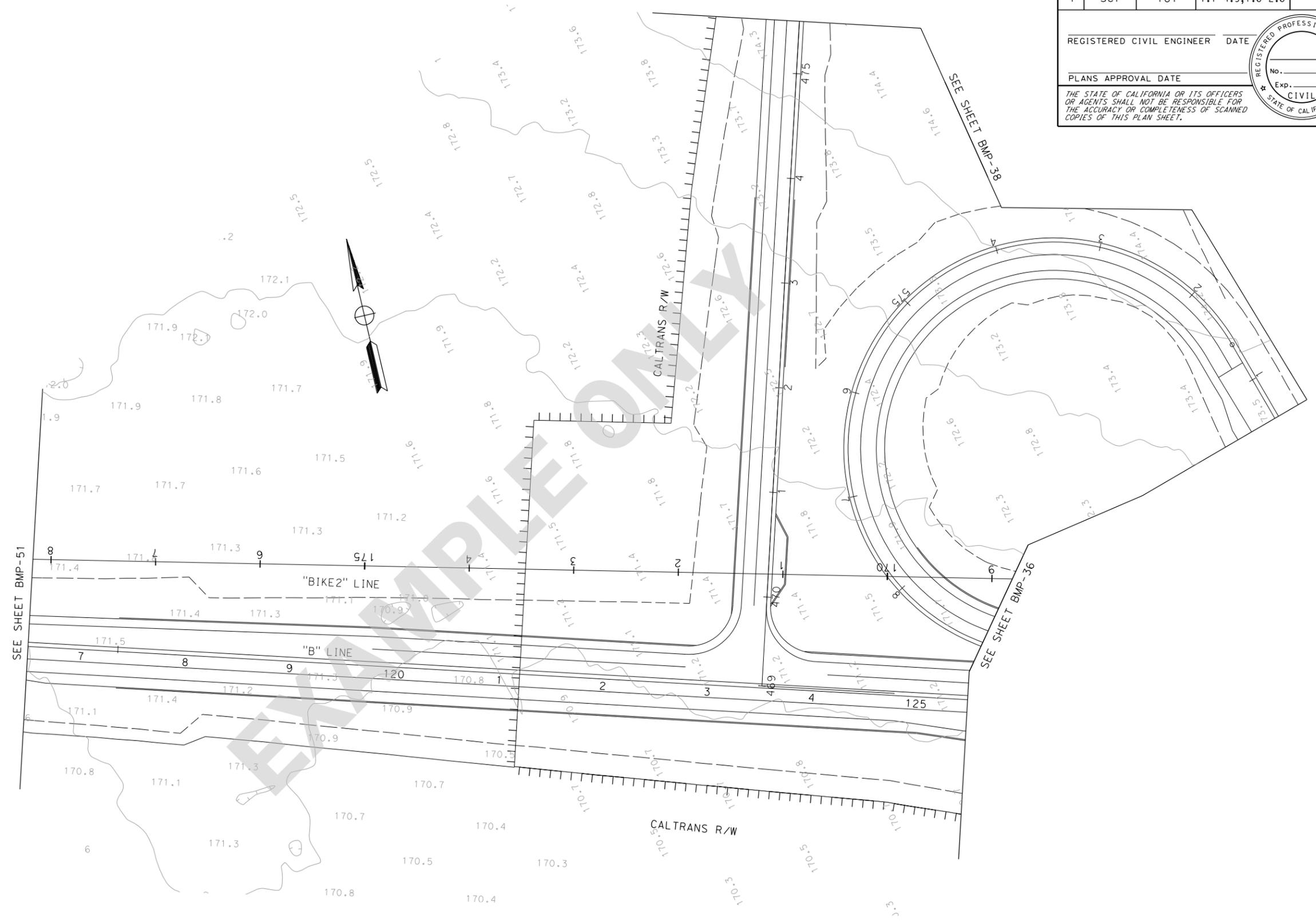
**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_

PLANS APPROVAL DATE \_\_\_\_\_

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		CHECKED BY	DATE REVISED

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

NO TREATMENT BMP WORK ON THIS SHEET

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**

SCALE 1"=50' **BMP-52**



**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		

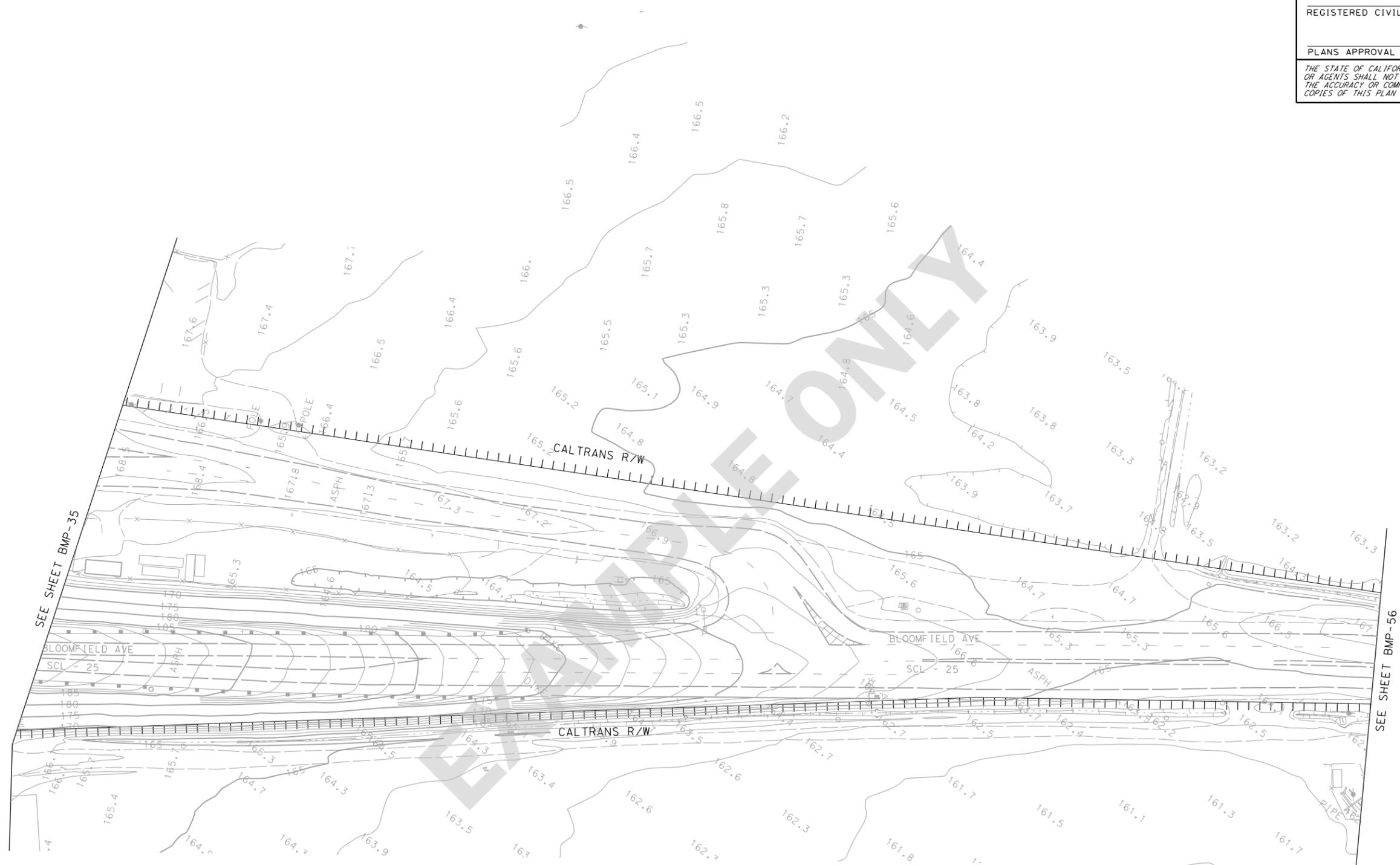
REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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SEE SHEET BMP-35

SEE SHEET BMP-56

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

NO TREATMENT BMP WORK ON THIS SHEET

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**

SCALE 1"=50' **BMP-53**

**EXAMPLE ONLY**



**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		

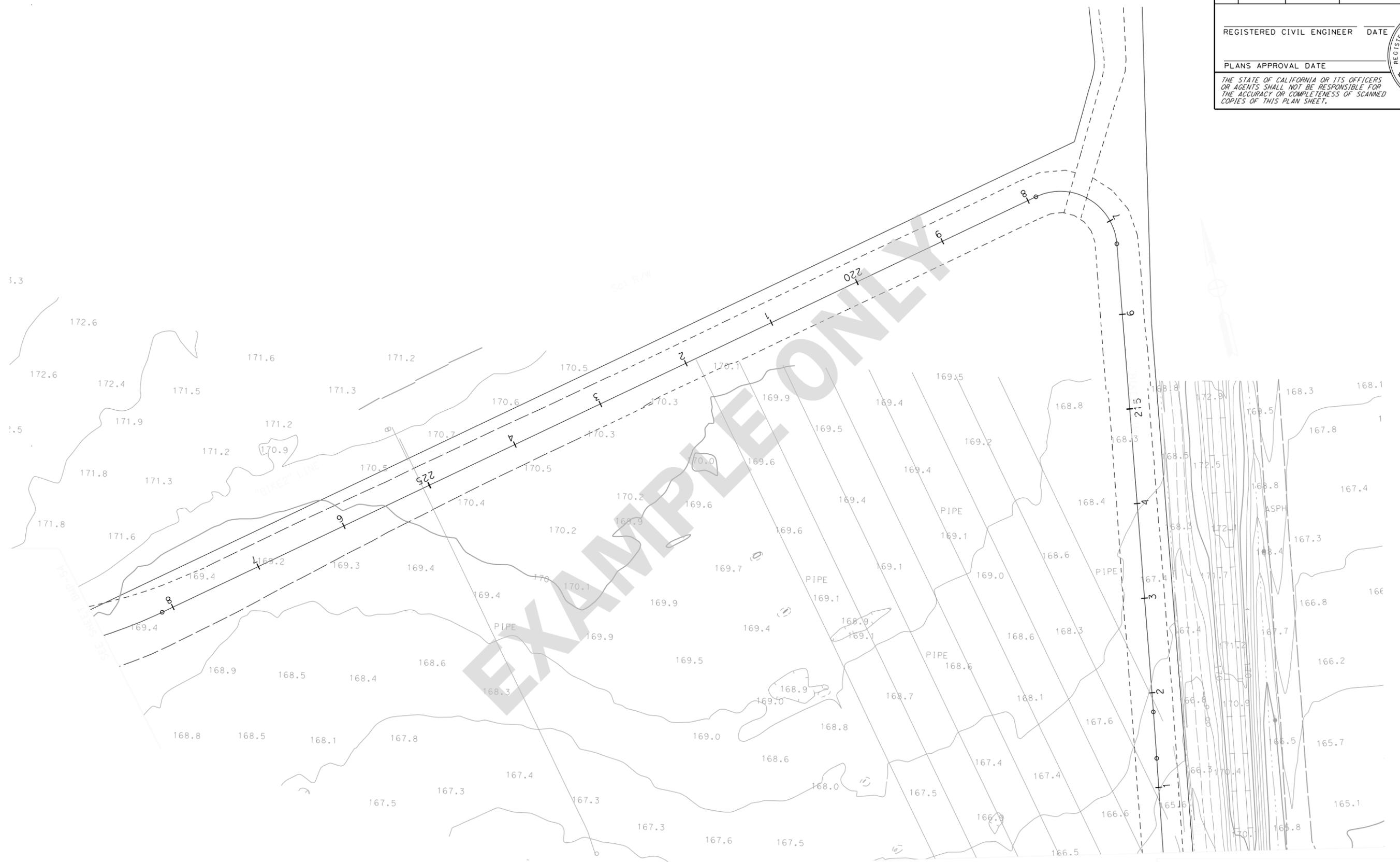
REGISTERED CIVIL ENGINEER	DATE
PLANS APPROVAL DATE	

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FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS,  
SUBJECT TO REVISION**

**TREATMENT BMPS AND  
MONITORING LOCATION MAP**  
SCALE 1"=50' **BMP-55**



**EXAMPLE ONLY**



**EXAMPLE ONLY**



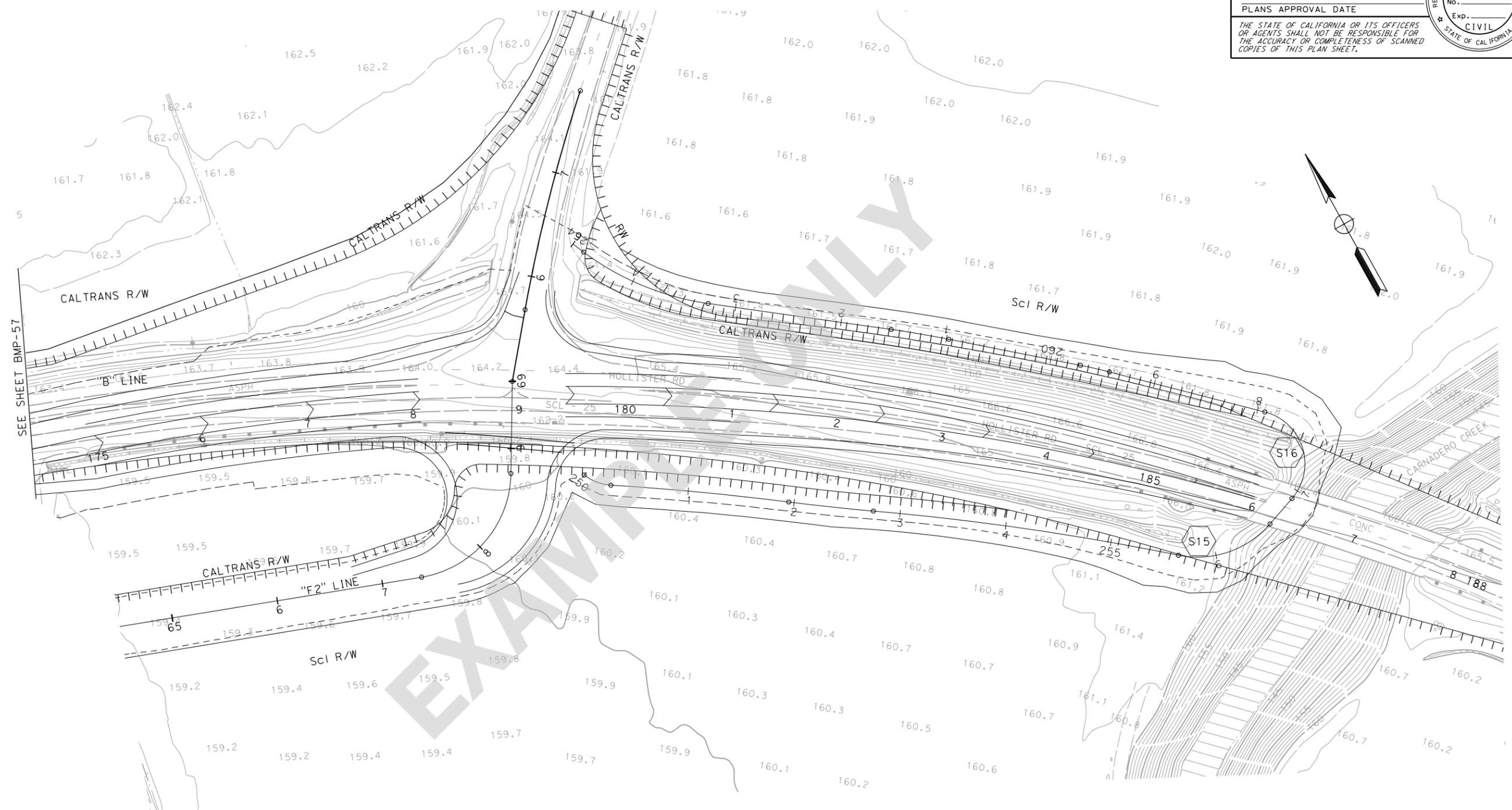
**EXAMPLE ONLY**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
4	SCI	101	1.1-4.9, 1.6-2.6		

REGISTERED CIVIL ENGINEER DATE \_\_\_\_\_

PLANS APPROVAL DATE \_\_\_\_\_

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SEE SHEET BMP-57

NO TREATMENT BMP WORK ON THIS SHEET

**TREATMENT BMPS AND MONITORING LOCATION MAP**  
 SCALE 1"=50'  
**BMP-58**

FOR NOTES, ABBREVIATIONS, AND/OR LEGEND, SEE SHEET BMP-1

**PRELIMINARY PLANS, SUBJECT TO REVISION**

STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION	FUNCTIONAL SUPERVISOR	CALCULATED/DESIGNED BY	REVISOR BY
		CHECKED BY	DATE REVISED

BORDER LAST REVISED 7/2/2010

USERNAME => hongchao\_yu  
 DGN FILE => ... \Dwg\SWDR12\BMP-058.dgn

RELATIVE BORDER SCALE IS IN INCHES



UNIT XXXX

PROJECT NUMBER & PHASE

XXXXXXXXXX

LAST REVISION DATE PLOTTED => 11/30/2010  
 00-00-00 TIME PLOTTED => 12:14:25 PM

**EXAMPLE ONLY**