Dist-County-Route: 07-LA-60 ; 07-LA-57
Post Mile Limits: R23.6/R26.5; R4.3/R4.8
Project Type: Interchange Improvement
Project ID (or EA): 279100
Program Identification: 07-276
Phase: ☐ PID ☒ PA/ED ☐ PS&E

Regional Water Quality Control Board(s): Los Angeles – Region 4

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

Total Disturbed Soil Area: 42.1 Acres (38.9 Acres Within Caltrans ROW) Risk Level: 2
Estimated: Construction Start Date: 4/22/14 Construction Completion Date: 10/24/16
Notice of Construction (NOC) Date to be submitted: 3/22/14

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

Marie Marston, P.E. Date
Registered Project Engineer

Godfrey Nzeogu, P.E. Date
Caltrans Designated Oversight Representative

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

Jiwanjit S. Palaha, Project Manager *Date*

Roger Castillo, Designated Maintenance Representative *Date*

Ron Russak, Designated Landscape Architect Representative *Date*

[Stamp Required for PS&E only) *Shirley Pak, District/Regional Design SW Coordinator or Designee* *Date*

STORM WATER DATA INFORMATION

1. Project Description

- This is a major interchange improvement project located on State Route 57 (PM R4.3/R4.8) and State Route 60 (PM R23.6/R26.5) in the cities of Industry and Diamond Bar.

  This project proposes to reconfigure the existing Grand Avenue interchange and build two bypass connectors, at the SR-57/SR-60 merge west of Grand Avenue and at the SR-57/SR-60 diverge east of Grand Avenue, to accommodate the future traffic volume of a rapidly growing region. A no-build alternative and two build alternatives are considered. The existing Grand Avenue overcrossing would be replaced with a wider and longer structure in the two build alternatives. The new Grand Avenue interchange would accommodate the projected traffic volume generated by the regional Southern California Association of Governments (SCAG) model for the year 2035. The reconfigured interchange would require additional improvements on the SR-57/SR-60 mainline, including separate eastbound bypass ramps to and from Grand Avenue bypassing the SR-60 west junction with SR-57 and bypassing the SR-60 east junction with northbound SR-57. Both Alternative 2 and Alternative 3 are being considered, but because Alternative 3 proposes the most extensive improvements, it will serve as the subject of this report.

  Alternative 3 proposes reconstructing the existing Grand Avenue interchange at SR-57/SR-60 to a partial cloverleaf interchange configuration by the addition of a new eastbound loop on-ramp. A new mainline lane would be added from the Grand Ave off-ramp to the add lane near the north SR-57 and SR-60 interchange. An auxiliary lane would be added to the mainline in the eastbound direction that extends from the eastbound on ramp at Grand Avenue to a new connector that bypasses the north SR-57 and SR-60 interchange. The project includes a bypass off-ramp from eastbound SR-60 to Grand Ave. A westbound auxiliary lane would be added from the existing lane drop on the southbound SR-57 connector to the Grand Avenue interchange. The existing Grand Avenue overcrossing structure would be reconstructed to accommodate the revised mainline configuration.

  Construction is expected to begin in FY 2013/2014. This project is classified as Category 3 as defined in the Caltrans Project Development Procedures Manual, Section 5 of Chapter 8.

  The construction of this project is expected to begin after the completion of the westbound on-ramp from Grand Avenue project construction (EA 255100 – WB Grand Avenue On-Ramp Project).

- The total disturbed soil area (DSA) was calculated to include new slopes, removal of existing roadway, new roadway, and proposed widening. The DSA within Caltrans right-of-way is 38.9 acres for Alternative 3, which proposes the greater soil disturbance of the two build alternatives. Outside of Caltrans right-of-way, the DSA is 3.2 acres. The total DSA is 42.1 acres.

- The total proposed impervious area within Caltrans right-of-way for Alternative 3 would be 64.3 acres. This is 12.9 acres greater than the existing impervious area of 51.4 acres. 1.2 acres of impervious acreage would be added outside of Caltrans right-of-way, resulting in 14.1 acres of total added impervious area.
- The urban MS4 area within the project limit is Los Angeles County.
- The project risk level was determined by the GIS Map Method (EPA Rainfall Erosivity Calculator & GIS Map). The sediment risk was classified as "high" and the receiving water risk was classified as "low", indicating a project combined Risk Level of 2. Supporting documents can be found in the Required Attachments.

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

- The receiving water body is Diamond Bar Creek, which is tributary to San Jose Creek Reach 1 (SG Confluence to Temple St.). It is within the Upper San Gabriel hydrologic area and belongs to the 405.20 hydrologic sub-area.

  Diamond Bar Creek flows west on the north side and parallel to SR-57/SR-60 within the project vicinity. Project drainage discharges to the Creek at numerous locations throughout the project.

  After crossing under Grand Avenue, Diamond Bar Creek flows for approximately 2.5 miles, bending northwest after entering the City of Walnut, before running into the San Jose Creek Reach 1 (SG Confluence to Temple St.).
- San Jose Creek Reach 1 (SG Confluence to Temple St.) is included on the 2006 CWA Section of 303(d) list. The pollutants of concern are ammonia (i.e. nitrogen), coliform bacteria, selenium, and toxicity.
- The Targeted Design Constituents (TDCs) for this project are nitrogen, copper, lead, zinc, and general metals.
- The project is not located near any drinking water reservoirs and/or recharge facilities.
- This project falls under the jurisdiction of the Los Angeles Regional Water Quality Control Board (LARWQCB). There are no known special requirements for this project required by the RWQCB.

  The project is located in the San Gabriel River Watershed. There is one existing TMDL and one future TMDL (Total Maximum Daily Loads) within the San Gabriel Watershed. The "San Gabriel River and Impaired Tributaries Metals and Selenium TMDL" directly involves this project. The "San Gabriel East Fork Trash TMDL" addresses water bodies along the San Gabriel River upstream of the San Jose Creek confluence with the San Gabriel River, and thus is not impacted by this project. The watershed TMDLs are:

  Future TMDL: San Gabriel River and Impaired Tributaries Metals and Selenium TMDL (Resolution 2006-014); The San Gabriel River and Impaired Tributaries Metals and Selenium TMDL is anticipated to become effective in the near future. Caltrans will be working with groups of responsible agencies to jointly comply with the TMDL.

Targeted pollutants are copper, lead, zinc, and selenium. Project Engineer shall consider treatment controls for the project and consult with the District NPDES Storm Water Coordinator. This TMDL was approved by the Regional Board on July 13, 2006.

Existing TMDL: San Gabriel East Fork Trash TMDL (Resolution 2000-010): This TMDL addresses impairment of the East Fork of the San Gabriel River due to trash deposition and litter. Implementation of this TMDL includes management practices designed to prevent deposition of litter in the four informal picnic areas. A monitoring program conducted by the Forest Service will serve to evaluate the effectiveness of the TMDL. The Regional Board will closely monitor the progress of the TMDL implementation. This TMDL has been in effect since April 17, 2001.

- Any work performed adjacent to Diamond Bar Creek during bird nesting season, generally defined as February 15 to September 15, must implement measures to mitigate adverse effects under the National Environmental Policy Act (NEPA) and significant impacts under the California Environmental Quality Act (CEQA). These measures can be found in the "SR-57/SR-60 Confluence at Grand Avenue Project Environmental Impact Report/Environmental Assessment (EIR/EA)".
- A written request for Section 401 water quality certification will be submitted to the RWQCB to ensure that no degradation of water quality would result from the proposed project.
- The rainy season is defined by the RWQCB and Caltrans Construction Site BMPs Manual, as October 1 through May 1. An approved SWPPP is required through both the rainy and dry seasons.
- Climate data was obtained for the City of Industry. Average monthly high temperatures range from 68°F in January to 95°F in August. Average monthly low temperatures range from 44°F in December to 63°F in August. The average rainfall in the region is 14.77 inches, with most of the precipitation falling between the months of October and April.

  Climate data was obtained for Diamond Bar. Average monthly high temperatures range from 68°F in January to 89°F in August. Average monthly low temperatures range from 41°F in December to 59°F in August. The average rainfall in the region is 16.96 inches, with most of the precipitation falling between the months of October and April.

  According to the Caltrans Project Planning and Design Guide, the rainfall intensity for calculation of water quality flow from areas discharging to flow-based Best Management Practices (BMPs) is 0.2" per hour.
- Treatment BMPs will be considered for this project. Percolation testing was performed at two locations on September 15, 2010. At the westbound loop on-ramp area, the infiltration rate is 0.16 in/hr and the Hydrologic Soil Group (HSG) Classification is C. At the proposed eastbound loop on-ramp area, the infiltration rate is 2.7 in/hr and the HSG Classification is A.

  The review of the soil information provided by the preliminary soils report shows the following: The site is located in the northern part of the Puente Hills, a northwesterly

trending range of low-elevation, rounded hills between the Los Angeles basin to the west and the Upper Santa Ana River Valley on the east. These hills are underlain primarily by Miocene-age (+/- 10-15 million years old) marine sedimentary rocks that have been uplifted within the past million years or so (Pleistocene geologic epoch) by geologic forces. These rocks are primarily light-colored, well-bedded, mudstones, shales, and sandstones. The Miocene sedimentary rocks are intruded by Miocene-age volcanic rocks and underlain by older basement rocks at depths on the order of a mile or more. In many places, the Miocene rocks are covered by young slopewash and terrace sediments, and by Quaternary-age alluvium in the valleys and basins. Grand Avenue extends northerly across a narrow valley at the north end of the Puente Hills. The hills on the north side of the valley are composed of Miocene-age, marine, sedimentary rocks of the Yorba Member of the Puente Formation which is composed primarily of thin-bedded siltstone (shale) and sandstone. The hills on the south side of the valley are underlain by the Soquel and LaVida members of the Puente Formation. The valley is filled with loose, non-indurated (unconsolidated), young (Quaternary-age) sands and gravels. These are underlain by medium dense silts and sands. Bedrock of the Puente Formation occurs at a depth of about 45 to 50 feet.

Groundwater is relatively shallow in the alluvium of the valley. Borings drilled by Caltrans for the original Grand Avenue structure (Bridge No. 53-1864) show groundwater at a depth of 10 to 15 feet below the freeway surface. Groundwater elevations were determined during the percolation testing. At the westbound loop on-ramp area, the ground water table elevation is 672.5 feet (13.5 feet below the surface). At the proposed eastbound loop on-ramp area, the ground water table elevation is 661.0 feet (5.0 feet below the surface).

- The presence of Aerially Deposited Lead (ADL) is currently unknown. ADL is anticipated in the project area as there was ADL found for the recently completed HOV project (EA 1257U1). ADL is also anticipated due to the large vehicle volume and age of the SR-57/SR-60 confluence and Grand Avenue overcrossing. ADL testing will occur during the PS&E phase.

  The Grand Avenue overcrossing and associated eastbound and westbound ramps were constructed before 1978. Because of this, the potential exists for asbestos containing materials in bridge structures, elevated levels of lead, and elevated levels of chromium to be present on-site.

- The DSA within Caltrans right-of-way is 38.9 acres for Alternative 3, which proposes the most extensive construction. Outside of Caltrans right-of-way, the DSA is 3.2 acres.

- The topography consists of slight to rolling hills and grasslands. The proposed improvements will encroach mostly into unimproved terrain or golf course with some encroachments into currently developed properties. Other than the relatively steep undeveloped hills to the northwest of the freeway, the existing topography consists of gentle to moderately steep sloped terrain. The project cut/fill slopes are planned to vary from 1:4 (V:H) to 1:10 (V:H) and flatter, or replaced by proposed retaining walls to minimize creation of slopes and acquisition of right of way.

- Areas outside of Caltrans right-of-way will be utilized for this project. The area north of the maintenance road (constructed in EA 255100) is owned by the City of Industry. This land will be used as a construction staging area. Other areas outside of Caltrans right-of-way may be utilized at the discretion of the land owner and contractor.
- Right-of-way will be acquired for the proposed improvements. Preliminary right-of-way requirements for areas outside of the existing Caltrans right-of-way have been identified and included in the right-of-way data sheet. Right-of-way is not required to implement Design Pollution Prevention (DPP) BMPs or Treatment BMPs.
- Right-of-way appraisal and certification will be performed at the Plans, Specifications, and Estimates (PS&E) stage.
- There are no slope stabilization concerns within the project limits.
- The majority of the area to the north of the freeway is currently vacant land and being processed for development with industrial and commercial uses. The remainder of the area consists of a golf course, residential, and commercial spaces. An existing water course flows through the golf course south of the freeway, then crosses the freeway flowing westerly (Diamond Bar Creek).
- Dry weather flows are present in the existing water course, but are not generated within Caltrans right of way.
- The following measures will be utilized to avoid or reduce potential storm water impacts.

  Erosion from slopes will be minimized using the following methods: disturbing existing slopes only when necessary, minimizing cut and fill areas to reduce slope length, incorporating retaining walls, avoiding soils or formations that will be particularly difficult to re-stabilize, providing cut and fill slopes flat enough to allow re-vegetation and limit erosion to pre-construction rates, rounding and shaping slopes to reduce concentrated flow, and collecting concentrated flows in stabilized drains and channels.

  Project design will allow for the ease of BMP maintenance. Concurrence with maintenance will occur in the PS&E phase.

  Construction items requiring extensive soil disturbance will be scheduled outside of the rainy season as much as practically feasible.

  Permanent storm water pollution controls will be installed as early in the construction process as feasible to provide additional protection and to possibly utilize them in addressing construction storm water impacts.
- A bioswale is proposed for the EA 255100 project north of the Grand Avenue westbound slip on-ramp that will be constructed for that project. No other treatment BMPs currently exist within the project area.

3. Regional Water Quality Control Board Agreements

- The Los Angeles Regional Water Quality Control Board (RWQCB) requires all new/major reconstruction projects that increase impervious area to evaluate the feasibility of post construction Treatment BMPs as a condition of the permit process. It has been determined that the following BMPs (e.g. bioswales, biostrips, media filter, infiltration basin, GSRD) will be incorporated into the project
- This project does not qualify for a CE (Categorical Exemption). The NPDES General Permit (CAS000002 and CAS00003) and Section 401 Permit will dictate the storm water measures implemented for this project.
- Caltrans will construct the project and will obtain a Notice of Construction (NOC) as required for submittal at least 30 days prior to the start of construction.

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 volumes and velocities of downstream drainage have not been determined at this time. The project proposes a maximum increase in impervious area of 14.1 acres in the Diamond Bar Creek watershed. Therefore, increases in volumes and/or velocities are anticipated.
- Total paved area has been reduced to the maximum extent practicable. Drainage patterns will be modified, but will follow existing drainage patterns as closely as possible.
- Discharge to unlined channels is present in existing conditions. Channel lining materials were considered, but was determined that unlined channels will be kept as much as possible to promote infiltration and groundwater replenishment.

  The City of Industry is currently designing a creek and habitat restoration project within Diamond Bar Creek on the north side of the highway west of Old Brea Canyon, which will be completed prior to the construction of the project. The Creek project proposes shoring with rock gabions to reduce erosion and undercutting. Also, a high flow channel will be created redirecting a portion of the flow from the triple box crossing under the freeway to a slow moving waterway.
- The addition of impervious surfaces will increase the velocity of drainage patterns, creating a potential for increased sediment loading.
- Energy dissipation devices will be placed where appropriate at culvert outlets.
- Transitions between culvert outlets/headwalls/wingwalls and channels will be smooth to reduce turbulence and scour.
- The project does not propose basins for the purpose of reducing peak discharge.
- Hydrologic and hydraulic considerations will be finalized at PS&E.

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

- Plans displaying the limits of cut and fill will be provided at the PS&E phase.
- Existing slopes vary from 1:2 to 1:4 (V:H) and flatter. Proposed improvements will create new slopes or modify existing slopes. Profiles and layouts were reviewed to minimize impact to existing slopes and requirement of new high cut/fill slopes. Retaining walls are proposed to minimize acquisition of right of way and avoid creation of new slopes. New slopes will be graded at 1:4 (V:H) or flatter wherever feasible to enhance aesthetics and facilitate re-vegetation.

  Proposed grading will not increase the potential for erosion at the site. New proposed fill slopes will maintain similar height and inclination as existing slopes wherever possible. Proposed slopes will not be high enough to warrant the implementation of benches or terraces. Slopes will be rounded and/or shaped to reduce concentrated flow. Flows are collected in stabilized drains or channels to protect slopes. The project proposes to add 14.1 acres of impervious area (12.9 acres within Caltrans right-of-way.)

  Proposed slopes steeper than 1:4 (V:H) are not expected. Therefore, an erosion control plan is not required.
- Vegetation north of the SR-57/SR-60 mainline consists mostly of grasses and small shrubs with scattered groups of trees. Bare spots devoid of vegetation are common at these locations. A golf course lies south of the mainline. Trees separate the golf course from the freeway. Grass is uniformly established at this location. Vegetation removal will be necessary to implement project improvements.

  The site will be evaluated to select the appropriate vegetation and planting strategy during the PS&E phase. The site evaluation will consider soil type and condition, site topography, climate and season, types of appropriate native and adapted vegetation suited to the site, and maintenance.

  Vegetated surfaces will be designed to minimize overland and concentrated flow depths and velocities, and maximize contact time between water and vegetated surfaces. This will enhance infiltration and pollutant removal opportunities.

  When determined feasible, topsoil (duff) and vegetation removed during construction will be stripped and stockpiled. These materials will be used in the surface preparation prior to seeding operations.
- Hard surfaces (rock blankets, paving) are not necessary to maintain slope/surface protection. Vegetation should provide adequate erosion protection for all disturbed soil area.
- Appropriate Standard Special Provisions (SSPs) for vegetated surfaces will be considered at the PS&E stage.

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

- The proposed concentrated conveyance systems for this project utilize the existing system as much as possible. Concentrated conveyance systems will be modified in accordance with proposed roadway improvements. Conveyance systems will also be modified to divert run-off into proposed treatment BMPs.
- Ditches and dikes will be modified in this project.

  An existing natural-lined roadside ditch is located north of the SR-57/SR-60 mainline, east of the Grand Avenue Interchange. This ditch collects surface sheet flow from the westbound mainline as well as the hillside north of the freeway, conveying the run-off into Diamond Bar Creek. This ditch will be relocated due to the proposed freeway widening and Grand Avenue northbound SR-57/SR-60 off-ramp realignment. The project proposes retaining wall along the freeway at this location. As a result, the proposed ditch will not collect sheet flow from the freeway (but will still intercept the hillside run-off).

  Dikes will be modified/removed/replaced as appropriate.

  Additional implementation of new ditches, berms, dikes and/or swales could be considered at the following locations: at the top of slopes to divert run-off from adjacent slopes and areas; at bottom and mid-slope locations to intercept sheet flow and convey concentrated flows; at other locations to convey run-off to overside drains, stabilized watercourses, and storm water drainage system inlets (catch basins), pipes and channels; to intercept run-off from paved surfaces; and along roadways and facilities subject to flooding.

  Risks due to erosion, overtopping, flow backups, or washout will be evaluated and minimized. Outlet protection will be considered where localized scour is anticipated. Channel lining will be considered when velocities exceed scour velocity.
- Existing off-site run-on enters the site from two locations. The first is at the aforementioned roadside ditch located north of the SR-57/SR-60 mainline, east of the Grand Avenue interchange. The project proposes retaining wall at this location, which requires off-site run-on to be intercepted before it reaches the roadway. Therefore, the run-on condition will be eliminated.

  The second location is at the hillside south of the eastbound SR-57/SR-60 on-ramp from Diamond Bar Boulevard. Under existing conditions, run-off from the hills enters the gutter of the eastbound on-ramp, mixing with Caltrans run-off, before entering an inlet. The project proposes a realignment of the on-ramp, shifting it to the south. The hillside will no longer be located at a higher elevation than the roadway, thus eliminating the run-on condition.
- Overside drains will be considered where slopes may be eroded by surface run-off. Paved spillways will be considered at side slopes flatter than 1:4 (V:H)
- Flared culvert end sections will be considered at outlets and inlets of overside drains and culverts.

- Outlet protection and velocity dissipation devices (including cross drains) will be considered where localized scouring is anticipated at the following devices: pipes, drains, culverts, slope drains, diversion ditches, swales, conduits or channels
- Appropriate SSPs for Concentrated Flow Conveyance Systems will be considered at the PS&E stage.

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

- This project will review Standard Specifications 16.1.01 and 16.1.02 to reduce clearing and grubbing and maximize preservation of existing vegetation. Clearing and grubbing will occur where appropriate over the entire disturbed soil area. Steps have been taken to minimize disturbed area. Proposed construction follows existing contours to minimize cut and fill. Removal of existing vegetation is not expected to have adverse impacts on the adjacent vegetation that will be preserved.

  This project will also replace landscape disturbed or removed during the westbound Grand Avenue slip on-ramp project (EA 255100). All landscape within Caltrans right-of-way that is disturbed or removed will be replaced following Caltrans Replacement planting policy. As an interim measure, erosion control will be applied to all disturbed areas following Caltrans Policy and Procedure.
- Coordination with Environmental concerning vegetation will occur in the PS&E phase. Appropriate vegetation and planting strategies will be decided at that time, as well as the time required for permanent vegetation to establish. Areas to be preserved will be delineated on the plans during the PS&E phase.
- Environmentally Sensitive Areas (ESAs) are present within the project limits. Diamond Bar Creek crosses the SR-57/SR-60 freeway just east of Grand Avenue; where it discharges into an unlined channel. The Creek flows through this unlined channel until it enters an RCB culvert that conveys the Creek under Grand Avenue. This unlined portion of Diamond Bar Creek is considered an ESA.

The total estimated cost for Design Pollution Prevention BMPs is approximately $27,600,000. Approximately $22,500,000 of that cost is for retaining walls and $5,000,000 is for landscaping.

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

Treatment BMP Strategy, Checklist T-1

- The TDCs for this project are nitrogen, copper, lead, zinc, and general metals.
- In accordance with the Deputy District Directive DD-92 dated March 17, 2008, this project may be required to implement all treatment BMPs recommended in the Corridor Stormwater Management Studies (Corridor Studies).

  The "Corridor Stormwater Management Study – For State Route 60 from State Route 57 to San Bernardino County Line (PM 23.6 to PM 30.5)", approved in December 2010, was consulted with regard to formulating project BMP strategy.

- The project proposes a significant alignment change compared to the Corridor Study, requiring a new BMP strategy as outlined below:

  Sites 1 and 7 are outside the limits of construction (though still inside the project limits). The Corridor Study does not anticipate the proposed freeway widening or westbound loop on-ramp realignment. With these improvements under consideration, Site 3 is not a feasible location for BMPs. The Corridor Study erred in its acreage calculations for Site 6. It does not incorporate the offsite hillside runoff that enters the roadside channel, mixing with Caltrans runoff. A bioswale is not optimal at this location when the additional WQF is considered.

  The GSRD at Site 5 will be proposed for this project. Other proposed BMPs for this project (as described in next bullet) will treat more impervious acreage (14.1 acres vs. 12.4 acres) and offer better quality treatment (per the 2010 PPDG) than the benchmarks established in the Corridor Study.

- The following table compares the treatment strategies as recommended in the Corridor Study versus those recommended in this SWDR:

Corridor Storm Water Management Treatment BMP				Proposed Treatment BMPs from SWDR				
Site No.	BMP Type	Paved Tributary Area (Acres)	Treatment Credit (cf)	Site No.	Post Mile	BMP Type	Paved Tributary Area (Acres)	Treatment Credit (cf)
1	Bioswale	1.09	2789	1	24.23	Bioswale*	1.5	3349
3	Del. Sand Filter	1.83	4384	2	24.34	Infiltration Basin	7.2	19602
5	GSRD	0.94	0	3	24.56	Austin Sand Filter	3.4	8053
6a	Bioswale	2.67	6833	4	24.63	GSRD	1.8	0
6b	Bioswale	3.87	9904		24.63	Bioswale		4018
7	Bioswale	1.97	5042	5	24.64	Bioswale	0.7	1563
Total		**12.37**	**28952**	**Total**			**14.6**	**36585**

* Bioswale established in EA 255101. Bioswale will be extended in this project and drainage modifications will be made to increase impervious treatment area.

The following table distinguishes treatment credit volume to paved tributary area before 1994 and treatment credit volume of paved tributary area after 1994:

Proposed Treatment BMPs from SWDR					
Site No.	BMP Type	Pre-1994		Post-1994	
		Paved Trib. Area (Acres)	Treatment Credit (cf)	Paved Trib. Area (Acres)	Treatment Credit (cf)
1	Bioswale*	1.5	3349	0	0
2	Infiltration Basin	5.0	13613	2.2	5990
3	Austin Sand Filter	1.3	3079	2.1	4974
4	GSRD	1.8	0	0	0
	Bioswale		4018		0
5	Bioswale	0.7	1563	0	0
Total		**10.3**	**25621**	**4.3**	**10964**

- Utilizing the 2010 PPDG guidelines, the treatment BMP strategy prioritizes implementation of BMPs with high infiltration (>90% WQV). Based upon percolation testing, the only location that can satisfy that requirement is within the Grand Avenue eastbound loop on-ramp. An infiltration basin is proposed at that location.

  After considering infiltration, BMP selection is determined by the project TDCs. *BMP Selection Matrix D* was used to properly select BMPs. A partial sedimentation Austin sand filter is proposed within the westbound loop on-ramp. Other Tier 1 BMPs are not appropriate for this project, due to inadequate infiltration rates and a lack of appropriate siting acreage.

  Biofiltration swales (bioswales) and biofiltration strips (biostrips) are listed as a Tier 2 BMPs. The project proposes to add two new bioswales and extend one existing bioswale within the project site.

  The GSRD recommended in the Corridor Study will be proposed for this project.

- Existing pavement within Caltrans right-of-way is 51.4 acres. The project proposes 12.9 acres of new pavement within Caltrans right-of-way, for a total proposed 64.3 acres of pavement.

  Proposed treatment BMPs will treat 14.6 acres of pavement. 23% of the Caltrans proposed total impervious will be treated (14.6 / 64.3 = 23%). All of the proposed Caltrans net new impervious area will be treated. Added impervious area outside of Caltrans right-of-way was not considered in Treatment BMP calculations.

Biofiltration Swales/Strips, Checklist T-1, Parts 1 and 2

- EA 255101 proposes a bioswale at Site 1 (Revised) north of the westbound on-ramp from Grand Avenue. This bioswale is anticipated to be 45 feet long with an 14 foot flat bottom and 1:3 (H:V) slopes. The bioswale will be 1 foot deep and has a top width of 20 feet. The bioswale established in EA 255100 will treat 3.5 acres (0.7 cfs).

  For the current project, drainage patterns will be modified to divert more impervious flow to the bioswale. The bioswale will be extended from 45 feet to 55 feet to satisfy the hydraulic residence time requirement of five minutes. After the completion of this project, the bioswale will treat a total of 5.0 acres (1.1 cfs). 1.5 acres (0.4 cfs) of impervious area is attributed to this project.

  A bioswale is proposed at Site 4 within the infield between the Grand Avenue westbound loop on-ramp and westbound off-ramp. It is oriented to the south of the existing open channel that runs through the infield. This bioswale is anticipated to be 65 feet long with an 8 foot bottom and 1:4 (H:V) slopes. The bioswale will be 0.6 feet deep (providing minimum 0.2 foot freeboard) and has a top width of 28 feet. The bioswale will treat 1.8 acres (0.4 cfs), directly from the GSRD.

  A bioswale is proposed at Site 5, also within this same infield, oriented north of the existing open channel. This bioswale is anticipated to be 50 feet long with an 8 foot bottom and 1:4 (H:V) slopes. The bioswale will be 0.5 feet deep (providing minimum 0.2 foot freeboard) and has a top width of 12 feet. The bioswale will treat 0.7 acres (0.1 cfs).

  There is a potential for ADL contamination at the proposed bioswale sites. This will be confirmed after testing is performed during the PS&E phase.

  The total impervious area (not including EA 255100 impervious area) treated solely by bioswales is 4.0 acres. The total WQF treated by bioswales (not including EA 255100 WQF) is 1.7 cfs.

- The tributary area of the Site 1 bioswale is 5.7 acres (5.0 acres impervious) When implemented in EA 255100, this bioswale is responsible for treating 3.5 acres impervious. The drainage modifications proposed in this project will allow the bioswale to treat an additional tributary area of 1.5 acres of impervious pavement, which will be taken from the westbound SR-57/SR-60 mainline.

  The tributary area of the Site 4 bioswale is 1.9 acres (1.8 acres impervious), which is taken from the westbound SR-57/SR-60 mainline between the Grand Avenue westbound loop on-ramp and westbound off-ramp.

  The tributary area of the Site 5 bioswale is 0.8 acres (0.7 acres impervious), which is taken from the westbound SR-57/SR-60 off-ramp from Grand Avenue.

- Funding has been allocated for the placement of these BMPs.

Dry Weather Diversion, Checklist T-1, Parts 1 and 3

- Dry weather diversion is not feasible for this project because there is no anticipated persistent dry weather flow generated by Caltrans. Therefore these devices are not proposed for implementation on this project.

Infiltration Devices – Checklist T-1, Parts 1 and 4

- An infiltration basin is proposed at Site 2, within the infield of the eastbound loop on-ramp from Grand Avenue. It is circular shaped, with a top radius of 63 feet and side slopes of 1:4 (H:V). It has a maximum WQV depth of 0.9 feet and maximum total depth of 2.4 feet (freeboard plus overflow depth equals 1.5 feet).
- 7.2 acres of impervious surface is treated by the proposed infiltration device.
- WQV was calculated using the Caltrans Basin Sizer (Method B). The total WQV for the proposed infiltration basin is approximately 24,503 cubic feet.
- The USCS Soil Classification at the proposed basin is silty sand (SM). The HSG Soil Classification is "A". These classifications indicate good permeability.
- Groundwater was found at elevation 661.0. The approximate elevation at the top of the basin is 670.0. Because groundwater is expected within 10 feet of the basin invert, the RWQCB must be consulted to ensure that groundwater quality will not be compromised.
- The infiltration rate of the soil is 2.7 inches per hour.
- Because the infiltration basin is proposed within a loop on-ramp area, the device is in close proximity to the ramp side slopes. There is also a drainage channel proposed below the infiltration basin. Both of these factors present possible geotechnical integrity issues. These issues will be explored at the BMP design stage during the PS&E phase.
- Funding has been allocated for the placement of this BMP.

Detention Devices, Checklist T-1, Parts 1 and 5

- Considering project TDCs, *BMP Selection Matrix D* classifies detention basins (unlined) as a Tier 1 treatment device. The only locations with appropriate acreage for a detention basin are within the Grand Avenue eastbound loop on-ramp and within the westbound loop on-ramp. At both locations, the seasonally high groundwater is expected to be within 10 feet of the invert of the proposed detention basin, requiring a lined detention basin. This makes detention basins less effective than other treatment options; therefore detention basins will not be proposed at these locations.

Gross Solids Removal Devices (GSRDs), Checklist T-1, Parts 1 and 6

- Based upon the Corridor Study recommendation, Linear Radial (LR-2) GSRD is recommended at Site 4, within the infield between the Grand Avenue westbound loop on-ramp and westbound off-ramp. It will treat 1.8 acres (0.4 cfs).
- The San Gabriel East Fork Trash TMDL has been in effect on April 17, 2001. Caltrans is not a responsible party for this TMDL.

- The GSRD will be part of a BMP train. Runoff will be treated by a bioswale after leaving the GSRD. Runoff ultimately enters Diamond Bar Creek.
- The 25-year peak flow is 4.6 cfs. The LR-2 device has a maximum flow rate of 7.1 cfs. Therefore, the device is appropriately sized for peak flow conditions.
- Funding has been allocated for the placement of this BMP.

Traction Sand Traps, Checklist T-1, Parts 1 and 7

- The project is not located in an area where traction sand is applied more than twice a year. Therefore, traction sand traps are not feasible and are not proposed to be implemented on this project.

Media Filters, Checklist T-1, Parts 1 and 8

- A partial sedimentation Austin Sand Filter is proposed at Site 3, within the infield of the westbound loop on-ramp from Grand Avenue. It is proposed as a rectangular shape, with top dimensions of 49 feet by 105 feet. It has a WQV depth of 3.0 feet. A full sedimentation Austin sand filter was not chosen because it requires more acreage, is higher maintenance, and only provides a marginal increase in efficiency over a partial sedimentation sand filter.
- Groundwater at the site is expected to be within 10 feet of the invert; therefore the device will be concrete lined.
- Storm water will be pretreated before entering the device. Sheet flow from the loop on-ramp will travel through a biostrip before entering the device. Concentrated flow from Grand Avenue discharges from a pipe and is conveyed through a bioswale before entering the Austin sand filter.
- 3.4 acres of impervious surface are treated by the proposed device.
- WQV was calculated using the Caltrans Basin Sizer (Method B). The WQV for the proposed Austin sand filter is 14,402 cubic feet.
- Delaware filters were considered for this project, but ultimately not chosen. According to *BMP Selection Matrix D,* Delaware filters are considered a Tier 2 BMP because phosphorus is not a project TDC. Bioswales and Biostrips, also Tier 2 BMPs, were chosen instead because they are generally cheaper and easier to maintain than Delaware Filters.
- Funding has been allocated for the placement of this BMP.

Multi-Chambered Treatment Trains (MCTTs), Checklist T-1, Parts 1 and 9

- There are no critical source areas (such as parking areas, vehicle service facilities, paved storage areas, or fueling stations) within the project area. Therefore, these devices are not feasible and are not proposed to be implemented on this project.

Wet Basins, Checklist T-1, Parts 1 and 10

- According to *BMP Selection Matrix D*, wet basins are only to be considered if phosphorus is a TDC. Because phosphorus is not a TDC for this project, wet basins were not considered.

Funding has been allocated to allow for the placement of the above recommended BMPs. Treatment BMPs are estimated to cost approximately $1,100,000.

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

- Construction Site Best Management Practices (BMPs) are to be applied during construction activities to reduce the pollutants in stormwater discharges throughout construction. These Construction Site BMPs provide both temporary erosion and sediment control, as well as control for potential pollutants other than sediment. The following categories of BMPs will be used for controlling potential pollutants on construction sites: Soil Stabilization Practices; Sediment Control Practices; Tracking Control Practices; Wind Erosion Control; Non-Stormwater Controls; and Waste Management and Material Pollution Controls.
- Dewatering is not required for this project.
- Turbidity and pH are not considered design pollutants for this project, therefore, Active treatment systems (ATS) will not be considered for the project.
- On August 5, 2011, Aythem Al-Saleh, District Construction Storm Water Coordinator agreed to the temporary construction site BMP strategy used for the scope of work of this project.
- Funds allocated incorporate construction items required by the new permit, which includes funds for separate bid line items (Prepare Storm Water Pollution Prevention Plan, Rain Event Action Plan, Storm Water Annual Report, and Storm Water Sampling and Analysis Day), Construction Site Management, and Supplemental Work (Additional Water Pollution Control Work and Storm Water Sampling Analysis)

  Additional items such as Receiving Water Bioassessment and Supplemental Monitoring are not applicable to this project because this project is classified Risk Level 2. Water Pollution Control Maintenance Sharing is also not applicable to the project.

Construction Site BMPs costs are calculated for the entire project and were estimated per the July 2010 Project Planning and Design Guide, Appendix F. The percentage of extra cost to the project due to Construction Site BMPs is 1.25% of the baseline construction cost. The current construction cost estimate is $218,800,000. The estimated Construction Site BMP cost is approximately $2,750,000.

7. Maintenance BMPs (Drain Inlet Stenciling)

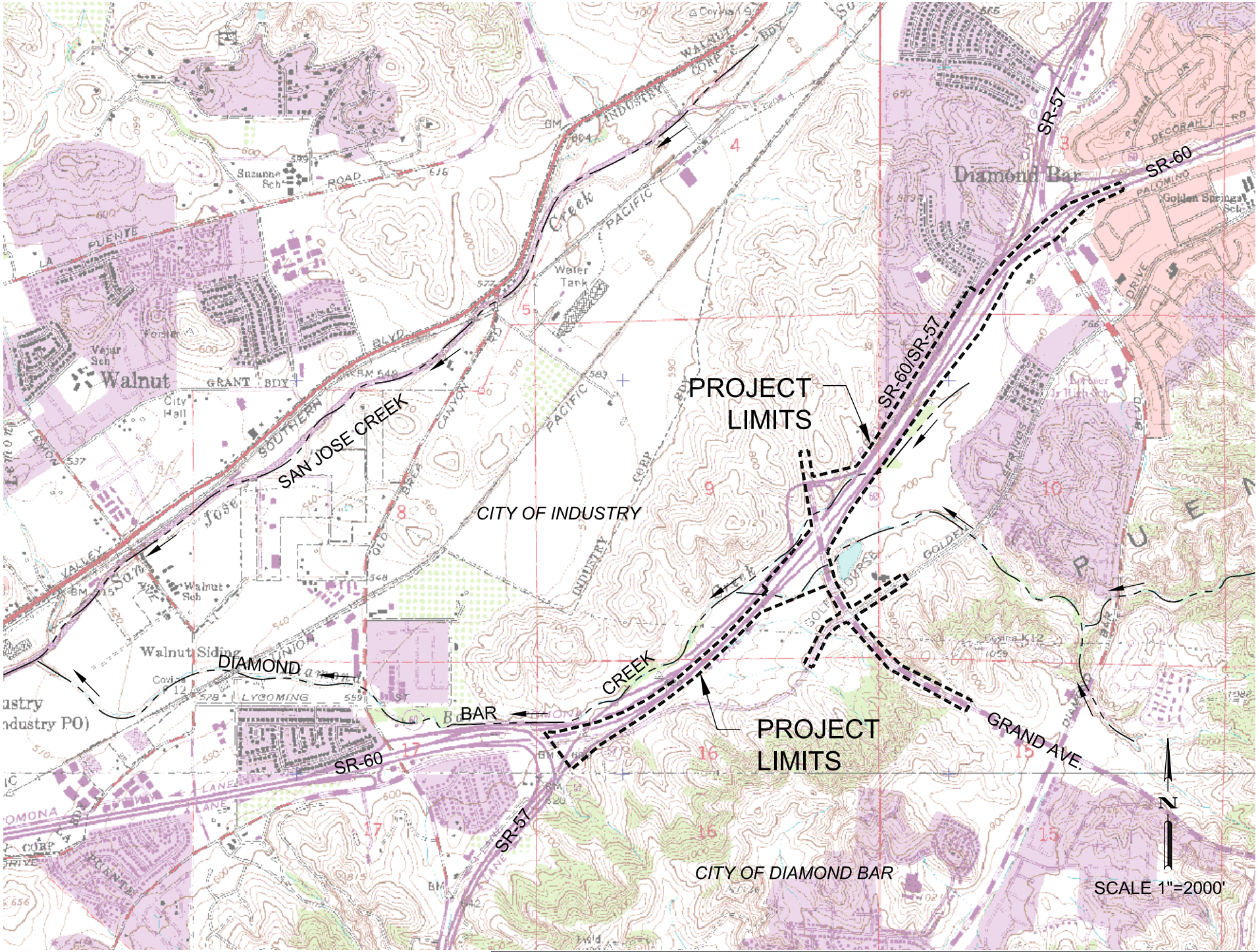
- Stenciling will be used for proposed inlets within both the City of Industry and the City of Diamond Bar as recommended by City standards. Specific locations and stencil details will be provided at PS&E phase.

Required Attachments

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

Supplemental Attachments

- Storm Water BMP Cost Summary
- Project Cost Estimate
- Layout Exhibit
- Storm Water Exhibit Showing BMP Deployment
- Water Quality Calculations
- Checklist SW-1, Site Data Sources
- Checklist SW-2, Storm Water Quality Issues Summary
- Checklist SW-3, Measures for Avoiding or Reducing Potential Storm Water BMPs
- Checklists DPP-1, Parts 1–5 (Design Pollution Prevention BMPs)
- Checklists T-1, Parts 1, 2, 4–6, 8, 9 (Treatment BMPs)



EA:	DIST-COUNTY-ROUTE:	POST MILE LIMITS:	SR-57 / SR-60 CONFLUENCE PROJECT VICINITY MAP
279100	07-LA-60 07-LA-57	R23.6-R26.5 R4.3-R4.8	

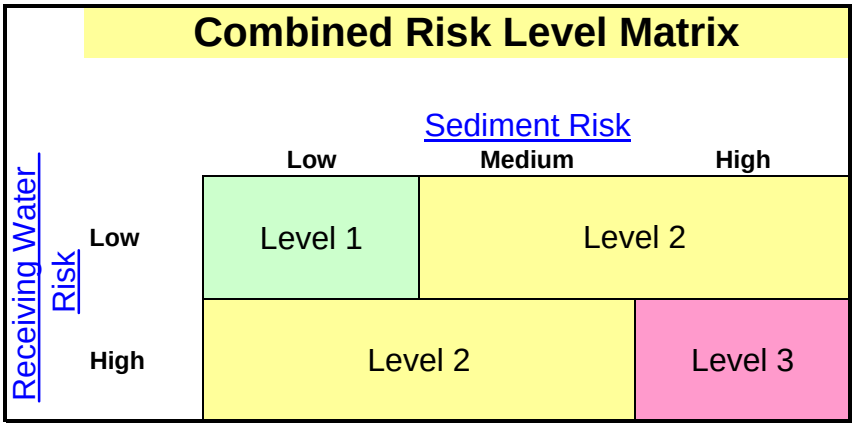
DATE: 4/9/12

Project ID (or EA) : 279100

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. _____ *(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**. *(Los Angeles County)*, go to 5. If **No**, document in SWDR go to 5.
5.	Is the project directly or indirectly discharging to surface waters?	✓		If **Yes**, continue to 6. If **No**, go to 10.
6.	Is it a new facility or major reconstruction?	✓		If **Yes**, continue to 8. If **No**, go to 7.
7.	Will there be a change in line/grade or hydraulic capacity?			If **Yes**, continue to 8. If **No**, go to 10.
8.	Does the project result in a net increase of one acre or more of new impervious surface?	✓		If **Yes**, continue to 9. If **No**, go to 10. *14.1 acres (Net Increase New Impervious Surface)*
9.	Project is required to consider approved Treatment BMPs.	✓	See Sections 2.4 and either Section 5.5or 6.5 for BMP Evaluation and Selection Process. Complete Checklist T-1 in this Appendix E.	
10.	Project is not required to consider Treatment BMPs. _____*(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

Combined Risk Level Matrix



Project Sediment Risk: High

Project RW Risk: Low

Project Combined Risk: Level 2

Return to "Start" Tab

/

Sediment Risk Factor Worksheet	Entry
A) R Factor	
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.	
http://cfpub.epa.gov/npdes/stormwater/LEW/lewCalculator.cfm	
R Factor Value	85.64
B) K Factor (weighted average, by area, for all site soils)	
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.	
Site-specific K factor guidance	
K Factor Value	0.32
C) LS Factor (weighted average, by area, for all slopes)	
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.	
LS Table	
LS Factor Value	4.19
Watershed Erosion Estimate (=RxKxLS) in tons/acre	114.83
Site Sediment Risk Factor	**High**
Low Sediment Risk: < 15 tons/acre	
Medium Sediment Risk: >=15 and <75 tons/acre	
High Sediment Risk: >= 75 tons/acre	

Welcome to the Rainfall Erosivity Factor Calculator!

The NPDES Stormwater Phase II Rule allows NPDES permitting authorities to accept "low erosivity waivers" for small construction sites. The waiver process exempts small construction sites (disturbing under five acres) from NPDES permitting requirements when the construction activity takes place during a relatively short time in arid or semi-arid areas.

EPA accepts low erosivity waivers for the four states and other areas where EPA is the permitting authority. Several states that are authorized to implement the NPDES permitting program also accept low erosivity waivers. Check with your state NPDES permitting authority for more information.

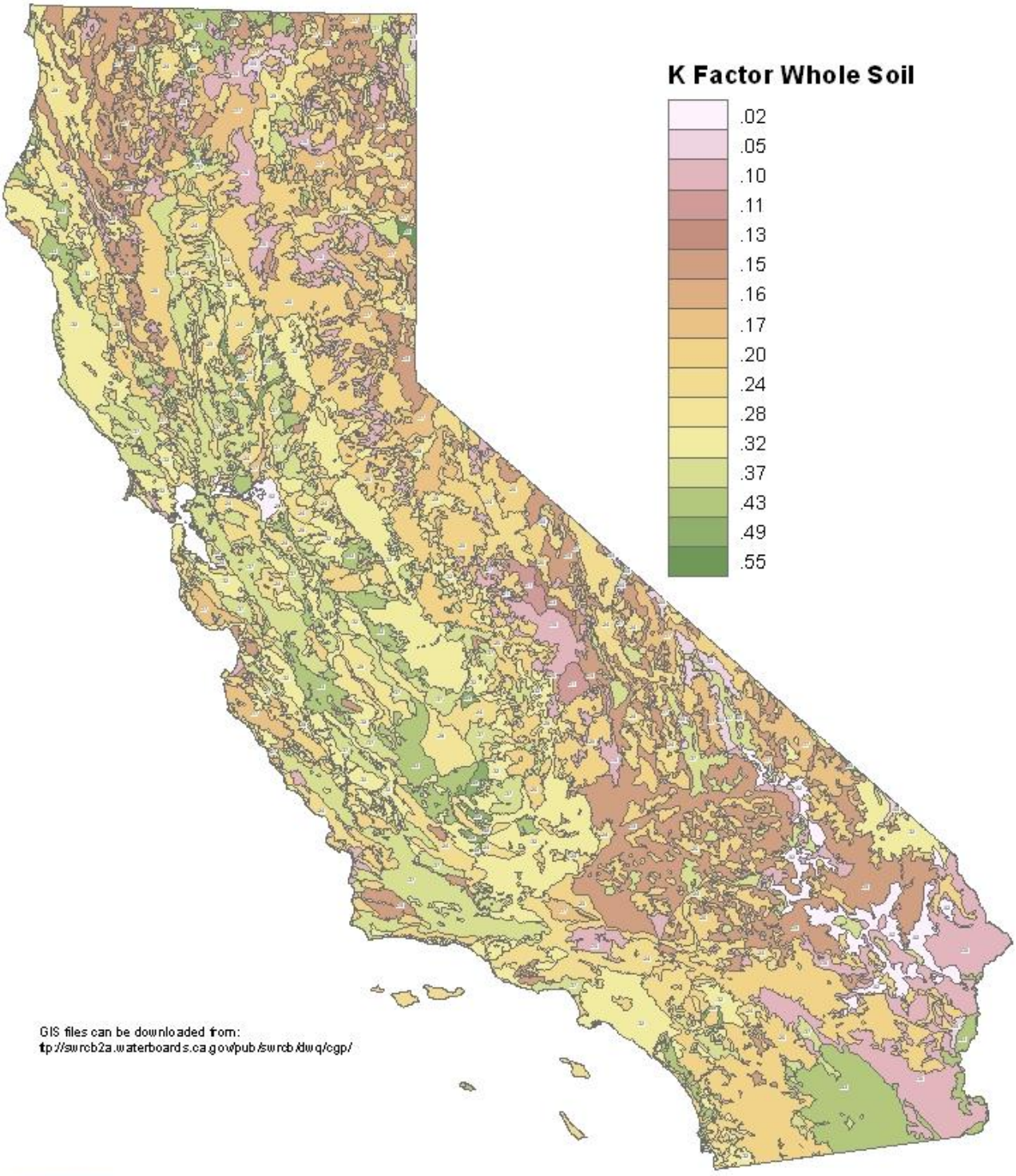
Note: EPA's online rainfall erosivity factor calculator is currently under construction. In the meantime, please use the New! Construction Rainfall Erosivity Waiver Fact Sheet (PDF) (12 pp, 1.39MB) to assist in determining the R Factor for a particular small construction site. Appendix C (PDF) (4 pp, 99K) of the 2012 CGP also provides information on small construction waivers.

R-Factor

EI Distribution Zone =	25		
Start Date =	4/22/2014	% EI = 100 - 55.2 =	44.8
End Date =	10/24/2016	% EI =	69.3
		%EI = 44.8 + 100 + 69.3 =	214.1%
		Isoerodent Value =	40
		R = (100.1%)(40) =	**85.64**

Methodology: EPA 833-F-00-014
Revised March 2012
Fact Sheet 3.1
Stormwater Phase II Final Rule
Construction Rainfall Erosivity Waiver

RUSLE K Values



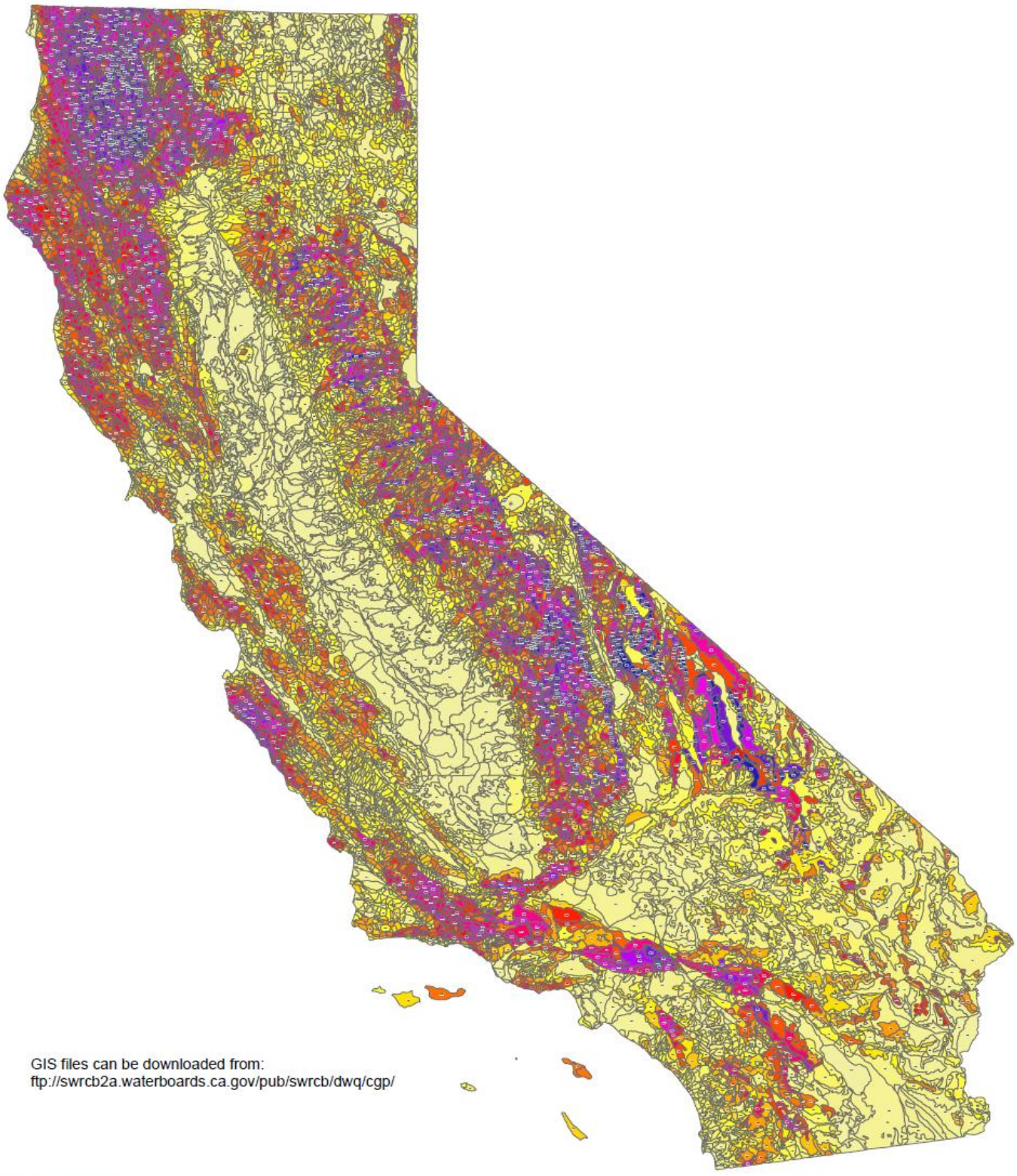
GIS files can be downloaded from:
ftp://swrcb2a.waterboards.ca.gov/pub/swrcb/dwq/cgp/

Water Boards

Data Source: *Natural Resources Conservation Service, U.S. Dept. of Agriculture and State Water Resources Control Board*


Diamond Bar
Golden Springs Dr
Orange Fwy
PROJECT LOCATION
N Grand Ave
Pomona Fwy
Brea Canyon
La Puente Rd
0.32
RUSLE K-VALUE

RUSLE LS Values

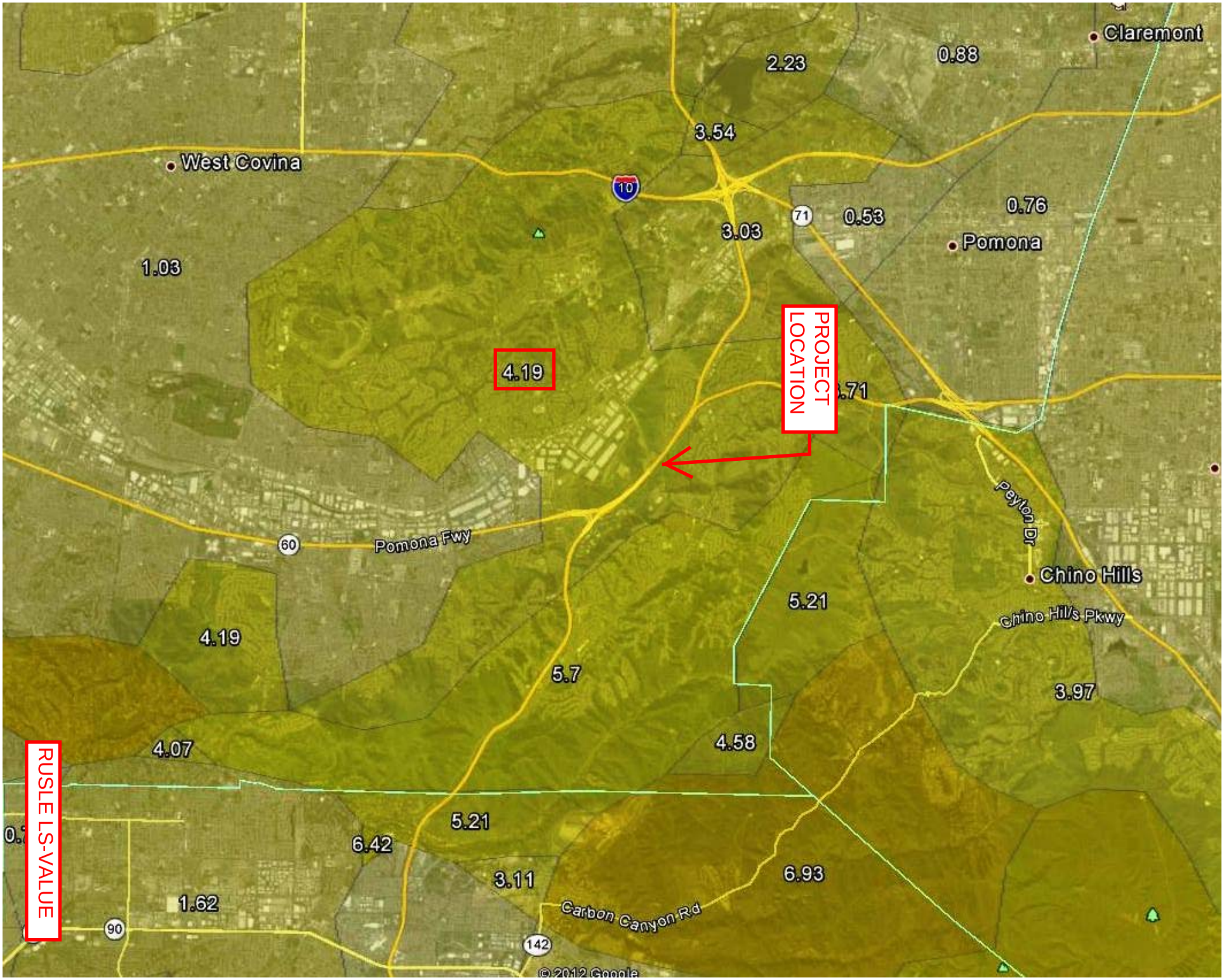


GIS files can be downloaded from:
ftp://swrcb2a.waterboards.ca.gov/pub/swrcb/dwq/cgp/

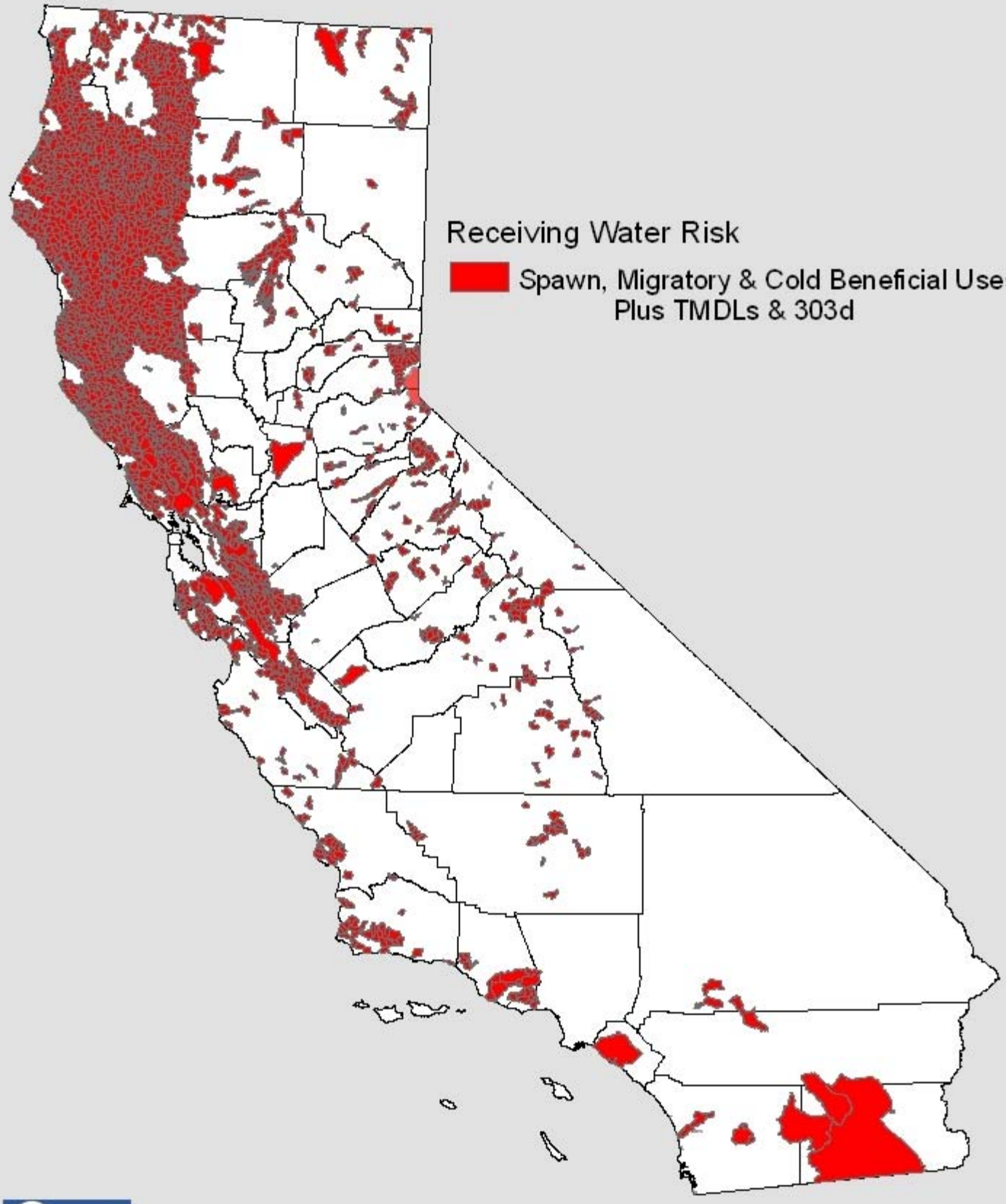
Water Boards

0 25 50 100 Miles

Data Source:*State Water Resources Control Board*


Claremont
2.23
0.88
3.54
West Covina
10
71
0.53
0.76
3.03
Pomona
1.03
PROJECT LOCATION
4.19
.71
Peyton Dr
60
Pomona Fwy
Chino Hills
5.21
Chino Hills Pkwy
4.19
5.7
3.97
4.07
4.58
RUSLE LS-VALUE
5.21
6.42
3.11
6.93
1.62
Carbon Canyon Rd
90
142
© 2012 Google

Receiving Water Risk



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

Storm Water BMP Cost Summary

Project Name:	**Confluence Project**
District:	**7**
EA:	**279100**
County:	**LA**
Route:	**SR-60 / SR-57**
Postmile:	**R23.6 / R4.3**
End Postmile:	**R26.5 / R4.8**

Total Treatment BMP Costs	$ 1,100,000
Total Design Pollution Prevention BMP Costs	$ 27,600,000
Total Permanent Storm Water BMP Costs	$ 28,700,000
Subtotal Soil Stabilization BMPs	$ -
Subtotal Sediment Control BMPs	$ -
Subtotal Wind Erosion Control BMPs	$ -
Subtotal Tracking Control BMPs	$ -
Subtotal Waste Management & Materials Handling BMPs	$ -
Subtotal Non-Storm Water Management	$ -
Subtotal Miscellaneous Items	$ -
Total Construction Site BMP Costs	$ 2,750,000
TOTAL COST FOR STORM WATER BMPs	$ 31,450,000

Note: Please enter data in the fields shaded on this and the following pages. The totals will be reflected on this sheet automatically.

Storm Water BMP Cost Summary

Treatment BMPs

BEES	Pollution Prevention BMPs PPDG Appendix A	SSP/nSSP (#, Y or N)	STD. Det. (Y or N)	Quantity	Unit	Unit Cost ($/Unit)	Cost ($)
	Biofiltration Strip				ft^2		$ -
	Biofiltration Swale			3	EA	$45,000	$ 135,000
	Dry Weather Diversion				EA		$ -
	Infiltration Devices (Trench)				EA		$ -
	Infiltration Devices (Basin)			1	EA	$70,000	$ 70,000
	Detention Devices				EA		$ -
	Gross Solid Removal Devices			1	EA	$150,000	$ 150,000
	Traction Sand Traps				EA		$ -
	Media Filters (Austin)			1	EA	$485,000	$ 485,000
	Media Filters (Delaware)				EA		$ -
	Wet Basins				EA		$ -
	Multi Chamber Treatment Train (MCTT)				EA		$ -
						Subtotal Treatment BMP Costs	$ 840,000
						Multiplier	1.25
						Total Treatment BMP Costs	$ 1,050,000
						Use:	**$ 1,100,000**

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 ($/Unit)	Cost ($)
	Downstream Effects/Increased Flow Mitigation						
	Slope/Surface Protection Systems- Hard Surfaces						
	Slope/Surface Protection Systems- Vegetated Surfaces						
	- Retaining Walls			1	LS	$22,416,500	$ 22,416,500
	- Highway Planting			1	LS	$5,000,000	$ 5,000,000
	Concentrated Flow Conveyance Systems						
	- Roadside Ditch Relocation (Excavation Costs)			200	CY	$30	$ 6,000
	- Asphalt Concrete Dike			5000	LF	$10	$ 50,000
	- Flume Downdrain			500	LF	$50	$ 25,000
	- Concrete Flared End Section			15	Each	$825	$ 12,375
	- Rock Slope Protection (Facing Method B)			200	CY	$110	$ 22,000
						Total Design Pollution Prevention BMP Costs	$ 27,531,875
						Use:	**$ 27,600,000**

Total Permanent Storm Water BMP Costs	**$ 28,700,000**

Construction BMP Costs (estimated at 1.25% of Total Project Cost)	**$ 2,750,000**

Storm Water BMP Cost Summary

Construction BMP Costs

Construction Costs are estimated at a percentage of the total project cost

Baseline Cost Percentage		1.25%
Adjustment for Project Magnitute (> $12,000,000)		0.00%
Adjustment for Location		0.00%
Adjustment for Type of Project		0.00%
Adjustment for Work near 303(d) Water Bodies		0.00%
Adjustment for Project Specific Issues		0.00%
Total Adjustments for Water Pollution Control		1.25%
Total Project Cost (09-23-10)		$218,739,864
Construction BMP Cost		$2,734,248
	Use	**$2,750,000**

57/60 CONFLUENCE PROJECT

EA 279100

PROJECT COST ESTIMATES

ITEM NO.	DESCRIPTION	Quantity	Unit	Unit Price	Unit Cost	
	1- ROADWAY ITEMS					
SECTION 1- EARTHWORK						
150608	REMOVE CHAIN LINK FENCE	14,200	LF	$ 6.00	$ 85,200	
150714	REMOVE TRAFFIC-STRIPE	1	LS	$ 80,000.00	$ 80,000	
150846	REMOVE CONCRETE PAVEMENT	125,000	SF	$ 4.00	$ 500,000	
153213	REMOVE CONCRETE (STRUCTURE) RET WALL & CHANNEL	102,900	CF	$ 6.00	$ 617,400	
153215	REMOVE CONCRETE (CURB AND GUTTER)	11,900	LF	$ 6.00	$ 71,400	
153218	REMOVE CONCRETE SIDEWALK	26,800	SF	$ 9.00	$ 241,200	
150830	REMOVE CONCRETE BLOCK RETAINING WALL (PORTION)	500	CY	$ 140.00	$ 70,000	
160101	CLEARING AND GRUBBING	1	LS	$ 150,000.00	$ 150,000	
190101	ROADWAY EXCAVATION	65,500	CY	$ 24.00	$ 1,572,000	
190107	ROADWAY EXCAVATION (TYPE Y-1) (AERIALLY DEPOSITED LEAD)	5,000	CY	$ 180.00	$ 900,000	
190110	LEAD COMPLIANCE PLAN	1	LS	$ 10,000.00	$ 10,000	
198001	IMPORTED BORROW	143,400	CY	$ 10.00	$ 1,434,000	
	SUBTOTAL					$ 5,731,200
SECTION 2- STRUCTURAL SECTION						
260301	CLASS 3 AGGREGATE BASE	47,600	CY	$ 35.00	$ 1,666,000	
280000	LEAN CONCRETE BASE	33,000	CY	$ 138.00	$ 4,554,000	
390132	HOT MIX ASPHALT (TYPE B)	51,400	TON	$ 99.00	$ 5,088,600	
731521	MINOR CONCRETE (SIDEWALK)	500	CY	$ 300.00	$ 150,000	
401050	JOINTED PLAIN CONCRETE PAVEMENT	14,200	CY	$ 150.00	$ 2,130,000	
839704	CONCRETE BARRIER (TYPE 60D)	1,000	LF	$ 40.00	$ 40,000	
	SUBTOTAL					$ 13,628,600
SECTION 3- DRAINAGE						
62010X	ON-SITE DRAINAGE	1	LS	$ 8,800,000.00	$ 8,800,000	
	SUBTOTAL					$ 8,800,000
SECTION 4- SPECIALTY ITEMS						
074019(S)	PREPARE STORM WATER POLLUTION PREVENTION PLAN	1	LS	$ 10,000.00	$ 10,000	
	CONSTUCTION SITE BMPS	1	LS	$ 3,250,000.00	$ 3,250,000	
	TREATEMENT BMPS	1	LS	$ 1,000,000.00	$ 1,000,000	
200001	HIGHWAY PLANTING	1	LS	$ 5,000,000.00	$ 5,000,000	
860460	LIGHTING AND SIGN ILLUMINATION	1	LS	$ 600,000.00	$ 600,000	
861750A	TRAFFIC OPERATIONS SYSTEM (ITS)	1	LS	$ 1,000,000.00	$ 1,000,000	
860251	SIGNAL AND LIGHTING	3	EA	$ 180,000.00	$ 540,000	
860252	SIGNAL AND LIGHTING (TEMPORARY)	6	EA	$ 80,000.00	$ 480,000	
860253	COUNT STATION MODIFICATION	6	EA	$ 75,000.00	$ 450,000	
	SUBTOTAL					$ 12,330,000
SECTION 5- TRAFFIC ITEMS						
120090	CONSTRUCTION AREA SIGNS	1	LS	$ 300,000.00	$ 300,000	
120100	TRANSPORTATION MANAGEMENT SYSTEM	1	LS	$ 1,540,000.00	$ 1,540,000	
120149	TEMPORARY PAVEMENT MARKING (PAINT)	500	SF	$ 4.00	$ 2,000	
120159	TEMPORARY TRAFFIC STRIPE (PAINT)	42,000	LF	$ 0.60	$ 25,200	
129000	TEMPORARY RAILING (TYPE K)	30,000	LF	$ 13.00	$ 390,000	
129110	TEMPORARY CRASH CUSHION	18	EA	$ 10,000.00	$ 180,000	
129150	TEMPORARY TRAFFIC SCREEN	30,000	LF	$ 4.00	$ 120,000	
150662	REMOVE METAL BEAM GUARD RAILING	2,600	LF	$ 10.00	$ 26,000	
150704	REMOVE YELLOW THERMOPLASTIC TRAFFIC-STRIPE	1	LS	$ 50,000.00	$ 50,000	
150710	REMOVE TRAFFIC STRIPE	1	LS	$ 250,000.00	$ 250,000	
800360	CHAIN LINK FENCE (TYPE CL-6)	14,000	LF	$ 21.00	$ 294,000	
832001(S)	METAL BEAM GUARDRAILING	2,000	LF	$ 20.00	$ 40,000	
840501	THERMOPLASTIC TRAFFIC STRIPE	1	LS	$ 510,000.00	$ 510,000	
566011	ROADSIDE SIGN	1	LS	$ 400,000.00	$ 400,000	
	OVERHEAD SIGN	1	LS	$ 3,450,000.00	$ 3,450,000	
860253	RAMPMETERING	5	EA	$ 80,000.00	$ 400,000	
860415A	LIGHTING AND SIGN ILLUMINATION (STAGE CONSTRUCTION)	69	EA	$ 5,000.00	$ 345,000	
	SUBTOTAL					$ 8,322,200
	TOTAL ITEMS 1-5					$ 48,812,000
SECTION 6- Minor Items						
	MINOR ITEMS					
	SUBTOTAL					$ 3,660,900
SECTION 7- Roadway Mobilization						
999990	MOBILIZATION					
	SUBTOTAL					$ 5,247,300
SECTION 8- Roadway Additions						
	ROADWAY ADDITIONS (SECTION 8) SUPPLEMENTAL)					
	SUBTOTAL					$ 5,247,300
SECTION 9- Time Related Overhead						
	TIME RELATED OVERHEAD					
	SUBTOTAL					$ 5,247,300
	ROADWAY CONTINGENCY					$ 24,876,105
	ROADWAY TOTAL					
						$ 93,090,905
	2- STRUCTURAL ITEMS					
	GOLF COURSE TUNNEL				$ 3,500,000	
RET WALLS & SOUND WALLS						
197020	RETAINING WALL No. 40 (TIE BACK)				$ 921,000	
197020	RETAINING WALL No. 244 (TYPE 1)				$ 4,728,000	
197020	RETAINING WALL No. 250 (MSE)				$ 1,704,000	
197020	RETAINING WALL No. 270 (TYPE 1)				$ 493,000	
197020	RETAINING WALL No. 280 (MSE)				$ 3,504,000	
197020	RETAINING WALL No. 284 (TYPE 1)				$ 237,000	
197020	RETAINING WALL No. 285 (TYPE 1)				$ 325,000	
197020	RETAINING WALL No. 286 (TYPE 1)				$ 445,000	
197020	RETAINING WALL No. 288 (MSE)				$ 1,895,000	
197020	RETAINING WALL No. 294 (TYPE 1)				$ 2,147,000	
197020	RETAINING WALL No. 350 (TYPE 1)				$ 2,086,000	
197020	RETAINING WALL No. 352 (MSE)				$ 337,000	

511047A	ANTI-GRAFFITI COATING (RETAINING WALL)				$ 3,594,500		
518002	SOUND WALL (MASONRY BLOCK) No. 294 (Along WB 60 east of Grand Ave)				$ 920,000		
518002	SOUND WALL (MASONRY BLOCK) No. 305 (Along EB 60 east of Grand Ave)				$ 1,000,000		
	TOTAL WALL COST					**$**	**24,336,500**
	GOLDEN SPRINGS OC (CONN A)				$ 11,956,000		
	GRAND AVENUE OC				$ 15,664,000		
	DIAMOND BAR OC (CONN B)				$ 14,638,000		
	ARCHITECTURAL TREATMENT @ 1.5%				$ 633,870		
	BRIDGE SUBTOTAL					**$**	**42,891,870**
	STRUCTURAL TOTAL					**$**	**70,728,370**
	TOTAL CONSTRUCTION COST IN 2010 $					**$**	**163,819,275**
	ESCALATION TO MID CONSTRUCTION (4% PER YR TO 2014)					**$**	**27,826,429**
	3. RIGHT-OF-WAY						
	RIGHT-OF-WAY					**$**	**27,094,160**
	TOTAL PROJECT COST					**$**	**218,739,864**

Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	SR-60	R23.87-R24.48		

REGISTERED CIVIL ENGINEER DATE

PLANS APPROVAL DATE

REGISTERED PROFESSIONAL ENGINEER
HANK T. NGUYEN
No. C 61227
Exp. 06-30-11
CIVIL
STATE OF CALIFORNIA

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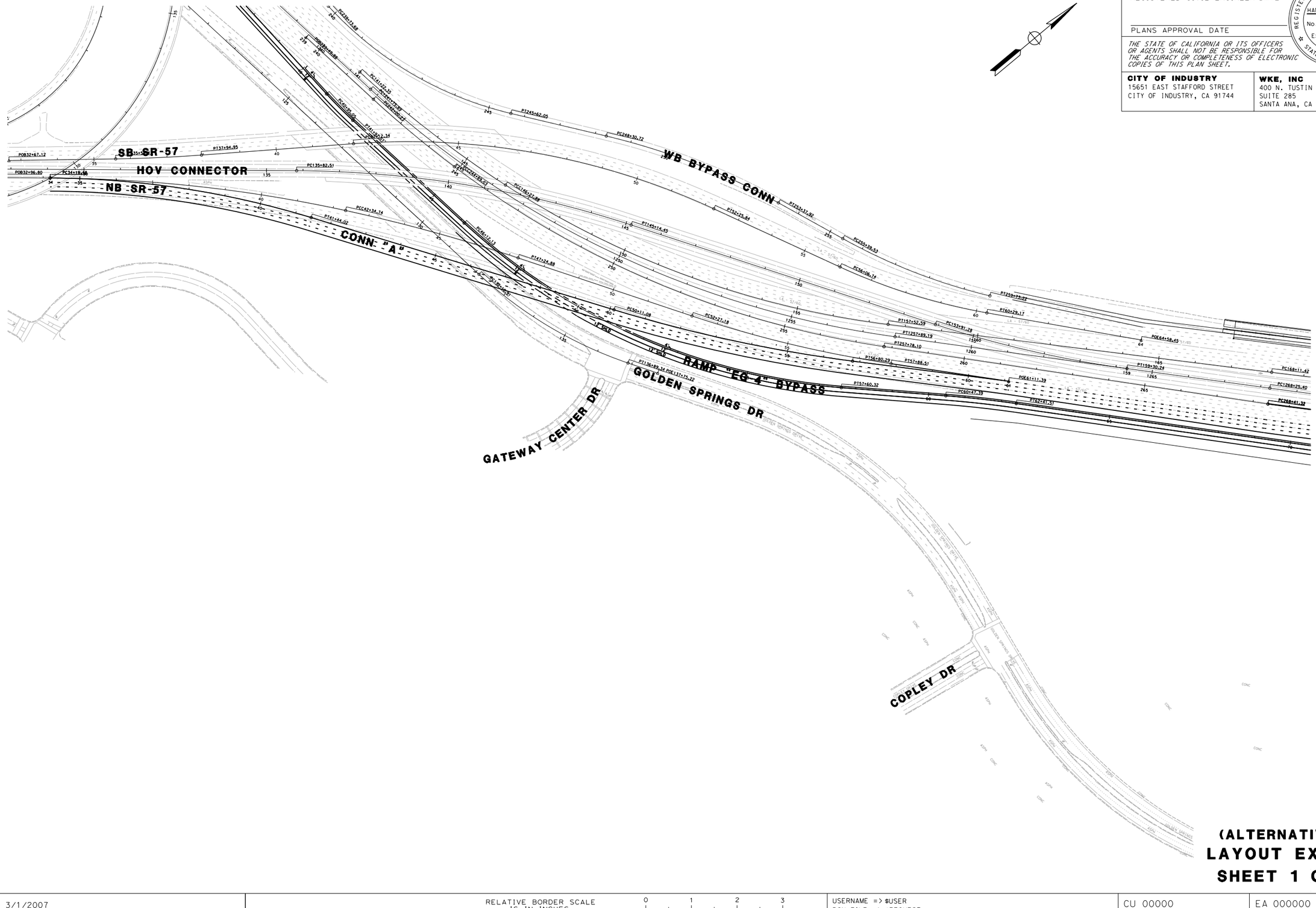
CITY OF INDUSTRY, CA 91744

WKE, INC
400 N. TUSTIN AVENUE
SUITE 285
SANTA ANA, CA 92705



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EA 000000

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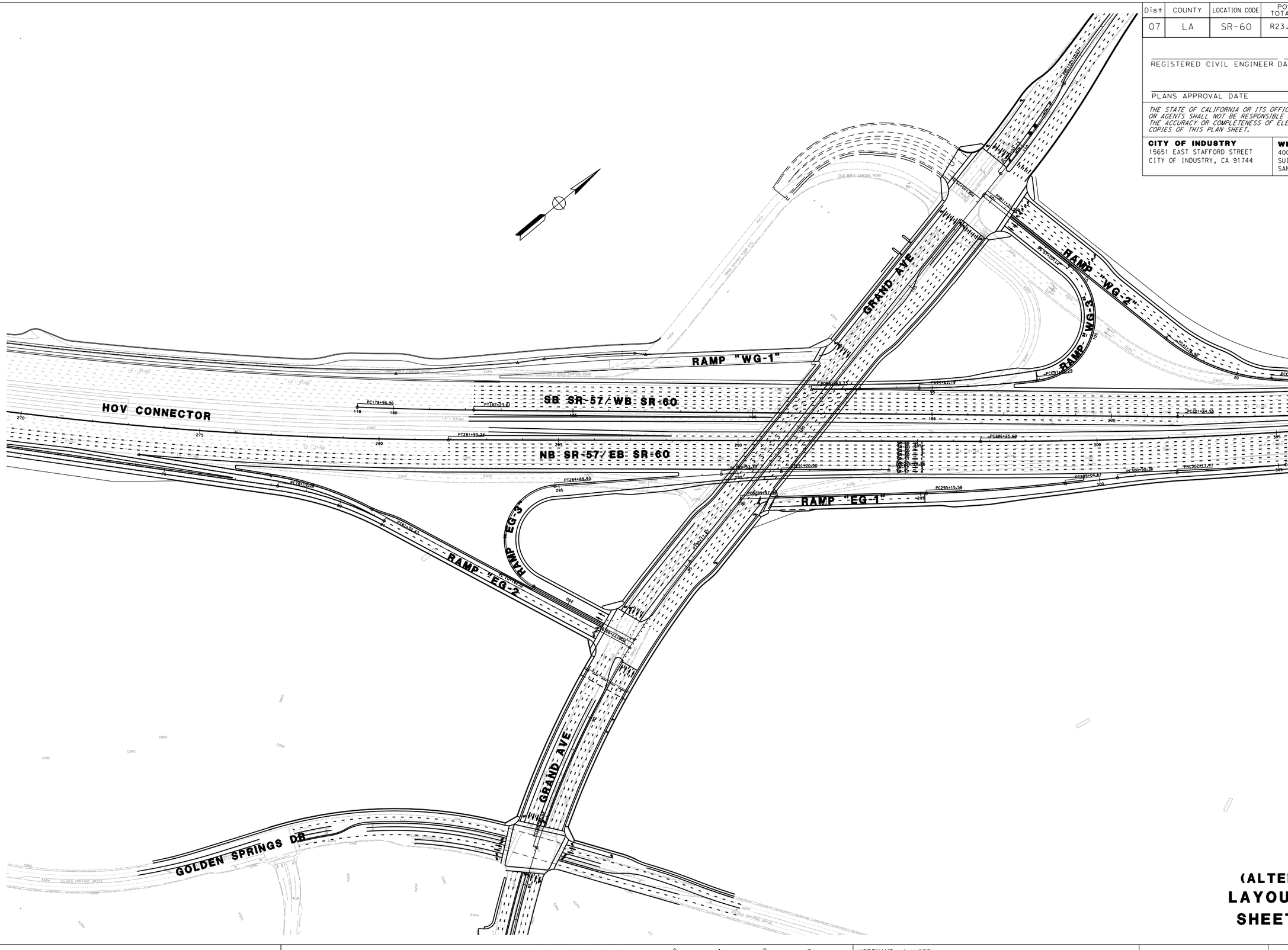

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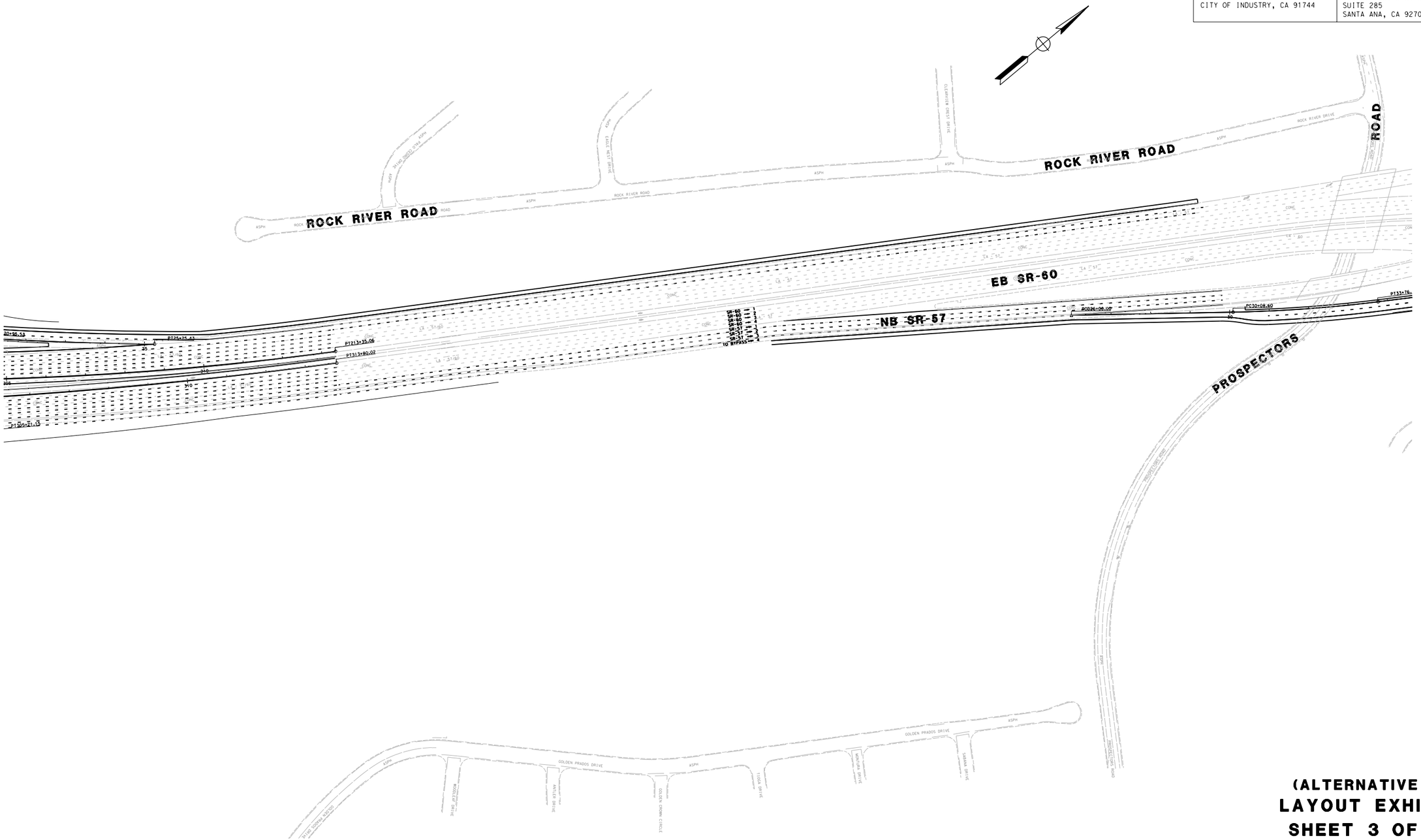
CITY OF INDUSTRY, CA 91744

WKE, INC
400 N. TUSTIN AVENUE
SUITE 285
SANTA ANA, CA 92705



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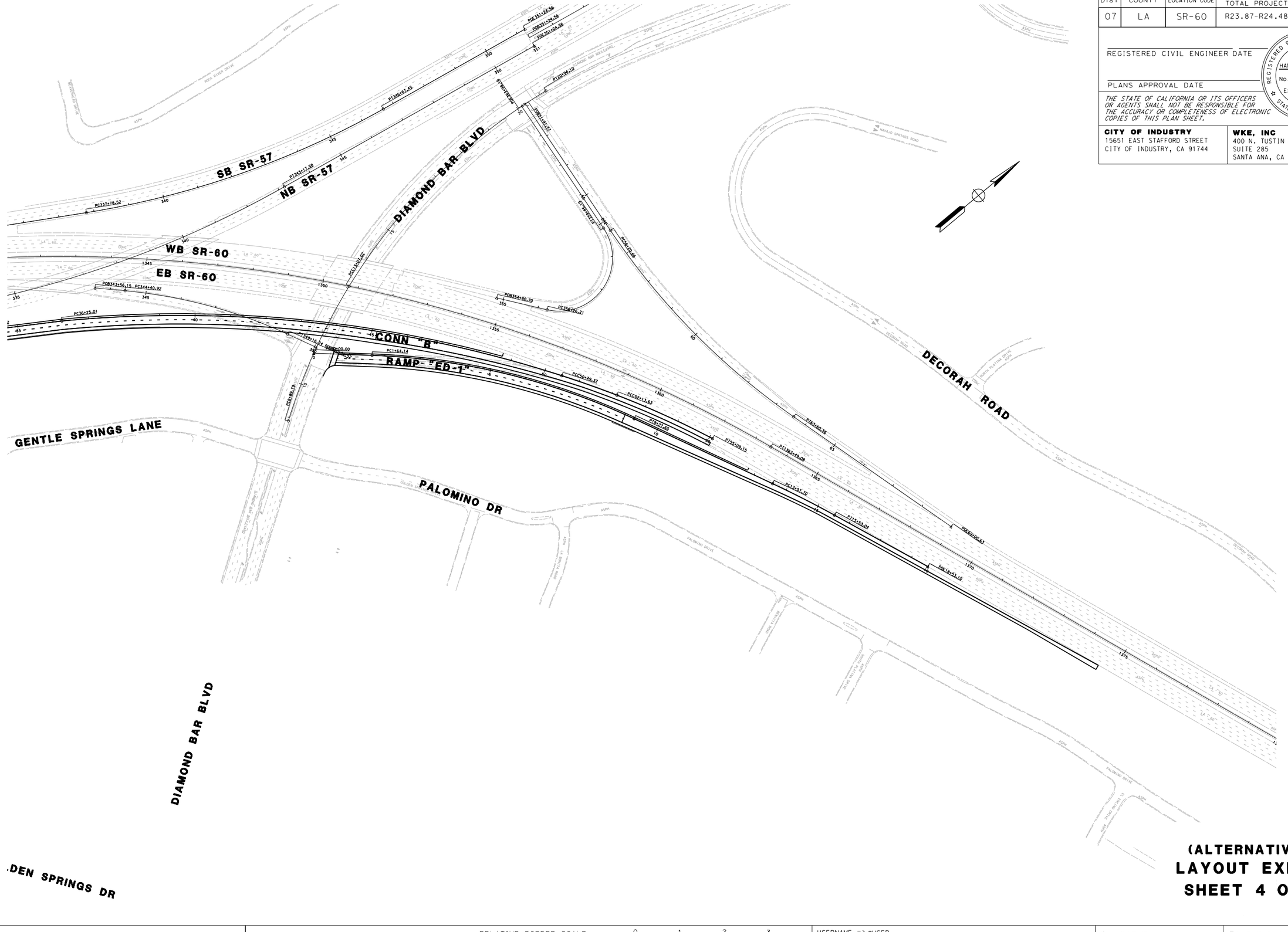

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Dist	COUNTY	LOCATION CODE	POST MILES TOTAL PROJECT	SHEET No.	TOTAL SHEETS
07	LA	SR-57 SR-60	R4.3 / R4.8 R23.6 / R26.5		

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CITY OF INDUSTRY, CA 91744

CIVIL WORKS ENGINEERS
3151 AIRWAY AVENUE
SUITE T-1
COSTA MESA, CA 92626

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STATE OF CALIFORNIA - DEPARTMENT OF TRANSPORTATION

Caltrans

DIAMOND BAR CREEK

BIOSWALE (ESTABLISHED IN EA 255101)

PERVIOUS AREA EA 255100 = 0.1 ACRES

IMPERVIOUS AREA EA 255100 =3.5 ACRES

SR-57 / SR-60

IMPERVIOUS AREA 1A = 1.5 ACRES

PERVIOUS AREA 1B = 0.6 ACRES

IMPERVIOUS AREA 3A = 1.2 ACRES

IMPERVIOUS AREA 3B = 1.0 ACRES

GRAND AVE

IMPERVIOUS AREA 3C = 0.6 ACRES

IMPERVIOUS AREA 3D = 0.6 ACRES

PERVIOUS AREA 3E = 2.1 ACRES

AUSTIN SAND FILTER

IMPERVIOUS AREA 6A = 0.7 ACRES

PERVIOUS AREA 6B = 0.1 ACRES

IMPERVIOUS AREA 5A = 1.8 ACRES

BIOSWALE

BIOSWALE

PERVIOUS AREA 5B = 0.1 ACRES

LINEAR RADIAL GSRD

IMPERVIOUS AREA "2B" = 1.1 ACRES

IMPERVIOUS AREA 1A = 1.5 ACRES

SR-57 / SR-60

PERVIOUS AREA 2C = 1.3 ACRES

IMPERVIOUS AREA 2A = 0.7 ACRES

INFILTRATION BASIN

IMPERVIOUS AREA 2F = 2.7 ACRES

IMPERVIOUS AREA 2E = 1.3 ACRES

PERVIOUS AREA 2G = 0.7 ACRES

IMPERVIOUS AREA 2D = 1.4 ACRES

DIAMOND BAR CREEK

GRAND AVE

DIAMOND BAR CREEK

LEGEND

--- DRAINAGE AREA BOUNDARY

STORM WATER EXHIBIT

SCALE 1"=200'

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Treatment BMP Consideration Process

Maximizing Biostrips & Bioswales
Checklist T-1, Part 1, Item 5

Location	WQV (cf)	Infiltration (in / hr)	Soil Type	Drawdown (hrs)	BMP Area (sf)	Infiltration Volume (cf)	Infiltration %
1	15328	0.36	B	12	1100	396	3%
4	5146	0.16	C	24	832	266	5%
5	2151	0.16	C	24	600	192	9%

Total WQV Infiltrated: 4%

Assess Infiltration of Infiltration BMP in conjunction with Biofiltration
Checklist T-1, Part 1, Item 7b

Location B is only appropriate location (Infiltration rate > 0.5 in/hr), RWQCB must be consulted due to groundwater proximity (5 feet).

Location	WQV (cf)	Infiltration (in / hr)	Soil Type	Drawdown (hrs)	Infiltration Area (sf)	Infiltration Volume (cf)	Infiltration %
2	24503	2.70	A	24	9075	24503	100%

Assess Infiltration of other Earthen BMPs in conjunction with Biofiltration
Checklist T-1, Part 1, Item 7c

Location C is only appropriate location due to size restrictions elsewhere. Infiltration from the devices may not be feasible because of proximity to ground water

Location	WQV (cf)	Infiltration (in / hr)	Soil Type	Drawdown (hrs)	Infiltration Area (sf)	Infiltration Volume (cf)	Infiltration %
3 (ASF)	14402	0.16	C	48	4545	2909	20%
3 (Det Basin)	14402	0.16	C	48	7032	4500	31%

Water Quality Volume (WQV) and Treatment Credit

Site No.	Post Mile	EB / WB	Nearest Cross Street	Inside Future R/W	Recommended BMP	BMP Surface Area (ft^2)	Water Depth (ft)	Minor Drainage Modifications							Efficiency (E)	Treatment Credit (Paved WQV*E) (ft^2)	LID Efficiency (E)	Treatment Credit (Paved WQV*E) (ft^2)
								I (in/area)	Runoff C Weighted	Paved Area (acre)	WQV (Paved) (ft^3)	Unpaved Area (acre)	WQV (Unpaved) (ft^3)	Total WQV (ft^3)				
1	24.23	WB	Grand Ave.	Y	Biofiltration Swale*	1100	0.35	0.75	0.99	3.5	9529	0.4	980	10509	82%	7813	94%	8957
					Biofiltration Swale**	1100	0.45	0.75	0.99	5.0	13613	0.7	1715	15328	82%	11162	94%	12796
2	24.34	EB	Grand Ave.	Y	Infiltration Basin	12660	0.93	0.75	0.98	7.2	19602	2.0	4901	24503	100%	19602	100%	19602
3	24.55	WB	Grand Ave.	Y	Austin Sand Filter	5197	3.00	0.75	0.96	3.4	9257	2.1	5146	14402	87%	8053	87%	8053
4	24.63	WB	Grand Ave.	Y	GSRD	282	N/A	0.75	1.00	1.8	4901	0.1	245	5146	0%	0	0%	0
				Y	Biofiltration Swale	832	0.21								82%	4018	94%	4606
5	24.64	WB	Grand Ave.	Y	Biofiltration Swale	600	0.13	0.75	0.99	0.7	1906	0.1	245	2151	82%	1563	94%	1791

* Bioswale Established in EA 255101 (WB On-Ramp Project). All treatment credited to that project

** Bioswale treats more pavement in EA 279101 due to minor drainage modifications

*** EA 279101 Treatment Credit incorporating Efficiency = (11162 - 7813) + 19602 + 8053 + 0 + 4018 + 1563 = 36586 s

EA 279101 Treatment Credit incorporating LID Efficiency = (12796 - 8957) + 19602 + 8053 + 0 + 4606 + 1791 = 37892 s

EA 255101 Treatment Credit:	7813	8957
EA 279101 Treatment Credit***:	36586	37892
Total Treatment Credit:	44399	46849

Summary of Hydraulics of Flow Based BMPs

Site No.	Post Mile	EB / WB	Nearest Cross Street	Inside Future R/W	Recommended BMP	Length (ft)	Top Width (ft)	Bottom Width (ft)	Side Slope (H:V)	Slope %	Runoff C (paved)	Runoff C (unpaved)	WQF					Q_{25}			
													I (in/hr)	WQF (ft^3/s)	Water Depth (ft)	Velocity (ft/s)	HRT (min) (> 5 min)	I_{10min} (in/hr)	Q_{25} (ft^3/s)	Water Depth (ft)	Velocity (ft/s)
1	24.23	WB	Grand Ave.	Y	Biofiltration Swale*	55	20.0	12.0	4	0.30%	1.0	0.9	0.20	0.77	0.35	0.16	5.8	2.42	9.34	0.61	1.05
					Biofiltration Swale**	55	20.0	12.0	4	0.30%	1.0	0.9	0.20	1.13	0.45	0.18	5.0	2.42	13.62	0.76	1.08
4	24.63	WB	Grand Ave.	Y	GSRD	24.5	11.5	11.5	N/A	N/A	1.0	0.9	0.20	0.38	N/A	N/A	N/A	2.42	4.57	N/A	N/A
				Y	Biofiltration Swale	65	12.8	8.0	4	1.00%	1.0	0.9	0.20	0.38	0.21	0.21	5.3	2.42	4.57	0.36	1.36
5	24.64	WB	Grand Ave.	Y	Biofiltration Swale	50	12.0	8.0	4	1.00%	1.0	0.9	0.20	0.16	0.13	0.15	5.5	2.42	1.91	0.22	1.01

* Bioswale Established in EA 255101 (WB On-Ramp Project).
** Bioswale extended in this project to capture greater pavement runoff (with Minor Drainage Modifications)

Site No.	Recommended BMP	Paved Area (acre)	Unpaved Area (acre)	Freeboard (ft)	Total Depth (ft)	Bioswale WQF Calcs					Bioswale Q25 Calcs			
						Area (sf)	P (ft)	R (ft)	WQF (Check)	Int. Rel. Formula (>=1300)	Area (sf)	P (ft)	R (ft)	Q25 (Check)
1	Biofiltration Swale*	3.5	0.4	0.39	1.00	4.69	14.89	0.32	0.74	5459	8.81	17.03	0.52	9.24
	Biofiltration Swale**	5.0	0.7	0.24	1.00	6.21	15.71	0.40	1.13	3650	11.45	18.28	0.63	13.64
4	GSRD	1.8	0.1	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
	Biofiltration Swale	1.8	0.1	0.24	0.60	1.86	9.73	0.19	0.38	6963	3.40	10.97	0.31	4.62
5	Biofiltration Swale	0.7	0.1	0.20	0.50	1.11	9.07	0.12	0.17	15144	1.95	9.81	0.20	1.98

Checklist SW-1, Site Data Sources

Prepared by: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

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

DATA CATEGORY/SOURCES	Date
Topographic	
• Project Plans for Construction on State Highway 57/60, Contract 07-125U4	December 2, 2002
• City Mapping prepared for Grand Avenue, Golden Springs, and future development north of freeway	June, 2009
• USGS Quad Maps – San Dimas	2009
Hydraulic	
• As-built Plans, Contract 07-036394	1970
• Project Plans for Construction on State Highway 57/60, Contract 07-125U4	December 2, 2002
Soils	
• LA County Dept. of Public Works Hydrology Manual	January 2006
• Soil Percolation Tests at Grand Avenue – Earth Mechanics, Inc.	September 15, 2010
• Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions (http://soils.usda.gov/technical/classification/osd/index.html)	February 2008
• Boring Logs obtained from Route 57/60 HOV Connector (EA 07-036394)	March 1968
Climatic	
• California State Climatologist (http://www.water.ca.gov/floodmgmt/hafoo/csc/)	May 23, 2010
• Caltrans Storm Water Quality Handbook: Project Planning and Design Guide	July 2010
Water Quality	
• LA County Dept. of Public Works Manual for the Standard Urban Storm Water Mitigation Plan (SUSMP)	September 2002
• LA County Dept. of Public Works Hydrology Manual	January 2006
• Caltrans Treatment BMP – Training Document	May 2003
• Caltrans Storm Water Quality Handbook: Project Planning and Design Guide	July 2010
• Project Water Quality Assessment	August 2009
Other Data Categories	
• Caltrans Project Risk Level Determination Guidance	July 2010

Checklist SW-2, Storm Water Quality Issues Summary

Prepared by: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

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

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

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

Prepared by: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

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: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

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: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

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: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

Slope / Surface Protection Systems

1.	What are the proposed areas of cut and fill? (attach plan or map)	☐Complete	
2.	Were benches or terraces provided on high cut and fill slopes to reduce concentration of flows?	☐Yes	☒No
3.	Were slopes rounded and/or shaped to reduce concentrated flow?	☒Yes	☐No
4.	Were concentrated flows collected in stabilized drains or channels?	☒Yes	☐No
5.	Are new or disturbed slopes > 4:1 horizontal:vertical (h:v)?	☐Yes	☒No
	If Yes, District Landscape Architect must prepare or approve an erosion control plan, at the District's discretion.		
6.	Are new or disturbed slopes > 2:1 (h:v)?	☐Yes	☒No
	If Yes, Geotechnical Services must prepare a Geotechnical Design Report, and the District Landscape Architect should prepare or approve an erosion control plan. Concurrence must be obtained from the District Maintenance Storm Water Coordinator for slopes steeper than 2:1 (h:v).		
7.	Estimate the net new impervious area that will result from this project. 14.1acres	☒Complete	

VEGETATED SURFACES

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

HARD SURFACES

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

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

Design Pollution Prevention BMPs

Checklist DPP-1, Part 4

Prepared by: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

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: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

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

Treatment BMPs

Checklist T-1, Part 1

Prepared by: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

Consideration of Treatment BMPs

This checklist is used for projects that require the consideration of Approved Treatment BMPs, as determined from the process described in Section 4 (Project Treatment Consideration) and the Evaluation Documentation Form (EDF). This checklist will be used to determine which Treatment BMPs should be considered for each watershed and sub-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

   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[1] can be infiltrated. When calculating the WQV, use a 12-hour drawdown for Type A and B soils, a 24-hour drawdown for Type C soils, and a 48-hour drawdown for Type D soils. ☒Complete

   _X_ < 20%
   ___ 20 % - 50%
   ___ 50% - 90%
   ___ > 90%

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

[1] A complete methodology for determining WQV infiltration is available at: http://www.dot.ca.gov/hq/oppd/stormwtr/index.htm

(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[2]). ☐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[3]). 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

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

[2] Type D soils are not expected where amendments are incorporated

[3] 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

(b) Assess infiltration of an infiltration BMP that is used in conjunction with biofiltration. Include infiltration losses from biofiltration, if biofiltration is feasible. ***(BMP at EB loop on-ramp possesses adequate infiltration rate for >90% infiltration rate from. Other locations do not - CWE)*** ☒Complete

(use 24 hr WQV)
_X_ < 20% (do not consider this BMP combination)
___ 20% - 50%
___ 50% - 90%
_X_ >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)	Earthen Austin SF (use 48 hr WQV)
___ < 20%	___ < 20%
_X_ 20% - 50%	_X_ 20% - 50%
___ > 50%	___ > 50%

☒Complete

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)?

☐ sediments	☒ copper (dissolved or total)
☐ phosphorus	☒ lead (dissolved or total)
☒ nitrogen	☒ zinc (dissolved or total)
	☒ general metals (dissolved or total)[1]

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

[1] 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.

BMP Selection Matrix A: General Purpose Pollutant Removal			
Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs 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

BMP Selection Matrix B: Any metal is the TDC, but not nitrogen or phosphorous			
Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs 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

BMP Selection Matrix C: Phosphorous and / or nitrogen is the TDC, but no metals are the TDC			
Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored.			
	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
* 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.			
** Delaware filters would be ranked in Tier 2 if the TDC is nitrogen only, as opposed to phosphorous only or both nitrogen and phosphorous.			

BMP Selection Matrix D: Any metal, plus phosphorous and / or nitrogen are the TDCs			
Consider approaches to treat the remaining WQV with combinations of the BMPs in this table. The PE should select at least one BMP for the project; preference is for Tier 1 BMPs, followed by Tier 2 BMPs when Tier 1 BMPs are not feasible. Within each Tier, BMP selection will be determined by the site-specific determination of feasibility (Section 2.4.2.1). BMPs are chosen based on the infiltration category determined in question 7. BMPs in other categories should be ignored.			
	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
    _X_ Infiltration Devices: Checklist T-1, Part 4
    _X_ Detention Devices: Checklist T-1, Part 5
    _X_ GSRDs: Checklist T-1, Part 6
    ____ Traction Sand Traps: Checklist T-1, Part 7
    _X_ Media Filter [Austin Sand Filter and Delaware Filter]: Checklist T-1, Part 8
    _X_ 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): __23__% ☒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): ☒Complete

    __100__%

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

Treatment BMPs

Checklist T-1, Part 2

Prepared by: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

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 ☐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. ☐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 ≤ 300 ft? *	☐Yes	☐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	☐No
8.	Have Biofiltration Systems been considered for locations upstream of other Treatment BMPs, as part of a treatment train? **	☐Yes	☐No

Treatment BMPs

Checklist T-1, Part 4

Prepared by: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

Infiltration Devices

Feasibility

1.	Does local Basin Plan or other local ordinance provide influent limits on quality of water that can be infiltrated, and would infiltration pose a threat to groundwater quality?	☐Yes	☒No
2.	Does infiltration at the site compromise the integrity of any slopes in the area?	☐Yes	☒No
3.	Per survey data or U.S. Geological Survey (USGS) Quad Map, are existing slopes at the proposed device site >15%?	☐Yes	☒No
4.	At the invert, does the soil type classify as NRCS Hydrologic Soil Group (HSG) D, or does the soil have an infiltration rate < 0.5 inches/hr?	☐Yes	☒No
5.	Is site located over a previously identified contaminated groundwater plume?	☐Yes	☒No

If "Yes" to any question above, Infiltration Devices are not feasible; stop here and consider other approved Treatment BMPs.

6.	(a) Does site have groundwater within 10 ft of basin invert?	☒Yes	☐No
	(b) Does site investigation indicate that the infiltration rate is significantly greater than 2.5 inches/hr?	☐Yes	☒No

If "Yes" to either part of Question 6, the RWQCB must be consulted, and the RWQCB must conclude that the groundwater quality will not be compromised, before approving the site for infiltration.

7.	Does adequate area exist within the right-of-way to place Infiltration Device(s)? If "Yes", continue to Design Elements sections. If "No", continue to Question 8.	☒Yes	☐No
8.	If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Infiltration Devices and how much right-of-way would be needed to treat WQV? _____ acres If Yes, continue to Design Elements section. If No, continue to Question 9.	☐Yes	☐No
9.	If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project.	☐Complete	

Design Elements – Infiltration Basin

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

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

1.	Has a detailed investigation been conducted, including subsurface soil investigation, in-hole conductivity testing and groundwater elevation determination? (This report must be completed for PS&E level design.) *	☐Yes	☐No
2.	Has an overflow spillway with scour protection been provided? *	☐Yes	☐No
3.	Is the Infiltration Basin size sufficient to capture the WQV while maintaining a 40-48 hour drawdown time? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet]) *	☐Yes	☐No
4.	Can access be placed to the invert of the Infiltration Basin? *	☐Yes	☐No
5.	Can the Infiltration Basin accommodate the freeboard above the overflow event elevation (reference Appendix B.1.3.1)? *	☐Yes	☐No
6.	Can the Infiltration Basin be designed with interior side slopes no steeper than 4:1 (h:v) (may be 3:1 [h:v] with approval by District Maintenance)? *	☐Yes	☐No
7.	Can vegetation be established in the Infiltration Basin? **	☐Yes	☐No
8.	Can diversion be designed, constructed, and maintained to bypass flows exceeding the WQV? **	☐Yes	☐No
9.	Can a gravity-fed Maintenance Drain be placed? **	☐Yes	☐No

Design Elements – Infiltration Trench

* **Required** Design Element – (see definition above)

** **Recommended** Design Element – (see definition above)

1.	Has a detailed investigation been conducted, including subsurface soil investigation, in-hole conductivity testing and groundwater elevation determination? (This report must be completed for PS&E level design.) *	☐Yes	☐No
2.	Is the surrounding soil within Hydrologic Soil Groups (HSG) Types A or B? *	☐Yes	☐No
3.	Is the volume of the Infiltration Trench equal to at least the 2.85x the WQV, while maintaining a drawdown time of ≤ 96 hours? It is recommended to use a drawdown time between 40 and 48 hours. (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet], unless the District/Regional NPDES Storm Water Coordinator will allow a volume between 2,830 ft^3 and 4,356 ft^3 to be considered.) *	☐Yes	☐No
4.	Is the depth of the Infiltration Trench ≤ 13 ft? *	☐Yes	☐No
5.	Can an observation well be placed in the trench? *	☐Yes	☐No
6.	Can access be provided to the Infiltration Trench? *	☐Yes	☐No
7.	Can pretreatment be provided to capture sediment in the runoff (such as using vegetation)? *	☐Yes	☐No
8.	Can flow diversion be designed, constructed, and maintained to bypass flows exceeding the Water Quality event? **	☐Yes	☐No
9.	Can a perimeter curb or similar device be provided (to limit wheel loads upon the trench)? **	☐Yes	☐No

Treatment BMPs

Checklist T-1, Part 5

Prepared by: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

Detention Devices

Feasibility

1. Is there sufficient head to prevent objectionable backwater conditions in the upstream drainage systems? ☒Yes ☐No

2. 2a) Is the volume of the Detention Device equal to at least the WQV? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet]) ☒Yes ☐No

   Only answer (b) if the Detention Device is being used also to capture traction sand.

   2b) Is the total volume of the Detention Device at least equal to the WQV plus the anticipated volume of traction sand, while maintaining a minimum 12 inch freeboard (1 ft)? ☐Yes ☐No

3. Is basin invert ≥ 10 ft above seasonally high groundwater or can it be designed with an impermeable liner? (Note: If an impermeable liner is used, the seasonally high groundwater elevation must not encroach within 12 inches of the invert.) ☒Yes ☐No

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

4. Does adequate area exist within the right-of-way to place Detention Device(s)? ☒Yes ☐No
   If Yes, continue to the 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 Detention Device(s) and how much right-of way would be needed to treat WQV? _____ acres ☐Yes ☐No
   If Yes, continue to the 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 this Treatment BMP into the project. ☐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 geotechnical integrity of the site been evaluated to determine potential impacts to surrounding slopes due to incidental infiltration? If incidental infiltration through the invert of an unlined Detention Device is a concern, consider using an impermeable liner. *	☐Yes	☐No
2.	Has the location of the Detention Device been evaluated for any effects to the adjacent roadway and subgrade? *	☐Yes	☐No
3.	Can a minimum freeboard of 12 inches be provided above the overflow event elevation? *	☐Yes	☐No
4.	Is an overflow outlet provided? *	☐Yes	☐No
5.	Is the drawdown time of the Detention Device within 24 to 72 hours with 40-hrs the preferred design drawdown time? *	☐Yes	☐No
6.	Is the basin outlet designed to minimize clogging (minimum outlet orifice diameter of 0.5 inches)? *	☐Yes	☐No
7.	Are the inlet and outlet structures designed to prevent scour and re-suspension of settled materials, and to enhance quiescent conditions? *	☐Yes	☐No
8.	Can vegetation be established in an earthen basin at the invert and on the side slopes for erosion control and to minimize re-suspension? Note: Detention Basins may be lined, in which case no vegetation would be required for lined areas.*	☐Yes	☐No
9.	Has sufficient access for Maintenance been provided? *	☐Yes	☐No
10.	Is the side slope 4:1 (h:v) or flatter for interior slopes? ** (Note: Side slopes up to 3:1 (h:v) allowed with approval by District Maintenance.)	☐Yes	☐No
11.	If significant sediment is expected from nearby slopes, can the Detention Device be designed with additional volume equal to the expected annual loading? **	☐Yes	☐No
12.	Is flow path as long as possible (≥ 2:1 length to width ratio at WQV elevation is recommended)? **	☐Yes	☐No

Treatment BMPs

Checklist T-1, Part 6

Prepared by: Marie Marston Date: 4/9/12 District-Co- 07-LA-60 ; 07-LA-57

PM: R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

Gross Solids Removal Devices (GSRDs)

Feasibility

1.	Is the receiving water body downstream of the tributary area to the proposed GSRD on a 303(d) list or has a TMDL for litter been established?	☒Yes	☐No
2.	Are the devices sized for flows generated by the peak drainage facility design event or can peak flow be diverted?	☒Yes	☐No
3.	Are the devices sized to contain gross solids (litter and vegetation) for a period of one year?	☒Yes	☐No
4.	Is there sufficient access for maintenance and large equipment (vacuum truck)?	☒Yes	☐No

If "No" to any question above, then Gross Solids Removal Devices are not feasible. Note that Biofiltration Systems, Infiltration Devices, Detention Devices, Dry Weather Flow Diversion, MCTT, Media Filters, and Wet Basins may be considered for litter capture, but consult with District/Regional NPDES if proposed to meet a TMDL for litter.

5.	Does adequate area exist within the right-of-way to place Gross Solids Removal Devices? If "Yes", continue to Design Elements section. If "No", continue to Question 6.	☒Yes	☐No
6.	If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site Gross Solids Removal Devices and how much right-of-way would be needed? _____ acres If "Yes", continue to Design Elements section. If "No", continue to Question 7.	☐Yes	☐No
7.	If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project.	☐Complete	

Design Elements – Linear Radial Device

* **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. Does sufficient hydraulic head exist to place the Linear Radial GSRD? * ☐Yes ☐No
2. Was the litter accumulation rate of 10 ft^3/ac/yr (or a different rate recommended by Maintenance) used to size the device? * ☐Yes ☐No
3. Were the standard detail sheets used for the layout of the devices? ** ☐Yes ☐No
   If No, consult with Headquarters Office of Storm Water Management and District/Regional NPDES.
4. Is the maximum depth of the storage within 10 ft of the ground surface, or another depth as required by District Maintenance? * ☐Yes ☐No

Design Elements – Inclined Screen

* **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. Does sufficient hydraulic head exist to place the Inclined Screen GSRD? * ☐Yes ☐No
2. Was the litter accumulation rate of 10 ft^3/ac/yr (or a different rate recommended by Maintenance) used to size the device? * ☐Yes ☐No
3. Were the standard details sheets used for the layout of the devices? ** ☐Yes ☐No
   If No, consult with Headquarters Office of Storm Water Management and District NPDES.
4. Is the maximum depth of the storage within 10 ft of the ground surface, or another depth as required by District Maintenance? * ☐Yes ☐No

Treatment BMPs

Checklist T-1, Part 8

Prepared by: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

Media Filters

Caltrans has approved two types of Media Filter: Austin Sand Filters and Delaware Filters. Austin Sand filters are typically designed for larger drainage areas, while Delaware Filters are typically designed for smaller drainage areas. The Austin Sand Filter is constructed with an open top and may have a concrete or earthen invert, while the Delaware is always constructed as a vault. See Appendix B, Media Filters, for a further description of Media Filters.

Feasibility – Austin Sand Filter

1. Is the volume of the Austin Sand Filter equal to at least the WQV using a 24 hour drawdown? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet]) ☒Yes ☐No
2. Is there sufficient hydraulic head to operate the device (minimum 3 ft between the inflow and outflow chambers)? ☒Yes ☐No
3. If initial chamber has an earthen bottom, is initial chamber invert ≥ 3 ft above seasonally high groundwater? ☒Yes ☐No
4. If a vault is used for either chamber, is the level of the concrete base of the vault above seasonally high groundwater or is a special design provided? ☒Yes ☐No

   If No to any question above, then an Austin Sand Filter is not feasible.
5. Does adequate area exist within the right-of-way to place an Austin Sand Filter(s)? ☒Yes ☐No

   If Yes, continue to Design Elements sections. If No, continue to Question 6.
6. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site the device and how much right-of way would be needed to treat WQV? _____ acres ☐Yes ☐No

   If Yes, continue to the Design Elements section.

   If No, continue to Question 7.
7. If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project. ☐Complete

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

Feasibility- Delaware Filter

1. Is the volume of the Delaware Filter equal to at least the WQV using a 40 to 48 hour drawdown? (Note: the WQV must be ≥ 4,356 ft^3 [0.1 acre-feet], consult with District/Regional Design Storm Water Coordinator if a lesser volume is under consideration.) ☒Yes ☐No

2. Is there sufficient hydraulic head to operate the device (minimum 3 ft between the inflow and outflow chambers)? ☒Yes ☐No

3. Would a permanent pool of water be allowed by the local vector control agency? Confirm that check valves and vector proof lid as shown on standard detail sheets will be allowed, is used. ☒Yes ☐No

If No to any question, then a Delaware Filter is not feasible

4. Does adequate area exist within the right-of-way to place a Delaware Filter(s)? If Yes, continue to Design Elements sections. If No, continue to Question 5. ☒Yes ☐No

5. If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site the device and how much right-of way would be needed to treat WQV? _____ acres ☐Yes ☐No
   If Yes, continue to the 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 this Treatment BMP into the project. ☐Complete

7. Does the project discharge to a waterbody that has been placed on the 303-d list or has had a TMDL adopted for bacteria, mercury, sulfides, or low dissolved oxygen? ☐Yes ☐No

   If yes, contact the Regional/District NPDES Storm Water Coordinator to determine if standing water in this treatment BMP would be a risk to downstream water quality. If standing water is a potential issue, consider use of another treatment BMP.

   If a Delaware Filter is still under consideration, continue to the Design Elements – Delaware Filter section.

Design Elements – Austin Sand Filter

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

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

1.	Is the drawdown time of the 2nd chamber 24 hours? *	☐Yes	☐No
2.	Is access for Maintenance vehicles provided to the Austin Sand Filter? *	☐Yes	☐No
3.	Is a bypass/overflow provided for storms > WQV? *	☐Yes	☐No
4.	Is the flow path length to width ratio for the sedimentation chamber of the "full" Austin Sand Filter ≥ 2:1? **	☐Yes	☐No
5.	Can pretreatment be provided to capture sediment and litter in the runoff (such as using vegetation)? **	☐Yes	☐No
6.	Can the Austin Sand Filter be placed using an earthen configuration? ** If No, go to Question 9.	☐Yes	☐No
7.	Is the Austin Sand Filter invert separated from the seasonally high groundwater table by ≥ 10 ft)? * If No, design with an impermeable liner.	☐Yes	☐No
8.	Are side slopes of the earthen chamber 3:1 (h:v) or flatter? *	☐Yes	☐No
9.	Is maximum depth ≤ 13 ft below ground surface? *	☐Yes	☐No
10.	Can the Austin Sand Filter be placed in an offline configuration? **	☐Yes	☐No

Design Elements – Delaware Filter

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

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

1.	Is the drawdown time of the 2nd chamber between 40 and 48 hours, typically 40-hrs? *	☐Yes	☐No
2.	Is access for Maintenance vehicles provided to the Delaware Filter? *	☐Yes	☐No
3.	Is a bypass/overflow provided for storms > WQV? **	☐Yes	☐No
4.	Can pretreatment be provided to capture sediment and litter in the runoff (such as using vegetation)? **	☐Yes	☐No
5.	Is maximum depth ≤ 13 ft below ground surface? *	☐Yes	☐No

Treatment BMPs

Checklist T-1, Part 9

Prepared by: Marie Marston, P.E. Date: 4/9/12 District-Co-Route: 07-LA-60; 07-LA-57

PM : R23.6 / R26.5 ; R4.3 / R4.8 Project ID (or EA): 279100 RWQCB: Region 4

MCTT (Multi-chambered Treatment Train)

Feasibility

1.	Is the proposed location for the MCTT located to serve a "critical source area" (i.e. vehicle service facility, parking area, paved storage area, or fueling station)?	☐ Yes	☒ No
2.	Is the WQV ≥ 4,346 ft³ [0.1 acre-foot]?	☐ Yes	☐ No
3.	Is there sufficient hydraulic head (typically ≥ 6 feet) to operate the device?	☐ Yes	☐ No
4.	Would a permanent pool of water be allowed by the local vector control agency? Confirm that check valves and vector proof lid as shown on standard detail sheets be allowed.	☐ Yes	☒ No
	If No to any question above, then an MCTT is not feasible.		
5.	Does adequate area exist within the right-of-way to place an MCTT(s)? If Yes, continue to Design Elements sections. If No, continue to Question 6.	☐ Yes	☐ No
6.	If adequate area does not exist within right-of-way, can suitable, additional right-of-way be acquired to site the device and how much right-of way would be needed to treat WQV? _____ acres If Yes, continue to Design Elements section. If No, continue to Question 7.	☐ Yes	☐ No
7.	If adequate area cannot be obtained, document in Section 5 of the SWDR that the inability to obtain adequate area prevents the incorporation of this Treatment BMP into the project.	☐ Complete	
8.	Does the project discharge to a waterbody that has been placed on the 303-d list or has had a TMDL adopted for bacteria, mercury, sulfides, low dissolved oxygen, or odors?	☐ Yes	☐ No
	If yes, contact the Regional/District NPDES Storm Water Coordinator to determine if standing water in this treatment BMP would be a risk to downstream water quality. If standing water is a potential issue, consider use of another treatment BMP.		

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.	Is the maximum depth of the 3rd chamber ≤ 13 ft below ground surface and has Maintenance accepted this depth? *	☐Yes	☐No
2.	Is the drawdown time in the 3rd chamber between 24 and 48 hours, typically designed for 24-hrs? *	☐Yes	☐No
3.	Is access for Maintenance vehicles provided to all chambers of the MCTT? *	☐Yes	☐No
4.	Is there sufficient hydraulic head to operate the device? *	☐Yes	☐No
5.	Has a bypass/overflow been provided for storms > WQV? *	☐Yes	☐No
6.	Can pretreatment be provided to capture sediment and litter in the runoff (such as using vegetation)? **	☐Yes	☐No