

# INFORMATION HANDOUT

For Contract No. 08-3401U4  
At 08-SBd-2, 138-6.2/6.4-2.3/R15.2

Identified by  
Project ID 0800000609

## PERMITS

California Department of Fish and Wildlife  
United States Army Corps of Engineers  
Water Quality Certification from State Water Resources Control Board

## WATER QUALITY

California Regional Water Quality Control Board  
Lahotan Region, Santa Ana Region  
Board Order No. 2009-0009-DWQ/2012-0006-DWQ  
NPDES Permit No. CAS 000002

08-3401U4  
08-SBd-2, 138-6.2/6.4-2.3/R15.2  
Project ID 0800000609

## MATERIALS INFORMATION

Summary of Foundation Recommendation Reports

1. Foundation Report for Sheep Creek Bridge (Replace)
2. Revised Geotechnical Design Report for two Soil Nail Walls
3. Revised Foundation Report for Cajon Mountain Underpass Slab on Grade
4. Foundation Report for Wildlife Undercrossing No. 2 and Modified Type 1 Retaining Wall
5. Foundation Report for Cajon Creek Bridge (Widen)

Hydraulic Reports

1. Wildlife Animal Undercrossing No.2
2. Cajon Creek Bridge and Sheep Creek Bridge
3. Addendum for Cajon Creek Bridge and Sheep Creek Bridge

## ELECTRONIC FILE

1. HA\_VA\_KCM
2. Cross\_Sections\_dgn

3. Slope\_Stake\_Listing\_pdf
4. OG\_3D\_dgn

## **ASBESTOS REPORT**

Asbestos Containing Materials and Lead-Based Paint Survey Report

## **ROCKWALL**

Picture

## **DESERT TORTOISE**

Information Brochure for Protection of Desert Tortoise

CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE  
INLAND DESERTS REGION  
3602 INLAND EMPIRE BLVD, SUITE C-220  
ONTARIO, CA 91764



**STREAMBED ALTERATION AGREEMENT**  
NOTIFICATION NO. 1600-2013-0096-R6

CALIFORNIA DEPARTMENT OF TRANSPORTATION  
EA: 3401U SR-138 WIDENING PROJECT

This Streambed Alteration Agreement (Agreement) is entered into between the California Department of Fish and Wildlife (CDFW) and the California Department of Transportation (Permittee).

**RECITALS**

WHEREAS, pursuant to Fish and Game Code (FGC) section 1602, Permittee notified CDFW on July 27, 2013 that Permittee intends to complete the project described herein. CDFW sent an incomplete letter to Permittee on August 1, 2013. Permittee sent CDFW the appropriate information and on September 6, 2013 and CDFW deemed the notification complete. On September 18, 2013, CDFW sent Permittee a notice of CEQA noncompliance. On the November 17, 2013, Permittee submitted the appropriate information to CDFW as required to execute this Agreement.

WHEREAS, pursuant to FGC section 1603, CDFW has determined that the project could substantially adversely affect existing fish or wildlife resources and has included measures in the Agreement necessary to protect those resources.

WHEREAS, Permittee has reviewed the Agreement and accepts its terms and conditions, including the measures to protect fish and wildlife resources.

NOW THEREFORE, Permittee agrees to complete the project in accordance with this Agreement.

**PROJECT LOCATION**

The project limits begin in Los Angeles County at State Route (SR) 138, Caltrans Post Mile (PM) 69.3 to PM 74.9 and extend into San Bernardino County starting from PM 0.0, ending at Interstate 15 (I-15) PM 15.2. Phase 1 includes the San Bernardino County segment from Phelan Road (PM 2.9) to the existing 4-lane facility just west of I-15.

**PROJECT DESCRIPTION**

This Agreement only includes Phase 1 of the project which consists of the widening of the existing SR-138 highway facility in both segments to a 4-lane highway plus a 4-foot median buffer. The project will consist of two 12-foot lanes in each direction, 8-foot outside shoulders, and a 4-foot median buffer. Within the Project limits, there are approximately 48 existing drainage facilities, which will be extended or replaced if the facility exceeds sixty percent of its service life. The Project will include extension of culverts, removal or construction of headwalls, reconstruction of several outside and downstream drains, asphalt concrete apron flared, and rock slope protection (Project).

To facilitate wildlife movements within United States Forest Service (USFS) boundaries in Phase 1 of this project, Permittee will construct two bridge structures at two locations as listed below:

Wildlife Crossing (Bridge number 403): Construct a cast-in-place, pre-stressed concrete slab bridge at PM 7.63.

Wildlife Crossing (Bridge number 735): The existing Reinforced Concrete Box (RCB) at PM 13.93 is not large enough to meet the height to width ratio opening as recommended by USFS. Permittee proposes to replace the existing 8'x10.5' RCB with a cast in place reinforced concrete slab bridge at the same location.

In addition to the wildlife crossing structures, proposed improvements include four structures as listed below:

- Widen Cajon Creek Bridge, (#54-0561), PM 14.93
- Widen Pine Lodge East Overhead (#54-1057), PM 14.76
- Widen Pine Lodge West Overhead (# 54-1056), PM 14.27
- Replace Sheep Creek bridge (# 54-0810), PM 3.62

The channel bottom under Sheep Creek Bridge will be impacted during construction. Excavation to bedrock will need to take place to construct new footings for the replacement bridge.

Cajon Creek will have impacts to the channel sides and bank of the river as access roads will need to be cut to allow construction to take place on the Cajon Creek Bridge. The channel bottom under the bridge will be impacted during construction. Excavation to bedrock will need to take place to construct new footings for the sections of the bridge that are widened. Some riparian vegetation will be impacted when the access roads are cut and when work is conducted within the channel itself as riparian vegetation is present there as well. There are many drainages on this project consisting of cast round culverts to box culverts of various sizes. These are all being extended to compensate for the widening of the roadway. They being cleaned where needed to restore to proper functioning level. Impacts will be minor as there are improvements to existing structures.

Cajon Creek and Sheep Creek bridges will possibly require water diversion for the purpose of constructing and protecting new and improved support structures. Water may be present during the construction of these two projects. The contractor will use Caltrans Best Management Practices found in the Clear Water Diversion NS-5 manual for properly creating a clear water diversion in these two creeks. The diversionary tactics will be implemented to protect the footings and structures being built and improved upon for the bridge work if work is being done while water is present in streambed.

## PROJECT IMPACTS

Existing fish or wildlife resources the Project could substantially adversely affect include: state-threatened desert tortoise (*Gopherus agassizii*), Mohave ground squirrel (*Xerospermophilus mohavensis*), burrowing owl (*Athene cunicularia*), and a variety of sensitive bat species.

The adverse effects the Project could have on the fish or wildlife resources identified above include 1.38 acres of temporary impacts and 3.42 acres of permanent impacts.

## **MEASURES TO PROTECT FISH AND WILDLIFE RESOURCES**

### **1. Administrative Measures**

Permittee shall meet each administrative requirement described below.

- 1.1 Documentation at Project Site. Permittee shall make this Agreement, any extensions and amendments to this Agreement, and all related notification materials and California Environmental Quality Act (CEQA) documents, readily available at the project site at all times and shall be presented to CDFW personnel, or personnel from another state, federal, or local agency upon request.
- 1.2 Providing Agreement to Persons at Project Site. Permittee shall provide copies of this Agreement and any extensions and amendments to the Agreement to all persons who will be working on the project at the project site on behalf of Permittee, including but not limited to contractors, subcontractors, inspectors, and monitors.
- 1.3 Notification of Conflicting Provisions. Permittee shall notify CDFW if the Permittee determines or learns that a provision in this Agreement might conflict with a provision imposed on the project by another local, state, or federal agency. In that event, CDFW shall contact Permittee to resolve any conflict.
- 1.4 Compliance with Other Agencies. This Agreement does not relieve the Permittee of responsibility for compliance with applicable federal, state, or local laws, ordinances or grant conditions. A consummated Agreement does not constitute CDFW endorsement of the proposed operation, or assure CDFW concurrence with permits and/or grant conditions required from other agencies.
- 1.5 Project Site Entry. Permittee agrees that CDFW personnel may enter the project site at any time to verify compliance with this Agreement.

### **2. Avoidance and Minimization Measures**

To avoid or minimize adverse impacts to fish and wildlife resources identified above, Permittee shall implement each measure listed below.

- 2.1 Pre-Construction Surveys. No more than 14 days prior to initiating construction activities, the qualified biologist shall conduct pre-construction surveys for sensitive species including desert tortoise, Mohave ground squirrel, and burrowing owl. The qualified biologist shall flag all potential sensitive species burrows within the survey area which includes the Project footprint, a 50-foot buffer and all Project access routes. If the Project area borders private property for which access has not been granted, buffer zone survey areas may be reduced as this Agreement does not authorize trespass. If sensitive species are observed, CDFW shall be immediately notified by phone, and in writing no later than the following business day (refer to 'Contact Information' below). No sensitive species shall be handled without obtaining a 2081 permit from CDFW.

- 2.2 Temporary Fencing. If pre-construction surveys indicate presence of desert tortoise on the project site, Permittee shall install temporary desert tortoise exclusionary fencing around any active construction area, lay down area, and storage area (whether on-site or off-site), prior to the onset of vegetation removal, or any other project construction activities that require overnight work or disturbance of desert tortoise habitat.
- 2.3 Cover Pipes. All pipes within the project disturbance area must be capped and/or covered every evening or when not in use to prevent animals from accessing the pipes.
- 2.4 Water Sources. All water sources shall be covered and secured when not in use to prevent drowning of special status species and wildlife.
- 2.5 Vegetation Removal. The Permittee shall not remove vegetation from the project site from March 15 to September 15 to avoid impacts to nesting birds. If the Permittee intends to commence Project construction between March 15 and September 15, the Permittee shall have a qualified biologist survey all potential nesting vegetation for nesting birds within the Project area, prior to Project activities (including construction and/or site preparation). Surveys shall be conducted at the appropriate time of day during the breeding season, and surveys shall end no more than three days prior to clearing. If no nesting birds were observed in pre-construction surveys, then project activities may begin immediately after conclusion of the surveys. If an active nest is observed within the project area, the onsite biological monitor will establish an appropriate buffer around the active nests. The buffer will be determined by the onsite biological monitor, in coordination with CDFW. If threatened or endangered avian species are observed in the area, no work shall occur during the avian breeding season (March 15 through September 15) without authorization from CDFW.
- 2.6 On-site Education. Permittee shall conduct an education program for all persons employed or otherwise working on the project site prior to performing any work on-site. The program shall consist of a presentation from the qualified biologist that includes a discussion of the biology of the habitats and species identified in this Agreement and present at this site. The qualified biologist shall also include as part of the education program information about the distribution and habitat needs of any special status species that may be present, legal protections for those species, penalties for violations and project-specific protective measures included in this Agreement. Interpretation shall be provided for non-English speaking workers, and the same instruction shall be provided for any new workers prior to their performing work on-site. Permittee shall prepare and distribute wallet-sized cards or a fact sheet that contains this information for workers to carry on-site. Upon completion of the education program, employees shall sign a form stating they attended the program and understand all protection measures. These forms shall be filed at the worksite offices and be available to CDFW upon request.
- 2.7 Bat Protection – Bridges and Culverts. Prior to work commencing at any bridge or culvert, the structure shall be surveyed for bats by a qualified bat biologist. If bats are found work on the bridge operations shall cease. Bats shall not be disturbed without specific notice to and consultation with CDFW. CDFW reserves the right to provide additional provisions to this Agreement designed to protect nesting/roosting bats. Impact minimization measures shall be implemented prior to project activities. If the bridges or culvert is being replaced, new bat habitat shall be incorporated in the design of the new structure.

- 2.8 Burrowing Owl Inspection. Permittee shall have a biologist, approved in advance by CDFW, perform a pre-construction survey for burrowing owls prior to the initiation of any construction activities. Permittee shall inspect all burrows that exhibit typical characteristics of owl activity at least three days prior to any site preparation activities. If it is evident that the burrows are actively being used, Permittee shall not commence activities until no sign is present that the burrows are being used by adults or juvenile owls or a passive relocation plan is approved by CDFW. The CDFW 2012 Staff Report on Burrowing Owl Mitigation includes passive relocation requirements and mitigation guidance as required if owls are present.

### 3. Avoid/Minimize Effects of Equipment

- 3.1 Minimize Vehicle Parking. Vehicles may enter and exit the Work Area as necessary for project activities, but may not be parked overnight within ten (10) feet of the drip line of any trees; nor shall vehicles be parked where mechanical fluid leaks may potentially enter the waters of the state.
- 3.2 Building Material Storage. Project building material and/or construction equipment shall not be placed where materials could pass into the waters of the state or where they may cover aquatic or riparian vegetation.
- 3.3 Erosion Protection for Vegetation Recovery. Permittee shall place erosion protection in areas where vegetation cannot reasonably be expected to re-establish. Erosion protection methods locations shall be pre-approved by CDFW.
- 3.4 Stockpiled Materials. Building materials and/or construction equipment shall not be stockpiled or stored where they may be washed into the water or cover aquatic or riparian vegetation. Stockpiles shall be covered when measurable rain is forecasted.
- 3.5 Spoil Sites. Spoil sites shall not be located within a stream or locations that may be subjected to high storm flows, where spoil may be washed back into a stream, or where it may impact streambed habitat, aquatic or riparian vegetation.

### 4. EXCAVATION, FILL, AND STABILIZATION

- 4.1 Stream Materials. Rock, gravel, and/or other materials shall not be imported to, taken from or moved within the bed or banks of the stream except as otherwise addressed in this Agreement.
- 4.2 No Harvesting of Gravels and Fill Material. No on-site harvesting of in-situ gravel or cobble may occur for temporary landings or ramps. Where additional material is required within the stream the Permittee shall use off-site commercial/permitted clean round river cobble or clean silt free gravel. No fill material, other than clean round river cobble, shall be allowed to enter the stream. Upon completion of the project, imported round river cobble may be removed from the stream or distributed on existing cobble bars near the flowing portion of the stream.

## 5. Equipment and Vehicles

- 5.1 Operating Equipment and Vehicle Leaks. Any equipment or vehicles driven and/or operated within or adjacent to the stream shall be checked and maintained daily to prevent leaks of materials that could be deleterious to aquatic and terrestrial life or riparian habitat.
- 5.2 Clean Equipment Prior to Entering Stream. All heavy equipment that will be entering the live stream shall be cleaned of materials deleterious to aquatic life including oil, grease, hydraulic fluid, soil and other debris. Cleaning of equipment shall take place outside of the Watercourse and Lake Protection Zone (WLPZ) and prior to entering the water.
- 5.3 Equipment Storage. Staging and storage areas for equipment, materials, fuels, lubricants and solvents, shall be located outside of the stream channel and banks.
- 5.4 Staging and Storage Areas. Staging and storage areas for equipment, materials, fuels, lubricants, and solvents shall be located more than twenty (20) feet from the stream channel and banks. All equipment and fuel stored on site shall be bermed to contain any spilled material and shall be protected from rain. Berms shall consist of plastic covered dirt or sand bags.
- 5.5 Hazardous Substances. Raw cement/concrete or washings thereof, asphalt, paint or other coating material, oil or other petroleum products, or any other substances which could be hazardous to aquatic life, resulting from project related activities, shall be prevented from contaminating the soil and/or entering the waters of the state. Any of these materials, placed within or where they may enter the stream by Permittee or any party working under contract, or with the permission of Permittee, shall be removed immediately.

## 6. DEWATERING AND TEMPORARY DIVERSIONS

- 6.1 Diversion Plan. If flowing water is present or reasonably anticipated, the Permittee shall submit for approval a detailed water diversion plan to CDFW. Dewatering structures may include the use of sand bag, Port-a-dams, water bladder dams, K-rails or driven sheet metal coffer dams. CDFW will review the proposed water diversion method, to approve the plan or provide the requirements for that approval. The Permittee may not commence the diversion of water without the written approval from CDFW.
- 6.2 Stream Diversion. When work in a flowing stream is unavoidable, Permittee shall divert the stream flow around or through the work area during construction operations.
- 6.3 Gravity Flow. Stream flow shall be diverted using gravity flow through temporary culverts/pipes or pumped around the work site with the use of hoses.
- 6.4 Ephemeral Stream Diversion. Vehicles shall not be driven or equipment operated in water covered portions of the stream, or where wetland vegetation, riparian vegetation, or aquatic organisms may be impacted, except as otherwise provided for in the Agreement and as necessary to complete authorized work.
- 6.5 Alternative Diversion Method. No other diversion method shall be used without authorization of CDFW. If another diversion method is preferred, Permittee shall submit a

plan detailing the desired diversion method. Authorization of any other diversion method shall be at the discretion of CDFW.

## 7. Site Restoration and Revegetation

- 7.1 Return to Previous Grade. If the gradient of the streambed may be altered during project operations, Permittee shall return its contours as close as possible to pre-project conditions. Permittee shall be responsible for restoration of contours to pre-project conditions in the event that subsequent erosion is caused by the Project. The Permittee may request a variance from this condition through the formal Agreement amendment process. Within 45 days of project completion, Permittee shall restore all temporary impact areas and no later than 90 days following project completion; a letter shall be submitted to CDFW that includes a description of the restoration activities performed and photographs of the temporary impact areas before and after restoration.
- 7.2 Native Plant Materials Required. Revegetation shall include only local plant materials native to the project area, unless otherwise approved by CDFW in writing.
- 7.3 Prohibited Plant Species. Permittee shall not plant, seed or otherwise introduce invasive exotic plant species. Prohibited exotic plant species include those identified in the California Exotic Pest Plant Council's database, which is accessible at: <http://www.cal-ipc.org/paf/>
- 7.4 Revegetation Annual Report. The Permittee shall submit an annual status report on the monitoring of planting to CDFW by December 31 of each year for three (3) years. This report shall include the survival, percent cover, and height of both tree and shrub species. The number by species of plants replaced, an overview of the re-vegetation effort, and the method used to assess these parameters shall also be included. Photos from designated photo stations shall be included.

## 8. Compensatory Measures

To compensate for adverse impacts to fish and wildlife resources identified above that cannot be avoided or minimized, Permittee shall mitigate for temporary impacts of 0.66 acres at the Cajon Bridge at a ratio of 1:1. Permanent Project (Phase 1) impacts include 3.42 acres and shall be mitigated for at a ratio of 2:1. Total mitigation required for the Project includes 7.50 acres. If land acquired through the 2081 Incidental Take Permit (ITP) process in Phase 2 includes suitable habitat, it may be used for Phase 1 mitigation with written approval from CDFW. However, if a 2081 permit is not attained for Phase 2, the Permittee will be responsible for acquiring the appropriate Phase 1 mitigation within three years of the start of Phase 1 construction.

## 9. Reporting Measures

- 9.1 Notification to CNDDDB. If sensitive species are observed on or in proximity to the project site, or during project surveys, Permittee shall submit California Natural Diversity Data Base (CNDDDB) forms and maps to the CNDDDB within five working days of the sightings, and provide the regional CDFW office with copies of the CNDDDB forms and survey maps. The CNDDDB form is available online at:

[www.DFW.ca.gov/whdab/pdfs/natspec.pdf](http://www.DFW.ca.gov/whdab/pdfs/natspec.pdf). **This information shall be mailed within five days to:** California Department of Fish and Wildlife, Natural Diversity Data Base, 1807 13th Street, Suite 202, Sacramento, CA 95814, Phone (916) 324-3812. A copy of this information shall also be mailed within five days to Department of Fish and Wildlife, Inland Deserts Region at the address below under Contact Information. **Please reference SAA # 1600-2013-0096-R6.**

- 9.2 Notification of Start of Construction. Permittee shall notify CDFW, in writing, at least five (5) days prior to initiation of project activities in jurisdictional areas, and at least five (5) days prior to completion of project activities in jurisdictional areas. Notification should be mailed to Department of Fish and Wildlife, Inland Deserts Region at the address below under Contact Information. **Please reference SAA # 1600-2013-0096-R6.**

## CONTACT INFORMATION

All communication between Permittee and CDFW shall be in writing and delivered to the address below by U.S. mail, fax, or email, or an alternative if Permittee or CDFW specifies by written notice to the other.

### To Permittee:

Scott Quinell  
California Department of Transportation  
464 W 4th Street, 6th Floor, MS 822  
San Bernardino, CA 92401-1400  
(909) 383-6936  
Scott\_quinnell@dot.ca.gov

### To CDFW:

Department of Fish and Wildlife  
Inland Deserts Region  
3602 Inland Empire Blvd, Suite-220  
Ontario, CA 91760  
Attn: Lake and Streambed Alteration Program –Heather Weiche  
Notification #1600-2013-0096-R6  
(909) 481-2945 Fax  
Heather.Weiche@wildlife.ca.gov

## LIABILITY

Permittee shall be solely liable for any violations of this Agreement, whether committed by Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents or contractors and subcontractors, to complete the project or any activity related to it that this Agreement authorizes.

This Agreement does not constitute CDFW endorsement of, or require Permittee to proceed with the Project. The decision to proceed with the Project is Permittee's alone.

## **SUSPENSION AND REVOCATION**

CDFW may suspend or revoke in its entirety this Agreement if it determines that Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, is not in compliance with this Agreement.

Before CDFW suspends or revokes this Agreement, it shall provide Permittee written notice by certified or registered mail that it intends to suspend or revoke. The notice shall state the reason(s) for the proposed suspension or revocation, provide Permittee an opportunity to correct any deficiency before CDFW suspends or revokes this Agreement, and include instructions to Permittee, if necessary, including but not limited to a directive to immediately cease the specific activity or activities that caused CDFW to issue the notice.

## **ENFORCEMENT**

Nothing in this Agreement precludes CDFW from pursuing an enforcement action against Permittee instead of, or in addition to, suspending or revoking this Agreement.

Nothing in this Agreement limits or otherwise affects CDFW enforcement authority or that of its enforcement personnel.

## **OTHER LEGAL OBLIGATIONS**

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from obtaining any other permits or authorizations that might be required under other federal, state, or local laws or regulations before beginning the project or an activity related to it.

This Agreement does not relieve Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, from complying with other applicable statutes in the FGC including, but not limited to, FGC sections 2050 *et seq.* (threatened and endangered species), 3503 (bird nests and eggs), 3503.5 (birds of prey), 5650 (water pollution), 5652 (refuse disposal into water), 5901 (fish passage), 5937 (sufficient water for fish), and 5948 (obstruction of stream).

Nothing in this Agreement authorizes Permittee or any person acting on behalf of Permittee, including its officers, employees, representatives, agents, or contractors and subcontractors, to trespass.

## **AMENDMENT**

CDFW may amend this Agreement at any time during its term if CDFW determines an amendment is necessary to protect an existing fish or wildlife resource.

The Permittee may amend this Agreement at any time during its term, provided the amendment is mutually agreed to in writing by CDFW and Permittee. To request an amendment, Permittee shall submit to CDFW a completed "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the corresponding amendment fee identified in the current fee schedule (Cal. Code Regs., tit. 14, § 699.5).

## **TRANSFER AND ASSIGNMENT**

This Agreement may not be transferred or assigned to another entity, and any purported transfer or assignment of this Agreement to another entity shall not be valid or effective, unless the transfer or assignment is requested by Permittee in writing, as specified below, and thereafter CDFW approves the transfer or assignment in writing.

The transfer or assignment of this Agreement to another entity shall constitute a minor amendment. To request a transfer or assignment, Permittee shall submit to CDFW a completed "Request to Amend Lake or Streambed Alteration" form and include with the completed form payment of the minor amendment fee identified in the current fee schedule (Cal. Code Regs., tit. 14, § 699.5).

## **EXTENSIONS**

In accordance with FGC section 1605(b), Permittee may request one extension of this Agreement, provided the request is made prior to the expiration of this Agreement's term. To request an extension, Permittee shall submit to CDFW a completed "Request to Extend Lake or Streambed Alteration" form and include with the completed form payment of the extension fee identified in the current fee schedule (Cal. Code Regs., tit. 14, § 699.5). CDFW shall process the extension request in accordance with FGC 1605(b) through (e).

If Permittee fails to submit a request to extend this Agreement prior to its expiration, Permittee must submit a new notification and notification fee before beginning or continuing the project the Agreement covers (FGC section 1605, subd. (f)).

## **EFFECTIVE DATE**

This Agreement becomes effective on the date of CDFW signature, which shall be: 1) after Permittee's signature; 2) after CDFW complies with all applicable requirements under CEQA; and 3) after payment of the applicable FGC section 711.4 filing fee listed at: [www.DFW.ca.gov/habcon/ceqa/ceqa\\_changes.html](http://www.DFW.ca.gov/habcon/ceqa/ceqa_changes.html).

## **TERM**

**This Agreement shall expire on January 1, 2019** unless it is terminated or extended before then. All provisions in this Agreement shall remain in force throughout its term. Permittee shall remain responsible for implementing any provisions specified herein to protect fish and wildlife resources after this Agreement expires or is terminated, as required by FGC section 1605(a)(2).

## **AUTHORITY**

If the person signing this Agreement (signatory) is doing so as a representative of Permittee, the signatory hereby acknowledges that he or she is doing so on Permittee's behalf and represents and warrants that he or she has the authority to legally bind Permittee to the provisions herein.

**AUTHORIZATION**

This Agreement authorizes only the Project described herein. If Permittee begins or completes a Project different from the project this Agreement authorizes, Permittee may be subject to civil or criminal prosecution for failing to notify CDFW in accordance with FGC section 1602.

**CONCURRENCE**

The undersigned accepts and agrees to comply with all provisions contained herein.

**FOR DEPARTMENT OF TRANSPORTATION**

  
\_\_\_\_\_  
Mr. Scott Quinnell

12-31-13  
\_\_\_\_\_  
Date

**FOR DEPARTMENT OF FISH AND WILDLIFE**

  
\_\_\_\_\_  
Ms. Leslie MacNair  
Environmental Program Manager

1/15/14  
\_\_\_\_\_  
Date

Prepared by: Heather Weiche  
Environmental Scientist



REPLY TO  
ATTENTION OF

DEPARTMENT OF THE ARMY  
US ARMY CORPS OF ENGINEERS  
P.O. BOX 532711  
LOS ANGELES, CA 90053-2325

December 18, 2013

Regulatory Division

Scott Quinnell  
California Department of Transportation, District 8  
Senior Environmental Planner 464 West 4th Street  
San Bernardino, California 92401-1400

**DEPARTMENT OF THE ARMY NATIONWIDE PERMIT VERIFICATION**

Dear Mr. Quinnell:

I am responding to your request (SPL-2009-00607) for a Department of the Army permit. Your proposed project, the State Route 138 Widening Project Phase I, is located within San Bernardino and Los Angeles Counties, California.

This project would result in a discharge of dredged and/or fill material into waters of the United States. Therefore, pursuant to section 404 of the Clean Water Act (33 U.S.C. 1344; 33 C.F.R. parts 323 and 330), your proposed project requires a Department of the Army permit.

I have determined construction of your proposed project would comply with Nationwide Permit (NWP) No. 14 Linear Transportation Projects, if constructed as described in your application.

Specifically, and as shown on the attached drawing(s)/map(s), you are authorized to conduct the following regulated activities:

1. To discharge fill, as described in item no. 2 below, in association with widening the existing SR-138 facility to a 4-lane highway, including a 4-foot median buffer and 8-foot outside shoulders beginning from the I-15 to approximately 0.6 mile west of the SR-138 and Phelan Road intersection (Phase I).
2. To permanently discharge fill into a total of 1.49 acres of waters of the U.S. including Cajon Creek and at crossings 1-57 and temporarily discharge fill into 0.2 acres of waters of the U.S. at the Cajon Creek crossing, as described in Table 2 and Figures 1 through 3B of the revised delineation report dated October 1, 2013, prepared by AMEC Environment & Infrastructure, Inc.

For this NWP verification letter to be valid, you must comply with all of the terms and conditions in Enclosure 1. Furthermore, you must comply with the non-discretionary Special Conditions listed below:

1. Prior to initiating construction in waters of the U.S., the Permittee shall submit to the Corps Regulatory Division a complete set of final detailed grading/construction plans (in PDF format) showing all work and structures in waters of the U.S. All plans shall be in compliance with the Final Map and Drawing Standards for the South Pacific Division Regulatory Program dated August 6, 2012

(<http://www.spd.usace.army.mil/Portals/13/docs/regulatory/standards/map.pdf>). All plan sheets shall be signed, dated, and submitted on paper no larger than 11x 17 inches. No work in waters of the U.S. is authorized until the Permittee receives, in writing (by letter or e-mail), Corps Regulatory Division approval of the final detailed grading/construction plans. The Permittee shall ensure that the project is built in accordance with the Corps-approved plans.

2. Within 45 calendar days of completion of authorized work in waters of the U.S., the Permittee shall submit to the Corps Regulatory Division a post-project implementation memorandum including the following information:

- A) Date(s) work within waters of the U.S. was initiated and completed;
- B) Summary of compliance status with each special condition of this permit (including any noncompliance that previously occurred or is currently occurring and corrective actions taken or proposed to achieve compliance);
- C) Color photographs (including map of photopoints) taken at the project site before and after construction for those aspects directly associated with permanent impacts to waters of the U.S. such that the extent of authorized fills can be verified;
- D) One copy of "as built" drawings for the entire project. Electronic submittal (Adobe PDF format) is preferred. All sheets must be signed, dated, and to-scale. If submitting paper copies, sheets must be no larger than 11 x 17 inches; and
- E) Signed Certification of Compliance (attached as part of this permit package).

3. This Corps permit does not authorize you to take any threatened or endangered species, in particular the Least Bell's vireo (*Vireo bellii pusillus* "LBV"), southwestern willow flycatcher (*Empidonax traillii extimus*), arroyo toad (*Anaxyrus californicus* (*Bufo microscaphus* c.)), Santa Ana River woolly-star (*Eriastrum densifolium* ssp. *sanctorum*), slender-homed spineflower (*Dodecahema leptoceras* (*Centrostegia* l.)), and the federally threatened desert tortoise (*Gopherus agassizii*), or adversely modify any of their designated critical habitat. In order to legally take a listed species, you must have separate authorization under the Endangered Species Act (ESA) (e.g. ESA Section 10 permit, or a Biological Opinion (BO) under ESA Section 7, with "incidental take" provisions with which you must comply). Pursuant to the FWS correspondence dated June 28, 2012, including the required, referenced avoidance and minimization measures, the Corps Regulatory Division has determined and the FWS has concurred your activity is not likely to adversely affect the above species. Your authorization under this Corps permit is conditional upon your compliance with all of the required avoidance and minimization measures, which are incorporated by reference in this permit. Failure to comply with the required avoidance and minimization measures would constitute non-compliance with your Corps permit.

4. This permit is contingent upon the issuance of a section 401 Water Quality Certification (WQC). The Permittee shall abide by the terms and conditions of the Clean Water Act section 401 WQC. The Permittee shall submit the section 401 WQC to the Corps Regulatory Division (preferably via email) within two weeks of receipt from the issuing state agency. The Permittee shall not proceed with construction until receiving an e-mail or other written notification from Corps Regulatory Division acknowledging the Clean Water Act 401 WQC has been received, reviewed, and determined to be acceptable. If the RWQCB fails to act on a valid request for certification within two months after receipt of a complete application, please notify the Corps so we may consider whether a waiver of water quality certification has been obtained.

This verification is valid through March 18, 2017. If on March 18, 2017 you have commenced or are under contract to commence the permitted activity you will have an additional twelve (12) months to complete the activity under the present NWP terms and conditions. However, if I discover noncompliance or unauthorized activities associated with the permitted activity we can exercise discretionary authority and thereby modify, suspend, or revoke this specific verification at an earlier date in accordance with procedures in 33 C.F.R. § 330.4(e) and 33 C.F.R. § 330.5(c) or (d). At the national level the Chief of Engineers at any time prior to the expiration of a NWP may chose to modify, suspend, or revoke the nationwide use of a NWP after following procedures set forth in 33 C.F.R. § 330.5. It is incumbent upon you to comply with all of the terms and conditions of this NWP verification and to remain informed of any change to the NWPs.

A NWP does not grant any property rights or exclusive privileges. Additionally, it does not authorize any injury to the property, rights of others, nor does it authorize interference with any existing or proposed Federal project. Furthermore, it does not obviate the need to obtain other Federal, state, or local authorizations required by law.

Thank you for participating in the regulatory program. If you have any questions, please contact Daniel Swenson at 213-452-3414 or via e-mail at [Daniel.P.Swenson@usace.army.mil](mailto:Daniel.P.Swenson@usace.army.mil). Please complete the customer survey form at <http://per2.nwp.usace.army.mil/survey.html>, which would help me to evaluate and improve the regulatory experience for others.

Sincerely,

ALLEN.AARON  
O.1232270795

Digitally signed by  
ALLEN.AARON.O.1232270795  
DN: c=US, o=U.S. Government,  
ou=DoD, ou=PKI, ou=USA,  
cn=ALLEN.AARON.O.1232270795  
Date: 2013.12.18 09:26:05 -08'00'

Aaron O. Allen, Ph.D.  
Chief, North Coast Branch  
Regulatory Division

Enclosure(s)



**LOS ANGELES DISTRICT  
US ARMY CORPS OF ENGINEERS**

**CERTIFICATE OF COMPLIANCE WITH  
DEPARTMENT OF THE ARMY NATIONWIDE PERMIT**

**Permit Number:** *SPL-2009-00607*

**Name of Permittee:** *Scott Quinnell, California Department of Transportation, District 8*

**Date of Issuance:** *December 18, 2013*

Upon completion of the activity authorized by this permit and the mitigation required by this permit, sign this certificate, and return it by **ONE** of the following methods;

1) Email a digital scan of the signed certificate to [Daniel.P.Swenson@usace.army.mil](mailto:Daniel.P.Swenson@usace.army.mil)  
**OR**

2) Mail the signed certificate to  
US Army Corps of Engineers  
ATTN: Regulatory Division SPL-2009-00607-VCC  
P.O. Box 532711  
Los Angeles, CA 90053-2325

I hereby certify the authorized work and any required compensatory mitigation has been completed in accordance with the NWP authorization, including all general, regional, or activity-specific conditions. Furthermore, if credits from a mitigation bank or in-lieu fee program were used to satisfy compensatory mitigation requirements I have attached the documentation required by 33 CFR 332.3(l)(3) to confirm the appropriate number and resource type of credits have been secured.

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Signature of Permittee

---

Date

## **Enclosure 1: NATIONWIDE PERMIT NUMBER(S) NWP 14 Linear Transportation Projects. TERMS AND CONDITIONS**

### **1. Nationwide Permit(s) NWP 14 Linear Transportation Projects. Terms:**

Your activity is authorized under Nationwide Permit Number(s) NWP 14 Linear Transportation Projects. subject to the following terms:

14. Linear Transportation Projects. Activities required for the construction, expansion, modification, or improvement of linear transportation projects (e.g., roads, highways, railways, trails, airport runways, and taxiways) in waters of the United States. For linear transportation projects in non-tidal waters, the discharge cannot cause the loss of greater than 1/2-acre of waters of the United States. For linear transportation projects in tidal waters, the discharge cannot cause the loss of greater than 1/3-acre of waters of the United States. Any stream channel modification, including bank stabilization, is limited to the minimum necessary to construct or protect the linear transportation project; such modifications must be in the immediate vicinity of the project. This NWP also authorizes temporary structures, fills, and work necessary to construct the linear transportation project. Appropriate measures must be taken to maintain normal downstream flows and minimize flooding to the maximum extent practicable, when temporary structures, work, and discharges, including cofferdams, are necessary for construction activities, access fills, or dewatering of construction sites. Temporary fills must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The areas affected by temporary fills must be revegetated, as appropriate. This NWP cannot be used to authorize non-linear features commonly associated with transportation projects, such as vehicle maintenance or storage buildings, parking lots, train stations, or aircraft hangars. Notification: The permittee must submit a pre-construction notification to the district engineer prior to commencing the activity if: (1) the loss of waters of the United States exceeds 1/10 acre; or (2) there is a discharge in a special aquatic site, including wetlands. (See general condition 27.) (Sections 10 and 404) Note: Some discharges for the construction of farm roads or forest roads, or temporary roads for moving mining equipment, may qualify for an exemption under Section 404(f) of the Clean Water Act (see 33 CFR 323.4).

Note: To qualify for NWP authorization, the prospective permittee must comply with the following general conditions, as appropriate, in addition to any regional or case-specific conditions imposed by the division engineer or district engineer. Prospective permittees should contact the appropriate Corps district office to determine if regional conditions have been imposed on an NWP. Prospective permittees should also contact the appropriate Corps district office to determine the status of Clean Water Act Section 401 water quality certification and/or Coastal Zone Management Act consistency for an NWP.

**2. Nationwide Permit General Conditions:** The following general conditions must be followed in order for any authorization by an NWP to be valid:

1. **1. Navigation.** (a) No activity may cause more than a minimal adverse effect on navigation.  
(b) Any safety lights and signals prescribed by the U.S. Coast Guard, through regulations or otherwise, must be installed and maintained at the permittee's expense on authorized facilities in navigable waters of the United States.  
(c) The permittee understands and agrees that, if future operations by the United States require the removal, relocation, or other alteration, of the structure or work herein authorized, or if, in the opinion of

the Secretary of the Army or his authorized representative, said structure or work shall cause unreasonable obstruction to the free navigation of the navigable waters, the permittee will be required, upon due notice from the Corps of Engineers, to remove, relocate, or alter the structural work or obstructions caused thereby, without expense to the United States. No claim shall be made against the United States on account of any such removal or alteration.

2. Aquatic Life Movements. No activity may substantially disrupt the necessary life cycle movements of those species of aquatic life indigenous to the waterbody, including those species that normally migrate through the area, unless the activity's primary purpose is to impound water. All permanent and temporary crossings of waterbodies shall be suitably culverted, bridged, or otherwise designed and constructed to maintain low flows to sustain the movement of those aquatic species.
3. Spawning Areas. Activities in spawning areas during spawning seasons must be avoided to the maximum extent practicable. Activities that result in the physical destruction (e.g., through excavation, fill, or downstream smothering by substantial turbidity) of an important spawning area are not authorized.
4. Migratory Bird Breeding Areas. Activities in waters of the United States that serve as breeding areas for migratory birds must be avoided to the maximum extent practicable.
5. Shellfish Beds. No activity may occur in areas of concentrated shellfish populations, unless the activity is directly related to a shellfish harvesting activity authorized by NWP 4 and 48, or is a shellfish seeding or habitat restoration activity authorized by NWP 27.
6. Suitable Material. No activity may use unsuitable material (e.g., trash, debris, car bodies, asphalt, etc.). Material used for construction or discharged must be free from toxic pollutants in toxic amounts (see Section 307 of the Clean Water Act).
7. Water Supply Intakes. No activity may occur in the proximity of a public water supply intake, except where the activity is for the repair or improvement of public water supply intake structures or adjacent bank stabilization.
8. Adverse Effects From Impoundments. If the activity creates an impoundment of water, adverse effects to the aquatic system due to accelerating the passage of water, and/or restricting its flow must be minimized to the maximum extent practicable.
9. Management of Water Flows. To the maximum extent practicable, the pre-construction course, condition, capacity, and location of open waters must be maintained for each activity, including stream channelization and storm water management activities, except as provided below. The activity must be constructed to withstand expected high flows. The activity must not restrict or impede the passage of normal or high flows, unless the primary purpose of the activity is to impound water or manage high flows. The activity may alter the pre-construction course, condition, capacity, and location of open waters if it benefits the aquatic environment (e.g., stream restoration or relocation activities).
10. Fills Within 100-Year Floodplains. The activity must comply with applicable FEMA-approved state or local floodplain management requirements.

11. Equipment. Heavy equipment working in wetlands or mudflats must be placed on mats, or other measures must be taken to minimize soil disturbance.
12. Soil Erosion and Sediment Controls. Appropriate soil erosion and sediment controls must be used and maintained in effective operating condition during construction, and all exposed soil and other fills, as well as any work below the ordinary high water mark or high tide line, must be permanently stabilized at the earliest practicable date. Permittees are encouraged to perform work within waters of the United States during periods of low-flow or no-flow.
13. Removal of Temporary Fills. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. The affected areas must be revegetated, as appropriate.
14. Proper Maintenance. Any authorized structure or fill shall be properly maintained, including maintenance to ensure public safety and compliance with applicable NWP general conditions, as well as any activity-specific conditions added by the district engineer to an NWP authorization.
15. Single and Complete Project. The activity must be a single and complete project. The same NWP cannot be used more than once for the same single and complete project.
16. Wild and Scenic Rivers. No activity may occur in a component of the National Wild and Scenic River System, or in a river officially designated by Congress as a "study river" for possible inclusion in the system while the river is in an official study status, unless the appropriate Federal agency with direct management responsibility for such river, has determined in writing that the proposed activity will not adversely affect the Wild and Scenic River designation or study status. Information on Wild and Scenic Rivers may be obtained from the appropriate Federal land management agency responsible for the designated Wild and Scenic River or study river (e.g., National Park Service, U.S. Forest Service, Bureau of Land Management, U.S. Fish and Wildlife Service).
17. Tribal Rights. No activity or its operation may impair reserved tribal rights, including, but not limited to, reserved water rights and treaty fishing and hunting rights.
18. Endangered Species. (a) No activity is authorized under any NWP which is likely to directly or indirectly jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, as identified under the Federal Endangered Species Act (ESA), or which will directly or indirectly destroy or adversely modify the critical habitat of such species. No activity is authorized under any NWP which "may affect" a listed species or critical habitat, unless Section 7 consultation addressing the effects of the proposed activity has been completed.  
(b) Federal agencies should follow their own procedures for complying with the requirements of the ESA. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address ESA compliance for the NWP activity, or whether additional ESA consultation is necessary.  
(c) Non-federal permittees must submit a pre-construction notification to the district engineer if any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the

project is located in designated critical habitat, and shall not begin work on the activity until notified by the district engineer that the requirements of the ESA have been satisfied and that the activity is authorized. For activities that might affect Federally-listed endangered or threatened species or designated critical habitat, the pre-construction notification must include the name(s) of the endangered or threatened species that might be affected by the proposed work or that utilize the designated critical habitat that might be affected by the proposed work. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-Federal applicant of the Corps' determination within 45 days of receipt of a complete pre-construction notification. In cases where the non-Federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified the Corps, the applicant shall not begin work until the Corps has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(d) As a result of formal or informal consultation with the FWS or NMFS the district engineer may add species-specific regional endangered species conditions to the NWP.

(e) Authorization of an activity by a NWP does not authorize the "take" of a threatened or endangered species as defined under the ESA. In the absence of separate authorization (e.g., an ESA Section 10 Permit, a Biological Opinion with "incidental take" provisions, etc.) from the U.S. FWS or the NMFS, The Endangered Species Act prohibits any person subject to the jurisdiction of the United States to take a listed species, where "take" means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. The word "harm" in the definition of "take" means an act which actually kills or injures wildlife. Such an act may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding or sheltering.

(f) Information on the location of threatened and endangered species and their critical habitat can be obtained directly from the offices of the U.S. FWS and NMFS or their world wide web pages at <http://www.fws.gov/> or <http://www.fws.gov/ipac> and <http://www.noaa.gov/fisheries.html> respectively.

19. Migratory Birds and Bald and Golden Eagles. The permittee is responsible for obtaining any "take" permits required under the U.S. Fish and Wildlife Service's regulations governing compliance with the Migratory Bird Treaty Act or the Bald and Golden Eagle Protection Act. The permittee should contact the appropriate local office of the U.S. Fish and Wildlife Service to determine if such "take" permits are required for a particular activity.

20. Historic Properties. (a) In cases where the district engineer determines that the activity may affect properties listed, or eligible for listing, in the National Register of Historic Places, the activity is not authorized, until the requirements of Section 106 of the National Historic Preservation Act (NHPA) have been satisfied.

(b) Federal permittees should follow their own procedures for complying with the requirements of Section 106 of the National Historic Preservation Act. Federal permittees must provide the district engineer with the appropriate documentation to demonstrate compliance with those requirements. The district engineer will review the documentation and determine whether it is sufficient to address section 106 compliance for the NWP activity, or whether additional section 106 consultation is necessary.

(c) Non-federal permittees must submit a pre-construction notification to the district engineer if the authorized activity may have the potential to cause effects to any historic properties listed on,

determined to be eligible for listing on, or potentially eligible for listing on the National Register of Historic Places, including previously unidentified properties. For such activities, the pre-construction notification must state which historic properties may be affected by the proposed work or include a vicinity map indicating the location of the historic properties or the potential for the presence of historic properties. Assistance regarding information on the location of or potential for the presence of historic resources can be sought from the State Historic Preservation Officer or Tribal Historic Preservation Officer, as appropriate, and the National Register of Historic Places (see 33 CFR 330.4(g)). When reviewing pre-construction notifications, district engineers will comply with the current procedures for addressing the requirements of Section 106 of the National Historic Preservation Act. The district engineer shall make a reasonable and good faith effort to carry out appropriate identification efforts, which may include background research, consultation, oral history interviews, sample field investigation, and field survey. Based on the information submitted and these efforts, the district engineer shall determine whether the proposed activity has the potential to cause an effect on the historic properties. Where the non-Federal applicant has identified historic properties on which the activity may have the potential to cause effects and so notified the Corps, the non-Federal applicant shall not begin the activity until notified by the district engineer either that the activity has no potential to cause effects or that consultation under Section 106 of the NHPA has been completed.

(d) The district engineer will notify the prospective permittee within 45 days of receipt of a complete pre-construction notification whether NHPA Section 106 consultation is required. Section 106 consultation is not required when the Corps determines that the activity does not have the potential to cause effects on historic properties (see 36 CFR §800.3(a)). If NHPA section 106 consultation is required and will occur, the district engineer will notify the non-Federal applicant that he or she cannot begin work until Section 106 consultation is completed. If the non-Federal applicant has not heard back from the Corps within 45 days, the applicant must still wait for notification from the Corps.

(e) Prospective permittees should be aware that section 110k of the NHPA (16 U.S.C. 470h-2(k)) prevents the Corps from granting a permit or other assistance to an applicant who, with intent to avoid the requirements of Section 106 of the NHPA, has intentionally significantly adversely affected a historic property to which the permit would relate, or having legal power to prevent it, allowed such significant adverse effect to occur, unless the Corps, after consultation with the Advisory Council on Historic Preservation (ACHP), determines that circumstances justify granting such assistance despite the adverse effect created or permitted by the applicant. If circumstances justify granting the assistance, the Corps is required to notify the ACHP and provide documentation specifying the circumstances, the degree of damage to the integrity of any historic properties affected, and proposed mitigation. This documentation must include any views obtained from the applicant, SHPO/THPO, appropriate Indian tribes if the undertaking occurs on or affects historic properties on tribal lands or affects properties of interest to those tribes, and other parties known to have a legitimate interest in the impacts to the permitted activity on historic properties.

21. Discovery of Previously Unknown Remains and Artifacts. If you discover any previously unknown historic, cultural or archeological remains and artifacts while accomplishing the activity authorized by this permit, you must immediately notify the district engineer of what you have found, and to the maximum extent practicable, avoid construction activities that may affect the remains and artifacts until the required coordination has been completed. The district engineer will initiate the Federal, Tribal and state coordination required to determine if the items or remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places.

22. Designated Critical Resource Waters. Critical resource waters include, NOAA-managed marine sanctuaries and marine monuments, and National Estuarine Research Reserves. The district engineer may designate, after notice and opportunity for public comment, additional waters officially designated by a state as having particular environmental or ecological significance, such as outstanding national resource waters or state natural heritage sites. The district engineer may also designate additional critical resource waters after notice and opportunity for public comment.
- (a) Discharges of dredged or fill material into waters of the United States are not authorized by NWPs 7, 12, 14, 16, 17, 21, 29, 31, 35, 39, 40, 42, 43, 44, 49, 50, 51, and 52 for any activity within, or directly affecting, critical resource waters, including wetlands adjacent to such waters.
- (b) For NWPs 3, 8, 10, 13, 15, 18, 19, 22, 23, 25, 27, 28, 30, 33, 34, 36, 37, and 38, notification is required in accordance with general condition 31, for any activity proposed in the designated critical resource waters including wetlands adjacent to those waters. The district engineer may authorize activities under these NWPs only after it is determined that the impacts to the critical resource waters will be no more than minimal.
23. Mitigation. The district engineer will consider the following factors when determining appropriate and practicable mitigation necessary to ensure that adverse effects on the aquatic environment are minimal:
- (a) The activity must be designed and constructed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States to the maximum extent practicable at the project site (i.e., on site).
- (b) Mitigation in all its forms (avoiding, minimizing, rectifying, reducing, or compensating for resource losses) will be required to the extent necessary to ensure that the adverse effects to the aquatic environment are minimal.
- (c) Compensatory mitigation at a minimum one-for-one ratio will be required for all wetland losses that exceed 1/10-acre and require pre-construction notification, unless the district engineer determines in writing that either some other form of mitigation would be more environmentally appropriate or the adverse effects of the proposed activity are minimal, and provides a project-specific waiver of this requirement. For wetland losses of 1/10-acre or less that require pre-construction notification, the district engineer may determine on a case-by-case basis that compensatory mitigation is required to ensure that the activity results in minimal adverse effects on the aquatic environment. Compensatory mitigation projects provided to offset losses of aquatic resources must comply with the applicable provisions of 33 CFR part 332.
- (1) The prospective permittee is responsible for proposing an appropriate compensatory mitigation option if compensatory mitigation is necessary to ensure that the activity results in minimal adverse effects on the aquatic environment.
- (2) Since the likelihood of success is greater and the impacts to potentially valuable uplands are reduced, wetland restoration should be the first compensatory mitigation option considered.
- (3) If permittee-responsible mitigation is the proposed option, the prospective permittee is responsible for submitting a mitigation plan. A conceptual or detailed mitigation plan may be used by the district engineer to make the decision on the NWP verification request, but a final mitigation plan that addresses the applicable requirements of 33 CFR 332.4(c)(2) – (14) must be approved by the district engineer before the permittee begins work in waters of the United States, unless the district engineer determines that prior approval of the final mitigation plan is not practicable or not necessary to ensure timely completion of the required compensatory mitigation (see 33 CFR 332.3(k)(3)).

(4) If mitigation bank or in-lieu fee program credits are the proposed option, the mitigation plan only needs to address the baseline conditions at the impact site and the number of credits to be provided.

(5) Compensatory mitigation requirements (e.g., resource type and amount to be provided as compensatory mitigation, site protection, ecological performance standards, monitoring requirements) may be addressed through conditions added to the NWP authorization, instead of components of a compensatory mitigation plan.

(d) For losses of streams or other open waters that require pre-construction notification, the district engineer may require compensatory mitigation, such as stream rehabilitation, enhancement, or preservation, to ensure that the activity results in minimal adverse effects on the aquatic environment.

(e) Compensatory mitigation will not be used to increase the acreage losses allowed by the acreage limits of the NWPs. For example, if an NWP has an acreage limit of 1/2-acre, it cannot be used to authorize any project resulting in the loss of greater than 1/2-acre of waters of the United States, even if compensatory mitigation is provided that replaces or restores some of the lost waters. However, compensatory mitigation can and should be used, as necessary, to ensure that a project already meeting the established acreage limits also satisfies the minimal impact requirement associated with the NWPs.

(f) Compensatory mitigation plans for projects in or near streams or other open waters will normally include a requirement for the restoration or establishment, maintenance, and legal protection (e.g., conservation easements) of riparian areas next to open waters. In some cases, riparian areas may be the only compensatory mitigation required. Riparian areas should consist of native species. The width of the required riparian area will address documented water quality or aquatic habitat loss concerns. Normally, the riparian area will be 25 to 50 feet wide on each side of the stream, but the district engineer may require slightly wider riparian areas to address documented water quality or habitat loss concerns. If it is not possible to establish a riparian area on both sides of a stream, or if the waterbody is a lake or coastal waters, then restoring or establishing a riparian area along a single bank or shoreline may be sufficient. Where both wetlands and open waters exist on the project site, the district engineer will determine the appropriate compensatory mitigation (e.g., riparian areas and/or wetlands compensation) based on what is best for the aquatic environment on a watershed basis. In cases where riparian areas are determined to be the most appropriate form of compensatory mitigation, the district engineer may waive or reduce the requirement to provide wetland compensatory mitigation for wetland losses.

(g) Permittees may propose the use of mitigation banks, in-lieu fee programs, or separate permittee-responsible mitigation. For activities resulting in the loss of marine or estuarine resources, permittee-responsible compensatory mitigation may be environmentally preferable if there are no mitigation banks or in-lieu fee programs in the area that have marine or estuarine credits available for sale or transfer to the permittee. For permittee-responsible mitigation, the special conditions of the NWP verification must clearly indicate the party or parties responsible for the implementation and performance of the compensatory mitigation project, and, if required, its long-term management.

(h) Where certain functions and services of waters of the United States are permanently adversely affected, such as the conversion of a forested or scrub-shrub wetland to a herbaceous wetland in a permanently maintained utility line right-of-way, mitigation may be required to reduce the adverse effects of the project to the minimal level.

24. Safety of Impoundment Structures. To ensure that all impoundment structures are safely designed, the district engineer may require non-Federal applicants to demonstrate that the structures comply with established state dam safety criteria or have been designed by qualified persons. The district engineer may also require documentation that the design has been independently reviewed by similarly qualified persons, and appropriate modifications made to ensure safety.

25. Water Quality. Where States and authorized Tribes, or EPA where applicable, have not previously certified compliance of an NWP with CWA Section 401, individual 401 Water Quality Certification must be obtained or waived (see 33 CFR 330.4(c)). The district engineer or State or Tribe may require additional water quality management measures to ensure that the authorized activity does not result in more than minimal degradation of water quality.
26. Coastal Zone Management. In coastal states where an NWP has not previously received a state coastal zone management consistency concurrence, an individual state coastal zone management consistency concurrence must be obtained, or a presumption of concurrence must occur (see 33 CFR 330.4(d)). The district engineer or a State may require additional measures to ensure that the authorized activity is consistent with state coastal zone management requirements.
27. Regional and Case-By-Case Conditions. The activity must comply with any regional conditions that may have been added by the Division Engineer (see 33 CFR 330.4(e)) and with any case specific conditions added by the Corps or by the state, Indian Tribe, or U.S. EPA in its section 401 Water Quality Certification, or by the state in its Coastal Zone Management Act consistency determination.
28. Use of Multiple Nationwide Permits. The use of more than one NWP for a single and complete project is prohibited, except when the acreage loss of waters of the United States authorized by the NWPs does not exceed the acreage limit of the NWP with the highest specified acreage limit. For example, if a road crossing over tidal waters is constructed under NWP 14, with associated bank stabilization authorized by NWP 13, the maximum acreage loss of waters of the United States for the total project cannot exceed 1/3-acre.
29. Transfer of Nationwide Permit Verifications. If the permittee sells the property associated with a nationwide permit verification, the permittee may transfer the nationwide permit verification to the new owner by submitting a letter to the appropriate Corps district office to validate the transfer. A copy of the nationwide permit verification must be attached to the letter, and the letter must contain the following statement and signature:

“When the structures or work authorized by this nationwide permit are still in existence at the time the property is transferred, the terms and conditions of this nationwide permit, including any special conditions, will continue to be binding on the new owner(s) of the property. To validate the transfer of this nationwide permit and the associated liabilities associated with compliance with its terms and conditions, have the transferee sign and date below.”

\_\_\_\_\_  
(Transferee)

\_\_\_\_\_  
(Date)

30. Compliance Certification. Each permittee who receives an NWP verification letter from the Corps must provide a signed certification documenting completion of the authorized activity and any required

compensatory mitigation. The success of any required permittee-responsible mitigation, including the achievement of ecological performance standards, will be addressed separately by the district engineer. The Corps will provide the permittee the certification document with the NWP verification letter. The certification document will include:

- (a) A statement that the authorized work was done in accordance with the NWP authorization, including any general, regional, or activity-specific conditions;
- (b) A statement that the implementation of any required compensatory mitigation was completed in accordance with the permit conditions. If credits from a mitigation bank or in-lieu fee program are used to satisfy the compensatory mitigation requirements, the certification must include the documentation required by 33 CFR 332.3(l)(3) to confirm that the permittee secured the appropriate number and resource type of credits; and
- (c) The signature of the permittee certifying the completion of the work and mitigation.

31. Pre-Construction Notification. (a) Timing. Where required by the terms of the NWP, the prospective permittee must notify the district engineer by submitting a pre-construction notification (PCN) as early as possible. The district engineer must determine if the PCN is complete within 30 calendar days of the date of receipt and, if the PCN is determined to be incomplete, notify the prospective permittee within that 30 day period to request the additional information necessary to make the PCN complete. The request must specify the information needed to make the PCN complete. As a general rule, district engineers will request additional information necessary to make the PCN complete only once. However, if the prospective permittee does not provide all of the requested information, then the district engineer will notify the prospective permittee that the PCN is still incomplete and the PCN review process will not commence until all of the requested information has been received by the district engineer. The prospective permittee shall not begin the activity until either:

(1) He or she is notified in writing by the district engineer that the activity may proceed under the NWP with any special conditions imposed by the district or division engineer; or

(2) 45 calendar days have passed from the district engineer's receipt of the complete PCN and the prospective permittee has not received written notice from the district or division engineer.

However, if the permittee was required to notify the Corps pursuant to general condition 18 that listed species or critical habitat might be affected or in the vicinity of the project, or to notify the Corps pursuant to general condition 20 that the activity may have the potential to cause effects to historic properties, the permittee cannot begin the activity until receiving written notification from the Corps that there is "no effect" on listed species or "no potential to cause effects" on historic properties, or that any consultation required under Section 7 of the Endangered Species Act (see 33 CFR 330.4(f)) and/or Section 106 of the National Historic Preservation (see 33 CFR 330.4(g)) has been completed. Also, work cannot begin under NWPs 21, 49, or 50 until the permittee has received written approval from the Corps. If the proposed activity requires a written waiver to exceed specified limits of an NWP, the permittee may not begin the activity until the district engineer issues the waiver. If the district or division engineer notifies the permittee in writing that an individual permit is required within 45 calendar days of receipt of a complete PCN, the permittee cannot begin the activity until an individual permit has been obtained. Subsequently, the permittee's right to proceed under the NWP may be modified, suspended, or revoked only in accordance with the procedure set forth in 33 CFR 330.5(d)(2).

(b) Contents of Pre-Construction Notification: The PCN must be in writing and include the following information:

- (1) Name, address and telephone numbers of the prospective permittee;

- (2) Location of the proposed project;
  - (3) A description of the proposed project; the project's purpose; direct and indirect adverse environmental effects the project would cause, including the anticipated amount of loss of water of the United States expected to result from the NWP activity, in acres, linear feet, or other appropriate unit of measure; any other NWP(s), regional general permit(s), or individual permit(s) used or intended to be used to authorize any part of the proposed project or any related activity. The description should be sufficiently detailed to allow the district engineer to determine that the adverse effects of the project will be minimal and to determine the need for compensatory mitigation. Sketches should be provided when necessary to show that the activity complies with the terms of the NWP. (Sketches usually clarify the project and when provided results in a quicker decision. Sketches should contain sufficient detail to provide an illustrative description of the proposed activity (e.g., a conceptual plan), but do not need to be detailed engineering plans);
  - (4) The PCN must include a delineation of wetlands, other special aquatic sites, and other waters, such as lakes and ponds, and perennial, intermittent, and ephemeral streams, on the project site. Wetland delineations must be prepared in accordance with the current method required by the Corps. The permittee may ask the Corps to delineate the special aquatic sites and other waters on the project site, but there may be a delay if the Corps does the delineation, especially if the project site is large or contains many waters of the United States. Furthermore, the 45 day period will not start until the delineation has been submitted to or completed by the Corps, as appropriate;
  - (5) If the proposed activity will result in the loss of greater than 1/10-acre of wetlands and a PCN is required, the prospective permittee must submit a statement describing how the mitigation requirement will be satisfied, or explaining why the adverse effects are minimal and why compensatory mitigation should not be required. As an alternative, the prospective permittee may submit a conceptual or detailed mitigation plan.
  - (6) If any listed species or designated critical habitat might be affected or is in the vicinity of the project, or if the project is located in designated critical habitat, for non-Federal applicants the PCN must include the name(s) of those endangered or threatened species that might be affected by the proposed work or utilize the designated critical habitat that may be affected by the proposed work. Federal applicants must provide documentation demonstrating compliance with the Endangered Species Act; and
  - (7) For an activity that may affect a historic property listed on, determined to be eligible for listing on, or potentially eligible for listing on, the National Register of Historic Places, for non-Federal applicants the PCN must state which historic property may be affected by the proposed work or include a vicinity map indicating the location of the historic property. Federal applicants must provide documentation demonstrating compliance with Section 106 of the National Historic Preservation Act.
- (c) Form of Pre-Construction Notification: The standard individual permit application form (Form ENG 4345) may be used, but the completed application form must clearly indicate that it is a PCN and must include all of the information required in paragraphs (b)(1) through (7) of this general condition. A letter containing the required information may also be used.
- (d) Agency Coordination: (1) The district engineer will consider any comments from Federal and state agencies concerning the proposed activity's compliance with the terms and conditions of the NWPs and the need for mitigation to reduce the project's adverse environmental effects to a minimal level.
- (2) For all NWP activities that require pre-construction notification and result in the loss of greater than 1/2-acre of waters of the United States, for NWP 21, 29, 39, 40, 42, 43, 44, 50, 51, and 52 activities that require pre-construction notification and will result in the loss of greater than 300

linear feet of intermittent and ephemeral stream bed, and for all NWP 48 activities that require pre-construction notification, the district engineer will immediately provide (e.g., via e-mail, facsimile transmission, overnight mail, or other expeditious manner) a copy of the complete PCN to the appropriate Federal or state offices (U.S. FWS, state natural resource or water quality agency, EPA, State Historic Preservation Officer (SHPO) or Tribal Historic Preservation Office (THPO), and, if appropriate, the NMFS). With the exception of NWP 37, these agencies will have 10 calendar days from the date the material is transmitted to telephone or fax the district engineer notice that they intend to provide substantive, site-specific comments. The comments must explain why the agency believes the adverse effects will be more than minimal. If so contacted by an agency, the district engineer will wait an additional 15 calendar days before making a decision on the pre-construction notification. The district engineer will fully consider agency comments received within the specified time frame concerning the proposed activity's compliance with the terms and conditions of the NWPs, including the need for mitigation to ensure the net adverse environmental effects to the aquatic environment of the proposed activity are minimal. The district engineer will provide no response to the resource agency, except as provided below. The district engineer will indicate in the administrative record associated with each pre-construction notification that the resource agencies' concerns were considered. For NWP 37, the emergency watershed protection and rehabilitation activity may proceed immediately in cases where there is an unacceptable hazard to life or a significant loss of property or economic hardship will occur. The district engineer will consider any comments received to decide whether the NWP 37 authorization should be modified, suspended, or revoked in accordance with the procedures at 33 CFR 330.5.

(3) In cases of where the prospective permittee is not a Federal agency, the district engineer will provide a response to NMFS within 30 calendar days of receipt of any Essential Fish Habitat conservation recommendations, as required by Section 305(b)(4)(B) of the Magnuson-Stevens Fishery Conservation and Management Act.

(4) Applicants are encouraged to provide the Corps with either electronic files or multiple copies of pre-construction notifications to expedite agency coordination.

### **3. Regional Conditions for the Los Angeles District:**

In accordance with General Condition Number 27, "Regional and Case-by-Case Conditions," the following Regional Conditions, as added by the Division Engineer, must be met in order for an authorization by any Nationwide to be valid:

1. For all activities in waters of the U.S. that are suitable habitat for federally listed fish species, the permittee shall design all road crossings to ensure that the passage and/or spawning of fish is not hindered. In these areas, the permittee shall employ bridge designs that span the stream or river, including pier- or pile-supported spans, or designs that use a bottomless arch culvert with a natural stream bed, unless determined to be impracticable by the Corps.
2. Nationwide Permits (NWP) 3, 7, 12-15, 17-19, 21, 23, 25, 29, 35, 36, or 39-46, 48-52 cannot be used to authorize structures, work, and/or the discharge of dredged or fill material that would result in the "loss" of wetlands, mudflats, vegetated shallows or riffle and pool complexes as defined at 40 CFR Part 230.40-45. The definition of "loss" for this regional condition is the same as the definition of "loss of waters of the United States" used for the Nationwide Permit Program. Furthermore, this regional condition applies only within the State of Arizona and within the Mojave and Sonoran (Colorado) desert

regions of California. The desert regions in California are limited to four USGS Hydrologic Unit Code (HUC) accounting units (Lower Colorado -150301, Northern Mojave-180902, Southern Mojave-181001, and Salton Sea-181002).

3. When a pre-construction notification (PCN) is required, the appropriate U.S. Army Corps of Engineers (Corps) District shall be notified in accordance with General Condition 31 using either the South Pacific Division PCN Checklist or a signed application form (ENG Form 4345) with an attachment providing information on compliance with all of the General and Regional Conditions. The PCN Checklist and application form are available at: <http://www.spl.usace.army.mil/regulatory>. In addition, the PCN shall include:
  - a. A written statement describing how the activity has been designed to avoid and minimize adverse effects, both temporary and permanent, to waters of the United States;
  - b. Drawings, including plan and cross-section views, clearly depicting the location, size and dimensions of the proposed activity as well as the location of delineated waters of the U.S. on the site. The drawings shall contain a title block, legend and scale, amount (in cubic yards) and area (in acres) of fill in Corps jurisdiction, including both permanent and temporary fills/structures. The ordinary high water mark or, if tidal waters, the mean high water mark and high tide line, should be shown (in feet), based on National Geodetic Vertical Datum (NGVD) or other appropriate referenced elevation. All drawings for projects located within the boundaries of the Los Angeles District shall comply with the most current version of the *Map and Drawing Standards for the Los Angeles District Regulatory Division* (available on the Los Angeles District Regulatory Division website at: [www.spl.usace.army.mil/regulatory/](http://www.spl.usace.army.mil/regulatory/)); and
  - c. Numbered and dated pre-project color photographs showing a representative sample of waters proposed to be impacted on the project site, and all waters proposed to be avoided on and immediately adjacent to the project site. The compass angle and position of each photograph shall be documented on the plan-view drawing required in subpart b of this regional condition.
4. Submission of a PCN pursuant to General Condition 31 and Regional Condition 3 shall be required for all regulated activities in the following locations:
  - a. All perennial waterbodies and special aquatic sites within the State of Arizona and within the Mojave and Sonoran (Colorado) desert regions of California, excluding the Colorado River in Arizona from Davis Dam to River Mile 261 (northern boundary of the Fort Mojave Indian Tribe Reservation). The desert region in California is limited to four USGS HUC accounting units (Lower Colorado -150301, Northern Mojave-180902, Southern Mojave-181001, and Salton Sea-181002).
  - b. All areas designated as Essential Fish Habitat (EFH) by the Pacific Fishery Management Council (i.e., all tidally influenced areas - Federal Register dated March 12, 2007 (72 FR 11092)), in which case the PCN shall include an EFH assessment and extent of proposed impacts to EFH. Examples of EFH habitat assessments can be found at: <http://www.swr.noaa.gov/efh.htm>.
  - c. All watersheds in the Santa Monica Mountains in Los Angeles and Ventura counties bounded by Calleguas Creek on the west, by Highway 101 on the north and east, and by Sunset Boulevard and Pacific Ocean on the south.
  - d. The Santa Clara River watershed in Los Angeles and Ventura counties, including but not limited to Aliso Canyon, Agua Dulce Canyon, Sand Canyon, Bouquet Canyon, Mint Canyon, South Fork of the Santa Clara River, San Francisquito Canyon, Castaic Creek, Piru Creek, Sespe Creek and the main-stem of the Santa Clara River.

5. Individual Permits shall be required for all discharges of fill material in jurisdictional vernal pools, with the exception that discharges for the purpose of restoration, enhancement, management or scientific study of vernal pools may be authorized under NWP 5, 6, and 27 with the submission of a PCN in accordance with General Condition 31 and Regional Condition 3.
6. Individual Permits shall be required in Murrieta Creek and Temecula Creek watersheds in Riverside County for new permanent fills in perennial and intermittent watercourses otherwise authorized under NWP 29, 39, 42 and 43, and in ephemeral watercourses for these NWP 14 for projects that impact greater than 0.1 acre of waters of the United States. In addition, when NWP 14 is used in conjunction with residential, commercial, or industrial developments the 0.1 acre limit would also apply.
7. Individual Permits (Standard Individual Permit or 404 Letter of Permission) shall be required in San Luis Obispo Creek and Santa Rosa Creek in San Luis Obispo County for bank stabilization projects, and in Gaviota Creek, Mission Creek and Carpinteria Creek in Santa Barbara County for bank stabilization projects and grade control structures.
8. In conjunction with the Los Angeles District's Special Area Management Plans (SAMPs) for the San Diego Creek Watershed and San Juan Creek/Western San Mateo Creek Watersheds in Orange County, California, the Corps' Division Engineer, through his discretionary authority has revoked the use of the following 26 selected NWP within these SAMP watersheds: 03, 07, 12, 13, 14, 16, 17, 18, 19, 21, 25, 27, 29, 31, 33, 39, 40, 41, 42, 43, 44, 46, 49, and 50. Consequently, these NWP are no longer available in those watersheds to authorize impacts to waters of the United States from discharges of dredged or fill material under the Corps' Clean Water Act section 404 authority.
9. Any requests to waive the 300 linear foot limitation for intermittent and ephemeral streams for NWP 29, 39, 40 and 42, 43, 44, 51 and 52 or to waive the 500 linear foot limitation along the bank for NWP 13, must include the following:
  - a. A narrative description of the stream. This should include known information on: volume and duration of flow; the approximate length, width, and depth of the waterbody and characters observed associated with an Ordinary High Water Mark (e.g. bed and bank, wrack line, or scour marks); a description of the adjacent vegetation community and a statement regarding the wetland status of the associated vegetation community (i.e. wetland, non-wetland); surrounding land use; water quality; issues related to cumulative impacts in the watershed, and; any other relevant information.
  - b. An analysis of the proposed impacts to the waterbody in accordance with General Condition 31 and Regional Condition 3;
  - c. Measures taken to avoid and minimize losses, including other methods of constructing the proposed project; and
  - d. A compensatory mitigation plan describing how the unavoidable losses are proposed to be compensated, in accordance with 33 CFR Part 332.
10. The permittee shall complete the construction of any compensatory mitigation required by special condition(s) of the NWP verification before or concurrent with commencement of construction of the authorized activity, except when specifically determined to be impracticable by the Corps. When mitigation involves use of a mitigation bank or in-lieu fee program, the permittee shall submit proof of payment to the Corps prior to commencement of construction of the authorized activity.

**4. Further information:**

1. Congressional Authorities: You have been authorized to undertake the activity described above pursuant to:
  - ( ) Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403).
  - (x) Section 404 of the Clean Water Act (33 U.S.C. 1344).
  - ( ) Section 103 of the Marine Protection, Research and Sanctuaries Act of 1972 (33 U.S.C. 1413).
2. Limits of this authorization.
  - (a) This permit does not obviate the need to obtain other Federal, state, or local authorizations required by law.
  - (b) This permit does not grant any property rights or exclusive privileges.
  - (c) This permit does not authorize any injury to the property or rights of others.
  - (d) This permit does not authorize interference with any existing or proposed Federal project.
3. Limits of Federal Liability. In issuing this permit, the Federal Government does not assume any liability for the following:
  - (a) Damages to the permitted project or uses thereof as a result of other permitted or unpermitted activities or from natural causes.
  - (b) Damages to the permitted project or uses thereof as a result of current or future activities undertaken by or on behalf of the United States in the public interest.
  - (c) Damages to persons, property, or to other permitted or unpermitted activities or structures caused by the activity authorized by this permit.
  - (d) Design or construction deficiencies associated with the permitted work.
  - (e) Damage claims associated with any future modification, suspension, or revocation of this permit.
4. Reliance on Applicant's Data: The determination of this office that issuance of this permit is not contrary to the public interest was made in reliance on the information you provided.
5. Reevaluation of Permit Decision. This office may reevaluate its decision on this permit at any time the circumstances warrant. Circumstances that could require a reevaluation include, but are not limited to, the following:
  - (a) You fail to comply with the terms and conditions of this permit.
  - (b) The information provided by you in support of your permit application proves to have been false, incomplete, or inaccurate (See 4 above).
  - (c) Significant new information surfaces which this office did not consider in reaching the original public interest decision.

Such a reevaluation may result in a determination that it is appropriate to use the suspension, modification, and revocation procedures contained in 33 CFR 330.5 or enforcement procedures such as those contained in 33 CFR 326.4 and 326.5. The referenced enforcement procedures provide for the issuance of an administrative order requiring you to comply with the terms and conditions of your permit and for the initiation of legal action where appropriate. You will be required to pay for any corrective measure ordered by this office, and if you fail to comply with such directive, this office may in certain situations (such as those specified in 33 CFR 209.170) accomplish the corrective measures by contract or otherwise and bill you for the cost.

6. This letter of verification is valid for a period not to exceed two years unless the nationwide permit is modified, reissued, revoked, or expires before that time.
7. You must maintain the activity authorized by this permit in good condition and in conformance with the terms and conditions of this permit. You are not relieved of this requirement if you abandon the permitted activity, although you may make a good faith transfer to a third party in compliance with General Condition H below. Should you wish to cease to maintain the authorized activity or should you desire to abandon it without a good faith transfer, you must obtain a modification of this permit from this office, which may require restoration of the area.
8. You must allow representatives from this office to inspect the authorized activity at any time deemed necessary to ensure that it is being or has been accomplished with the terms and conditions of your permit.

01 October 2013

Adam Compton  
Environmental Planner and Biologist  
Biological Studies and Permits Branch  
California Department of Transportation, District 8  
464 West 4<sup>th</sup> Street, 6<sup>th</sup> Floor, MS 822  
San Bernardino, California 92401

**Re: Revised Supplemental Jurisdictional Delineation Report for the State Route 138 Widening Project (Task Order 14)**

The California Department of Transportation (Caltrans), District 8, proposes to widen the existing State Route 138 (SR-138) from Interstate 15 (I-15) to Highway 18 (HW-18) in San Bernardino and Los Angeles Counties, California. Caltrans retained AMEC Environment & Infrastructure, Inc. (AMEC) to determine the potential for impacts to jurisdictional waters.

A jurisdictional delineation of the proposed project site was conducted by ECORP Consulting, Inc. (ECORP) in 2009 (ECORP, 2009). Due to changes in the development plan, a revised jurisdictional delineation report was prepared by AMEC in 2012 (AMEC, 2012). Due to additional project scope changes, the project required ground proving the existing jurisdictional delineation and adding locations that were outside of the previous study area. This delineation letter report documents and quantifies the extent of jurisdictional areas and impacts to jurisdictional areas on the project site; however, ancillary information, such as soils and vegetation descriptions, is contained in the ECORP report.

## **1.0 PROJECT DESCRIPTION**

The proposed project consists of the widening of SR-138 from two lanes to four lanes with a median left turn lane and realignment of portions of the mainline to improve traffic operation and safety. The project will occur in two phases. Phase 1 of the project occurs along SR-138 from the I-15 to approximately 0.6 mile west of the SR-138 and Phelan Road intersection. Phase 2 continues west to the SR-138 and HW-18 intersection.

## **2.0 PROJECT LOCATION**

The proposed project is located along SR-138 from the I-15/SR-138 interchange in San Bernardino County to the SR-138/HW-18 interchange in Los Angeles County. Phase 1 of the project is approximately 13 miles long and extends from Post Mile (PM) 15.2 to PM 2.2 in San Bernardino County. Phase 2 is approximately 7.8 miles long and extends from PM 2.2 to PM 0.0 in San Bernardino County and from PM 75.0 to PM 69.4 in Los Angeles County (Figure 1).

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### **3.0 RESULTS**

The survey area contains 113 jurisdictional drainages identified as Drainages 1 through 110, Cajon Creek, Sheep Creek and Mescale Creek. The Jurisdictional Delineation Maps (Figures 2A through 2I) identify all on-site jurisdictional drainages. Table 1 portrays the jurisdictional area within each drainage.

### **4.0 IMPACTS TO JURISDICTIONAL AREAS**

The proposed development plan was overlaid on the jurisdictional areas to determine the extent of impacts. Table 2 portrays the impacted United States Army Corp of Engineers (USACE) jurisdiction and California Department of Fish and Wildlife (CDFW) jurisdiction within each drainage. Table 3 portrays the impacts to waters of the state and Table 4 portrays the impacts separated by project phase. Generally, the permanent impact boundary was determined by the cut and fill line provided by Caltrans. The survey boundary coincides with the permanent impact boundary with the exception of the area around Cajon Creek and Sheep Creek, which extended to the Caltrans right-of-way in order to accommodate design modifications. Permanent impacts included the addition of pavement, culvert and bridge extensions, rip-rap, and bridge pilings. Temporary impacts will only occur in Cajon Creek and Sheep Creek, and will result from temporary construction access.

### **5.0 STATEMENT OF QUALIFICATIONS**

The field work and preparation of this report was led by Scot Chandler, a senior biologist and regulatory specialist at AMEC with over 10 years of experience delineating Waters of the United States, Waters of the State of California and California Department of Fish and Wildlife streambeds throughout Southern California. Mr. Chandler holds a Bachelor of Science degree in Applied Ecology from the University of California, Irvine.

If you have any questions or concerns regarding this report, please contact Scot Chandler at 951-369-8060 or by email at [scot.chandler@amec.com](mailto:scot.chandler@amec.com).

Respectfully submitted,

**AMEC Environment & Infrastructure, Inc.**



Scot Chandler  
Senior Biologist/Regulatory Specialist

## **6.0 REFERENCES**

AMEC, 2012. Supplemental Jurisdictional Delineation Report, State Route 138 Widening Project. Prepared for Caltrans District 8.

ECORP Consulting, Inc, 2009. Jurisdictional Delineation Report, State Route 138 Widening Project. Prepared for Caltrans District 8.

## **ATTACHMENT A**

### **TABLES**

**Table 1**  
**Summary of Jurisdictional Areas**

| Drainage ID | Waters of the US (acres) | Waters of the State (acres) | CDFW Jurisdiction (acres) | Waters of the US/State Length (feet) | Waters of the US/State Width (feet) | CDFW Width (feet) | Watershed |
|-------------|--------------------------|-----------------------------|---------------------------|--------------------------------------|-------------------------------------|-------------------|-----------|
| 1           | 0.0043                   | 0.0043                      | 0.0098                    | 87                                   | 2                                   | 5                 | Santa Ana |
| 1a          | 0.0320                   | 0.0320                      | 0.0795                    | 730                                  | 2                                   | 5                 | Santa Ana |
| 1b          | 0                        | 0                           | 0.0336                    | 0                                    | 0                                   | 12                | Santa Ana |
| 2           | 0.0074                   | 0.0074                      | 0.0153                    | 40                                   | 8                                   | 15                | Santa Ana |
| 3           | 0.0238                   | 0.0238                      | 0.0595                    | 310                                  | 2-10                                | 5-26              | Santa Ana |
| 4           | 0.0157                   | 0.0157                      | 0.0463                    | 681                                  | 1                                   | 3                 | Santa Ana |
| 5           | 0.0345                   | 0.0345                      | 0.0807                    | 134                                  | 8-14                                | 20-30             | Santa Ana |
| 6           | 0.0296                   | 0.0296                      | 0.0692                    | 574                                  | 2-4                                 | 5-8               | Santa Ana |
| 7           | 0.0183                   | 0.0183                      | 0.0482                    | 400                                  | 2                                   | 5                 | Santa Ana |
| 8           | 0.0286                   | 0.0286                      | 0.1256                    | 418                                  | 2-6                                 | 3-22              | Santa Ana |
| 9           | 0.0327                   | 0.0327                      | 0.0847                    | 343                                  | 4                                   | 8                 | Santa Ana |
| 10          | 0.0508                   | 0.0508                      | 0.0940                    | 167                                  | 12-14                               | 20-26             | Santa Ana |
| 11          | 0.0597                   | 0.0597                      | 0.1033                    | 168                                  | 12-18                               | 26                | Santa Ana |
| 12          | 0.0744                   | 0.0744                      | 0.1603                    | 520                                  | 2-16                                | 8-26              | Santa Ana |
| 13          | 0.0312                   | 0.0312                      | 0.0450                    | 176                                  | 8-9                                 | 12                | Santa Ana |
| 14          | 0.0937                   | 0.0937                      | 0.1437                    | 246                                  | 18                                  | 25                | Santa Ana |
| 15          | 0.0030                   | 0.0030                      | 0.0081                    | 88                                   | 1.5                                 | 4                 | Santa Ana |
| 16          | 0.0503                   | 0.0503                      | 0.0818                    | 270                                  | 8                                   | 12-15             | Santa Ana |
| 17          | 0.1079                   | 0.1079                      | 0.2570                    | 305                                  | 12-20                               | 36                | Santa Ana |
| 18          | 0.0025                   | 0.0025                      | 0.0042                    | 36                                   | 3                                   | 5                 | Santa Ana |
| 19          | 0.0254                   | 0.0254                      | 0.0738                    | 1046                                 | 1                                   | 3                 | Santa Ana |
| 20          | 0.0176                   | 0.0176                      | 0.0477                    | 572                                  | 1-4                                 | 3-8               | Santa Ana |
| 21          | 0.0853                   | 0.0853                      | 0.1491                    | 1093                                 | 1-5                                 | 1-8               | Santa Ana |
| 22          | 0.0038                   | 0.0038                      | 0.0077                    | 166                                  | 1                                   | 4                 | Santa Ana |
| 23          | 0.0056                   | 0.0056                      | 0.0113                    | 99                                   | 1-3                                 | 4-5               | Santa Ana |
| 24          | 0.0690                   | 0.0690                      | 0.1243                    | 201                                  | 18                                  | 28                | Santa Ana |
| 25          | 0.0079                   | 0.0079                      | 0.0239                    | 348                                  | 1                                   | 3                 | Santa Ana |
| 26          | 0.0032                   | 0.0032                      | 0.0097                    | 140                                  | 1                                   | 3                 | Santa Ana |
| 27          | 0.0034                   | 0.0034                      | 0.0103                    | 151                                  | 1                                   | 3                 | Santa Ana |
| 28          | 0.0034                   | 0.0034                      | 0.0092                    | 94                                   | 1-2                                 | 3-5               | Santa Ana |
| 29          | 0.0008                   | 0.0008                      | 0.0025                    | 35                                   | 1                                   | 3                 | Santa Ana |
| 30          | 0.0025                   | 0.0025                      | 0.0063                    | 55                                   | 2                                   | 5                 | Santa Ana |
| 31          | 0.0009                   | 0.0009                      | 0.0026                    | 38                                   | 1                                   | 3                 | Santa Ana |
| 32          | 0.0008                   | 0.0008                      | 0.0024                    | 34                                   | 1                                   | 3                 | Santa Ana |
| 32a         | 0.0008                   | 0.0008                      | 0.0024                    | 35                                   | 1                                   | 3                 | Santa Ana |
| 32b         | 0.0086                   | 0.0086                      | 0.0129                    | 90                                   | 4                                   | 6                 | Santa Ana |
| 32c         | 0.0012                   | 0.0012                      | 0.0035                    | 50                                   | 1                                   | 3                 | Santa Ana |
| 33          | 0.0031                   | 0.0031                      | 0.0095                    | 138                                  | 1                                   | 3                 | Santa Ana |
| 33a         | 0.0009                   | 0.0009                      | 0.0039                    | 42                                   | 1                                   | 4                 | Santa Ana |
| 33b         | 0.0016                   | 0.0016                      | 0.0064                    | 69                                   | 1                                   | 4                 | Santa Ana |
| 34          | 0.00560                  | 0.00560                     | 0.0045                    | 48                                   | 3-6                                 | 5-11              | Santa Ana |
| 34a         | 0.0027                   | 0.0027                      | 0.0108                    | 38                                   | 3                                   | 5                 | Santa Ana |

California Department of Transportation  
Revised Supplemental Jurisdictional Delineation Report  
for the State Route 138 Widening Project (Task Order 14)  
01 October 2013

| Drainage ID | Waters of the US (acres) | Waters of the State (acres) | CDFW Jurisdiction (acres) | Waters of the US/State Length (feet) | Waters of the US/State Width (feet) | CDFW Width (feet) | Watershed       |
|-------------|--------------------------|-----------------------------|---------------------------|--------------------------------------|-------------------------------------|-------------------|-----------------|
| 35          | 0.0081                   | 0.0081                      | 0.0167                    | 70                                   | 5                                   | 10                | Santa Ana       |
| 36          | 0.0151                   | 0.0151                      | 0.0461                    | 162                                  | 4                                   | 12                | Santa Ana       |
| 37          | 0.0017                   | 0.0017                      | 0.0051                    | 73                                   | 1                                   | 3                 | Santa Ana       |
| 38          | 0.0039                   | 0.0039                      | 0.0098                    | 84                                   | 2                                   | 5                 | Santa Ana       |
| 39          | 0.0016                   | 0.0016                      | 0.0048                    | 68                                   | 1                                   | 3                 | Santa Ana       |
| 40          | 0.0062                   | 0.0062                      | 0.0129                    | 89                                   | 3                                   | 6                 | Santa Ana       |
| 41          | 0.0060                   | 0.0060                      | 0.0170                    | 130                                  | 2                                   | 6                 | Santa Ana       |
| 41a         | 0.0090                   | 0.0090                      | 0.0127                    | 46                                   | 8                                   | 9                 | Mojave          |
| 41b         | 0.0100                   | 0.0100                      | 0.0161                    | 69                                   | 2-8                                 | 5-12              | Mojave          |
| 41c         | 0.0275                   | 0.0275                      | 0.0510                    | 233                                  | 5                                   | 9                 | El Mirage       |
| 41d         | 0.0086                   | 0.0086                      | 0.0198                    | 170                                  | 2-3                                 | 5                 | El Mirage       |
| 42          | 0.0087                   | 0.0087                      | 0.0239                    | 82                                   | 4-5                                 | 6-14              | El Mirage       |
| 43          | 0.0292                   | 0.0292                      | 0.0767                    | 279                                  | 3-5                                 | 8-13              | El Mirage       |
| 44          | 0.1258                   | 0.1258                      | 0.2901                    | 1194                                 | 3-5                                 | 5-12              | El Mirage       |
| 45          | 0.0445                   | 0.0445                      | 0.1094                    | 431                                  | 3-8                                 | 8-18              | El Mirage       |
| 46          | 0.0136                   | 0.0136                      | 0.0517                    | 220                                  | 1-6                                 | 3-12              | El Mirage       |
| 47          | 0.0393                   | 0.0393                      | 0.0495                    | 550                                  | 1-5                                 | 3-6               | El Mirage       |
| 48          | 0.0271                   | 0.0271                      | 0.0126                    | 178                                  | 4                                   | 8                 | El Mirage       |
| 49          | 0.0073                   | 0.0073                      | 0.0129                    | 108                                  | 1-3                                 | 3-5               | El Mirage       |
| 50          | 0.0111                   | 0.0111                      | 0.0227                    | 159                                  | 3                                   | 6                 | El Mirage       |
| 51          | 0.0086                   | 0.0086                      | 0.0145                    | 124                                  | 3                                   | 5                 | El Mirage       |
| 52          | 0.0179                   | 0.0179                      | 0.0446                    | 155                                  | 5                                   | 12                | El Mirage       |
| 53          | 0.0131                   | 0.0131                      | 0.0272                    | 123                                  | 4                                   | 8                 | El Mirage       |
| 54          | 0.0192                   | 0.0192                      | 0.0435                    | 170                                  | 4-6                                 | 8-14              | El Mirage       |
| 55          | 0.0183                   | 0.0183                      | 0.0355                    | 213                                  | 3-4                                 | 5-8               | El Mirage       |
| 56          | 0.0264                   | 0.0264                      | 0.0443                    | 251                                  | 4-5                                 | 10-12             | El Mirage       |
| 57          | 0.0181                   | 0.0181                      | 0.0657                    | 197                                  | 4                                   | 9                 | El Mirage       |
| 58          | 0.0086                   | 0.0086                      | 0.0420                    | 285                                  | 1-2                                 | 3-5               | Rosamond/Rogers |
| 59          | 0.0036                   | 0.0036                      | 0.0240                    | 31                                   | 5                                   | 12                | Rosamond/Rogers |
| 59a         | 0.0069                   | 0.0069                      | 0.0089                    | 301                                  | 1                                   | 3                 | Rosamond/Rogers |
| 59b         | 0.0158                   | 0.0158                      | 0.0208                    | 300                                  | 2-4                                 | 8-12              | Rosamond/Rogers |
| 60          | 0.0105                   | 0.0105                      | 0.0281                    | 169                                  | 2-3                                 | 6-8               | Rosamond/Rogers |
| 61          | 0.0010                   | 0.0010                      | 0.0033                    | 15                                   | 3                                   | 8                 | Rosamond/Rogers |
| 62          | 0.0109                   | 0.0109                      | 0.0313                    | 182                                  | 2-3                                 | 6-8               | Rosamond/Rogers |
| 63          | 0.006                    | 0.006                       | 0.014                     | 62                                   | 4                                   | 8-12              | Rosamond/Rogers |
| 64          | 0.005                    | 0.005                       | 0.016                     | 51                                   | 4                                   | 12                | Rosamond/Rogers |
| 65          | 0.018                    | 0.018                       | 0.037                     | 191                                  | 3-5                                 | 8-10              | Rosamond/Rogers |
| 66          | 0.007                    | 0.007                       | 0.019                     | 92                                   | 3-6                                 | 6-20              | Rosamond/Rogers |
| 67          | 0.005                    | 0.005                       | 0.013                     | 38                                   | 5-6                                 | 12-13             | Rosamond/Rogers |
| 68          | 0.005                    | 0.005                       | 0.012                     | 22                                   | 10                                  | 20                | Rosamond/Rogers |
| 69          | 0.009                    | 0.009                       | 0.021                     | 62                                   | 6-8                                 | 13-16             | Rosamond/Rogers |
| 70          | 0.013                    | 0.013                       | 0.028                     | 293                                  | 1-2                                 | 4-6               | Rosamond/Rogers |
| 71          | 0.004                    | 0.004                       | 0.011                     | 56                                   | 3                                   | 8                 | Rosamond/Rogers |
| 72          | 0.013                    | 0.013                       | 0.036                     | 370                                  | 1-8                                 | 3-15              | Rosamond/Rogers |

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| Drainage ID  | Waters of the US (acres) | Waters of the State (acres) | CDFW Jurisdiction (acres) | Waters of the US/State Length (feet) | Waters of the US/State Width (feet) | CDFW Width (feet) | Watershed       |
|--------------|--------------------------|-----------------------------|---------------------------|--------------------------------------|-------------------------------------|-------------------|-----------------|
| 73           | 0.006                    | 0.006                       | 0.013                     | 47                                   | 4-6                                 | 10-12             | Rosamond/Rogers |
| 74           | 0.004                    | 0.004                       | 0.015                     | 47                                   | 4                                   | 12                | Rosamond/Rogers |
| 75           | 0.001                    | 0.001                       | 0.004                     | 17                                   | 3                                   | 8                 | Rosamond/Rogers |
| 76           | 0.020                    | 0.020                       | 0.064                     | 839                                  | 1-5                                 | 3-15              | Rosamond/Rogers |
| 77           | 0.001                    | 0.001                       | 0.003                     | 44                                   | 1                                   | 3                 | Rosamond/Rogers |
| 78           | 0.006                    | 0.006                       | 0.012                     | 48                                   | 5                                   | 10                | Rosamond/Rogers |
| 79           | 0.001                    | 0.001                       | 0.004                     | 23                                   | 2                                   | 7                 | Rosamond/Rogers |
| 80           | 0.005                    | 0.005                       | 0.013                     | 59                                   | 3-5                                 | 5-20              | Rosamond/Rogers |
| 81           | 0.006                    | 0.006                       | 0.020                     | 69                                   | 4                                   | 12                | Rosamond/Rogers |
| 82           | 0.023                    | 0.023                       | 0.040                     | 115                                  | 8-10                                | 12-20             | Rosamond/Rogers |
| 83           | 0.002                    | 0.002                       | 0.005                     | 66                                   | 1                                   | 3                 | Rosamond/Rogers |
| 84           | 0.012                    | 0.012                       | 0.054                     | 97                                   | 5                                   | 15-28             | Rosamond/Rogers |
| 85           | 0.020                    | 0.020                       | 0.044                     | 111                                  | 8-9                                 | 15-20             | Rosamond/Rogers |
| 86           | 0.018                    | 0.018                       | 0.035                     | 130                                  | 6                                   | 10-12             | Rosamond/Rogers |
| 87           | 0.012                    | 0.012                       | 0.028                     | 105                                  | 4-6                                 | 10-12             | Rosamond/Rogers |
| 88           | 0.020                    | 0.020                       | 0.068                     | 149                                  | 5-8                                 | 18-24             | Rosamond/Rogers |
| 89           | 0.023                    | 0.023                       | 0.064                     | 208                                  | 4-10                                | 9-12              | Rosamond/Rogers |
| 90           | 0.006                    | 0.006                       | 0.026                     | 117                                  | 2-3                                 | 8-10              | Rosamond/Rogers |
| 91           | 0.012                    | 0.012                       | 0.053                     | 136                                  | 4                                   | 15-20             | Rosamond/Rogers |
| 92           | 0.030                    | 0.030                       | 0.041                     | 110                                  | 10-16                               | 12-26             | Rosamond/Rogers |
| 93           | 0.019                    | 0.019                       | 0.060                     | 106                                  | 6-12                                | 20-30             | Rosamond/Rogers |
| 94           | 0.003                    | 0.003                       | 0.010                     | 142                                  | 1                                   | 3                 | Rosamond/Rogers |
| 95           | 0.018                    | 0.018                       | 0.074                     | 153                                  | 5                                   | 18-23             | Rosamond/Rogers |
| 96           | 0.008                    | 0.008                       | 0.013                     | 137                                  | 2                                   | 4                 | Rosamond/Rogers |
| 97           | 0.008                    | 0.008                       | 0.020                     | 170                                  | 2                                   | 5                 | Rosamond/Rogers |
| 98           | 0.015                    | 0.015                       | 0.030                     | 125                                  | 5                                   | 10                | Rosamond/Rogers |
| 99           | 0.018                    | 0.018                       | 0.076                     | 117                                  | 5-8                                 | 14-40             | Rosamond/Rogers |
| 100          | 0.024                    | 0.024                       | 0.085                     | 131                                  | 8                                   | 28                | Rosamond/Rogers |
| 101          | 0.003                    | 0.003                       | 0.009                     | 65                                   | 2                                   | 6                 | Rosamond/Rogers |
| 102          | 0.002                    | 0.002                       | 0.007                     | 75                                   | 1                                   | 4                 | Rosamond/Rogers |
| 103          | 0.002                    | 0.002                       | 0.005                     | 76                                   | 1                                   | 3                 | Rosamond/Rogers |
| 104          | 0.010                    | 0.010                       | 0.028                     | 122                                  | 3-4                                 | 8-12              | Rosamond/Rogers |
| 105          | 0.008                    | 0.008                       | 0.035                     | 116                                  | 1-6                                 | 4-30              | Rosamond/Rogers |
| 106          | 0.004                    | 0.004                       | 0.009                     | 62                                   | 2-3                                 | 5-6               | Rosamond/Rogers |
| 107          | 0.006                    | 0.006                       | 0.027                     | 87                                   | 2.5-4                               | 6-24              | Rosamond/Rogers |
| 108          | 0.004                    | 0.004                       | 0.012                     | 43                                   | 4                                   | 8-18              | Rosamond/Rogers |
| 109          | 0.009                    | 0.009                       | 0.021                     | 54                                   | 3-14                                | 12-18             | Rosamond/Rogers |
| 110          | 0.003                    | 0.003                       | 0.006                     | 37                                   | 2-3                                 | 5-6               | Rosamond/Rogers |
| Cajon Creek  | 1.043                    | 1.043                       | 5.7696                    | 2580                                 | 2-75                                | 134-477           | Santa Ana       |
| Mescal Creek | 0.057                    | 0.057                       | 0.1577                    | 156                                  | 16                                  | 40                | Rosamond/Rogers |
| Sheep Creek  | 0.971                    | 0.971                       | 1.2512                    | 367                                  | 120                                 | 155               | El Mirage       |
| <b>Total</b> | <b>4.09</b>              | <b>4.09</b>                 | <b>11.95</b>              | <b>25,881</b>                        | <b>-</b>                            | <b>-</b>          | <b>-</b>        |

**Table 2**  
**Summary of Impacts to Waters of the US and CDFW Jurisdiction**

| Drainage ID | Temporary Impacts to Waters of the US (acres) | Permanent Impacts to Waters of the US (acres) | Temporary Impacts to CDFW Jurisdiction (acres) | Permanent Impacts to CDFW Jurisdiction (acres) | Permanent Impact Length to Waters of the US (feet) | Project Phase |
|-------------|---|---|--|--|--|---------------|
| 1           | 0   | 0.0043  | 0  | 0.0098   | 87   | 1             |
| 1a          | 0   | 0.032   | 0  | 0.080  | 730  | 1             |
| 1b          | 0   | 0   | 0  | 0.034  | 0  | 1             |
| 2           | 0   | 0.007   | 0  | 0.015  | 40   | 1             |
| 3           | 0   | 0.0238  | 0  | 0.0595   | 310  | 1             |
| 4           | 0   | 0.0157  | 0  | 0.0463   | 681  | 1             |
| 5           | 0   | 0.0345  | 0  | 0.0807   | 134  | 1             |
| 6           | 0   | 0.0296  | 0  | 0.0692   | 574  | 1             |
| 7           | 0   | 0.0183  | 0  | 0.0482   | 400  | 1             |
| 8           | 0   | 0.0286  | 0  | 0.1256   | 418  | 1             |
| 9           | 0   | 0.0327  | 0  | 0.0847   | 343  | 1             |
| 10          | 0   | 0.0508  | 0  | 0.0940   | 167  | 1             |
| 11          | 0   | 0.0597  | 0  | 0.1033   | 168  | 1             |
| 12          | 0   | 0.0744  | 0  | 0.1603   | 520  | 1             |
| 13          | 0   | 0.0312  | 0  | 0.0450   | 176  | 1             |
| 14          | 0   | 0.0937  | 0  | 0.1437   | 246  | 1             |
| 15          | 0   | 0.0030  | 0  | 0.0081   | 88   | 1             |
| 16          | 0   | 0.0503  | 0  | 0.0818   | 270  | 1             |
| 17          | 0   | 0.1079  | 0  | 0.2570   | 305  | 1             |
| 18          | 0   | 0.0025  | 0  | 0.0042   | 36   | 1             |
| 19          | 0   | 0.0254  | 0  | 0.0738   | 1046   | 1             |
| 20          | 0   | 0.0176  | 0  | 0.0477   | 572  | 1             |
| 21          | 0   | 0.0853  | 0  | 0.1491   | 1093   | 1             |
| 22          | 0   | 0.0038  | 0  | 0.0077   | 166  | 1             |
| 23          | 0   | 0.0056  | 0  | 0.0113   | 99   | 1             |
| 24          | 0   | 0.0690  | 0  | 0.1243   | 201  | 1             |
| 25          | 0   | 0.0079  | 0  | 0.0239   | 348  | 1             |
| 26          | 0   | 0.0032  | 0  | 0.0097   | 140  | 1             |
| 27          | 0   | 0.0034  | 0  | 0.0103   | 151  | 1             |
| 28          | 0   | 0.0034  | 0  | 0.0092   | 94   | 1             |
| 29          | 0   | 0.0008  | 0  | 0.0025   | 35   | 1             |
| 30          | 0   | 0.0025  | 0  | 0.0063   | 55   | 1             |
| 31          | 0   | 0.0009  | 0  | 0.0026   | 38   | 1             |
| 32          | 0   | 0.0008  | 0  | 0.0024   | 34   | 1             |
| 32a         | 0   | 0.0008  | 0  | 0.0024   | 35   | 1             |
| 32b         | 0   | 0.0086  | 0  | 0.0129   | 90   | 1             |
| 32c         | 0   | 0.0012  | 0  | 0.0035   | 50   | 1             |
| 33          | 0   | 0.0031  | 0  | 0.0095   | 138  | 1             |
| 33a         | 0   | 0.0009  | 0  | 0.0039   | 42   | 1             |
| 33b         | 0   | 0.0016  | 0  | 0.0064   | 69   | 1             |

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| Drainage ID | Temporary Impacts to Waters of the US (acres) | Permanent Impacts to Waters of the US (acres) | Temporary Impacts to CDFW Jurisdiction (acres) | Permanent Impacts to CDFW Jurisdiction (acres) | Permanent Impact Length to Waters of the US (feet) | Project Phase |
|-------------|---|---|--|--|--|---------------|
| 34          | 0   | 0.00560                                       | 0  | 0.0108   | 48   | 1             |
| 34a         | 0   | 0.0027  | 0  | 0.00450  | 38   | 1             |
| 35          | 0   | 0.0081  | 0  | 0.0167   | 70   | 1             |
| 36          | 0   | 0.0151  | 0  | 0.0461   | 162  | 1             |
| 37          | 0   | 0.0017  | 0  | 0.0051   | 73   | 1             |
| 38          | 0   | 0.0039  | 0  | 0.0098   | 84   | 1             |
| 39          | 0   | 0.0016  | 0  | 0.0048   | 68   | 1             |
| 40          | 0   | 0.0062  | 0  | 0.0129   | 89   | 1             |
| 41          | 0   | 0.0060  | 0  | 0.0170   | 130  | 1             |
| 41a         | 0   | 0.0090  | 0  | 0.0127   | 46   | 1             |
| 41b         | 0   | 0.0100  | 0  | 0.0161   | 69   | 1             |
| 41c         | 0   | 0.0275  | 0  | 0.0510   | 233  | 1             |
| 41d         | 0   | 0.0086  | 0  | 0.0198   | 170  | 1             |
| 42          | 0   | 0.0087  | 0  | 0.0239   | 82   | 1             |
| 43          | 0   | 0.0292  | 0  | 0.0767   | 279  | 1             |
| 44          | 0   | 0.1258  | 0  | 0.2901   | 1194   | 1             |
| 45          | 0   | 0.0445  | 0  | 0.1094   | 431  | 1             |
| 46          | 0   | 0.0136  | 0  | 0.0517   | 220  | 1             |
| 47          | 0   | 0.0393  | 0  | 0.0495   | 550  | 1             |
| 48          | 0   | 0.0271  | 0  | 0.0126   | 178  | 1             |
| 49          | 0   | 0.0073  | 0  | 0.0129   | 108  | 1             |
| 50          | 0   | 0.0111  | 0  | 0.0227   | 159  | 1             |
| 51          | 0   | 0.0086  | 0  | 0.0145   | 124  | 1             |
| 52          | 0   | 0.0179  | 0  | 0.0446   | 155  | 1             |
| 53          | 0   | 0.0131  | 0  | 0.0272   | 123  | 1             |
| 54          | 0   | 0.0192  | 0  | 0.0435   | 170  | 1             |
| 55          | 0   | 0.0183  | 0  | 0.0355   | 213  | 1             |
| 56          | 0   | 0.0264  | 0  | 0.0443   | 251  | 1             |
| 57          | 0   | 0.0181  | 0  | 0.0657   | 197  | 1             |
| 58          | 0   | 0.0086  | 0  | 0.0420   | 285  | 1             |
| 59          | 0   | 0.0036  | 0  | 0.0240   | 31   | 1             |
| 59a         | 0   | 0.0069  | 0  | 0.0089   | 301  | 1             |
| 59b         | 0   | 0.0158  | 0  | 0.0208   | 300  | 1             |
| 60          | 0   | 0.0105  | 0  | 0.0281   | 169  | 1             |
| 61          | 0   | 0.0010  | 0  | 0.0033   | 15   | 1             |
| 62          | 0   | 0.0109  | 0  | 0.0313   | 182  | 1             |
| 63          | 0   | 0.006   | 0  | 0.014  | 62   | 2             |
| 64          | 0   | 0.005   | 0  | 0.016  | 51   | 2             |
| 65          | 0   | 0.018   | 0  | 0.037  | 191  | 2             |
| 66          | 0   | 0.007   | 0  | 0.019  | 92   | 2             |
| 67          | 0   | 0.005   | 0  | 0.013  | 38   | 2             |
| 68          | 0   | 0.005   | 0  | 0.012  | 22   | 2             |
| 69          | 0   | 0.009   | 0  | 0.021  | 62   | 2             |

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| Drainage ID | Temporary Impacts to Waters of the US (acres) | Permanent Impacts to Waters of the US (acres) | Temporary Impacts to CDFW Jurisdiction (acres) | Permanent Impacts to CDFW Jurisdiction (acres) | Permanent Impact Length to Waters of the US (feet) | Project Phase |
|-------------|---|---|--|--|--|---------------|
| 70          | 0   | 0.013   | 0  | 0.028  | 293  | 2             |
| 71          | 0   | 0.004   | 0  | 0.011  | 56   | 2             |
| 72          | 0   | 0.013   | 0  | 0.036  | 370  | 2             |
| 73          | 0   | 0.006   | 0  | 0.013  | 47   | 2             |
| 74          | 0   | 0.004   | 0  | 0.015  | 47   | 2             |
| 75          | 0   | 0.001   | 0  | 0.004  | 17   | 2             |
| 76          | 0   | 0.020   | 0  | 0.064  | 839  | 2             |
| 77          | 0   | 0.001   | 0  | 0.003  | 44   | 2             |
| 78          | 0   | 0.006   | 0  | 0.012  | 48   | 2             |
| 79          | 0   | 0.001   | 0  | 0.004  | 23   | 2             |
| 80          | 0   | 0.005   | 0  | 0.013  | 59   | 2             |
| 81          | 0   | 0.006   | 0  | 0.020  | 69   | 2             |
| 82          | 0   | 0.023   | 0  | 0.040  | 115  | 2             |
| 83          | 0   | 0.002   | 0  | 0.005  | 66   | 2             |
| 84          | 0   | 0.012   | 0  | 0.054  | 97   | 2             |
| 85          | 0   | 0.020   | 0  | 0.044  | 111  | 2             |
| 86          | 0   | 0.018   | 0  | 0.035  | 130  | 2             |
| 87          | 0   | 0.012   | 0  | 0.028  | 105  | 2             |
| 88          | 0   | 0.020   | 0  | 0.068  | 149  | 2             |
| 89          | 0   | 0.023   | 0  | 0.064  | 208  | 2             |
| 90          | 0   | 0.006   | 0  | 0.026  | 117  | 2             |
| 91          | 0   | 0.012   | 0  | 0.053  | 136  | 2             |
| 92          | 0   | 0.030   | 0  | 0.041  | 110  | 2             |
| 93          | 0   | 0.019   | 0  | 0.060  | 106  | 2             |
| 94          | 0   | 0.003   | 0  | 0.010  | 142  | 2             |
| 95          | 0   | 0.018   | 0  | 0.074  | 153  | 2             |
| 96          | 0   | 0.008   | 0  | 0.013  | 137  | 2             |
| 97          | 0   | 0.008   | 0  | 0.020  | 170  | 2             |
| 98          | 0   | 0.015   | 0  | 0.030  | 125  | 2             |
| 99          | 0   | 0.018   | 0  | 0.076  | 117  | 2             |
| 100         | 0   | 0.024   | 0  | 0.085  | 131  | 2             |
| 101         | 0   | 0.003   | 0  | 0.009  | 65   | 2             |
| 102         | 0   | 0.002   | 0  | 0.007  | 75   | 2             |
| 103         | 0   | 0.002   | 0  | 0.005  | 76   | 2             |
| 104         | 0   | 0.010   | 0  | 0.028  | 122  | 2             |
| 105         | 0   | 0.008   | 0  | 0.035  | 116  | 2             |
| 106         | 0   | 0.004   | 0  | 0.009  | 62   | 2             |
| 107         | 0   | 0.006   | 0  | 0.027  | 87   | 2             |
| 108         | 0   | 0.004   | 0  | 0.012  | 43   | 2             |
| 109         | 0   | 0.009   | 0  | 0.021  | 54   | 2             |
| 110         | 0   | 0.003   | 0  | 0.006  | 37   | 2             |
| Cajon Creek | 0.200   | 0.006   | 0.661  | 0.016  | 48   | 1             |

| Drainage ID  | Temporary Impacts to Waters of the US (acres) | Permanent Impacts to Waters of the US (acres) | Temporary Impacts to CDFW Jurisdiction (acres) | Permanent Impacts to CDFW Jurisdiction (acres) | Permanent Impact Length to Waters of the US (feet) | Project Phase |
|--------------|---|---|--|--|--|---------------|
| Mescal Creek | 0   | 0.057   | 0  | 0.158  | 156  | 2             |
| Sheep Creek  | 0.538   | 0.026   | 0.720  | 0.026  | 48   | 1             |
| <b>Total</b> | <b>0.738</b>                                  | <b>2.103</b>                                  | <b>1.381</b>                                   | <b>4.920</b>                                   | <b>23,030</b>                                      | <b>-</b>      |

**Table 3**  
**Summary of Impacts to Waters of the State**

| Drainage ID | Temporary Impacts to Waters of the State (acres) | Permanent Impacts to Waters of the State (acres) | Temporary Impact Length to Waters of the State (feet) | Permanent Impact Length to Waters of the State (feet) | Watershed | Project Phase |
|-------------|--|--|---|---|-----------|---------------|
| 1           | 0  | 0.0043   | 0   | 87  | Santa Ana | 1             |
| 1a          | 0  | 0.032  | 0   | 730   | Santa Ana | 1             |
| 1b          | 0  | 0  | 0   | 0   | Santa Ana | 1             |
| 2           | 0  | 0.007  | 0   | 40  | Santa Ana | 1             |
| 3           | 0  | 0.0238   | 0   | 310   | Santa Ana | 1             |
| 4           | 0  | 0.0157   | 0   | 681   | Santa Ana | 1             |
| 5           | 0  | 0.0345   | 0   | 134   | Santa Ana | 1             |
| 6           | 0  | 0.0296   | 0   | 574   | Santa Ana | 1             |
| 7           | 0  | 0.0183   | 0   | 400   | Santa Ana | 1             |
| 8           | 0  | 0.0286   | 0   | 418   | Santa Ana | 1             |
| 9           | 0  | 0.0327   | 0   | 343   | Santa Ana | 1             |
| 10          | 0  | 0.0508   | 0   | 167   | Santa Ana | 1             |
| 11          | 0  | 0.0597   | 0   | 168   | Santa Ana | 1             |
| 12          | 0  | 0.0744   | 0   | 520   | Santa Ana | 1             |
| 13          | 0  | 0.0312   | 0   | 176   | Santa Ana | 1             |
| 14          | 0  | 0.0937   | 0   | 246   | Santa Ana | 1             |
| 15          | 0  | 0.0030   | 0   | 88  | Santa Ana | 1             |
| 16          | 0  | 0.0503   | 0   | 270   | Santa Ana | 1             |
| 17          | 0  | 0.1079   | 0   | 305   | Santa Ana | 1             |
| 18          | 0  | 0.0025   | 0   | 36  | Santa Ana | 1             |
| 19          | 0  | 0.0254   | 0   | 1046  | Santa Ana | 1             |
| 20          | 0  | 0.0176   | 0   | 572   | Santa Ana | 1             |
| 21          | 0  | 0.0853   | 0   | 1093  | Santa Ana | 1             |
| 22          | 0  | 0.0038   | 0   | 166   | Santa Ana | 1             |
| 23          | 0  | 0.0056   | 0   | 99  | Santa Ana | 1             |
| 24          | 0  | 0.0690   | 0   | 201   | Santa Ana | 1             |
| 25          | 0  | 0.0079   | 0   | 348   | Santa Ana | 1             |
| 26          | 0  | 0.0032   | 0   | 140   | Santa Ana | 1             |

California Department of Transportation  
Revised Supplemental Jurisdictional Delineation Report  
for the State Route 138 Widening Project (Task Order 14)  
01 October 2013

| Drainage ID | Temporary Impacts to Waters of the State (acres) | Permanent Impacts to Waters of the State (acres) | Temporary Impact Length to Waters of the State (feet) | Permanent Impact Length to Waters of the State (feet) | Watershed       | Project Phase |
|-------------|--|--|---|---|-----------------|---------------|
| 27          | 0  | 0.0034   | 0   | 151   | Santa Ana       | 1             |
| 28          | 0  | 0.0034   | 0   | 94  | Santa Ana       | 1             |
| 29          | 0  | 0.0008   | 0   | 35  | Santa Ana       | 1             |
| 30          | 0  | 0.0025   | 0   | 55  | Santa Ana       | 1             |
| 31          | 0  | 0.0009   | 0   | 38  | Santa Ana       | 1             |
| 32          | 0  | 0.0008   | 0   | 34  | Santa Ana       | 1             |
| 32a         | 0  | 0.0008   | 0   | 35  | Santa Ana       | 1             |
| 32b         | 0  | 0.0086   | 0   | 90  | Santa Ana       | 1             |
| 32c         | 0  | 0.0012   | 0   | 50  | Santa Ana       | 1             |
| 33          | 0  | 0.0031   | 0   | 138   | Santa Ana       | 1             |
| 33a         | 0  | 0.0009   | 0   | 42  | Santa Ana       | 1             |
| 33b         | 0  | 0.0016   | 0   | 69  | Santa Ana       | 1             |
| 34          | 0  | 0.00560  | 0   | 48  | Santa Ana       | 1             |
| 34a         | 0  | 0.0027   | 0   | 38  | Santa Ana       | 1             |
| 35          | 0  | 0.0081   | 0   | 70  | Santa Ana       | 1             |
| 36          | 0  | 0.0151   | 0   | 162   | Santa Ana       | 1             |
| 37          | 0  | 0.0017   | 0   | 73  | Santa Ana       | 1             |
| 38          | 0  | 0.0039   | 0   | 84  | Santa Ana       | 1             |
| 39          | 0  | 0.0016   | 0   | 68  | Santa Ana       | 1             |
| 40          | 0  | 0.0062   | 0   | 89  | Santa Ana       | 1             |
| 41          | 0  | 0.0060   | 0   | 130   | Santa Ana       | 1             |
| 41a         | 0  | 0.0090   | 0   | 46  | Mojave          | 1             |
| 41b         | 0  | 0.0100   | 0   | 69  | Mojave          | 1             |
| 41c         | 0  | 0.0275   | 0   | 233   | El Mirage       | 1             |
| 41d         | 0  | 0.0086   | 0   | 170   | El Mirage       | 1             |
| 42          | 0  | 0.0087   | 0   | 82  | El Mirage       | 1             |
| 43          | 0  | 0.0292   | 0   | 279   | El Mirage       | 1             |
| 44          | 0  | 0.1258   | 0   | 1194  | El Mirage       | 1             |
| 45          | 0  | 0.0445   | 0   | 431   | El Mirage       | 1             |
| 46          | 0  | 0.0136   | 0   | 220   | El Mirage       | 1             |
| 47          | 0  | 0.0393   | 0   | 550   | El Mirage       | 1             |
| 48          | 0  | 0.0271   | 0   | 178   | El Mirage       | 1             |
| 49          | 0  | 0.0073   | 0   | 108   | El Mirage       | 1             |
| 50          | 0  | 0.0111   | 0   | 159   | El Mirage       | 1             |
| 51          | 0  | 0.0086   | 0   | 124   | El Mirage       | 1             |
| 52          | 0  | 0.0179   | 0   | 155   | El Mirage       | 1             |
| 53          | 0  | 0.0131   | 0   | 123   | El Mirage       | 1             |
| 54          | 0  | 0.0192   | 0   | 170   | El Mirage       | 1             |
| 55          | 0  | 0.0183   | 0   | 213   | El Mirage       | 1             |
| 56          | 0  | 0.0264   | 0   | 251   | El Mirage       | 1             |
| 57          | 0  | 0.0181   | 0   | 197   | El Mirage       | 1             |
| 58          | 0  | 0.0086   | 0   | 285   | Rosamond/Rogers | 1             |
| 59          | 0  | 0.0036   | 0   | 31  | Rosamond/Rogers | 1             |

California Department of Transportation  
 Revised Supplemental Jurisdictional Delineation Report  
 for the State Route 138 Widening Project (Task Order 14)  
 01 October 2013

| Drainage ID | Temporary Impacts to Waters of the State (acres) | Permanent Impacts to Waters of the State (acres) | Temporary Impact Length to Waters of the State (feet) | Permanent Impact Length to Waters of the State (feet) | Watershed       | Project Phase |
|-------------|--|--|---|---|-----------------|---------------|
| 59a         | 0  | 0.0069   | 0   | 301   | Rosamond/Rogers | 1             |
| 59b         | 0  | 0.0158   | 0   | 300   | Rosamond/Rogers | 1             |
| 60          | 0  | 0.0105   | 0   | 169   | Rosamond/Rogers | 1             |
| 61          | 0  | 0.0010   | 0   | 15  | Rosamond/Rogers | 1             |
| 62          | 0  | 0.0109   | 0   | 182   | Rosamond/Rogers | 1             |
| 63          | 0  | 0.006  | 0   | 62  | Rosamond/Rogers | 2             |
| 64          | 0  | 0.005  | 0   | 51  | Rosamond/Rogers | 2             |
| 65          | 0  | 0.018  | 0   | 191   | Rosamond/Rogers | 2             |
| 66          | 0  | 0.007  | 0   | 92  | Rosamond/Rogers | 2             |
| 67          | 0  | 0.005  | 0   | 38  | Rosamond/Rogers | 2             |
| 68          | 0  | 0.005  | 0   | 22  | Rosamond/Rogers | 2             |
| 69          | 0  | 0.009  | 0   | 62  | Rosamond/Rogers | 2             |
| 70          | 0  | 0.013  | 0   | 293   | Rosamond/Rogers | 2             |
| 71          | 0  | 0.004  | 0   | 56  | Rosamond/Rogers | 2             |
| 72          | 0  | 0.013  | 0   | 370   | Rosamond/Rogers | 2             |
| 73          | 0  | 0.006  | 0   | 47  | Rosamond/Rogers | 2             |
| 74          | 0  | 0.004  | 0   | 47  | Rosamond/Rogers | 2             |
| 75          | 0  | 0.001  | 0   | 17  | Rosamond/Rogers | 2             |
| 76          | 0  | 0.020  | 0   | 839   | Rosamond/Rogers | 2             |
| 77          | 0  | 0.001  | 0   | 44  | Rosamond/Rogers | 2             |
| 78          | 0  | 0.006  | 0   | 48  | Rosamond/Rogers | 2             |
| 79          | 0  | 0.001  | 0   | 23  | Rosamond/Rogers | 2             |
| 80          | 0  | 0.005  | 0   | 59  | Rosamond/Rogers | 2             |
| 81          | 0  | 0.006  | 0   | 69  | Rosamond/Rogers | 2             |
| 82          | 0  | 0.023  | 0   | 115   | Rosamond/Rogers | 2             |
| 83          | 0  | 0.002  | 0   | 66  | Rosamond/Rogers | 2             |
| 84          | 0  | 0.012  | 0   | 97  | Rosamond/Rogers | 2             |
| 85          | 0  | 0.020  | 0   | 111   | Rosamond/Rogers | 2             |
| 86          | 0  | 0.018  | 0   | 130   | Rosamond/Rogers | 2             |
| 87          | 0  | 0.012  | 0   | 105   | Rosamond/Rogers | 2             |
| 88          | 0  | 0.020  | 0   | 149   | Rosamond/Rogers | 2             |
| 89          | 0  | 0.023  | 0   | 208   | Rosamond/Rogers | 2             |
| 90          | 0  | 0.006  | 0   | 117   | Rosamond/Rogers | 2             |
| 91          | 0  | 0.012  | 0   | 136   | Rosamond/Rogers | 2             |
| 92          | 0  | 0.030  | 0   | 110   | Rosamond/Rogers | 2             |
| 93          | 0  | 0.019  | 0   | 106   | Rosamond/Rogers | 2             |
| 94          | 0  | 0.003  | 0   | 142   | Rosamond/Rogers | 2             |
| 95          | 0  | 0.018  | 0   | 153   | Rosamond/Rogers | 2             |
| 96          | 0  | 0.008  | 0   | 137   | Rosamond/Rogers | 2             |
| 97          | 0  | 0.008  | 0   | 170   | Rosamond/Rogers | 2             |
| 98          | 0  | 0.015  | 0   | 125   | Rosamond/Rogers | 2             |
| 99          | 0  | 0.018  | 0   | 117   | Rosamond/Rogers | 2             |
| 100         | 0  | 0.024  | 0   | 131   | Rosamond/Rogers | 2             |

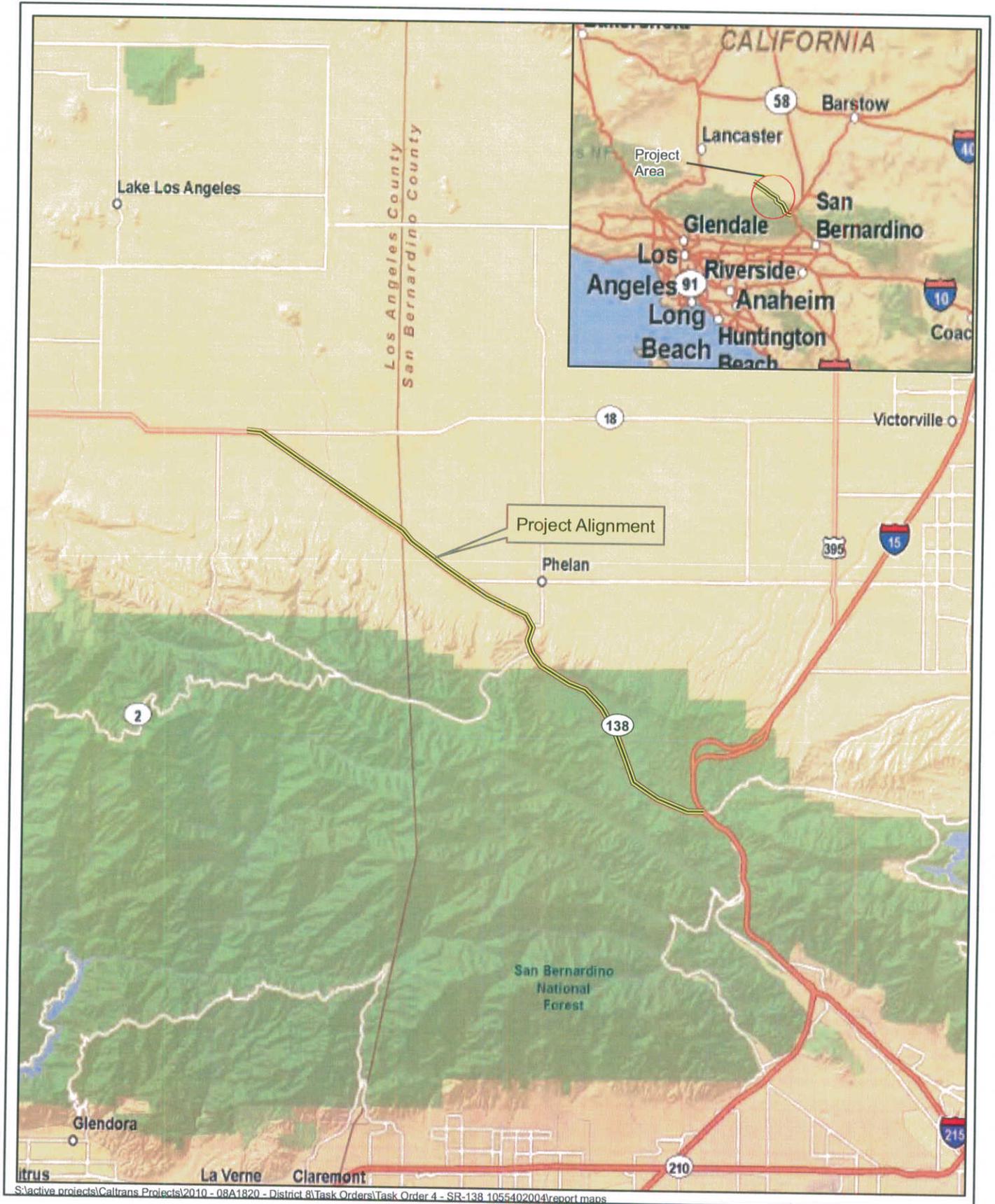
| Drainage ID  | Temporary Impacts to Waters of the State (acres) | Permanent Impacts to Waters of the State (acres) | Temporary Impact Length to Waters of the State (feet) | Permanent Impact Length to Waters of the State (feet) | Watershed       | Project Phase |
|--------------|--|--|---|---|-----------------|---------------|
| 101          | 0  | 0.003  | 0   | 65  | Rosamond/Rogers | 2             |
| 102          | 0  | 0.002  | 0   | 75  | Rosamond/Rogers | 2             |
| 103          | 0  | 0.002  | 0   | 76  | Rosamond/Rogers | 2             |
| 104          | 0  | 0.010  | 0   | 122   | Rosamond/Rogers | 2             |
| 105          | 0  | 0.008  | 0   | 116   | Rosamond/Rogers | 2             |
| 106          | 0  | 0.004  | 0   | 62  | Rosamond/Rogers | 2             |
| 107          | 0  | 0.006  | 0   | 87  | Rosamond/Rogers | 2             |
| 108          | 0  | 0.004  | 0   | 43  | Rosamond/Rogers | 2             |
| 109          | 0  | 0.009  | 0   | 54  | Rosamond/Rogers | 2             |
| 110          | 0  | 0.003  | 0   | 37  | Rosamond/Rogers | 2             |
| Cajon Creek  | 0.200  | 0.006  | 307   | 48  | Santa Ana       | 1             |
| Mescal Creek | 0  | 0.057  | 0   | 156   | Rosamond/Rogers | 2             |
| Sheep Creek  | 0.538  | 0.026  | 217   | 48  | El Mirage       | 1             |
| <b>Total</b> | <b>0.738</b>                                     | <b>2.103</b>                                     | <b>524</b>  | <b>23,030</b>   | -               | -             |

**Table 4**  
**Summary of Impacts by Project Phase**

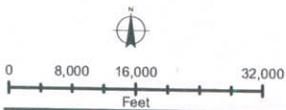
| Project Phase | Temporary Impacts to Waters of the US (acres) | Permanent Impacts to Waters of the US (acres) | Temporary Impacts to Waters of the State (acres) | Permanent Impacts to Waters of the State (acres) | Temporary Impacts to CDFW Jurisdiction (acres) | Permanent Impacts to CDFW Jurisdiction (acres) |
|---------------|---|---|--|--|--|--|
| 1             | 0.738   | 1.569   | 0.738  | 1.569  | 1.381  | 3.422  |
| 2             | 0   | 0.534   | 0  | 0.534  | 0  | 1.498  |

## **ATTACHMENT B**

### **FIGURES**

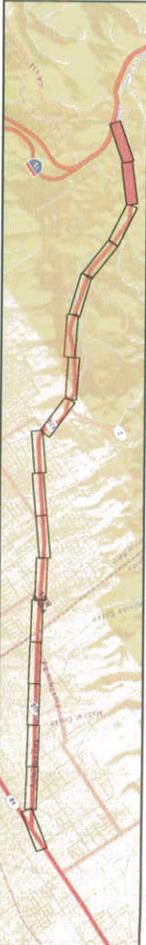
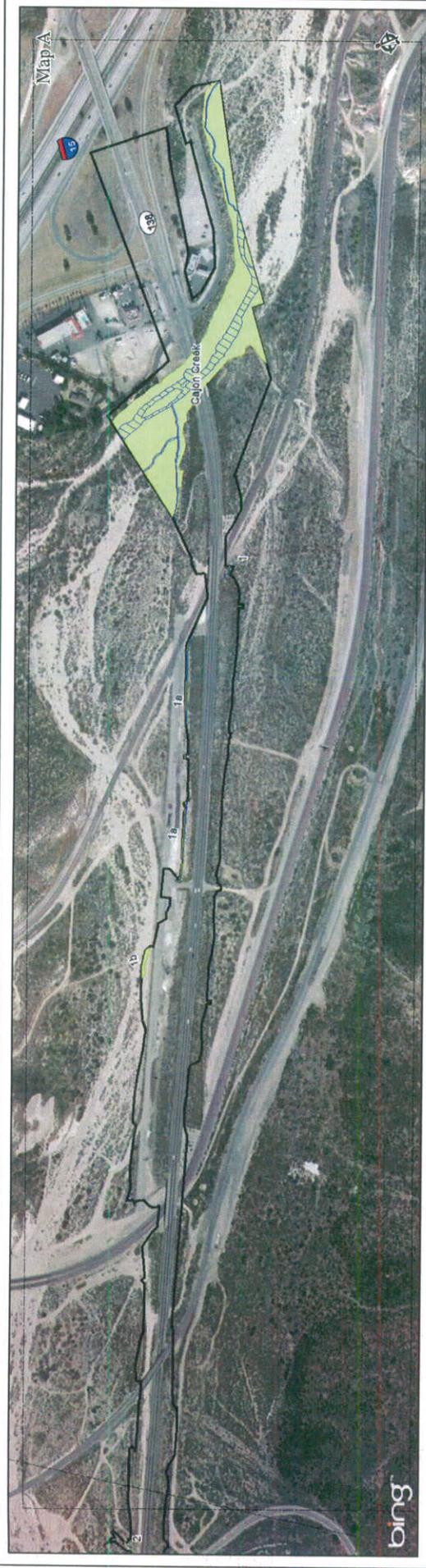


S:\active projects\Caltrans Projects\2010 - 08A1820 - District 8\Task Orders\Task Order 4 - SR-138 1055402004\report maps



Regional Location  
 SR-138 Widening Project  
 California Department of Transportation

**FIGURE**  
**1**



Date: 9/27/2013

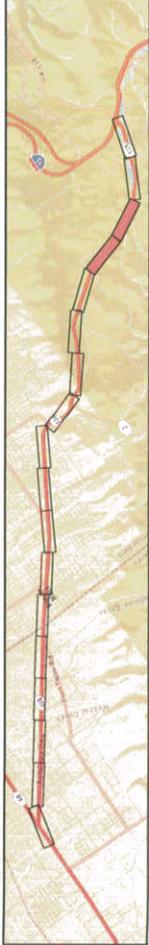
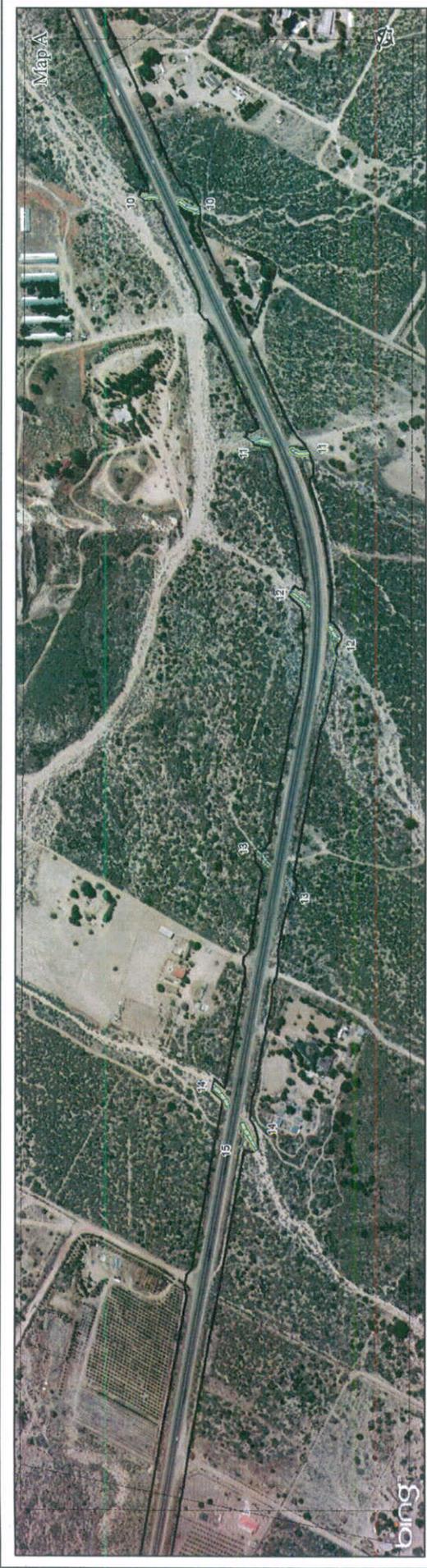
**Jurisdictional Delineation Map**  
**SR-138 Widening Project**  
**California Department of Transportation**

**FIGURE 2A**

MAP NOTES  
 Survey Area - AEEC (2009)  
 Survey Area - AEEC (2011)  
 Project: MAD\_1583\_StatePlane\_California\_V\_FIPS\_0405\_Feet\_0  
 Projection: NAD\_1983\_StatePlane\_California\_V\_FIPS\_0405\_Feet\_0  
 (CLAYGUT\_4ENVR\_Rev\_June2011.dgn & LA.dgn & M011U\_D\_0.dwg)

1 inch = 417 feet  
 0 250 500 1,000 Feet

Survey Area    WUSWSC    CDFW Jurisdiction



Date: 5/27/2013

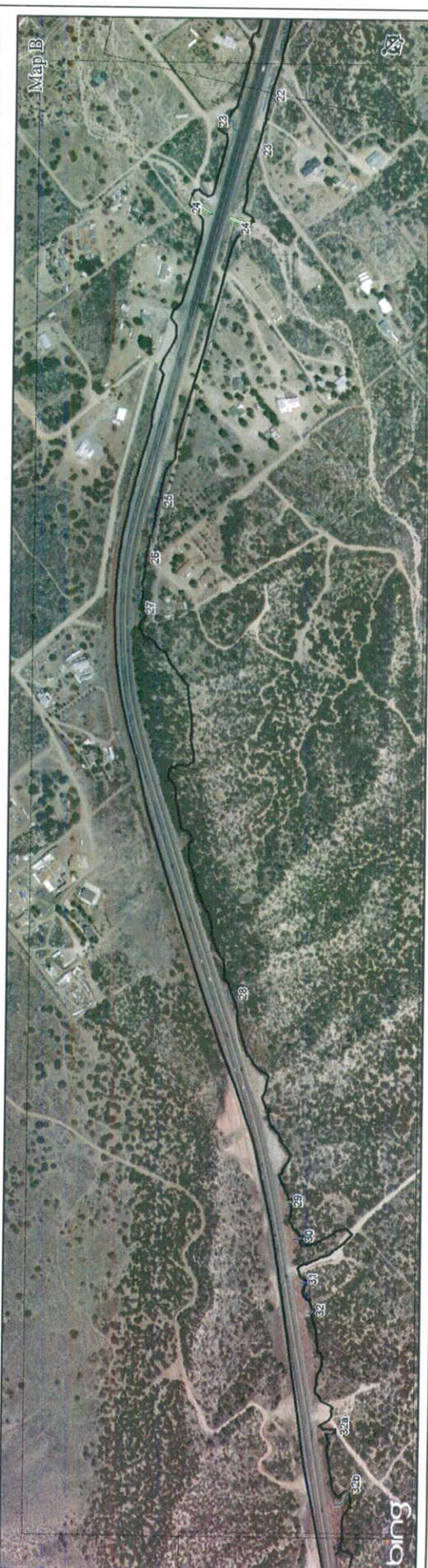
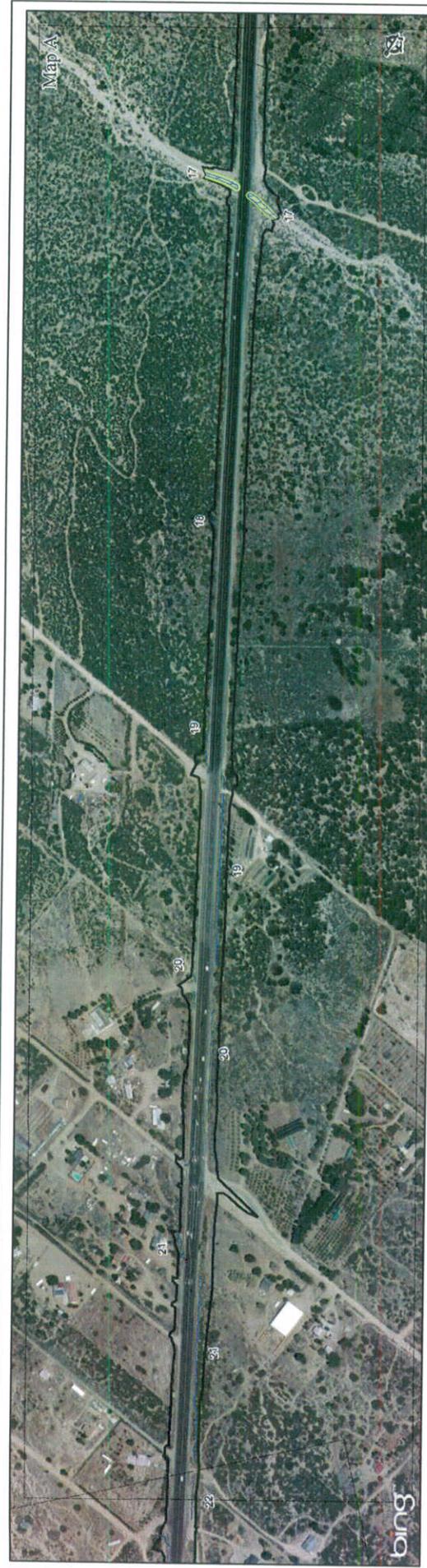
**Jurisdictional Delineation Map**  
**SR-138 Widening Project**  
**California Department of Transportation**

Survey Area
  WUSWSC
  CDFW Jurisdiction

MAP NOTES  
 Aerial Image - Bing maps (2009)  
 Projection - NAD 1983 StatePlane, California\_V\_FIPS\_0405\_Feet 0  
 Limit of Payment - Caltrans  
 (LAYOUT\_#ENVR\_Rev\_new.DGN & Layout & SACTU D-out.rtl)

1 inch = 417 feet  
 250 500 Feet

**FIGURE 2B**



Date: 9/27/2013

**Jurisdictional Delineation Map  
SR-138 Widening Project**

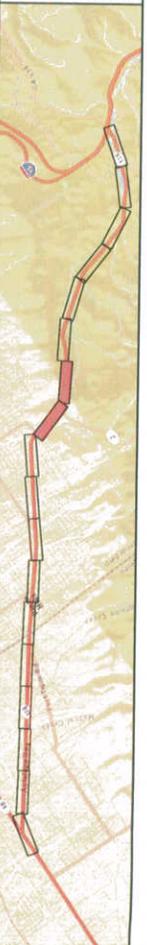
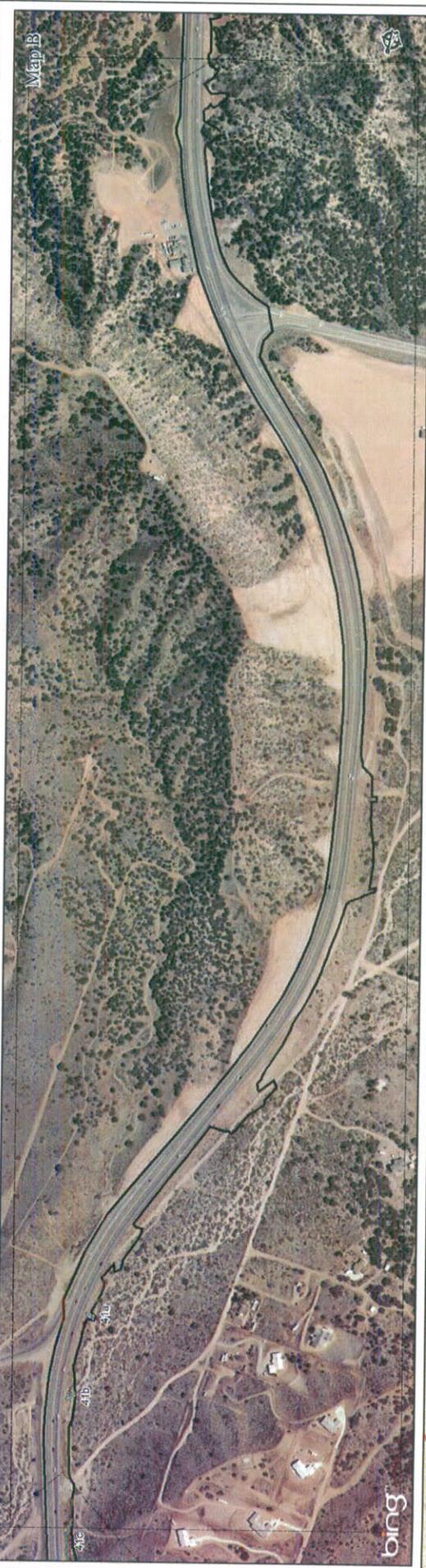
**California Department of Transportation**

Survey Area
  WUSWSC
  CDFW Jurisdiction

**FIGURE 2C**

**MAP NOTES**  
 Aerial Image - Bing maps (2009)  
 Projection - NAD 1983 StatePlane\_California\_V\_FIPS\_9405\_Feet\_0  
 Limit of Pavement - Caltrans  
 (D:\LAYOUT\_AENVR\_Rev\_new\DCN\_&LA\fig & 345\U D-cdfw)

1 inch = 417 feet  
 0 25 50 100 Feet



Date: 9/27/2013

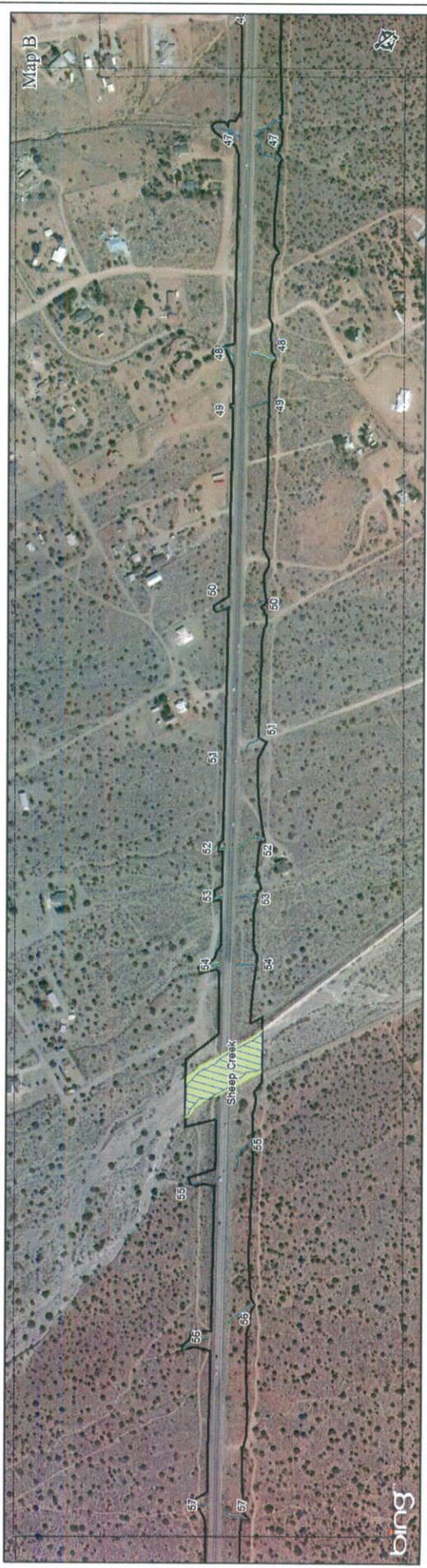
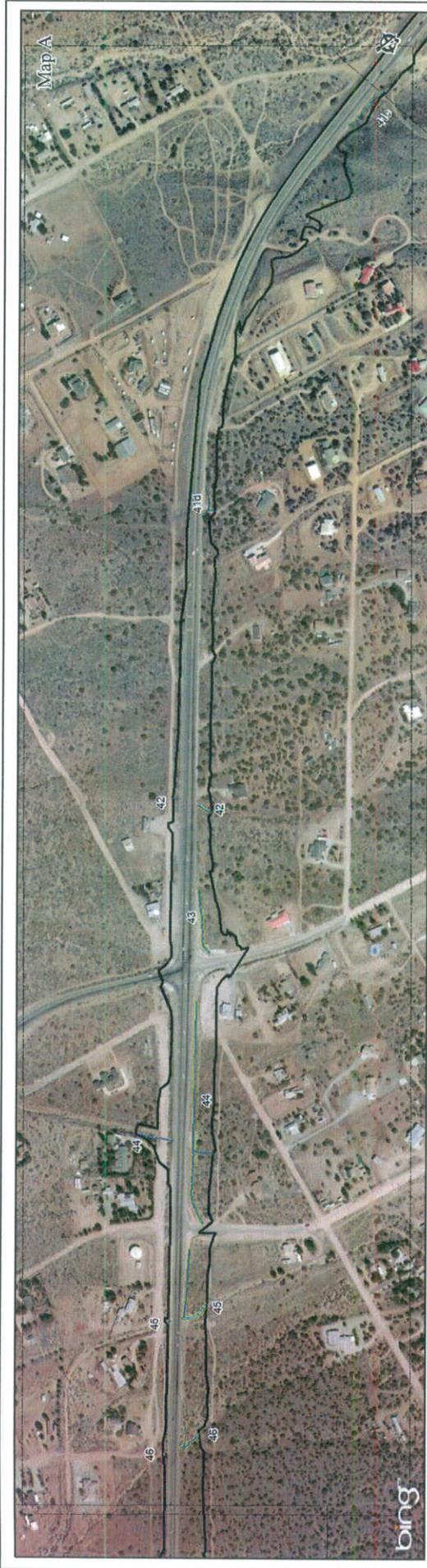
**Jurisdictional Delineation Map**  
**SR-138 Widening Project**  
 California Department of Transportation

Survey Area    WUS/WSC    CDFW Jurisdiction

MAP NOTES  
 Aerial Image: Bing maps (2009)  
 Survey Area: AMEC (2011)  
 Stationing: Caltrans Plans, California, V\_FPS\_M05\_Fuel 0  
 Limit of Pavement: Caltrans Plans, California, V\_FPS\_M05\_Fuel 0  
 (D-LAYOUT\_AENVR\_Rev\_new.DGN & LA.dgn & 3401U.D-cad-5)

1 inch = 417 feet  
 250 500 1,000 Feet

**FIGURE 2 D**



DATE: 10/12/13

**Jurisdictional Delineation Map  
SR-138 Widening Project  
California Department of Transportation**

MAP NOTES

Aerial Image - Bing maps (2009)

Survey Area - MISC (2011)

Survey Area - MISC (2011)

Limit of Payment - California, V. FPS\_0405\_Fwd 0

(D-LAYOUT - 45NWR - Rev. new DGN & LA.dgn & 3401U D-04-8)

1 inch = 417 feet

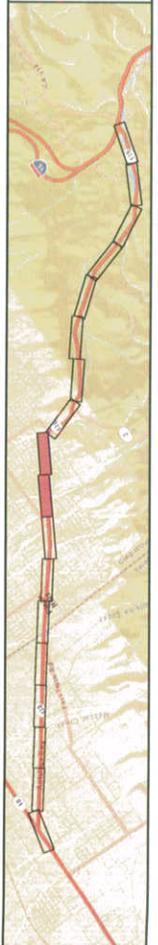
500 1000 Feet

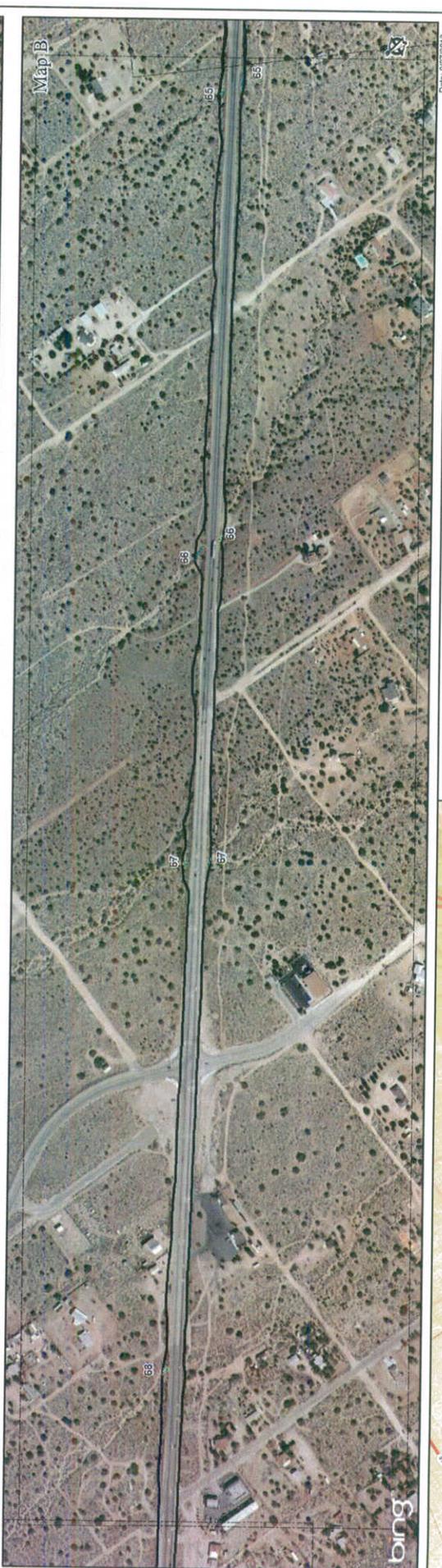
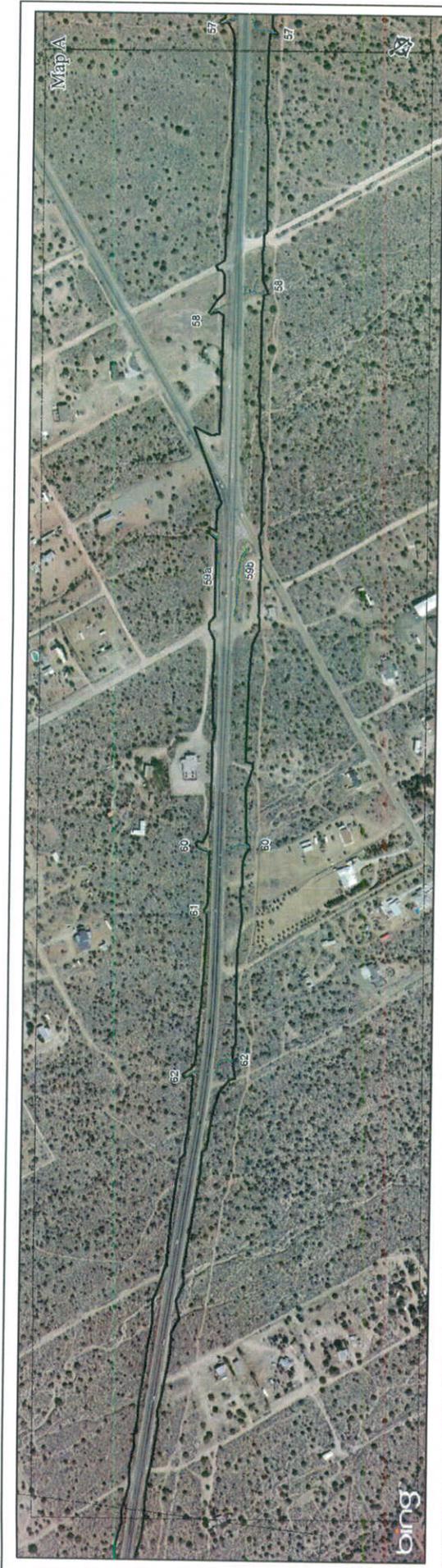
Survey Area

WUS/WSC

CDFW Jurisdiction

**FIGURE 2 E**





MAP NOTES  
 Aerial Image - Bing Maps (2009)  
 State Plane - California, NAD 83  
 Projection: NAD 1983 StatePlane\_California\_V\_FIPS\_0405\_Feet\_0  
 Unit of Measurement - California  
 (PLANOUT: ENVIR\_Rev. new DGN & LA.dgn & 3401U D-04.rft)

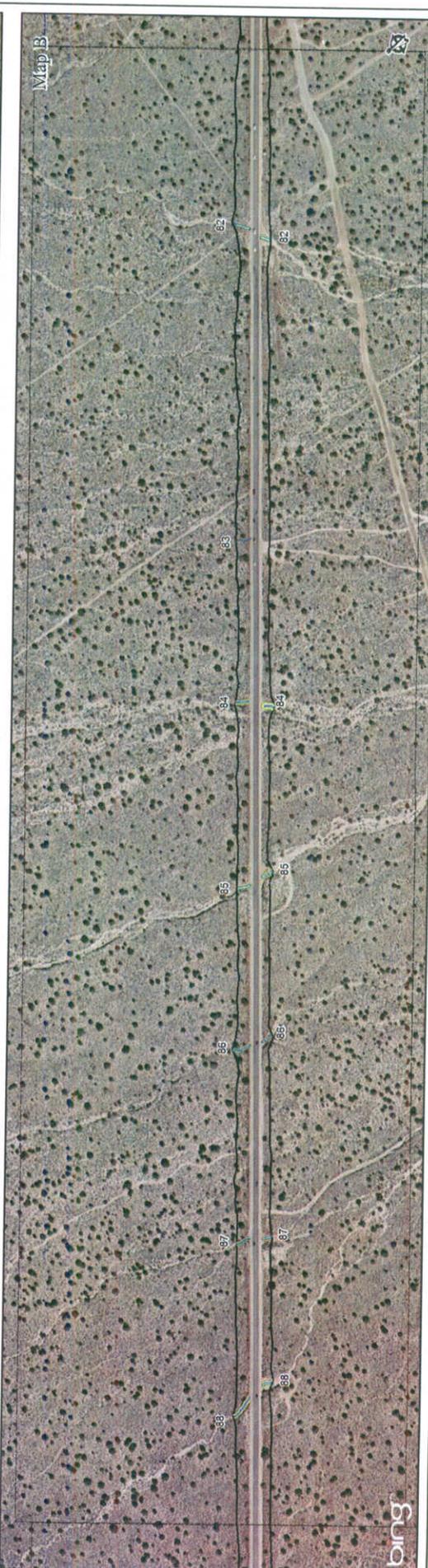
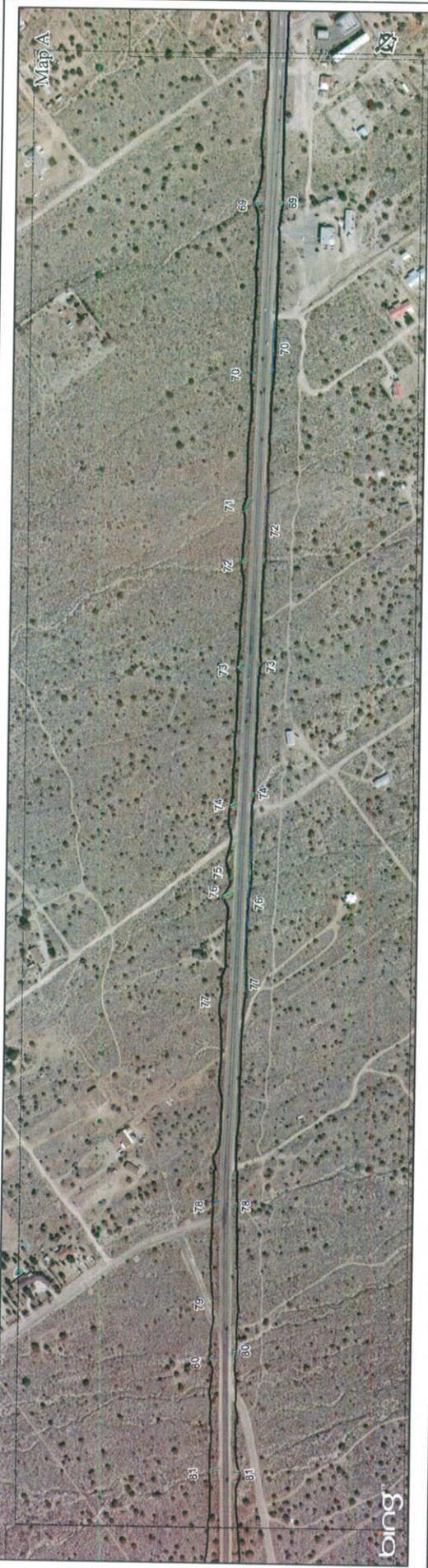
1 inch = 417 feet  
 300 500 1000 Feet

Date: 02/27/2013

**Jurisdictional Delineation Map**  
**SR-138 Widening Project**  
 California Department of Transportation

Survey Area  
 WUS/WSC  
 CDFW Jurisdiction

**FIGURE**  
**2F**



Date: 8/27/2013

**Jurisdictional Delineation Map  
SR-138 Widening Project**

**California Department of Transportation**

Survey Area

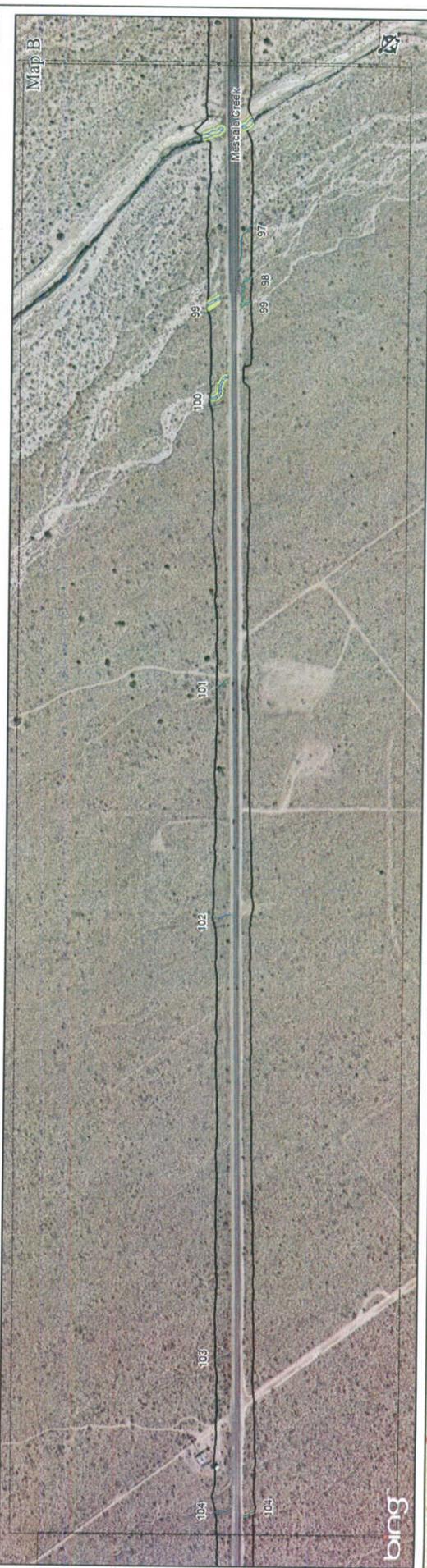
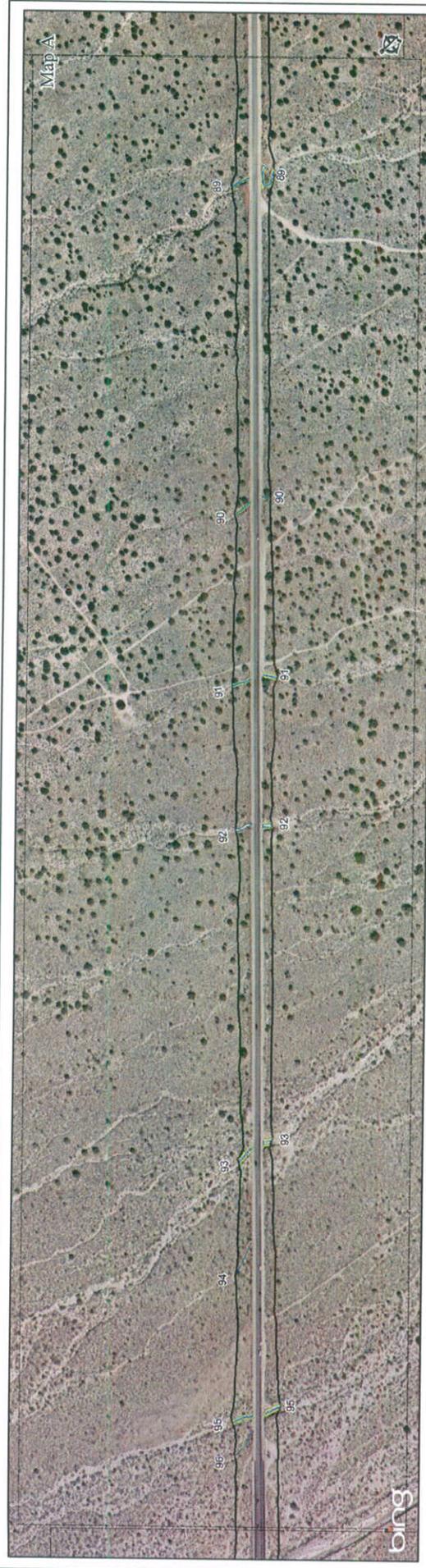
WUS/WSC

CDFW Jurisdiction

**FIGURE 2 G**

**MAP NOTES**  
 Aerial Image - Bing Maps (2009)  
 Projection: NAD\_1983\_StatePlane\_California\_V\_FIPS\_0405\_Feet\_0  
 Limit of Pavement - Caltrans  
 (D:\LAYOUT\_REVIEW\_Area\_new\CDM & LA\Sign & Safety D-cad.rvt)

1 inch = 417 feet  
 250 500 1,000  
 Feet



Date: 9/27/2013

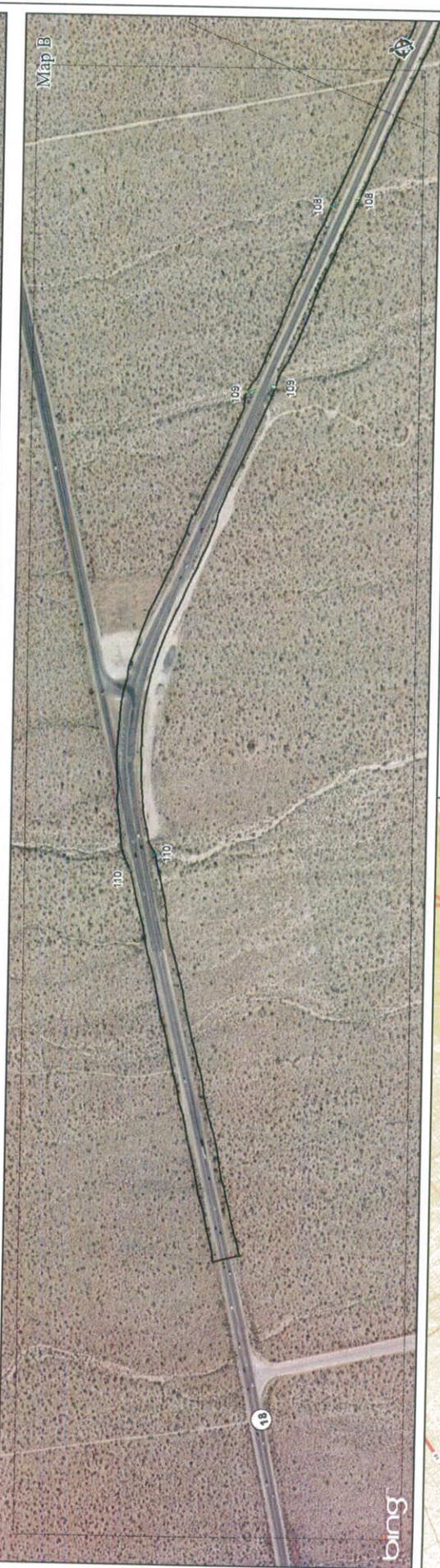
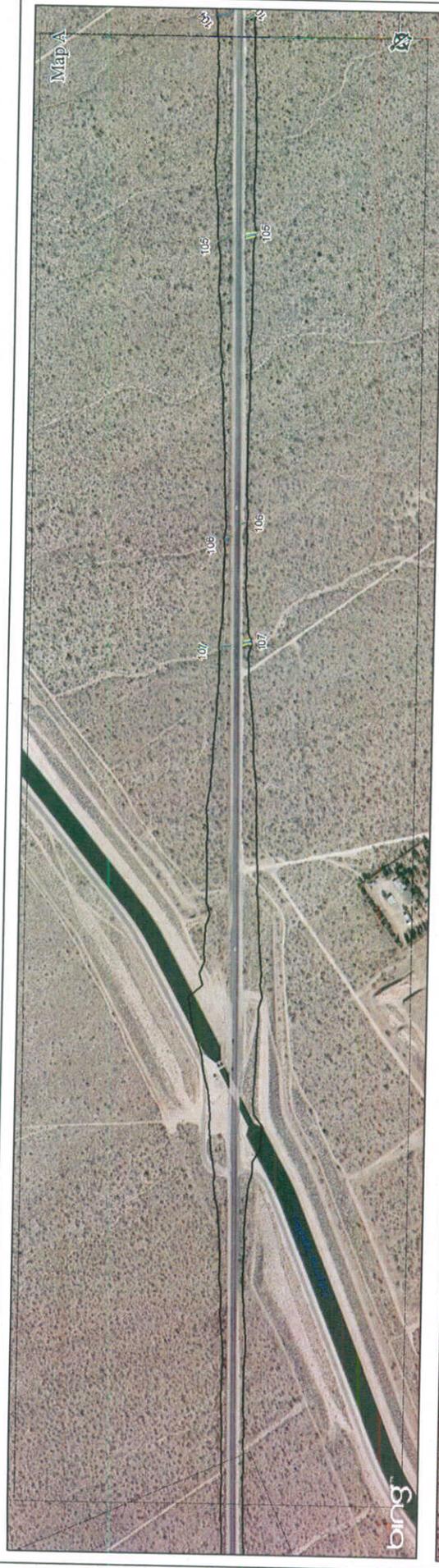
**Jurisdictional Delineation Map**  
**SR-138 Widening Project**  
**California Department of Transportation**

**FIGURE 2H**

MAP NOTES  
 Aerial Image - AMEC (2008)  
 Survey - AMEC  
 Projection: NAD\_1983\_StatePlane\_California\_V\_FIPS\_0605\_Feet\_0  
 Unit of Measurement - California  
 (D:\PROJECTS\SR138\REVISED\New\CON\LA\LA.dgn & 34671U D-cad.rvt)

1 inch = 417 feet  
 250 500 1000 Feet

Survey Area  
 WUS/WSC  
 CDFW Jurisdiction



Date: 8/27/2013

**Jurisdictional Delineation Map  
SR-138 Widening Project**

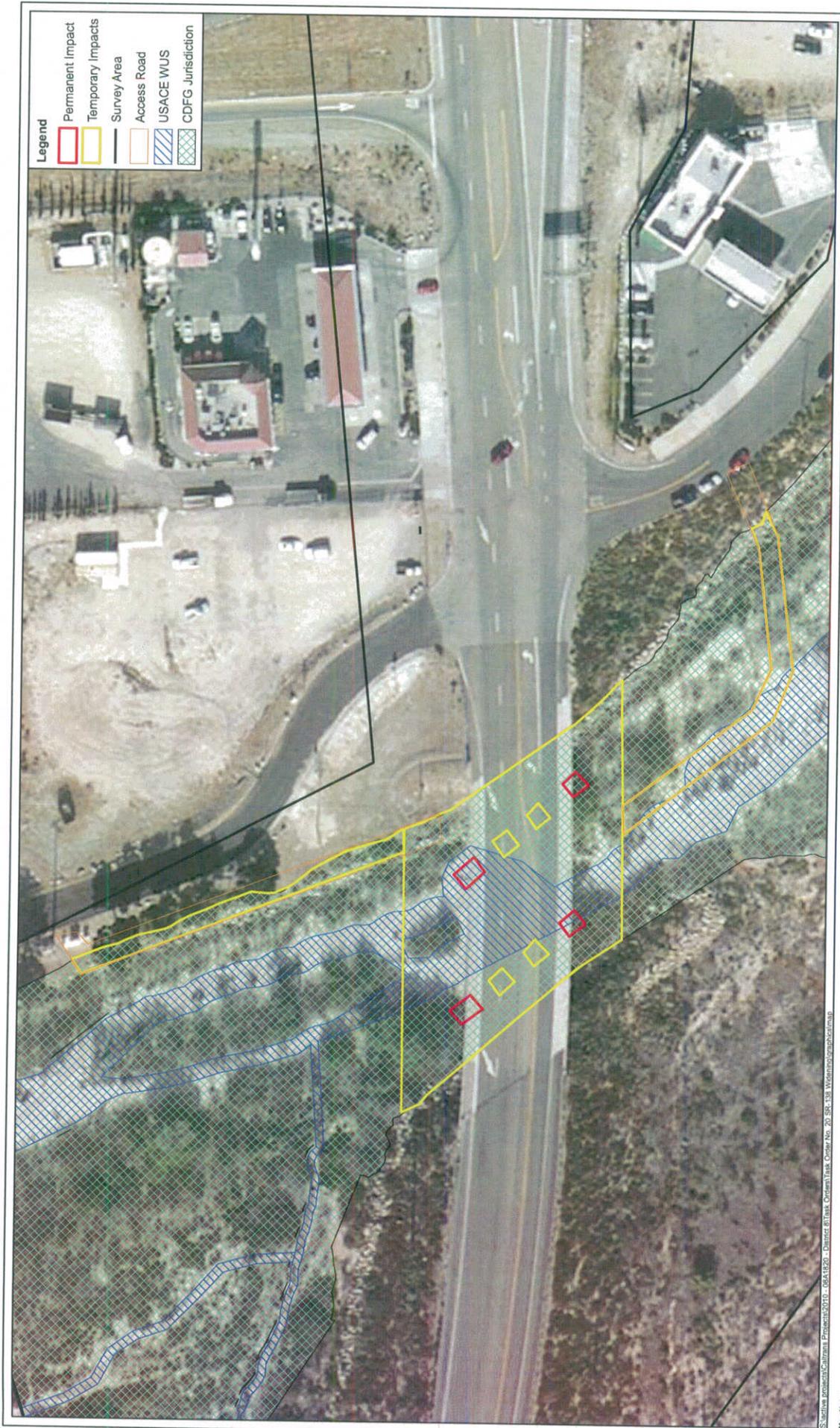
**California Department of Transportation**

Survey Area
  WUS/WSC
  CDFW Jurisdiction

**FIGURE 2I**

**MAP NOTES**  
 Aerial Image - Bing maps (2009)  
 Survey Area - AMEC (2011)  
 Survey Points - Plans, California\_V\_SPS\_0405\_Fwd &  
 Limit of Payment - California  
 ID-LAYOUT\_AENWR\_Rev\_new.DGN & LA.dgn & 3401U D-out-01

1 inch = 417 feet  
 250 500 1,000 Feet



**Legend**

|   |                   |
|---|-------------------|
| <span style="color: red;">■</span>  | Permanent Impact  |
| <span style="color: yellow;">■</span>   | Temporary Impacts |
| <span style="border: 1px solid black;"> </span>                               | Survey Area       |
| <span style="border: 1px solid black;"> </span>                               | Access Road       |
| <span style="background-color: lightblue; border: 1px solid black;"> </span>  | USACE WJUS        |
| <span style="background-color: lightgreen; border: 1px solid black;"> </span> | CDFG Jurisdiction |

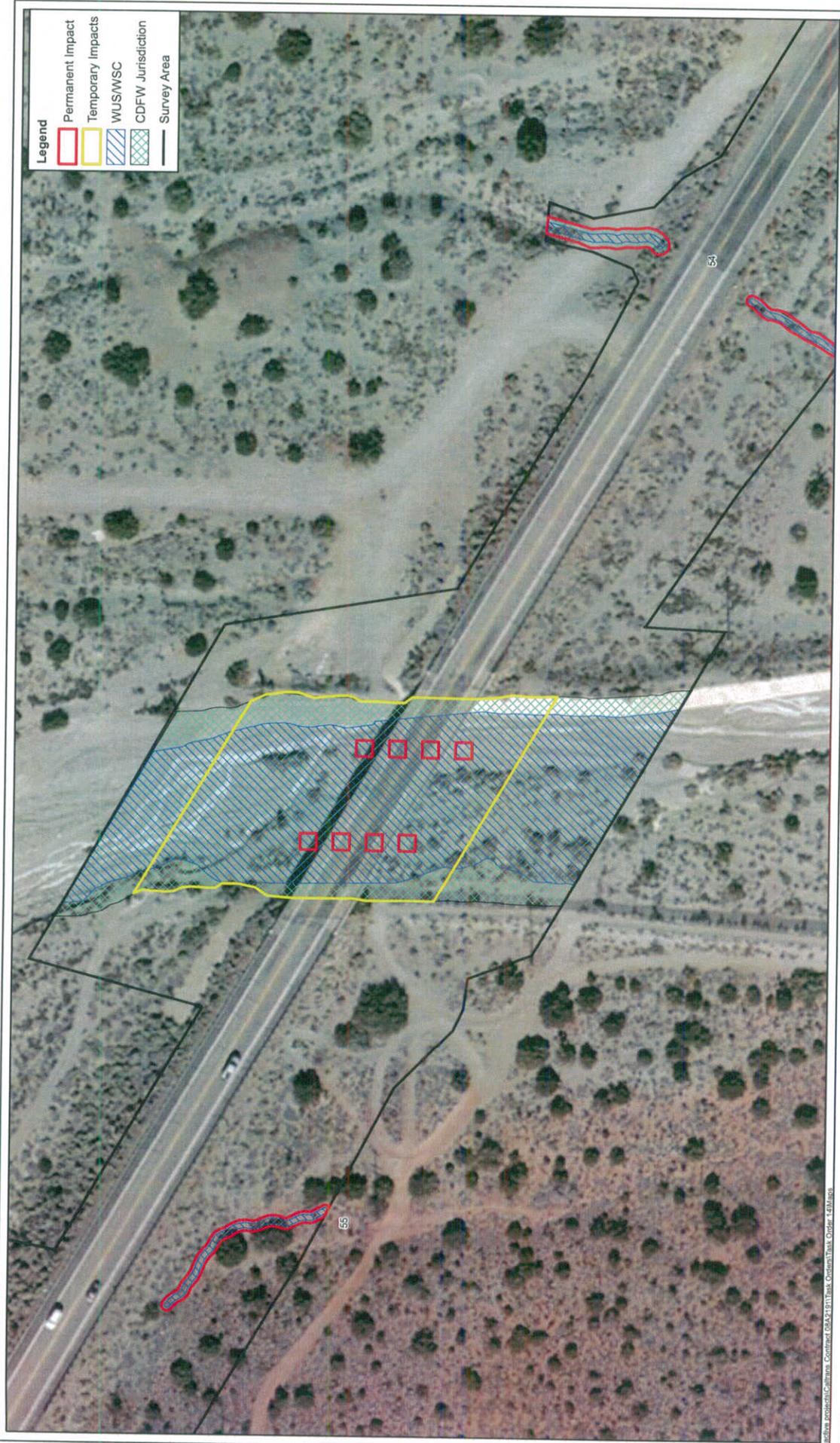
Map Notes  
 Aerial Image - Bing Map  
 Survey Area - AMEC (2011)  
 Limit of Impact - California04-0561-r-spp-Cajon Creek-wid-v3.dgn



**Impact Assessment Map-Cajon Creek  
 SR-138 Widening Project  
 California Department of Transportation**

00000172

**FIGURE  
 3A**



- Legend**
- Permanent Impact
  - Temporary Impacts
  - WUS/WSC
  - CDFW Jurisdiction
  - Survey Area

**Impact Assessment Map-Cajon Creek**  
**SR-138 Widening Project**  
 California Department of Transportation

09/27/13

**3 B**

Map Notes - Site Map  
 Survey Area - AMEC (2011)  
 Limit of Impact - California 3401U-D-04-06 (DGN)  
 0 12.5 25 50 Feet  
 1 inch = 67 feet

# PRELIMINARY JURISDICTIONAL DETERMINATION FORM

This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

District Office Los Angeles District File/ORM # SPL-2009-607 PJD Date: Dec 11, 2013

State CA City/County San Bernardino County  
Nearest Waterbody: Santa Ana and Mojave Rivers  
Location: TRS, Lat/Long or UTM: See attached table (Cajon Creek and drainages 1-57).  
Name/Address of Person Requesting PJD: SCOTT QUINNELL, Caltrans  
464 West 4th Street, San Bernardino, CA 92401

Identify (Estimate) Amount of Waters in the Review Area:  
Non-Wetland Waters:          linear ft          width 2.53 acres          Stream Flow: Ephemeral  
Wetlands: 0 acre(s) Cowardin Class:           
Name of Any Water Bodies on the Site Identified as Section 10 Waters: Tidal:          Non-Tidal:           
 Office (Desk) Determination  
 Field Determination: Date of Field Trip:         

**SUPPORTING DATA: Data reviewed for preliminary JD (check all that apply - checked items should be included in case file and, where checked and requested, appropriately reference sources below):**

- Maps, plans, plots or plat submitted by or on behalf of the applicant/consultant:
- Data sheets prepared/submitted by or on behalf of the applicant/consultant.
  - Office concurs with data sheets/delineation report.
  - Office does not concur with data sheets/delineation report.
- Data sheets prepared by the Corps
- Corps navigable waters' study:
- U.S. Geological Survey Hydrologic Atlas:
  - USGS NHD data.
  - USGS 8 and 12 digit HUC maps.
- U.S. Geological Survey map(s). Cite quad name:
- USDA Natural Resources Conservation Service Soil Survey. Citation:
- National wetlands inventory map(s). Cite name:
- State/Local wetland inventory map(s):
- FEMA/FIRM maps:
- 100-year Floodplain Elevation is:
- Photographs:  Aerial (Name & Date):         
  - Other (Name & Date):
- Previous determination(s). File no. and date of response letter:
- Other information (please specify):

**IMPORTANT NOTE: The information recorded on this form has not necessarily been verified by the Corps and should not be relied upon for later jurisdictional determinations.**

SWENSON.DANIEL.PATTERSON.1081348363  
SON.1081348363

Digitally signed by SWENSON.DANIEL.PATTERSON.1081348363  
DN: cn=US, o=U.S. Government, ou=DOD, ou=PKI, ou=USA,  
cn=SWENSON.DANIEL.PATTERSON.1081348363  
Date: 2013.12.13 17:08:20 -0800

Signature and Date of Regulatory Project Manager (REQUIRED)

Signature and Date of Person Requesting Preliminary JD (REQUIRED, unless obtaining the signature is impracticable)

**EXPLANATION OF PRELIMINARY AND APPROVED JURISDICTIONAL DETERMINATIONS:**  
1. The Corps of Engineers believes that there may be jurisdictional waters of the United States on the subject site, and the permit applicant or other affected party who requested this preliminary JD is hereby advised of his or her option to request and obtain an approved jurisdictional determination (JD) for that site. Nevertheless, the permit applicant or other person who requested this preliminary JD has declined to exercise the option to obtain an approved JD in this instance and at this time.  
2. In any circumstance where a permit applicant obtains an individual permit, or a Nationwide General Permit (NWP) or other general permit verification requiring "preconstruction notification" (PCN), or requests verification for a non-reporting NWP or other general permit, and the permit applicant has not requested an approved JD for the activity, the permit applicant is hereby made aware of the following: (1) the permit applicant has elected to seek a permit authorization based on a preliminary JD, which does not make an official determination of jurisdictional waters; (2) that the applicant has the option to request an approved JD before accepting the terms and conditions of the permit authorization, and that basing a permit authorization on an approved JD could possibly result in less compensatory mitigation being required or different special conditions; (3) that the applicant has the right to request an individual permit rather than accepting the terms and conditions of the NWP or other general permit authorization; (4) that the applicant can accept a permit authorization and thereby agree to comply with all the terms and conditions of that permit, including whatever mitigation requirements the Corps has determined to be necessary; (5) that undertaking any activity in reliance upon the subject permit authorization without requesting an approved JD constitutes the applicant's acceptance of the use of the preliminary JD, but that either form of JD will be processed as soon as is practicable; (6) accepting a permit authorization (e.g., signing a proffered individual permit) or undertaking any activity in reliance on any form of Corps permit authorization based on a preliminary JD constitutes agreement that all wetlands and other water bodies on the site affected in any way by that activity are jurisdictional waters of the United States, and precludes any challenge to such jurisdiction in any administrative or judicial compliance or enforcement action, or in any administrative appeal or in any Federal court; and (7) whether the applicant elects to use either an approved JD or a preliminary JD, that JD will be processed as soon as is practicable. Further, an approved JD, a proffered individual permit (and all terms and conditions contained therein), or individual permit denial can be administratively appealed pursuant to 33 C.F.R. Part 331, and that in any administrative appeal, jurisdictional issues can be raised (see 33 C.F.R. 331.5(a)(2)). If, during that administrative appeal, it becomes necessary to make an official determination whether CWA jurisdiction exists over a site, or to provide an official delineation of jurisdictional waters on the site, the Corps will provide an approved JD to accomplish that result, as soon as is practicable.

**PRELIMINARY JURISDICTIONAL DETERMINATION FORM**

This preliminary JD finds that there "may be" waters of the United States on the subject project site, and identifies all aquatic features on the site that could be affected by the proposed activity, based on the following information:

Appendix A - Sites

District Office  File/ORM #  PJD Date:

State  City/County  Person Requesting PJD

| Site Number | Latitude | Longitude | Cowardin Class | Est. Amount of Aquatic Resource in Review Area | Class of Aquatic Resource  |
|-------------|----------|-----------|----------------|--|----------------------------|
| 1-41        | Attached | Attached  |                | Attached                                       | Non-Section 10 non-wetland |
|             |          |           |                |  |                            |
|             |          |           |                |  |                            |
|             |          |           |                |  |                            |
|             |          |           |                |  |                            |
|             |          |           |                |  |                            |

**Notes:**

See table 1 (Cajon Creek and drainages 1-57) within attached delineation report dated October 1, 2013 prepared by AMEC Environment & Infrastructure, Inc.

## NOTIFICATION OF ADMINISTRATIVE APPEAL OPTIONS AND PROCESS AND REQUEST FOR APPEAL

|   |  |                   |
|---|--|-------------------|
| Applicant: Scott Quinnell, CA DOT, District 8 | File Number: 2009-607  | Date: 20131218    |
| Attached is:                                  |  | See Section below |
|   | INITIAL PROFFERED PERMIT (Standard Permit or Letter of permission) | A                 |
|   | PROFFERED PERMIT (Standard Permit or Letter of permission)         | B                 |
|   | PERMIT DENIAL  | C                 |
|   | APPROVED JURISDICTIONAL DETERMINATION                              | D                 |
| X   | PRELIMINARY JURISDICTIONAL DETERMINATION                           | E                 |

**SECTION I -** The following identifies your rights and options regarding an administrative appeal of the above decision. Additional information may be found at [http://www.usace.army.mil/cecw/pages/reg\\_materials.aspx](http://www.usace.army.mil/cecw/pages/reg_materials.aspx) or Corps regulations at 33 CFR Part 331.

**A: INITIAL PROFFERED PERMIT:** You may accept or object to the permit.

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **OBJECT:** If you object to the permit (Standard or LOP) because of certain terms and conditions therein, you may request that the permit be modified accordingly. You must complete Section II of this form and return the form to the district engineer. Your objections must be received by the district engineer within 60 days of the date of this notice, or you will forfeit your right to appeal the permit in the future. Upon receipt of your letter, the district engineer will evaluate your objections and may: (a) modify the permit to address all of your concerns, (b) modify the permit to address some of your objections, or (c) not modify the permit having determined that the permit should be issued as previously written. After evaluating your objections, the district engineer will send you a proffered permit for your reconsideration, as indicated in Section B below.

**B: PROFFERED PERMIT:** You may accept or appeal the permit

- **ACCEPT:** If you received a Standard Permit, you may sign the permit document and return it to the district engineer for final authorization. If you received a Letter of Permission (LOP), you may accept the LOP and your work is authorized. Your signature on the Standard Permit or acceptance of the LOP means that you accept the permit in its entirety, and waive all rights to appeal the permit, including its terms and conditions, and approved jurisdictional determinations associated with the permit.
- **APPEAL:** If you choose to decline the proffered permit (Standard or LOP) because of certain terms and conditions therein, you may appeal the declined permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**C: PERMIT DENIAL:** You may appeal the denial of a permit under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**D: APPROVED JURISDICTIONAL DETERMINATION:** You may accept or appeal the approved JD or provide new information.

- **ACCEPT:** You do not need to notify the Corps to accept an approved JD. Failure to notify the Corps within 60 days of the date of this notice, means that you accept the approved JD in its entirety, and waive all rights to appeal the approved JD.
- **APPEAL:** If you disagree with the approved JD, you may appeal the approved JD under the Corps of Engineers Administrative Appeal Process by completing Section II of this form and sending the form to the division engineer. This form must be received by the division engineer within 60 days of the date of this notice.

**E: PRELIMINARY JURISDICTIONAL DETERMINATION:** You do not need to respond to the Corps regarding the preliminary JD. The Preliminary JD is not appealable. If you wish, you may request an approved JD (which may be appealed), by contacting the Corps district for further instruction. Also you may provide new information for further consideration by the Corps to reevaluate the JD.

**SECTION II - REQUEST FOR APPEAL or OBJECTIONS TO AN INITIAL PROFFERED PERMIT**

**REASONS FOR APPEAL OR OBJECTIONS:** (Describe your reasons for appealing the decision or your objections to an initial proffered permit in clear concise statements. You may attach additional information to this form to clarify where your reasons or objections are addressed in the administrative record.)

**ADDITIONAL INFORMATION:** The appeal is limited to a review of the administrative record, the Corps memorandum for the record of the appeal conference or meeting, and any supplemental information that the review officer has determined is needed to clarify the administrative record. Neither the appellant nor the Corps may add new information or analyses to the record. However, you may provide additional information to clarify the location of information that is already in the administrative record.

**POINT OF CONTACT FOR QUESTIONS OR INFORMATION:**

If you have questions regarding this decision and/or the appeal process you may contact:  
Daniel P. Swenson, D.Env.  
Chief, LA & San Bernardino Counties Section  
U.S. Army Corps of Engineers  
Attn: Regulatory Division  
915 Wilshire Blvd.  
Los Angeles, CA 90017  
213-452-3414

If you only have questions regarding the appeal process you may also contact: Thomas J. Cavanaugh  
Administrative Appeal Review Officer,  
U.S. Army Corps of Engineers  
South Pacific Division  
1455 Market Street, 2052B  
San Francisco, California 94103-1399  
Phone: (415) 503-6574 Fax: (415) 503-6646  
Email: [thomas.j.cavanaugh@usace.army.mil](mailto:thomas.j.cavanaugh@usace.army.mil)

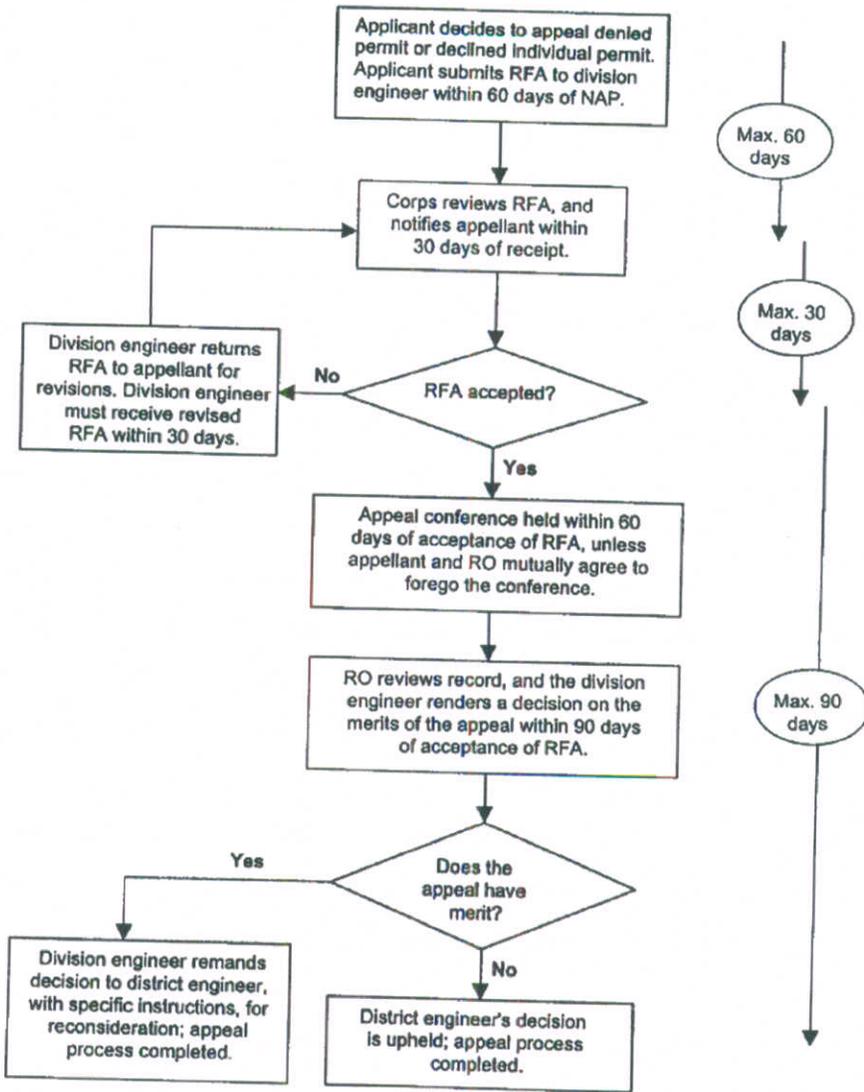
**RIGHT OF ENTRY:** Your signature below grants the right of entry to Corps of Engineers personnel, and any government consultants, to conduct investigations of the project site during the course of the appeal process. You will be provided a 15 day notice of any site investigation, and will have the opportunity to participate in all site investigations.

\_\_\_\_\_  
Signature of appellant or agent.

Date:

Telephone number:

### Administrative Appeal Process



Appendix A



EDMUND G. BROWN JR.  
GOVERNOR

MATTHEW RODRIGUEZ  
SECRETARY FOR  
ENVIRONMENTAL PROTECTION

## State Water Resources Control Board

CLEAN WATER ACT SECTION 401 WATER QUALITY CERTIFICATION FOR  
CALIFORNIA DEPARTMENT OF TRANSPORTATION STATE ROUTE 138 WIDENING PROJECT  
PHASE 1, SAN BERNARDINO, CALIFORNIA  
U.S. ARMY CORPS OF ENGINEERS FILE NUMBER SPL-2009-00607  
FILE NO. SB13004IN, REGULATORY MEASURE 394308

**PROJECT:** California Department of Transportation (Caltrans) –State Route 138 Widening Project–Phase 1 (Project)

**APPLICANT:** Scott Quinnell  
California Department of Transportation, District 8  
464 West 4<sup>th</sup> Street  
San Bernardino, California 92401

This Water Quality Certification (Certification) responds to your request on behalf of Caltrans for Certification for the Project. Your application for the Project was received on July 29, 2013, and was deemed complete on December 10, 2013. The State Water Resources Control Board (State Water Board) provided public notice of your application pursuant to title 23, California Code of Regulations, section 3858 on December 10, 2013 and posted information describing the Project on the State Water Board website from December 10, 2013 to December 31, 2013. Full fees of \$59,000 were received on December 4, 2013.

Signatory requirements for all notifications and reports required in this certification are found in Attachment A.

**ACTION:**

- |   |   |
|---|---|
| <input type="checkbox"/> Order for Standard Certification                           | <input type="checkbox"/> Order for Denial of Certification                |
| <input checked="" type="checkbox"/> Order for Technically Conditioned Certification | <input type="checkbox"/> Order for Waiver of Waste Discharge Requirements |

**AUTHORIZATION:**

The proposed Project consists of widening State Route 138 from two lanes to four lanes with a median left turn lane and realignment of portions of the mainline to improve traffic operation and safety. The Project location includes the highway segment from the Interstate 15/State Route 138 interchange, in San Bernardino County to the State Route 138/Acorn Road interchange near the City of Phelan (see Attachment C, Project Area Map). The Project is approximately 13 miles long and extends from Post Mile (PM) 15.2 to PM 2.2. Project activities involve horizontal realignment, pavement rehabilitation, drainage improvements, turning lanes, traffic system management, wildlife crossings, bridge improvements, structure widening, and an addition of a vista point. Project Information is summarized in Attachment B.

FELICIA MARCUS, CHAIR | THOMAS HOWARD, EXECUTIVE DIRECTOR

1001 I Street, Sacramento, CA 95814 | Mailing Address: P.O. Box 100, Sacramento, Ca 95812-0100 | [www.waterboards.ca.gov](http://www.waterboards.ca.gov)

The Project occurs within three watersheds: the Mojave Hydrologic Unit (HU), the El Mirage Hydrologic Area (HA), and the Santa Ana River HU. The watersheds are located within the Lahontan Regional Water Quality Control Board's (Lahontan Regional Water Board) and the Santa Ana Regional Water Quality Control Board's (Santa Ana Regional Water Board) jurisdiction. Due to the Project affecting waters within multiple Regional Water Board jurisdictions the State Water Board has responsibility for the Project.

Water bodies impacted by the Project include Cajon Creek, Sheep Creek, and multiple unnamed ephemeral streams. This Water Quality Certification applies to all aspects of the Project except for impacts to Sheep Creek and non-federal waters of the state in that vicinity. Impacts to those non-federal waters will be addressed separately through Waste Discharge Requirements.

Impacts related to construction and operations of the Project include permanent fill impacts to 1.486 acres of waters of the U.S. and temporary fill impacts of 0.200 acres of waters of the U.S.

Details of anticipated project impacts are presented in Attachment D.

#### **STANDARD CONDITIONS:**

1. This Certification action is subject to modification or revocation upon administrative or judicial review, including review and amendment pursuant to section 13330 of the Water Code and article 6 (commencing with section 3867) of chapter 28, title 23 of the California Code of Regulations.
2. This Certification action is not intended and shall not be construed to apply to any activity involving a hydroelectric facility requiring a Federal Energy Regulatory Commission (FERC) license or an amendment to a FERC license, unless the pertinent certification application was filed pursuant to subsection 3855(b) of chapter 28, title 23 of the California Code of Regulations, and the application specifically identified that a FERC license or amendment to a FERC license for a hydroelectric facility was being sought.
3. This Certification is conditioned upon total payment of any fee required under chapter 28, title 23 of the California Code of Regulations and owed by the applicant.

#### **ADDITIONAL CONDITIONS:**

1. The Applicant Proposed Measures (APMs) as described in the Initial Study/Mitigated Negative Declaration (IS/MND) pertaining to water quality and protection of the beneficial uses of waters of the U.S. are incorporated into this Certification and shall be implemented in this Project in accordance with this Certification.
2. Caltrans shall not cause or contribute to an exceedance of any water quality objectives contained in regional and statewide water quality control plans and policies.
3. Caltrans shall obtain coverage, and notify staff upon enrollment, under the National Pollutant Discharge Elimination System (NPDES) General Permit for Storm Water Discharges Associated with Construction Activities (Order 2009-0009-DWQ as amended by 2010-0014-DWQ and 2012-0006-DWQ) (Construction Storm Water Permit, or CGP). The applicant shall also notify the designated staff contact when changes to the enrollment are made and when a request for Notice of Termination is submitted.
4. Best Management Practices (BMPs)
  - a) Appropriate BMPs shall be implemented and maintained throughout Project activities to minimize sediment disturbance to and suspension within surface waters as described in this

Certification, the Project Storm Water Pollution Prevention Plans (SWPPPs), and the Project Initial Study and Addenda.

- b) All BMP materials shall be on site prior to construction activity and ready for use throughout construction. BMPs shall be in full compliance with all specifications governing their proper design, installation, operation, and maintenance of such management practices throughout their useful life.
- c) Substances resulting from construction activities that could be harmful to aquatic life shall not be discharged to waters of the U.S., including but not limited to, petroleum lubricants and fuels; cured and uncured cements; epoxies, paints and other protective coating materials; Portland cement, concrete, or asphalt concrete; and washings and cuttings thereof.
- d) Concrete washout devices will be implemented to contain any concrete waste discharged within the project area.
- e) Vehicles shall not be driven or equipment operated in waters of the U.S. on the Project site, except as necessary to complete the proposed Project.
- f) Fueling, lubrication, maintenance, storage, and staging of vehicles and equipment shall be outside of waters of the U.S., and shall not result in a discharge or a threatened discharge to waters of the U.S.
- g) A daily log shall be maintained to note the presence and absence of waste releases from vehicles and equipment within or adjacent to waters of the U.S. Copies of the daily log shall be available on site. Daily visual inspections for waste releases of all vehicles and equipment parked or operating within 50 feet of waters of the U.S. shall be conducted before the vehicles or equipment are operated for the work day. Spillage and leaks shall be reported in the daily log when they occur. Presence of any spillage from leaks shall be reported in the daily log and contaminated soils shall be removed immediately from the site and disposed of at an approved area or facility. State Water Board and/or the appropriate Regional Water Board staff may request this information at any time.
- h) Any waste releases from vehicles or equipment of five gallons or more shall be reported to the State Water Board and the appropriate Regional Water Board within 24 hours with an explanation of how the spillage was remedied.
- i) For areas of temporary disturbance, the contours of disturbed areas shall be restored to pre-Project conditions and viable seed of native species collected in the Mojave HU, El Mirage HA, and the Santa Ana River HU. HUs and HAs shall be used for habitat restoration of disturbed areas. If Caltrans is unable to obtain enough viable native seed from these watersheds, it will obtain authorization from State Water Board staff to expand the source area to use ecologically viable seed sources from outside the Mojave HU, El Mirage HA, and the Santa Ana HU.
- j) Any trash, excess material or other debris shall be removed from the work area and disposed of properly and on a daily basis. Also, no rubbish shall be deposited within 100 feet of waters of the U.S.
- k) All ground disturbance activities shall employ appropriate washout and erosion control BMPs to protect waters of the U.S.
- l) Any straw or hay used for BMPs or any purpose must be certified as weed free.
- m) The limits of Project disturbance shall be clearly identified in the field with highly visible markers such as construction fencing, flagging or similar practices prior to commencement of construction activities within waters of the U.S. Such identification shall be properly maintained until construction is completed and soils have been stabilized. Equipment, materials, or any other substances or activities that impact waters outside of the permit limits (as shown on the permit maps/drawings), is prohibited. This requirement is only waived if all waters of the U.S. are avoided on site, and if no off-site waters are located within 100 feet of the Project site.

- n) Design and placement of bio-swales, as required under Mitigation Measure SW-3 from the Project IS/MND, shall at least be sufficient to minimize or eliminate any cumulative effects due to increased storm water runoff rates and volumes. Bio-swales shall at least be able to retain and infiltrate runoff volumes and rates caused by the Project which would otherwise exceed existing volumes and rates.
- o) Construction entrances and exits will be protected to prevent tracking of soil onto adjoining roadways.

5. Flow Diversions during in-water construction

- a) All work areas shall be effectively isolated from stream flows using suitable control measures before commencement of any in-water work. The diverted stream flow shall not be contaminated by construction activities. Structures for isolating the in-water work area and/or diverting the stream flow (e.g., cofferdam, geo-textile silt curtain) shall not be removed until all disturbed areas are cleaned of debris and stabilized.
- b) All bridges, culverts, or other channel crossing structures shall be installed so that water flow is not impaired. Bottoms of temporary culverts shall be placed at stream channel grade and bottoms of permanent culverts shall be placed at or below stream channel grade.
- c) Disturbed in-water work areas must be temporarily stabilized to prevent erosion at least 48 hours prior to the predicted commencement of a rainfall event with greater than a 50 percent probability of occurrence, as predicted by the National Oceanic and Atmospheric Administration (NOAA) - National Weather Service. If the predicted commencement of such a rainfall event is less than 48 hours after the prediction, temporary stabilization of the disturbed in-water work areas must begin immediately.
- d) In the event of rain, the in-water work area shall be temporarily stabilized before streamflow exceeds the capacity of the diversion structure. The streambed shall be stabilized so that the disturbed areas will not come in contact with the streamflow.
- e) Cofferdams and water barrier construction shall be adequate to prevent seepage into or from the work area. Cofferdams or water barriers shall not be made of earth or other substances subject to erosion or that contain pollutants. When dewatering is necessary to create a temporary dry construction area, the water shall be pumped through a sediment-settling device before it is returned to the water body. The enclosure and the supportive material shall be removed when the work is completed, and removal shall proceed from downstream to upstream.
- f) Flow diversions shall be done in a manner that shall prevent pollution and/or siltation and provide flows to downstream reaches. Said flows shall be of sufficient quality and quantity, and of appropriate temperature, to support fish or other aquatic life normally present both above and below the diversion. Diversions shall be engineered, installed, and maintained to ensure resistance to washout and erosion of the water body. All open flow temporary diversion channels will be lined with filter fabric or plastic to prevent channel erosion and sediment transport. Normal flows shall be restored to the affected stream immediately upon completion of work at that location. All flow diversion facilities shall be removed and the site restored to pre-project conditions.
- g) If dewatering is required for groundwater control, Caltrans shall consult with the appropriate Regional Water Board to determine if additional permits are required.

## 6. Surface Water Monitoring

Surface water monitoring shall be implemented when: (1) in-water work is performed; (2) Project activities result in any materials reaching surface waters; or (3) Project activities result in the creation of a visible plume in surface waters. Monitoring of the water quality objectives listed below in subsection 7(a) through 7(e) shall be conducted immediately upstream out of the influence of the Project and within 300 feet downstream of the active work area. Overnight monitoring of affected stream reaches after each day's work is not required.

- a) When in-water work is performed:
  - i) sampling frequency shall be at least once prior to scheduled activities and then every four hours during the activity; and
  - ii) turbidity measurements must be collected within one hour after barrier installation and within one hour after barrier removal
- b) When Project activities result in any materials reaching surface waters or the creation of a visible plume in surface waters
  - i) sampling frequency shall be immediately after a discharge reaches surface waters or a visible plume is created in surface waters, and every 4 hours until objectives in Conditions 7(a) through 7(e) below are met.

Results of the analysis shall be submitted to the State and Regional Water Boards within two weeks of initiation of sampling and every two weeks thereafter. A map or drawing indicating the locations of the sampling points must be included with each submittal.

If the concentrations of parameters in the monitoring samples collected exceed the limits described below, then this must be reported to State Water Board staff within 24 hours of occurrence or discovery (via email or phone) and Caltrans shall propose measures that will allow surface waters to meet water quality objectives set forth in the Water Quality Control Plan for the Santa Ana Region (Santa Ana River Basin Plan) and the Water Quality Control Plan for the Lahontan Region (Lahontan Region Basin Plan). Any violations of these limits may result in corrective and/or enforcement actions, including increased monitoring and sample collection.

## 7. Constituent measurements must comply with the following limits as specified in the Regional Board Basin Plans:

- a) pH
  - i. For waters of the U.S. subject to the Lahontan Region Basin Plan, in fresh waters with designated beneficial uses of COLD or WARM, changes in normal ambient pH levels shall not exceed 0.5 pH units. For all other waters of the Region, the pH shall not be depressed below 6.5 nor raised above 8.5. The Regional Board recognizes that some waters of the Region may have natural pH levels outside of the 6.5 to 8.5 range. Compliance with the pH objective for these waters will be determined on a case-by-case basis.
  - ii. For waters of the U.S. subject to the Santa Ana River Basin Plan, pH shall not be depressed below 6.5 or raised above 8.5 as a result of controllable water quality factors.
- b) Temperature
  - i. For waters of the U.S. subject to the Lahontan Region Basin Plan, the natural receiving water temperature of all waters shall not be altered unless it can be demonstrated to the satisfaction of the Regional Board that such an alteration in temperature does not adversely affect the water for beneficial uses. For waters designated WARM, water temperature shall not be altered by more than five degrees Fahrenheit (5°F) above or below the natural temperature. For waters designated COLD, the temperature shall not be altered. Temperature objectives for COLD interstate waters and WARM interstate waters

are as specified in the "Water Quality Control Plan for Control of Temperature in The Coastal and Interstate Waters and Enclosed Bays and Estuaries of California" including any revisions. This plan is summarized in Chapter 6 (Plans and Policies) of the Lahontan Region Basin Plan, and included in Appendix B.

- ii. For waters of the U.S. subject to the Santa Ana River Basin Plan, waters designated WARM shall not be raised above 90°F June through October or above 78°F during the rest of the year as a result of controllable water quality factors. For waters designated COLD, water temperature shall not be increased by more than 5°F above the natural temperature as a result of controllable water quality factors.
- c) Dissolved Oxygen
- i. For waters of the U.S. subject to the Lahontan Region Basin Plan, the dissolved oxygen concentration, as percent saturation, shall not be depressed by more than 10 percent, nor shall the minimum dissolved oxygen concentration be less than 80 percent of saturation.  
For waters with the beneficial uses of COLD, COLD with SPWN, WARM, and WARM with SPWN, the minimum dissolved oxygen concentration shall not be less than that specified in Table 3-6 of the Lahontan Region Basin Plan.
  - ii. For waters of the U.S. subject to the Santa Ana Basin Plan, the dissolved oxygen content of surface waters shall not be depressed below 5 milligrams per liter (mg/l) for waters designated WARM, or 6mg/l for waters designated COLD, as a result of controllable water quality factors. In addition, waste discharges shall not cause the median dissolved oxygen concentration to fall below 85 percent of saturation or the 95th percentile concentration or fall below 75 percent of saturation within a 30-day period.
- d) Turbidity
- i. For waters of the U.S. subject to the Lahontan Region Basin Plan, waters shall be free of changes in turbidity that cause nuisance or adversely affect the water for beneficial uses. Increases in turbidity shall not exceed natural levels by more than 10 percent.
  - ii. For waters of the U.S. subject to the Santa Ana Basin Plan:
    - 1) Where natural turbidity is between 0 and 5 Nephelometric Turbidity Units (NTU), increases shall not exceed 20 percent.
    - 2) Where natural turbidity is between 50 and 100 NTU, increases shall not exceed 10 NTU.
    - 3) Where natural turbidity is greater than 100 NTU, increases shall not exceed 10 percent.
- e) Suspended Materials
- i. For waters of the U.S. subject to the Lahontan Region Basin Plan, waters shall not contain suspended materials in concentrations that cause nuisance or that adversely affects the water for beneficial uses. For natural high quality waters, the concentration of total suspended materials shall not be altered to the extent that such alterations are discernible at the 10 percent significance level.
  - ii. For waters of the U.S. subject to the Santa Ana Basin Plan:  
Settleable solids are deleterious to benthic organisms and may cause anaerobic conditions to form. Suspended solids can clog fish gills and interfere with respiration in aquatic fauna. They also screen out light, hindering photosynthesis and normal aquatic plant growth and development.  
  
Inland surface waters shall not contain suspended or settleable solids in amounts which cause a nuisance or adversely affect beneficial uses as a result of controllable water quality factors.

## **CERTIFICATION DEVIATIONS**

Minor modifications of Project locations or predicted impacts may be necessary as a result of unforeseen field conditions, necessary engineering re-design, construction concerns, or similar reasons. Some of these prospective Project modifications may have impacts on waters resources.

Some modifications of Project locations or predicted impacts may qualify as Certification Deviations. For purposes of this Certification, a "Certification Deviation" is a Project locational or impact modification that does not require an immediate amendment of the Certification, because the State Water Board has determined that any potential water resource impacts that may result from the change are sufficiently addressed by the Certification conditions and the Project IS/MND.

Project modifications that warrant or necessitate changes to Certification conditions that are not addressed by existing environmental documents will require an amendment to this Certification and do not qualify for the Certification Deviation procedures set forth in Attachment E.

After the termination of construction, this Certification will be amended to reflect all authorized Certification Deviations and any resulting adjustments to the amount of water resource impacts and required compensatory mitigation amounts.

## **COMPENSATORY MITIGATION CONDITIONS:**

1. To compensate for temporary and permanent impacts to waters of the U.S., Caltrans shall implement each measure listed below.
2. Caltrans shall prepare and implement a Mitigation and Monitoring Plan (MMP) consistent with Compensatory Mitigation Conditions 3 through 5 to compensate for temporary and permanent impacts to waters of the U.S. The MMP shall include all measures to restore waters of the U.S. back to pre-Project conditions due to temporary impacts as well as conceptual-level compensatory mitigation measures for permanent impacts. Approval of Compensatory mitigation ratios for permanent impacts will be a separate process from approval of the MMP.
3. Caltrans shall submit an MMP to the State Water Board and Regional Water Boards within 120 days of issuance of this Certification.
4. The MMP must be approved by State Water Board staff prior to the start of Project construction within waters of the U.S.
5. Temporary impacts. For project-wide temporary impacts to 0.200 acre and 307 linear feet of waters of the U.S., on-site in-kind restoration of waters of the U.S. at a 1:1 ratio shall be provided. Implementation of these plans shall be conducted according to the following conditions:
  - a. Non-native/invasive plant species. Caltrans will develop or adopt a plan to control and limit the establishment of non-native and invasive plant species for all on-site restoration of temporary disturbance before the start of construction. Such plans shall be subject to approval by State Water Board staff, and shall be implemented throughout the construction and restoration phases of the project.
  - b. Caltrans shall complete the post-construction restoration steps for temporary impacts to waters of the U.S. within 30 days following completion of Project activity at individual restoration locations. This period may be extended to accommodate proper planting times. If restoration is not initiated within two years of the impacts, additional mitigation will be required to offset temporal loss of waters of the U.S. These timelines may be extended and approved by State Water Board staff if satisfactory progress can be demonstrated to State Water Board staff.

- c. Performance measures for all restoration of temporary disturbance, including disturbance to waters, shall, at a minimum, be as described in the Construction General Permit. Project specific performance measures, which shall be subject to State Water Board staff approval, shall be developed and incorporated into the project restoration plans before the onset of construction.
  - d. Monitoring. The restoration of temporary impacts shall be maintained and monitored for a five year period or until performance standards are met, whichever is later. Maintenance, monitoring, and reporting shall be conducted following a prescribed schedule to assess progress and identify potential problems with the restoration. Remedial action (e.g., additional planting, weeding, erosion control, use of container stock, supplemental watering, etc.), if necessary, shall be implemented by qualified restoration specialists during the maintenance and monitoring period to ensure the success of the restoration. At the end of the initial five year maintenance and monitoring period, if the restoration fails to meet the performance measures developed in accordance with condition 6.d above, maintenance and monitoring will be extended until the criteria are met or unless otherwise approved by State Water Board staff.
  - e. Monitoring reports shall be submitted to the State and the appropriate Regional Water Board for each temporary impact site. All reports shall include the following:
    - i. The file number of this Certification: SB130041N.
    - ii. Appropriate data and documentation regarding pre- and post-construction conditions (with supporting photographic documentation) for each site where temporary impacts to waters of the U.S. were permitted.
    - iii. A summary of Project compliance (including noncompliance and corrective actions taken to achieve compliance during construction).
    - iv. Annual reports shall be provided by January 31 of each year for 5 years or until all long-term performance standards have been met, as verified by State Water Board staff.
    - v. Timelines may be extended and approved by State Water Board staff if progress satisfactory to the State Water Board has been made.
6. **Permanent impacts.** To compensate for 1.486 acres and 15,951 linear feet of permanent impacts to waters of the U.S., Caltrans shall provide compensatory mitigation before the start of construction as described below:
- a) For impacts in the Santa Ana Watershed, compensation shall be achieved through purchase of credits at the Riverside-Corona Resource Conservation District (RCRCD) In-Lieu Fee (ILF) Program. For impacts in the Mojave Watershed, compensation shall be achieved through purchase of credits at the Inland Empire Resource Conservation District (IERCD) ILF Program.
  - b) Prior to purchasing the appropriate number and resource type of credits from the sponsor, Caltrans shall obtain approval from the State Water Board that the compensatory mitigation site(s) satisfies compensatory mitigation requirements and adequately replaces the lost functions and values of waters of the U.S. impacted by the Project in accordance with this Certification.
7. **Mitigation Site Agreements:** Compensatory mitigation site agreements for ILF proposed programs must:
- a) clearly indicate the party or parties responsible for the implementation, performance, and long-term management of the compensatory mitigation project(s).

- b) contain a provision expressing the sponsor's agreement to assume responsibility for Caltrans compensatory mitigation requirements as specified herein, once Caltrans has secured the appropriate compensatory mitigation from the sponsor and the State Water Board has received documentation of the transaction.
  - c) be provided to, and approved by, State Water Board staff.
8. **Responsibilities.** Caltrans shall retain responsibility for providing the compensatory mitigation until the appropriate compensatory mitigation has been secured from a sponsor and the State Water Board has received documentation that confirms that the sponsor has accepted the responsibility for providing the required compensatory mitigation. This documentation may consist of a letter or form signed by the sponsor, with the file number and a statement indicating the number and resource type of credits that have been secured from the sponsor. Copies of this documentation will be retained in the administrative records for both the permit and the instrument.
  9. **Non-compliance with compensatory mitigation.** If the sponsor fails to provide the required compensatory mitigation, the State Water Board may pursue measures against the sponsor to ensure compliance. This condition must be made a part of Caltrans agreement with the mitigation sponsor.
  10. **Timing.** All compensatory mitigation shall be acquired or secured and approved by State Water Board staff prior to the start of Project construction. Any delay in acquiring or securing compensatory mitigation shall require approval from State Water Board staff and may result in higher mitigation ratio requirements to offset the additional temporal loss of waters of the United States.
  11. If Caltrans does not provide full, adequate compensatory mitigation approved by State Water Board staff prior to the start of Project construction, Caltrans will be in violation of this Certification and subject to administrative civil liabilities under Water Code, section 13385. Under Water Code section 13385, both the State and Regional Water Boards can impose administrative civil liabilities for any violation of a water quality certification issued pursuant to Section 401 of the Clean Water Act. Timelines may be extended and approved by State Water Board staff if progress satisfactory to the State Water Board has been made.
  12. **"Start of Project construction" defined.** For the purpose of this Certification, "start of Project construction" means to engage in a program of on-site construction, including site clearing, grading, dredging, landfilling, changing equipment, substituting equipment, or even moving the location of equipment specifically designed for a stationary source in preparation for the fabrication, erection or installation of the building components of the stationary source within waters of the U.S.

#### **Violations:**

1. Caltrans, or its contractor or subcontractors, shall verbally report any noncompliance to the Certification Program Manager of the State Water Board within 24 hours of the time when Caltrans or its contractor or subcontractors, become aware of the circumstances of noncompliance.
2. Caltrans or its contractor or subcontractors, shall report all violations of any terms or requirements of this Order in writing to the State Water Board and/or its contractor or subcontractors, the appropriate Regional Water Board within seven (7) consecutive days from the time Caltrans, or its contractors or subcontractors, becomes aware of the violation. The written report shall contain:
  - a) A description of the violation and its cause.

- b) The period of the violation event, including dates and times, and if the violation has not been corrected, the anticipated time the violation is expected to continue.
  - c) Steps taken or planned to reduce, eliminate, and prevent recurrence of the violation.
3. In the event of any violation or threatened violation of the requirements of this Order, the violation shall be subject to any remedies, penalties, processes, or sanctions as provided for under State law.
  4. In response to a suspected violation of any requirement of this Order, the State Water Board or appropriate Regional Water Board may require the holder of any permit or license subject to this Certification to furnish, under penalty of perjury, any technical or monitoring reports the State Water Board or appropriate Regional Water Board deems appropriate, provided that the burden, including the cost of the reports, shall be in reasonable relationship to the need for the reports and the benefits to be obtained from the reports.
  5. In response to any violation of the requirements of this Order, the State Water Board may add to or modify the requirements of this Order as appropriate to ensure compliance.

**ADMINISTRATIVE CONDITIONS:**

1. The State Water Board reserves the right to suspend, cancel, or modify and reissue this Certification, after providing notice to Caltrans and/or responsible contractor/sub-contractor, if the State Water Board determines that Caltrans or its agents fail to comply with any of the terms or requirements of this Certification.
2. A copy of this Certification, the application, and supporting documentation must be available at the Project site during construction for review by site personnel and agencies. All personnel performing work on the proposed Project shall be familiar with the content of this Certification and its posted location on the Project site.
3. Caltrans shall grant State Water Board and the appropriate Regional Water Board staff, or an authorized representative, upon presentation of credentials and other documents as may be required by law, permission to enter the Project site at reasonable times, to ensure compliance with the terms and requirements of this Certification and/or to determine the impacts the Project may have on waters of the U.S.

**STATE WATER BOARD CONTACT PERSON:**

If you have any questions, please contact State Water Board Environmental Scientist Bob Solecki at (916) 341-5483, via e-mail at [robert.solecki@waterboards.ca.gov](mailto:robert.solecki@waterboards.ca.gov), or by mail at:

State Water Resources Control Board  
401 Certification & Wetland Program  
P.O. Box 100, Sacramento, CA 95812-2000 (by mail)  
1001 I St., 15<sup>th</sup> Floor, Sacramento, CA 95814. (by hand delivery)

You may also contact Bill Orme, Chief of the Water Quality Certification Unit, at (916) 341-5464 or via e-mail at [bill.orme@waterboards.ca.gov](mailto:bill.orme@waterboards.ca.gov).

**CALIFORNIA ENVIRONMENTAL QUALITY ACT:**

State Water Board staff reviewed and evaluated the significant and potentially significant individual Project impacts to water quality identified in the *Draft State Route 138 Widening Project Initial Study [With Proposed Mitigated Negative Declaration]/Environmental Assessment* prepared by Caltrans (lead agency) and published in March, 2010 (State Clearinghouse Number 2010031104) and the *Final State Route 138 Widening Project Initial Study [With Proposed Mitigated Negative Declaration]/Environmental Assessment* published in June, 2012 (the "IS/MND")

Caltrans approved the IS/MND on June 29, 2012, followed by a Notice of Determination (NOD), which was filed at the SCH by Caltrans on July 9, 2012. Caltrans prepared an "Environmental Commitments Record," dated November 19, 2013, and listed all CEQA project mitigation measures and reporting responsibilities, in compliance with Public Resources Code section 21081.6 and California Code of Regulations, title 14, section 15097 (Attachment F). The mitigation measures and other conditions that are imposed on the Project through this 401 Certification action are being required pursuant to the State Water Board's authority under the Porter-Cologne Water Quality Control Act, not under CEQA. Therefore a CEQA mitigation monitoring and reporting program is not required for these conditions.

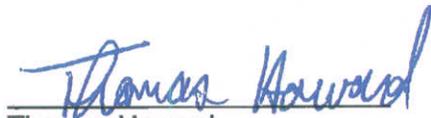
**CEQA Findings on Individual Impacts**

The State Water Board's CEQA findings of facts for the Project are provided in Attachment G. The Applicant Proposed Measures (APMs) as described in the IS/MND pertaining to water quality and protection of the beneficial uses of waters of the U.S. are incorporated into this Certification and shall be implemented in this Project in accordance with this Certification. The State Water Board finds these mitigation measures for potentially significant individual Project water quality impacts as identified in the initial study, along with the measures proposed in the application for Certification and supplemental application materials, the conditions in the Certification, and information in the attachments to the Certification, to be adequate to reduce impacts within the State Water Board's authorities to less than significant levels.

**WATER QUALITY CERTIFICATION:**

I hereby issue the Certification for Phase 1 of the State Route 138 Widening Project (FILE NO. SB13004IN) certifying that as long as all of the conditions listed in this Certification are met, any discharge from the referenced Project will comply with the applicable provisions of the Clean Water Act sections 301 (Effluent Limitations), 302 (Water Quality Related Effluent Limitations), 303 (Water Quality Standards and Implementation Plans), 306 (National Standards of Performance), and 307 (Toxic and Pretreatment Effluent Standards). This discharge is also regulated pursuant to State Water Board Water Quality Order No. 2003-0017-DWQ which authorizes this Certification to serve as Waste Discharge Requirements pursuant to the Porter-Cologne Water Quality Control Act (Wat. Code, § 13000 et seq.).

Except insofar as may be modified by any preceding conditions, all Certification actions are contingent on (a) the discharge being limited and all proposed mitigation being completed in strict compliance with the conditions of this Certification and the attachments to this Certification, and (b) compliance with all applicable requirements of Statewide Water Quality Control Plans and Policies, the Regional Water Boards' Water Quality Control Plans and Policies, and the IS for the Caltrans State Route 138 Widening Project.



Thomas Howard  
Executive Director

1/15/14  
Date

**Attachments (7):**

- A. Signatory Requirements
- B. Project Information
- C. Project Area Map
- D. Project Impact Details
- E. Certification Deviation Procedures
- F. Project Environmental Commitments
- G. CEQA Findings of Fact

**M e m o r a n d u m***Flex your power!  
Be energy efficient!*

**To:** MR. BARTT GUNTER  
Division of Engineering Services  
Office of Bridge Design South 2  
Bridge Design Branch 19

**Date:** July 10, 2013

**File:** 08-SBD-138-PM 3.6  
EA 08-3401U1  
Project No. 0800000609  
Sheep Creek Br. (Replace)  
Br. #54-1286

**Attn:** Jason Fang

**From:** DEPARTMENT OF TRANSPORTATION  
DIVISION OF ENGINEERING SERVICES  
GEOTECHNICAL SERVICES  
OFFICE OF GEOTECHNICAL DESIGN – SOUTH 2  
DESIGN BRANCH B, MS #5

**Subject:** Foundation Report for Sheep Creek Bridge (Replace)

This report is in response to a request from the Office of Bridge Design South 2 requesting final foundation recommendations for the proposed Sheep Creek Bridge, Br. No. 54-1286, which will replace the existing Sheep Creek Bridge, Br. No. 54-0810. The foundation recommendations provided in this report are based on a review of the “As-Built” General Plan, “As-Built” Foundation Plan, 1966 Foundation Report, 1966 Foundation Review, 1967 Field Report of Foundation Conditions, “As-Built” Log of Test Borings (LOTB) sheets, along with the new General Plan (dated 5-24-13) and Foundation Plan (dated 8-28-12), local geological maps, 2013 seismic design recommendations and the recent subsurface investigation completed in 2012/2013. All elevations referenced in this report are based on the 1929 National Geodetic Vertical Datum (NGVD). This Foundation Report supercedes all previous foundation reports developed for this project.

**Project Description**

The existing Sheep Creek Bridge is located within the town of Phelan on State Route 138 at post mile 3.62, in southwestern San Bernardino County, approximately 15 miles west of the Interstate 15 / State Route 138 Interchange. The proposed replacement bridge is part of a widening project of State Route 138 from 2 lanes to 4 lanes, from PM 69.4 to PM 75.0 in Los Angeles County and PM 0.0 to PM 15.2 in San Bernardino County. According to the General Plan, the proposed replacement bridge consist of a 3-span, cast-in-place, pre-stressed concrete, box girder type structure supported on spread footing foundations. The proposed bridge has a planned length of 200 ft and a width of 81 ft.

**Site Geology**

The bridge site is located within the Mojave Desert Province just north of the San Bernardino Mountains and approximately 4.4 miles northeast of the San Andreas Fault. The Geologic map of the San Bernardino and Santa Ana 30' x 60' quadrangles (Morton, D.M., and Miller, F.K., 2006),

reveals the bridge site is underlain by Quaternary young alluvial-fan deposits that consist of alluvial sand, gravel, cobbles and boulders.

Currently, the bridge spans an intermittent creek that flows in a northerly direction and is constrained by a levee to both the east and west that is lined with concrete and extends upstream at least 1000 feet from the bridge site.

The 1966 subsurface investigation consisted of five 2.25-inch diameter penetration borings and one (3-inch diameter) mud-rotary boring. The 2012/2013 subsurface investigation consisted of six (4-inch diameter) mud-rotary borings with four borings located within the channel near the proposed pier locations and two borings located near the proposed abutment locations (outside of the existing levee). The 2012/2013 mud-rotary borings (RC-12-001 through RC-13-006) utilized fully cased, wire-line coring methods. A Christensen CS 1000 track mounted drill rig was used to drill borings RC-13-002 through RC-13-006, and a CME 75 was used to drill borings RC-12-001. Standard Penetration Test (SPT) testing was performed at regular intervals in the soil during the both the 1962 and 2012/2013 subsurface investigations. During the 2013 field investigation, some soil samples were collected for corrosion testing.

In general, the 2012/2013 borings revealed that the site is underlain by silty sand, poorly graded sand and well graded sand with silt, gravel and cobbles. Isolated interbeds of clayey sand and poorly graded gravel with sand and cobbles were also identified at the site, but were less common. The apparent density of the soil was typically medium dense to dense soil in the upper 10 feet of the borings and very dense below 10 feet continuing all the way down to the maximum explored depth of 66 feet.

The 1966 subsurface investigation showed similar subsurface conditions. For specific information regarding the subsurface conditions at the site, please refer to the 2013 Log of Test Borings (LOTB) and the 1966 As-Built LOTB's.

### **Groundwater**

During the 1962 and 2012/2013 subsurface investigations, groundwater was not encountered. However, it is important to mention that the bridge site is located within an intermittent creek that will have surface flows during times of heavy precipitation. As discussed in the structure hydraulics report (dated 1-28-13), the annual precipitation rate at the site is approximately 15 inches per year.

### **Scour Potential**

The bridge site is located within an intermittent creek that has the potential for scour. Based on the structure hydraulics report (dated 1-28-13), the local scour is estimated to be 7.4 feet and degradation is estimated at 1 foot at the proposed pier locations. The total potential scour during the 75-year design life of the proposed structure is estimated at 8.4 feet below the existing grade. For details regarding the estimated scour, please contact Ronald McGaugh with the Structure Hydraulics and Hydrology at 916-227-8026.

**Laboratory Testing - Corrosion**

Corrosion test result for soil sample collected from boring RC-13-003 is shown below in Table 1. The soil sample tested is considered non-corrosive by current Caltrans standards.

**Table 1 – Corrosion Test Summary**

| Sample Location                              | SIC number | pH   | Minimum Resistivity (ohm-Cm) | Chloride Content (ppm) | Sulfate Content (ppm) |
|--|------------|------|------------------------------|------------------------|-----------------------|
| Boring RC-13-003<br>(El. 4337.7 - 4336.2 ft) | C701530A   | 8.41 | 8970                         | N/A                    | N/A                   |
| Boring RC-13-003<br>(El. 4331.2 – 4327.7ft)  | C701530B   | 8.87 | 16135                        | N/A                    | N/A                   |

Note: Caltrans currently defines a corrosive environment as an area where the soil has either a chloride concentration of 500 ppm or greater, a sulfate concentration of 2000 ppm or greater, or has a pH of 5.5 or less. With the exception of MSE walls, soil and water are not tested for chlorides and sulfates if the minimum resistivity is greater than 1,000 ohm-cm.

**Fault, Seismic and Liquefaction Data**

Based on the 2007 Caltrans Fault Database, the site is located approximately 4.4 miles (7.1 km) northeast of the San Andreas Fault Zone (Fault ID 314,  $M_{max} = 7.8$ , strike slip type, dip angle = 90 deg) which is the controlling fault for the deterministic seismic procedure. The probabilistic response spectrum is obtained for the 5% probability of exceedance in 50 years from the 2008 USGS Seismic Hazard Map. Based on the 1962 and 2012/2013 subsurface investigations, the average shear wave velocity of the upper 100 feet is estimated as  $V_{S30} = 390$  m/s. At this site, the design response spectrum is controlled by the probabilistic response spectrum with a corresponding peak ground acceleration (PGA) is estimated as 0.79g.

Liquefaction potential due to strong ground shaking at this site is low due to the presence of medium dense to very dense soils at the site. It is also anticipated that lateral spreading will not occur at the site.

For site specific seismic data and design recommendations, refer to the memorandum concerning seismic design recommendations (dated February 27, 2013), by AnhDan Le (916-227-7211) of the Office of Geotechnical Design South 2 (OGDS2).

**“As-Built” Information**

The existing Sheep Creek Bridge (Br. No. 54-0810) was constructed in 1968 and consists of seven –span structure supported on spread footing foundations at all support locations. The spread footings at the abutments were designed using an allowable footing pressure of 1.5 tsf. The spread footings at the piers were designed using an allowable footing pressure of 3.0 tsf. For a summary of the “As-Built” information, refer to the following Table 2.

**Table 2 - "As-Built" CIDH Pile Data - 1968**

| Support Location | Foundation Type | Allowable / Design Footing Pressures | Bottom of Footing Elevation (ft) |
|------------------|-----------------|--------------------------------------|----------------------------------|
| Abutment 1       | Spread footing  | 1.5 tsf                              | 4344.8                           |
| Pier 2           | Spread footing  | 3.0 tsf                              | 4329                             |
| Pier 3           | Spread footing  | 3.0 tsf                              | 4329                             |
| Pier 4           | Spread footing  | 3.0 tsf                              | 4330                             |
| Pier 5           | Spread footing  | 3.0 tsf                              | 4330                             |
| Pier 6           | Spread footing  | 3.0 tsf                              | 4331                             |
| Pier 7           | Spread footing  | 3.0 tsf                              | 4332                             |
| Abutment 8       | Spread footing  | 1.5 tsf                              | 4346.7                           |

\* Bottom of footing elevations obtained from As-Built Foundation Plan and As-Built LOTB.

### Foundation Recommendations

The following foundation recommendations are for the proposed replacement of the Sheep Creek Bridge as shown on the General Plan provided by Structures Design. The following foundation recommendations provided are based upon a review of the subsurface investigations, "As-Built" information, the General Plan, the Foundation Plan, and foundation design information provided to our office.

At all support locations, spread footing foundations are recommended for support of the proposed replacement structure. Other foundation types were not considered due to the increased cost and/or constructability issues associated with them.

The foundation design at the abutment locations was based on working stress design (WSD) and Load Resistance Factored Design (LRFD) was used at the pier locations. The information shown in Table 3, 4, 5, 6, & 7 is based on specific foundation design information provided to our office (dated 5-17-13) by the Office of Bridge Design South 2.

**Table 3: Foundation Data (per MTD 4-1, Att. 2, April 2008)**

| Support No. | Design Method | Finished Grade Elevation (ft) | Bottom of Footing Elevation (ft) | Footing Dimension (ft) |       | Permissible Settlement Under Service Load (in) |
|-------------|---------------|-------------------------------|----------------------------------|------------------------|-------|--|
|             |               |                               |                                  | B                      | L     |  |
| Abutment 1  | WSD           | 4345.50                       | 4337.0                           | 12.00                  | 49.10 | 1.00   |
| Pier 2      | LRFD          | 4335.50                       | 4323.0                           | 12.00                  | 12.00 | 1.00   |
| Pier 3      | LRFD          | 4336.50                       | 4323.0                           | 12.00                  | 12.00 | 1.00   |
| Abutment 4  | WSD           | 4347.92                       | 4339.0                           | 12.00                  | 49.10 | 1.00   |

Note: The proposed structure will be constructed in two stages as two separate bridges with similar dimensions

**Table 4: Foundation Data (per MTD 4-1, Att. 2, April 2008)**

| Support No. | Degradation Scour (ft) | Base Flood Scour (ft) |       | Total Scour (ft) |
|-------------|------------------------|-----------------------|-------|------------------|
|             |                        | Contraction           | Local |                  |
| Abutment 1  | N/A                    | N/A                   | N/A   | N/A              |
| Pier 2      | 1.0                    | 0                     | 7.4   | 8.4              |
| Pier 3      | 1.0                    | 0                     | 7.4   | 8.4              |
| Abutment 4  | N/A                    | N/A                   | N/A   | N/A              |

**Table 5: LRFD Service Limit State 1 (MTD 4-1, Att. 2, April 2008)**

| Support No. | Total Load           |                                  |       |   | Permanent Load       |                                  |       |
|-------------|----------------------|----------------------------------|-------|---|----------------------|----------------------------------|-------|
|             | Vertical Load (kips) | Effective Footing Dimension (ft) |       | Horizontal Load in Longitudinal Direction | Vertical Load (kips) | Effective Footing Dimension (ft) |       |
|             |                      | B'                               | L'    |   |                      | B'                               | L'    |
| Abutment 1  | 1347                 | 9.72                             | 49.10 | 208                                       | 1064                 | 9.30                             | 49.10 |
| Abutment 4  | 1347                 | 9.72                             | 49.10 | 208                                       | 1064                 | 9.30                             | 49.10 |

Note: - The proposed structure will be constructed in two stages as two separate bridges then joined with a closure pour. Each structure has similar design loads.

**Table 6: LRFD Service-I Limit State for Controlling Load Combinations (per MTD 4-1, Att. 2, Draft 2010)**

| Support No. | Total Load                    |                         |                         |                      |                      | Permanent Load                |                         |                         |                      |                      |
|-------------|-------------------------------|-------------------------|-------------------------|----------------------|----------------------|-------------------------------|-------------------------|-------------------------|----------------------|----------------------|
|             | P <sub>total</sub> (kips) Net | M <sub>x</sub> (kip-ft) | M <sub>y</sub> (kip-ft) | V <sub>x</sub> (kip) | V <sub>y</sub> (kip) | P <sub>total</sub> (kips) Net | M <sub>x</sub> (kip-ft) | M <sub>y</sub> (kip-ft) | V <sub>x</sub> (kip) | V <sub>y</sub> (kip) |
| Pier 2      | 854.49                        | N/A                     | N/A                     | 0                    | 0                    | 588.30                        | N/A                     | N/A                     | 0                    | 0                    |
| Pier 3      | 854.49                        | N/A                     | N/A                     | 0                    | 0                    | 588.30                        | N/A                     | N/A                     | 0                    | 0                    |

Notes: - The proposed structure will be constructed in two stages as two separate bridges then joined with a closure pour. Each structure has similar design loads.  
 - Moments M<sub>x</sub> & M<sub>y</sub> shown as "N/A" are due to the columns being pinned at the base of column/top of the footing.

**Table 7: LRFD Strength, Construction and Extreme (per MTD 4-1, Att. 2, Draft 2010)**

| Support No. | Strength/Construction Limit State (Controlling Group) |                         |                         |                      |                      | Extreme Event Limit State (Controlling Group) |                         |                         |                      |                      |
|-------------|---|-------------------------|-------------------------|----------------------|----------------------|---|-------------------------|-------------------------|----------------------|----------------------|
|             | P <sub>total</sub> (kips) Gross                       | M <sub>x</sub> (kip-ft) | M <sub>y</sub> (kip-ft) | V <sub>x</sub> (kip) | V <sub>y</sub> (kip) | P <sub>total</sub> (kips) Gross               | M <sub>x</sub> (kip-ft) | M <sub>y</sub> (kip-ft) | V <sub>x</sub> (kip) | V <sub>y</sub> (kip) |
| Pier 2      | 1482.80   | N/A                     | N/A                     | 0                    | 0                    | 840.00  | N/A                     | N/A                     | 112.16               | 112.16               |
| Pier 3      | 1482.80   | N/A                     | N/A                     | 0                    | 0                    | 840.00  | N/A                     | N/A                     | 112.16               | 112.16               |

Notes: - The proposed structure will be constructed in two stages as two separate bridges then joined with a closure pour. Each structure has similar design loads.  
 - Moments M<sub>x</sub> & M<sub>y</sub> shown as "N/A" are due to the columns being pinned at the base of column/top of the footing.

Using the design information provided in the tables above, the Office of Geotechnical Design South 2 developed the foundation design information for the abutments and the pier locations, which is shown in Tables 8, respectively. The recommended Factored Gross Nominal Bearing Resistances and bottom of footing elevations are listed in the following Table 8.

**Table 8: Foundation Design Recommendations**

| Support No. | Footing Size (ft) |      | Bottom of Footing Elevation (ft) | Minimum Footing Embedment Depth (ft) | Total Permissible Support Settlement (in) | WSD (LRFD Service-I Limit State Load Combination) |  | Service Limit State | Strength of Construction Limit State $\phi_b = 0.45$ | Extreme Event Limit State $\phi_b = 1.0$ |
|-------------|-------------------|------|----------------------------------|--------------------------------------|---|---|--|---------------------|--|--|
|             | B                 | L    |                                  |                                      |   | Permissible Gross Contact Stress (ksf)            | Allowable Gross Bearing Capacity (ksf) |                     |  |  |
| Abut 1      | 12.0              | 49.1 | 4337.0                           | 7                                    | 1   | 3.2 ksf   | 3.2 ksf                                | N/A                 | N/A  | N/A                                      |
| Pier 2      | 12.0              | 12.0 | 4323.0                           | 12.5                                 | 1   | N/A   | N/A                                    | 16.0                | 11.0   | 32.4                                     |
| Pier 3      | 12.0              | 12.0 | 4323.0                           | 13.5                                 | 1   | N/A   | N/A                                    | 17.2                | 11.9   | 34.6                                     |
| Abut 4      | 12.0              | 49.1 | 4339.0                           | 6                                    | 1   | 2.8 ksf   | 2.8 ksf                                | N/A                 | N/A  | N/A                                      |

Note: - The Contact Stresses and Bearing Resistance/Capacity values listed above were based upon the effective footing dimensions for the controlling load combination listed in Tables 5-7.  
 - The minimum footing embedment depth is measured from Finished Grade or Top of Slope (at toe) down to the bottom of footing elevation.

In Table 8, above, the spread footing recommendations for the support locations are based on the following design criteria:

At the Abutment (per MTD 4-1, 2008)

- 1) The final designed spread footing will have an effective footing area such that the Gross Uniform Bearing Stress ( $q_o$ ) does not exceed the recommended design value for the Permissible Gross Contact Stress ( $q_{pg}$ ) for Service-I Limit State.
- 2) The final designed spread footing will have an effective footing area such that the Gross Uniform Bearing Stress ( $q_o$ ) does not exceed the recommended design values for the Allowable Gross Bearing Capacity ( $q_{all}$ ) for Service-I Limit State.
- 3) The spread footings are to be constructed at or below the recommended bottom of footing elevations and minimum footing embedment depths are maintained, as listed in Table 8.

At the Piers (per MTD 4-1, Draft 2010)

- 4) The final designed spread footing will have an effective footing area such that the Net Uniform Bearing Stress ( $q_{n,u}$ ) does not exceed the recommended design value for the Permissible Net Contact Stress ( $q_{pn}$ ) for Service-I Limit State.
- 5) The final designed spread footing will have an effective footing area such that the Gross Uniform Bearing Stress ( $q_{g,u}$ ) does not exceed the recommended design values for the Factored Gross Nominal Bearing Resistances ( $q_R$ ) for Strength and Extreme Limit States.

- 6) The spread footings are to be constructed at or below the recommended bottom of footing elevations and minimum footing embedment depths are maintained, as listed in Table 8.

If any of the above loading conditions are changed, minimum footing widths or embedment depths are reduced, or bottom of footing elevations raised, the Office of Geotechnical Design-South 2, Branch B, is to be contacted for reevaluation.

**General Notes:**

1. All support locations are to be plotted on the Log of Test Borings, in plan view, as stated in "Memos to Designers" 4-2. The plotting of the support locations should be made prior to the foundation review.

**Construction Considerations:**

1. At all support locations (except Abutment 1 & 4), the spread footings are to be constructed on the native alluvium soil at the bottom of the excavation. The structural concrete is to be placed neat against the undisturbed native alluvium soil at the bottom of the footing excavation. Should the bottom of the footing excavation be disturbed, then the disturbed material at the base of the footing excavation shall be removed to a depth of 6 inches below the disturbance then re-compacted to 95% relative compaction prior to placement of any steel rebar in the excavation.
2. At the Abutment 1 & 4 support locations, unsuitable native soils were identified in the subsurface investigation and possibly underlie the proposed support footing. Therefore, it is recommended that the native materials be removed down to a depth of 3 feet below the bottom of footing and then brought back up to the bottom of footing elevation using structure backfill compacted to 95% relative compaction, or lean concrete. The bottom of sub-excavation elevations for the abutments is listed in Table 9. The limits of the sub-excavation and replacement with 95% compacted structure backfill material shall be established by a vertical plane extending down from lines one foot (1 ft) outside the bottom edges of the footing. The thickness of each layer (i.e. lift) of structure backfill shall not exceed 0.5 ft before compacting.

**Table 9: Abutment 1 & 4 – Bottom of Sub-Excavation Elevations**

| Support Location | Bottom of Sub-Excavation Elevation |
|------------------|------------------------------------|
| Abutment 1       | 4334.4                             |
| Abutment 4       | 4336.4                             |

MR. BARTT GUNTER  
July 10, 2013  
Page 8

Sheep Creek Bridge  
Br. No. 54-1286  
EA No. 08-3401U1  
Project No. 0800000609

3. All support footing excavations are to be inspected and approved by a representative of the Office of Geotechnical Design South 2, Branch B. For contact information please refer to the end of the report. The inspections are to be made after the excavation has been completed down to the bottom of footing elevations for the piers and the bottom of sub-excavation elevation for the abutments listed in Table 8 and prior to placing any steel rebar or concrete in the excavations. The contractor is to allow seven (7) working days for the inspection of each abutment footing excavation to be completed. The structures representative is to provide the Office of Geotechnical Design South 2, Branch B a one-week notification prior to beginning the seven-day contractor waiting period.

The recommendations contained in this report are based on specific project information regarding structure type, support locations, and design loads that have been provided by Simon Wong Engineering. If any conceptual changes are made during final project design, the Office of Geotechnical Design-South 2, Design Branch B, should review those changes to determine if these foundation recommendations are still applicable. Any questions regarding the above recommendations should be directed to the attention of Hector Valencia, (916) 227-4555, or Mark DeSalvatore, (916) 227-5391, at the Office of Geotechnical Design-South 2, Branch B.

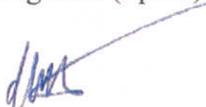
Prepared by:                      Date: 7-10-13



Hector Valencia, P.E. - Civil # 65257  
Engineering Geologist  
Office of Geotechnical Design-South 2  
Design Branch B



cc: Mark Lancaster – Dist 8 Project Manager  
Bruce Kean – Dist 8 Materials Engineer  
Structures Construction - R.E. Pending File  
John Stayton - Structures Office Engineer (Specs)  
Abbas Abghari – OGDS2  
Mark DeSalvatore – OGDS2  
Geotechnical Archive



## Memorandum

*Flex your power!  
Be energy efficient!*

To: Mr. Bartt Gunter  
Design  
  
Attn: Wei-Kung Hsia

Date: July 26, 2013  
  
File: 08-SBd-138-PM 0.0/15.2  
EA: 08-3401U0  
0800000609

From: DEPARTMENT OF TRANSPORTATION  
Division of Engineering Services  
Office of Geotechnical Design South - 2

Subject: Revised Geotechnical Design Report for Two Soil Nail Walls

Due to the design modifications, our office prepared this revised Geotechnical Design Report to supersede the project description and recommendations for the two subjected soil nail walls, RW372 and RW446. These two soil nail walls were previously discussed in our "Geotechnical Design Report for Retaining Walls" prepared for District 08 by our office and dated on Sept 13, 2012.

Previous reports submitted for this project also include: "Geotechnical Design Report for Converting the Existing Two-Lane Highway to a Four-Lane with a median Left-Turn Lane on SR 138", Sept. 2002, by OGDS2 (includes a Seismic Refraction Report for the Mormon Rocks area PM 13.8); and "Geotechnical Design Report for Retaining Walls PM 14.5", May 14, 2009, by OGDS2. These reports are comprehensive and still valid.

For the information of general geology, site conditions, and site investigations, corrosion, please refer to our previously prepared GDR (9/13/2012).

### Soil Nail Wall RW372

This wall is located between Stations 372+00 and 374+50. The proposed wall is about 10 ft high to cut into the existing slope. One horizontal boring RC-12-010 was drilled within the wall location area. The boring indicated that the subsurface soil is well-graded SAND with gravel and silt in a medium dense to very dense condition. No caving was observed during our drilling operation.

### Soil Nail Wall RW446

This wall is located between Stations 446+00 and 449+00. This proposed wall is about 18 ft high to cut into the existing slope. The original slope between Stations 446+50 and 448+25 ("A" Line) is a little steeper than 1.25:1 (H:V). Based on our understanding, the slope area near this portion will be graded flatter down to 1.5 : 1 slope. One horizontal boring RC-12-009 was drilled within the wall location area. The boring indicated that the subsurface soil at the near surface consists of SILTY SAND with GRAVEL in a medium dense to very dense condition. Below 10

ft from the original ground, the soil grades into well-graded SAND with gravel in a medium dense to very dense condition. The boring was left open for twenty-four hours and no caving was observed.

**Recommendations for Soil-Nail Walls**

The finished slope above the wall was assumed to be 1.5 : 1, or flatter, in our design analyses, with no additional surcharge loading nor traffic loading above the wall. For these two soil nail walls, SNAIL program (Version 3.09) was used for analysis and design purpose. Groundwater is not considered for this case. The soil nail walls are designed generally in accordance with the guidelines provided by FHWA's Manual for Design & Construction Monitoring of Soil Nail Walls, Edition 1996. The listed safety factors resulted from our analyses, as listed in the Table 2 below, covered the following aspects of the soil nail wall design considerations: global stability, sliding failure, bearing failure, pullout failure, bar-grout pullout failure and tensile failure.

Following design parameters are assumed during our design:

- Design pullout resistance: 3 kips/ft.
- Internal soil friction angle in drained condition: 32 degrees.
- Soil unit weight: 125 pcf.

**Table 1: General Design Recommendations**

| Wall Nos. | Stations |        | Max. Wall Height (ft) | Min. Nail Length (ft) | Spacing (ft) |     |        |        | Design Punch Shear (Kips) | Design Yield Stress (Ksi) |
|-----------|----------|--------|-----------------------|-----------------------|--------------|-----|--------|--------|---------------------------|---------------------------|
|           |          |        |                       |                       | Vertical     |     |        | Horiz. |                           |                           |
|           | From     | To     |                       |                       | Top          | Mid | Bottom |        |                           |                           |
| RW372     | 372+00   | 374+50 | 10.0                  | H + 5.0               | 2.5          | 5.0 | 1.5    | 5.0    | 40.0                      | 75.0                      |
| RW446     | 446+00   | 449+00 | 18.0                  | H + 5.0               | 2.5          | 5.0 | 1.5    | 5.0    | 40.0                      | 75.0                      |

The nail length should be at least 10 ft. For different wall heights, the nail length in feet is recommended to be: H + 5.0, where H is the wall height in feet for a specific wall section.

The locations of the top row of nails may be modified in some sections of the wall to accommodate for the drainage gutter above the wall. The vertical spacing for the top row of soil nails should at most be 2.5 ft under the bottom of the drainage gutter.

**Table 2: Safety Factors**

| Wall Nos. | Stations From | Stations To | Wall Data         |            |                       |                     | Static (Global) | Pseudo-Static |
|-----------|---------------|-------------|-------------------|------------|-----------------------|---------------------|-----------------|---------------|
|           |               |             | Above Slope (H:V) | Max H (ft) | Vertical Spacing (ft) | Horiz. Spacing (ft) | Min. S.F.       | Min. S.F.     |
| RW372     | 372+00        | 374+50      | 1.5 : 1           | 10.0       | 5.0                   | 5.0                 | 1.52            | 1.28          |
| RW446     | 446+00        | 449+00      | 1.5 : 1           | 18.0       | 5.0                   | 5.0                 | 1.50            | 1.28          |

**Construction Notes:**

Mr. Bartt Gunter  
July 26, 2013  
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GDR for Soil Nail Walls  
08-3401U0

- Nails are inclined at 15 degrees down from horizontal.
- All nails have a minimum diameter of 1.13 inches (#9 bar).
- Nails are to start at no more than 2.5 feet from the wall ends.
- Geocomposite drains should be installed vertically between the nails.
- Test nails are sacrificial and are at least two test nails, or 8%, per row at minimum.
- Each lift for vertical cut shall not be over 5.0 feet.
- The soil zone is considered the same for each wall profile, as for temporary cut slope stability considerations and testing nail configurations.

### Construction Considerations for Soil Nail Walls

Drilling for nail installation may encounter caving due to gravelly sandy materials of the existing embankment, even though our site exploratory borings did not present the caving potential. Caving and sloughing of the face materials may also be encountered during the first lift excavation and top row nail installation.

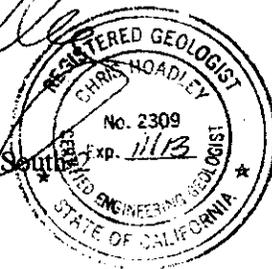
In areas where top rows of nails are close to the top of the cut, a short casing may be required for nail installations. The short casings, if necessary, are anticipated to be from 3.5 to 5 ft. long and placed at the beginning of the holes.

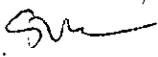
The recommendations contained in this report are based on specific project information regarding structure support locations that have been provided to Office of Geotechnical Design – South 2. If any conceptual changes are made during final project design, Office of Geotechnical Design, Branch C, should review those changes to determine if the foundation recommendations contained in this report are still applicable.

If you have further questions, please contact Chris Hoadley at 916-227-4515 or Shawn Wei at 916-227-5252.



Chris Hoadley, CEG  
Engineering Geologist  
Office of Geotechnical Design (South)  
Branch C



cc: SWei   
AAbgari

**M e m o r a n d u m***Flex your power!  
Be energy efficient!*

**To:** MR. BARTT GUNTER, CHIEF  
Division of Engineering Services  
Bridge Design Branch 19  
Office of Bridge Design South 2

**Date:** May 29, 2013  
**File:** 08-SBD-138-PM 14.2  
08-3401U1  
0800000609  
Cajon Mountain UP Slab On Grade  
Br. #54-0832

**From:** DEPARTMENT OF TRANSPORTATION  
DIVISION OF ENGINEERING SERVICES  
Geotechnical Services  
Office of Geotechnical Design – South 2 MS #5  
Design Branch B

**Subject:** Revised Foundation Report for Cajon Mountain Underpass Slab On Grade

This Revised Foundation Report presents the foundation recommendations for the proposed Slab On Grade located directly below the Cajon Mountain Underpass Bridge (Br. #54-0832), and supersedes the original Foundation Report, dated May 28, 2013, which was recently sent to your office. This Revised Foundation Report is being provided due to the decrease in Strength Limit State, Max per Pile design loads at Bents 3 and 4 support locations. Tables 2, 4, 5 and 6 show in bold font the information that has been changed from the original Foundation Report.

This Revised Foundation Report, and the original report are in response to a request memorandum (dated April 15, 2013) from the Office of Bridge Design South 2, Bridge Design Branch 19.

The following foundation recommendations are based on the soil information presented in the 1965/1966 “As-Built” Log of Test Borings (LOTB) for the Cajon Mt. UP bridge and LOTBs for the nearby Pine Lodge West OH (54-1056L). With regards to the current foundation recommendations, all elevations referenced within this report are based on the National Geodetic Vertical Datum (NGVD) 1929.

**Project Description**

The existing Route 138 will be widened from 2 to 4 lanes. The proposed Cajon Mt. UP Slab On Grade structure will add two lanes to Route 138 on the north side. The purpose of the slab on grade is to span the existing foundation at Bent 3 of Cajon Mountain Underpass. The proposed structure will prevent traffic surcharge on the existing spread footings at Bent 3 and will consist of a three-span, cast-in-place, concrete slab supported on CIDH piles. The layout of the proposed structure is shown in the General Plan dated May 7, 2013.

### **Site Geology**

The project site is located on Route 138 at Post Mile 14.2 and approximately 1 mile west of Highway 15 in San Bernardino County. The Geologic Map of the Cajon Quadrangle (Diblee, Jr., 2003) reveals that the bridge site is located on Quaternary alluvium which is composed predominately of poorly and well-graded sands with gravels and cobbles. Middle Miocene non-marine sedimentary rock underlies the alluvium deposits, and nearby rock outcrops generally consist of sandstone and conglomerate.

The soil borings from the 1965/1966 subsurface investigations revealed the site is underlain by medium dense to very dense silty sands and poorly and well-graded sands with gravel to the maximum explored depth of 60 ft (Elev. = 3190 ft).

For specific details regarding the alluvium thickness and descriptions, refer to the "As-Built" LOTB sheet.

### **Ground Water**

No groundwater was encountered during the 1965/1966 subsurface investigate for the Cajon Mt. UP Bridge. At nearby structure, Pine Lodge West OH (Br#54-1056L), groundwater was encountered at elevation 3169.9 feet during a 2010 subsurface investigation. Groundwater surface elevations are subject to seasonal fluctuations and will be encountered at higher or lower elevations depending on seasonal conditions at time of construction.

### **Scour Potential**

Scour is not considered an issue an issue at this location, since the bridge does not span any watercourse.

### **Corrosion**

No corrosion tests were conducted during the 1965/1966 subsurface investigations. During the 2010 subsurface investigation at Pine Lodge West OH (Br#54-1056L), two soil samples were tested for corrosion. All the tested soil samples were considered non-corrosive by current Caltrans standards.

### **Fault and Seismic Data**

The structure site is potentially subject to ground motions from nearby earthquake sources during the design life of the new structure. The Office of Geotechnical Design-South 2 has provided Seismic Design Recommendations in a memorandum dated May 22, 2013. Based on the 2007 Caltrans Fault Database, the site is located 1.7 miles (2.8 km) northeast of the San Andreas Fault, Mojave Section (Fault ID 325:  $M_{max} = 7.9$ , strike slip type, dip angle = 90 deg.) which is controlling fault for the deterministic seismic procedure. The average shear wave velocity ( $V_{s30}$ ) for the upper 100 feet is estimated at 260 m/s (853 ft/sec). At this site, the

probabilistic procedure controls the seismic design. The corresponding peak ground acceleration (PGA) is estimated to be 1.0g.

**Surface Rupture Potential**

The site is not located with the Earthquake Fault Hazard Zone in California, therefore the potential for surface fault rupture hazard is considered low.

**Liquefaction Potential**

The Seismic Design Recommendations state the potential for soil liquefaction at this site is considered low. Based on the Seismic Design Recommendations memo, the amount of settlement due to strong ground shaking is considered low. For more details, refer to the above-mentioned memorandum, by Anhdan Le (916-227-7211) of the Office of Geotechnical Design South 2.

**Foundation Recommendations**

The following recommendations are for the proposed Mountain Underpass Slab On Grade as shown on the General Plan dated May 7, 2013.

At Abutment and Bent support locations, 16-inch diameter Cast-In-Drilled-Hole (CIDH) piles are recommended for support. Tables 1 and 2 below, show the foundation design data provided by Structure Design Branch 19.

**Table 1 – Foundation Design Data**

| Support Location | Pile Type | Finished Grade Elevation (ft) | Pile Cutoff Elevation (ft) | Pile Cap Size (ft) |       | Permissible Settlement Under Service Load (in) | Number of Piles |
|------------------|-----------|-------------------------------|----------------------------|--------------------|-------|--|-----------------|
|                  |           |                               |                            |                    |       |  |                 |
| Abutment 1       | 16" CIDH  | 3234.00                       | 3234.25                    | 2.50               | 38.98 | 1  | 6               |
| Bent 2           | 16" CIDH  | 3234.63                       | 3234.88                    | 3.00               | 38.98 | 1  | 9               |
| Bent 3           | 16" CIDH  | 3234.33                       | 3234.58                    | 3.00               | 38.98 | 1  | 9               |
| Abutment 4       | 16" CIDH  | 3233.00                       | 3233.25                    | 2.50               | 38.98 | 1  | 6               |

**Table 2- Foundation Design Loads**

| Support Location | Service 1 Limit State (Kips) |              | Strength Limit State (Controlling Group, Kips) |             |              |             | Extreme Event Limit State (Controlling Group, Kips) |             |              |             |              |
|------------------|------------------------------|--------------|--|-------------|--------------|-------------|---|-------------|--------------|-------------|--------------|
|                  | Total Loads                  |              | Permanent Loads                                | Compression |              | Tension     |   | Compression |              | Tension     |              |
|                  | Per Support                  | Max Per Pile | Per Support                                    | Per Support | Max Per Pile | Per Support | Max Per Pile  | Per Support | Max Per Pile | Per Support | Max Per Pile |
| Abut.1           | 323                          | 54           | 130  | N/A         | N/A          | N/A         | N/A   | N/A         | N/A          | N/A         | N/A          |
| Bent 2           | 513                          | 57           | 264  | 842         | <b>94</b>    | N/A         | N/A   | N/A         | N/A          | N/A         | N/A          |
| Bent 3           | 513                          | 57           | 264  | 842         | <b>94</b>    | N/A         | N/A   | N/A         | N/A          | N/A         | N/A          |
| Abut.4           | 323                          | 54           | 130  | N/A         | N/A          | N/A         | N/A   | N/A         | N/A          | N/A         | N/A          |

***Abutment 1 and Abutment 4 Locations***

At Abutments 1 and 4 locations, 16-inch diameter CIDH piles with a 90 kip design capacity are recommended for support. The specified pile tip elevations for Abutment supports are listed in Table 3, below.

**Table 3 - Abutment Foundation Design Recommendations**

| Location | Pile Type    | Pile Cutoff Elevation (ft) | Nominal Resistance (kips) |         | Design Tip Elevation (ft) | Specified Tip Elevation (ft) |
|----------|--------------|----------------------------|---------------------------|---------|---------------------------|------------------------------|
|          |              |                            | Compression               | Tension |                           |                              |
| Abut. 1  | 16-inch CIDH | 3234.25                    | 110                       | N/A     | 3208.0 (a)                | 3208.0                       |
| Abut. 4  | 16-inch CIDH | 3233.25                    | 110                       | N/A     | 3208.0 (a)                | 3208.0                       |

Note: Design tip elevations are controlled by (a) Compression, (b) Settlement, (c) Lateral Load.

***Bent Locations***

At Bent 2 and 3 locations, 16-inch diameter CIDH piles with a 140 kip design capacity are recommended for support. The specified pile tip elevations for Bent supports are listed in Table 4, below.

**Table 4 - Bent Foundation Design Recommendations**

| Support Location | Pile Type    | Pile Cutoff Elevation (ft) | Service-I Limit State Load per Support (kips) | Total Permissible Support Settlement (in) | Required Nominal Resistance Per Pile (kips) |                        |                    |                      | Design Tip Elevation (ft) | Specified Tip Elevation (ft) |
|------------------|--------------|----------------------------|---|---|---|------------------------|--------------------|----------------------|---------------------------|------------------------------|
|                  |              |                            |   |   | Strength Limit                              |                        | Extreme Event      |                      |                           |                              |
|                  |              |                            |   |   | Comp. ( $\phi=0.7$ )                        | Tension ( $\phi=0.7$ ) | Comp. ( $\phi=1$ ) | Tension ( $\phi=1$ ) |                           |                              |
| Bent 2           | 16-inch CIDH | 3234.88                    | 513   | 1   | <b>140</b>                                  | N/A                    | N/A                | N/A                  | <b>3206.0 (a-I)</b>       | <b>3206.0</b>                |
| Bent 3           | 16-inch CIDH | 3234.58                    | 513   | 1   | <b>140</b>                                  | N/A                    | N/A                | N/A                  | <b>3206.0 (a-I)</b>       | <b>3206.0</b>                |

Note: Design tip elevations are controlled by (a-I) Compression (Strength Limit).

The pile data table for the Abutments 1 and 4 and Bents 2 and 3, is presented in Table 5, below. The ultimate geotechnical pile capacity of CIDH piles will meet or exceed the required nominal resistance in compression.

**Table 5 – Pile Data Table (Br.# 54-0832)**

| Support Location | Pile Type    | Required Nominal Resistance (Kips) |         | Design Tip Elev. (ft) | Specified Tip Elev. (ft) |
|------------------|--------------|------------------------------------|---------|-----------------------|--------------------------|
|                  |              | Compression                        | Tension |                       |                          |
| Abutment 1       | 16-inch CIDH | 110                                | N/A     | 3208.0 (a)            | 3208.0                   |
| Bent 2           | 16-inch CIDH | <b>140</b>                         | N/A     | <b>3206.0 (a-l)</b>   | <b>3206.0</b>            |
| Bent 3           | 16-inch CIDH | <b>140</b>                         | N/A     | <b>3206.0 (a-l)</b>   | <b>3206.0</b>            |
| Abutment 4       | 16-inch CIDH | 110                                | N/A     | 3208.0 (a)            | 3208.0                   |

Note: Design tip elevations are controlled by (a) Compression, (a-l) Compression (Strength Limit).

**General Notes:**

- 1) All support locations are to be plotted in plan view on the Log of Test Borings as stated in "Memo to Designers" 4-2. The plotting of support locations should be made prior to requesting a final foundation review.
- 2) When applicable, the structure engineer shall show on the plans, in the pile data table, the design pile tip elevation required to meet the lateral load demands. If the design pile tip elevation required to meet lateral load demands exceeds the specified pile tip elevations given within this report, the Office of Geotechnical Design-South 2, Branch B shall be contacted for further recommendations.

**Construction Considerations:**

**CIDH Piles**

- 1) The calculated geotechnical capacity of all CIDH piles is based on skin friction only and no end-bearing was considered. The skin friction zones used to calculate geotechnical capacity of the CIDH piles are summarized below in Table 6.

**Table 6 - CIDH Pile Skin Friction Zone Elevations**

| Location | Skin Friction Zone Start Elevation | Skin Friction Zone End Elevation |
|----------|------------------------------------|----------------------------------|
| Abut. 1  | 3231.7 ft                          | 3211.0 ft                        |
| Bent 2   | 3232.7 ft                          | <b>3209.0 ft</b>                 |
| Bent 3   | 3232.7 ft                          | <b>3209.0 ft</b>                 |
| Abut 4   | 3231.7ft                           | 3211.0 ft                        |

- 2) During the 2010 subsurface investigation at nearby Pine Lodge West OH, static groundwater was encountered at elev. 3169.9 feet. Groundwater surface elevations are subject to seasonal variations and may be encountered at higher or lower elevations depending on seasonal conditions at time of construction.
- 3) If the CIDH piles are to be constructed using slurry displacement method, the slurry shall consist of mineral or synthetic slurry only. Water shall not be allowed to be used as slurry.

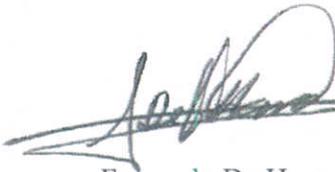
This report is based on specific project information regarding structure type and location that have been provided by the Office of Bridge Design South 2. If any conceptual changes are made during final project design, the Office of Geotechnical Design-South 2, Design Branch B, should review those changes to determine if these foundation recommendations are still applicable. Any questions regarding the above recommendations should be directed to the attention of Fernando De Haro, (916) 227-4556, or Mark Desalvatore, (916) 227-5391, at the Office of Geotechnical Design-South 2, Branch B.

Prepared by:

Date: 5/29/2013

Reviewed by:

Date: 5/29/13



Fernando De Haro, R.C.E.  
Transportation Engineer  
Office of Geotechnical Design  
Design Branch B



Erich Neupert P.G., 8137  
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Office of Geotechnical Design-South 2  
Design Branch B

cc: RE\_Pending\_File@dot.ca.gov  
Mark Lancaster – District 8 (Project Manager)  
John Stayton – P. S. & E.  
Bruce Kean – District 8 Materials Engineer  
Abbas Abghari – OGDS-2  
Mark Desalvatore – OGDS-2 *l.v. for Mark DeSalvatore*



## Memorandum

*Flex your power!  
Be energy efficient!*

**To:** BARTT GUNTER  
Division of Engineering Services  
Office of Bridge Design – South 2  
Bridge Design Branch 19

**Date:** July 22, 2013

**File:** 08-SBd-138-PM 13.9  
EA No. 08-3401U1  
Proj. No. 0800000609  
Wildlife UC No. 2  
Br. No. 54-1288

**Attn:** Jonathan Szabo

**From:** DEPARTMENT OF TRANSPORTATION  
DIVISION OF ENGINEERING SERVICES  
GEOTECHNICAL SERVICES  
OFFICE OF GEOTECHNICAL DESIGN – SOUTH 2  
DESIGN BRANCH B, MS #5

**Subject:** Foundation Report for Wildlife Undercrossing No. 2 and Modified Type 1 Retaining Walls

This report is in response to a request from the Office of Bridge Design-South 2, Branch 19, to provide foundation recommendations for the proposed construction of Wildlife Undercrossing No. 2 (Br. No. 54-1288) and Modified Type 1 retaining walls associated this structure on Route 138 at PM 13.9. The foundation recommendations provided in this report supersedes all previously generated foundation reports for this structure, and are based on a review of the General Plan (dated 5-24-13), Foundation Plan (dated 11-29-12), Retaining Wall Details (6-3-13), Seismic Design Report (dated 1-8-13), the 3<sup>rd</sup> Revised Final Hydraulic Report (dated 7-1-13), a 2010 subsurface investigation, and local geological maps. All elevations referenced in this report are in feet and based on the 1929 National Geodetic Vertical Datum (NGVD29).

### **Project Description**

The proposed bridge site is located on State Route 138, in southwestern San Bernardino County, approximately 1.26 miles west of the Interstate 15 / State Route 138 Interchange. Wildlife Undercrossing No. 2 is part of a proposed widening project of State Route 138 from 2 lanes to 4 lanes, from PM 69.4 to PM 74.9 in Los Angeles County and PM 0.0 to PM 15.2 in San Bernardino County. Wildlife Undercrossing No. 2 will accommodate 4 lanes on Route 138, provide a safe undercrossing for wildlife, and replace an existing 10.5 ft by 8 ft reinforced concrete box culvert. According to the General Plan, the proposed bridge will be 30 ft long and varies in width from 86.4 feet wide at Abutment 1 to 88.7 feet wide at Abutment 2. The proposed bridge is a single span, cast-in-place, reinforced concrete slab supported on strutted abutments that will be constructed in a two stage construction sequence.

## **Regional Geology**

The bridge site is located within the Transverse Ranges Province between the San Bernardino Mountains and San Gabriel Mountains, approximately 1.7 miles northeast of the San Andreas Fault. The bridge site is located in what is generally described as a dissected alluvial valley. The "Geologic Map of the Cajon Quadrangle, San Bernardino County (Dibblee, 2003)" reveals that the bridge site is underlain by late Holocene granular alluvium. The granular alluvium present in the immediate area generally consists of silt, sand, gravel, cobbles, and minor small boulders. The alluvial valley is locally bounded by steeply dipping outcrops of Eocene sedimentary rock, and massive rock units composed of Precambrian metamorphic rock juxtaposed to Cretaceous granodiorite to a quartz diorite.

## **Project Site Geology**

A subsurface investigation was completed in July of 2010, which consisted of one 4.5-inch diameter mud rotary boring (RC-10-001) was conducted using a 94mm diameter, fully cased, wire-line, punch core drilling system. The exploratory boring RC-10-001 was drilled approximately 150 ft east of the existing box culvert. The underlying material at this boring location is generally composed of medium dense to very dense poorly-graded sand with gravel and cobbles underlain by very dense poorly-graded sand with silt. Scattered cobbles ranging from 3 to 6 inches were encountered from the surface down to the approximate elevation of 3245 ft. The maximum explored depth of boring RC-10-001 was 41.2 ft (elev. 3238.2 ft). The earth materials stated above are interpreted as the late Holocene alluvium as described in the Regional Geology section of this report.

For more specific details regarding subsurface conditions, soil descriptions, and boring location refer to the LOTB sheet for the recent subsurface investigation.

## **Ground Water**

Ground water was not encountered in Boring RC-10-001 during the 2010 subsurface investigation. However, it is anticipated that water will flow through the drainage channel during times of moderate or heavy precipitation. Therefore, "Type D" excavation should be anticipated during construction. The amount of water in the drainage channel will vary depending on the duration and intensity of the precipitation events.

## **Scour Potential**

### ***Abutment 1 and Abutment 2 Locations***

The proposed bridge will span a small intermittent drainage channel (desert wash) that has a potential for flash flooding and scour. The scour depths for the proposed abutment locations are provided in Table 3 of the 3<sup>rd</sup> Revised Final Hydraulic Report (HR) and were used in the geotechnical design for the Abutments. Table 1 presents the scour depths at the abutment location.

**Table 1: Scour Data (per MTD 4-1, Att. 2, April 2008)**

| Support No. | Degradation Scour (ft) | Base Flood Scour (ft) |       | Total Scour (ft) <sup>1</sup> |
|-------------|------------------------|-----------------------|-------|-------------------------------|
|             |                        | Contraction           | Local |                               |
| Abutment 1  | 1.0                    | 0                     | 8.1   | 9.1*                          |
| Abutment 2  | 1.0                    | 0                     | 7.7   | 8.7                           |

Note: (1) Total Scour 9.1 ft at Abutment 1 is not correctly shown in 3<sup>rd</sup> Revised Final Hydraulic Report. The Total Scour of 9.1 ft was confirmed via email with Ronald McGaugh with Structure Hydraulics and Hydrology.

**Modified Type 1 Retaining Wall Locations**

The scour depths for the proposed retaining walls are provided in Table 3 of the 3<sup>rd</sup> Revised (HR) and were used in the geotechnical design for the stepped Type 1 Modified Retaining Walls. Table 2 below presents the scour depths at the stepped Modified Type 1 Retaining Walls.

**Table 2: Scour depths at Modified Type 1 Retaining Walls**

| Upstream                 |                               |                               | Downstream               |                               |                               |
|--------------------------|-------------------------------|-------------------------------|--------------------------|-------------------------------|-------------------------------|
|                          | Abutment 1                    | Abutment 2                    |                          | Abutment 1                    | Abutment 2                    |
| Wall height section (ft) | Scour Depth <sup>1</sup> (ft) | Scour Depth <sup>1</sup> (ft) | Wall height Section (ft) | Scour Depth <sup>1</sup> (ft) | Scour Depth <sup>1</sup> (ft) |
| H=28                     | 2                             |                               | H=28                     | 3                             |                               |
| H=24                     | 1                             |                               | H=24                     | 2                             |                               |
| H=20                     | 0                             |                               | H=20                     | 1                             |                               |
| H=26                     |                               | 2                             | H=26                     |                               | 3                             |
| H=22                     |                               | 1                             | H=22                     |                               | 2                             |
| H=18                     |                               | 0                             | H=18                     |                               | 1                             |

Note: (1) Scour depths are measured from the proposed finished grade.

Please note that the 3<sup>rd</sup> Revised HR has the same date as the 2<sup>nd</sup> Revised HR and the title of the report does not state the report as a revision. For further details regarding the estimated scour at the abutments and retaining walls, please contact Ronald McGaugh with the Structure Hydraulics and Hydrology at (916) 227-8026.

**Corrosion**

No corrosion data exists for this bridge site. However, corrosion samples of similar granular alluvium were taken during the 2010 subsurface investigations at Pine Lodge West Overhead (PLWO), Br. 54-1057 located 0.34 miles to the east, as well as at Pine Lodge East Overhead (PLEO), Br. No. 54-1057 located 0.83 miles east of the proposed bridge location. Corrosion test results for the samples collected at those bridge sites are not considered corrosive by current Caltrans standards. Since the subsurface soil at the Wildlife UC No. 2 is considered similar to PLEO and the PLWO, then the soil at this bridge site may be considered not corrosive. The corrosion results are shown in the Table 3.

**Table 3: Corrosion Summary**

| SIC Number (TL101) | Sample Location    | Sample Type | Sample Depth (ft.) | Minimum Resistivity (ohm-cm) | pH   | Chloride Content (ppm) | Sulfate Content (ppm) |
|--------------------|--------------------|-------------|--------------------|------------------------------|------|------------------------|-----------------------|
| C599371            | Pine Lodge West OH | Soil        | 0 - 20             | 2368                         | 7.38 | Not tested             | Not tested            |
| C599372            | Pine Lodge West OH | Soil        | 30.7 - 62.2        | 6825                         | 7.74 | Not tested             | Not tested            |
| C599375            | Pine Lodge East OH | Soil        | 0 - 65.4           | 7661                         | 7.55 | Not tested             | Not tested            |

Note: Caltrans currently defines a corrosive environment as an area where the soil has either a chloride concentration of 500 ppm or greater, a sulfate concentration of 2000 ppm or greater, or has a pH of 5.5 or less. With the exception of MSE walls, soil and water are not tested for chlorides and sulfates if the minimum resistivity is greater than 1,000 ohm-cm.

### **Fault and Seismic Data**

The project site is potentially subject to ground shaking due to the presence of nearby active faults. Based on the 2007 Caltrans Fault Database, the site is located approximately 1.7 miles (2.7 km) northeast of the San Andreas Fault (Mojave Section) (Fault ID 314)  $M_{max} = 7.8$ , strike slip type, dip = 90 deg) which is the controlling fault for the deterministic seismic procedure.

Based on boring RC-10-001 from the 2010 subsurface investigation, the average shear wave velocity for the upper 100 feet of subsurface materials is estimated as  $V_{S30} = 320$  m/s. For further details regarding information listed above, please refer to the Seismic Design Recommendations (SDR) dated 1-8-13 by Anhdan Le.

### **Design Response Spectrum**

Based on the SDR, the Design Response Spectrum is controlled solely by the probabilistic approach. Spectral acceleration values for the probabilistic approach were obtained from the 2008 USGS Interactive Deaggregations (Beta) web tool. Adjustments for site conditions and near fault effects are implemented when applicable. The peak ground acceleration (PGA) is estimated at 1.1 g. For more details, refer to the SDR.

### **Liquefaction Potential**

The potential for soil liquefaction under strong ground shaking is considered low at this site.

### **Seismic Settlement**

The amount of settlement due to strong ground shaking is considered to be less than 1 inch.

### **Surface Fault Rupture Hazard**

The site is not located within Alquist-Priolo Fault Rupture Hazard Zones. Thus, the potential for surface rupture hazard is considered negligible.

If you have any questions regarding the fault and seismic data provided in this report, please contact AnhDan Le (916) 227-7211 or Angel Perez-Cobo (916) 227-7167 at the Office of Geotechnical Design South-2.

**Foundation Recommendations**

***Abutment 1 and Abutment 2***

The following recommendations for the proposed structure Wildlife Undercrossing No. 2 (Br. No. 54-1288) are based on the structure plans and design information provided to our office by the Office of Bridge Design - South 2, Branch 19. Spread footings are the recommended foundation type at the Abutment support locations. The foundation design at the proposed abutment locations is based on Working Stress Design (WSD). The following Tables 4 and 5, presents the Abutment 1 and Abutment 2 foundation design information provided by Structure Design.

**Table 4: Foundation Data (per MTD 4-1, Att. 2, April 2008)**

| Support No. | Design Method | Finished Grade Elevation (ft) | Bottom of Footing Elevation (ft) | Footing Dimension (ft) |        | Permissible Settlement Under Service Load (in) |
|-------------|---------------|-------------------------------|----------------------------------|------------------------|--------|--|
|             |               |                               |                                  | B                      | L      |  |
| Abutment 1  | WSD           | 3275                          | 3258                             | 12                     | 99.42  | 2  |
| Abutment 2  | WSD           | 3275                          | 3258                             | 12                     | 100.75 | 2  |

**Table 5: LRFD Service Limit State 1 (MTD 4-1, Att. 2, April 2008) <sup>1</sup>**

| Support No. | Total Load           |                                  |        |  | Permanent Load       |                                  |        |
|-------------|----------------------|----------------------------------|--------|--|----------------------|----------------------------------|--------|
|             | Vertical Load (kips) | Effective Footing Dimension (ft) |        | Horizontal Load in Longitudinal Direction <sup>2</sup> | Vertical Load (kips) | Effective Footing Dimension (ft) |        |
|             |                      | B                                | L      |  |                      | B                                | L      |
| Abutment 1  | 4574                 | 11.71                            | 99.42  | 1889   | 4175                 | 12                               | 99.42  |
| Abutment 2  | 4634                 | 11.71                            | 100.75 | 1914   | 4232                 | 12                               | 100.75 |

Note: (1) Service I values shown below are for long-term condition, without scour soil reduction at the toe.  
 (2) Longitudinal is taken as direction that is parallel with centerline of bridge.

The total scour depth listed in Table 1, and the proposed finished grade data from the plans (Abutment Wall Details dated 6-3-13) were compared to the total scour elevations provided by the Office of Hydraulics in the 3rd Revised Hydraulic Report. In many cases the total scour elevations provided in the Hydraulic Report did not match our calculated scour elevations. Therefore, the two data sets were evaluated and the most conservative elevation was used in developing geotechnical calculations. Table 6 presents the recommended Permissible Net Contact Stresses and Allowable Gross Bearing Capacities at the Abutment 1 and Abutment 2 foundation locations.

**Table 6: Foundation Design Recommendations**

| Support No. | Footing Size (ft) |        | Bottom of Footing Elevation (ft) | Minimum Footing Embedment Depth <sup>1</sup> (ft) | Total Permissible Support Settlement (in) | WSD (LRFD Service-I Limit State Load Combination)          |  |
|-------------|-------------------|--------|----------------------------------|---|---|--|--|
|             | B                 | L      |                                  |   |   | Permissible Net Contact Stress <sup>2</sup> $q_{pn}$ (ksf) | Allowable Gross Bearing Capacity $q_{all}$ (ksf) |
| Abut 1      | 12.0              | 99.42  | 3258                             | 6.6   | 2   | 5.4  | 5.4  |
| Abut 2      | 12.0              | 100.75 | 3258                             | 5.7   | 2   | 5.4  | 5.4  |

Note: (1) Minimum Embedment is measured from the lowest estimated scour elevation down to the bottom of footing elevation.  
 (2) The actual calculated Permissible Net Contact Stress ( $q_{pn}$ ) far exceeds the Allowable Gross Bearing Capacity ( $q_{all}$ ), therefore the  $q_{pn}$  listed above is limited to the allowable gross bearing capacity and will induce less than 2 inches of settlement.

In Table 6, the spread footing recommendations for Abutment 1 and Abutment 2 are based on the following design criteria:

- 1) The final designed spread footing will have an effective footing area such that the Net Uniform Bearing Stress ( $q_{n,u}$ ) does not exceed the recommended design value for the Permissible Net Contact Stress ( $q_{pn}$ ) for Service-I Limit State.
- 2) The final designed spread footing will have an effective footing area such that the Gross Uniform Bearing Stress ( $q_{g,u}$ ) does not exceed the recommended design values for the Allowable Gross Bearing Capacity ( $q_{all}$ ) for Service-I Limit State.
- 3) The recommended bottom of footing elevations listed in Table 6 were designed to place the top of footing at or below the total potential scour depth listed in the 3<sup>rd</sup> Revised Final Hydraulic Report (dated 7-1-13).
- 4) The spread footings are to be constructed at or below the recommended bottom of footing elevations and minimum footing embedment depths are maintained, as show in Table 6.

If any of the above loading conditions are changed, minimum footing widths or embedment depths are reduced, or bottom of footing elevations raised, the Office of Geotechnical Design-South 2, Branch B, is to be contacted for reevaluation.

***Modified Type 1 Retaining Wall Locations***

The following recommendations are for the proposed Modified Type 1 Retaining Walls as shown on the General Plan. Spread footings are the recommended foundation type for the Modified Type 1 Retaining Walls. The foundation design at the proposed wall locations was based on Load Resistance Factor Design (LRFD). The retaining wall design information provided by Structure Design which includes Net Bearing Stress ( $q'_o$ ) and Gross Uniform Bearing Stress ( $q_o$ ) is listed in Tables 7 & 8.

The total scour depth listed in Table 2, and the proposed finished grade data from the plans (Abutment Wall Details dated 6-3-13) were compared to the total scour elevations provided by the Office of Hydraulics in the 3rd Revised Hydraulic Report. In many cases the total scour elevations provided in the Hydraulic Report did not match our calculated scour elevations. Therefore, the two data sets were evaluated and the most conservative elevation was used in developing geotechnical calculations. The recommended Permissible Net Contact Stresses ( $q_{pn}$ ), and the Factored Gross Nominal Bearing Resistances ( $q_R$ ) that are to be used for design are also listed in Tables 7 and 8.

**Table 7: Abutment 1 Left Side & Abutment 2 Left Side - Modified Type 1 Retaining Walls**

| Abut 1 & Abut 2 Left Wall No. | Approximate Support Location From "A" Line <sup>1</sup> | Design Height of Wall "H" (ft) | Bottom of Footing Elevation (ft) | Footing Width (ft) | Loading Type | Effective Footing Width (ft) | Vertical Load (Kips/LF) | Net / Gross Uniform Bearing Stress ( $q'_o / q_o$ ) (KSF) | Permissible Net Contact Stress ( $q_{pn}$ ) (Ksf) | Factored Gross Nominal Bearing Resistance ( $q_R$ ) (Ksf) |
|-------------------------------|---|--------------------------------|----------------------------------|--------------------|--------------|------------------------------|-------------------------|---|---|---|
| 729                           | Sta. 734+79.0 to Sta. 734+93.5                          | 20                             | 3266.0                           | 13.25              | Service      | 12.70                        | 33.68                   | $q'_o = 2.05$   | 5.3   | --  |
|                               |   |                                |                                  |                    | Strength     | 10.19                        | 32.79                   | $q_o = 3.22$  | --  | 14.9  |
|                               |   |                                |                                  |                    | Extreme      | 8.78                         | 33.68                   | $q_o = 3.83$  | --  | 14.1  |
| 731                           | Sta. 734+93.5 to Sta. 735+01.5                          | 24                             | 3262.0                           | 15.75              | Service      | 15.74                        | 45.43                   | $q'_o = 2.29$   | 6.0   | --  |
|                               |   |                                |                                  |                    | Strength     | 13.00                        | 44.23                   | $q_o = 3.40$  | --  | 17.7  |
|                               |   |                                |                                  |                    | Extreme      | 11.12                        | 45.43                   | $q_o = 4.08$  | --  | 16.8  |
| 733                           | Sta. 735+01.5 to Sta. 735+11.5                          | 28                             | 3258.0                           | 18.42              | Service      | 17.70                        | 59.65                   | $q'_o = 2.77$   | 4.9   | --  |
|                               |   |                                |                                  |                    | Strength     | 16.12                        | 58.02                   | $q_o = 3.60$  | --  | 18.4  |
|                               |   |                                |                                  |                    | Extreme      | 13.13                        | 59.65                   | $q_o = 4.58$  | --  | 17.2  |
| 735                           | Sta. 735+48.5 to Sta. 735+58.5                          | 26                             | 3258.0                           | 17.08              | Service      | 16.59                        | 52.84                   | $q'_o = 2.59$   | 5.1   | --  |
|                               |   |                                |                                  |                    | Strength     | 14.64                        | 51.47                   | $q_o = 3.52$  | --  | 17.9  |
|                               |   |                                |                                  |                    | Extreme      | 11.91                        | 52.84                   | $q_o = 4.44$  | --  | 16.6  |
| 737                           | Sta. 735+58.5 To Sta. 735+66.5                          | 22                             | 3262.0                           | 14.50              | Service      | 14.36                        | 38.59                   | $q'_o = 2.09$   | 6.3   | --  |
|                               |   |                                |                                  |                    | Strength     | 12.15                        | 37.61                   | $q_o = 3.09$  | --  | 17.3  |
|                               |   |                                |                                  |                    | Extreme      | 10.19                        | 38.59                   | $q_o = 3.79$  | --  | 16.3  |
| 739                           | Sta. 735+66.5 To Sta. 735+81.0                          | 18                             | 3266.0                           | 12.00              | Service      | 11.59                        | 27.04                   | $q'_o = 1.73$   | 5.8   | --  |
|                               |   |                                |                                  |                    | Strength     | 9.47                         | 26.29                   | $q_o = 2.77$  | --  | 14.5  |
|                               |   |                                |                                  |                    | Extreme      | 8.48                         | 27.04                   | $q_o = 3.19$  | --  | 13.9  |

Note: (1) The stationing for each wall segment was provided by Structure Design in an email dated July 12, 2013.

**Table 8: Abutment 1 Right Side & Abutment 2 Right Side - Modified Type 1 Retaining Walls**

| Abut 1 & Abut 2 Right Wall No. | Approximate Support Location From "A" Line <sup>1</sup> | Design Height of Wall "H" (ft) | Bottom of Footing Elevation (ft) | Footing Width (ft) | Loading Type | Effective Footing Width (ft) | Vertical Load (Kips/LF) | Net / Gross Uniform Bearing Stress ( $q'_o / q_o$ ) (KSF) | Permissible Net Contact Stress ( $q_{pn}$ ) (Ksf) | Factored Gross Nominal Bearing Resistance ( $q_R$ ) (Ksf) |
|--------------------------------|---|--------------------------------|----------------------------------|--------------------|--------------|------------------------------|-------------------------|---|---|---|
| 730                            | Sta. 734+83.1 to Sta. 734+93.6                          | 20                             | 3266.0                           | 13.25              | Service      | 12.70                        | 33.68                   | $q'_o = 2.05$   | 6.7   | --  |
|                                |   |                                |                                  |                    | Strength     | 10.19                        | 32.79                   | $q_o = 3.22$  | --  | 18.2  |
|                                |   |                                |                                  |                    | Extreme      | 8.78                         | 33.68                   | $q_o = 3.83$  | --  | 17.2  |
| 732                            | Sta. 734+93.6 to Sta. 735+01.5                          | 24                             | 3262.0                           | 15.75              | Service      | 15.74                        | 45.43                   | $q'_o = 2.29$   | 6.7   | --  |
|                                |   |                                |                                  |                    | Strength     | 13.00                        | 44.23                   | $q_o = 3.40$  | --  | 21.1  |
|                                |   |                                |                                  |                    | Extreme      | 11.12                        | 45.43                   | $q_o = 4.08$  | --  | 19.9  |
| 734                            | Sta. 735+01.5 to Sta. 735+11.5                          | 28                             | 3258.0                           | 18.42              | Service      | 17.70                        | 59.65                   | $q'_o = 2.77$   | 5.4   | --  |
|                                |   |                                |                                  |                    | Strength     | 16.12                        | 58.02                   | $q_o = 3.60$  | --  | 21.7  |
|                                |   |                                |                                  |                    | Extreme      | 13.13                        | 59.65                   | $q_o = 4.58$  | --  | 20.2  |
| 736                            | Sta. 735+48.5 to Sta. 735+58.5                          | 26                             | 3258.0                           | 17.08              | Service      | 16.59                        | 52.84                   | $q'_o = 2.59$   | 5.6   | --  |
|                                |   |                                |                                  |                    | Strength     | 14.64                        | 51.47                   | $q_o = 3.52$  | --  | 21.0  |
|                                |   |                                |                                  |                    | Extreme      | 11.91                        | 52.84                   | $q_o = 4.44$  | --  | 19.5  |
| 738                            | Sta. 735+58.5 To Sta. 735+66.4                          | 22                             | 3262.0                           | 14.50              | Service      | 14.36                        | 38.59                   | $q'_o = 2.09$   | 6.9   | --  |
|                                |   |                                |                                  |                    | Strength     | 12.15                        | 37.61                   | $q_o = 3.09$  | --  | 20.6  |
|                                |   |                                |                                  |                    | Extreme      | 10.19                        | 38.59                   | $q_o = 3.79$  | --  | 19.3  |
| 740                            | Sta. 735+66.4 To Sta. 735+76.9                          | 18                             | 3266.0                           | 12.00              | Service      | 11.59                        | 27.04                   | $q'_o = 1.73$   | 7.4   | --  |
|                                |   |                                |                                  |                    | Strength     | 9.47                         | 26.29                   | $q_o = 2.77$  | --  | 17.7  |
|                                |   |                                |                                  |                    | Extreme      | 8.48                         | 27.04                   | $q_o = 3.19$  | --  | 17.0  |

Note: (1) The stationing for each wall segment was provided by Structure Design in an email dated July 12, 2013.

The spread footing recommendations for the proposed retaining wall locations, provided in Table 7 and Table 8, are based upon the following design criteria:

- 1) The final designed spread footings have an effective width (B') such that the Net Bearing Stress ( $q'_o$ ) does not exceed the recommended design values for the Permissible Net Contact Stress ( $q_{pn}$ ) for Service I Limit States.
- 2) The final designed spread footings have an effective width (B') such that the Gross Uniform Bearing Stress ( $q_o$ ) does not exceed the recommended design values for the Factored Gross Nominal Bearing Resistances ( $q_R$ ) for Strength and Extreme Limit States, where  $q_R = \phi * q_{ult}$ ;  $\phi = 0.45$  for Strength and  $\phi = 1.0$  for Extreme Loading.
- 3) All spread footings shall be constructed at or below the recommended bottom of footing elevations as shown in Table 7 and Table 8.

If any of the above loading conditions are changed, minimum effective footing widths or embedment depths are reduced, or bottom of footing elevations raised, the Office of Geotechnical Design-South 2, Branch B, is to be contacted for reevaluation.

**General Notes:**

1. All support locations are to be plotted on the Log of Test Borings, in plan view, as stated in "Memos to Designers" 4-2. The plotting of the support locations should be made prior to the foundation review.
2. Due to the possibility of groundwater being encountered during construction of the proposed abutment footings and retaining wall footings, structure excavation Type "D" is recommended to be shown on the plans.

**Spread Footings**

1. At the Abutment 1, Abutment 2, and all retaining wall support locations, the spread footings are to be constructed on the native alluvium soil at the bottom of the excavation. The structural concrete is to be placed neat against the undisturbed native alluvium soil at the bottom of the footing excavation. Should the bottom of the footing excavation be disturbed, the disturbed material at the base of the footing excavation shall be re-compacted to 95% relative compaction prior to placement of any steel rebar in the excavation.
2. Due to the abutment footings and retaining wall footings located inside the drainage channel, the contractor should anticipate the possibility that surface and/or ground water may be encountered during construction of the spread footing foundations.
3. During construction, the contractor should anticipate the possibility of water flowing in the drainage channel, and should protect the abutment and retaining wall footing excavations from being flooded from surface and/or ground water flowing in from the channel.
4. Spread footing excavations at Abutment 1, Abutment 2, and the retaining walls are to be inspected and approved by a representative of the Office of Geotechnical Design South 2, Branch B. For contact information please refer to the end of the report. The inspections are to be made after the excavation has been completed down to the bottom of footing of elevation listed in Table 6, 7 & 8 and prior to placing any steel rebar or concrete in the excavations. The contractor is to allow seven (7) working days for the inspection of the excavation to be completed. The structures representative is to provide the Office of Geotechnical Design South 2, Branch B a one-week notification prior to beginning the seven-day contractor waiting period.

The recommendations contained in this report are based on specific project information regarding structure type, support locations, and design loads that have been provided by the Office of Bridge Design - South 2, Branch 19. If any conceptual changes are made during the final project design, the Office of Geotechnical Design-South 2, Branch B should review those changes to determine if this report is still applicable. Any questions regarding the recommendations within this report should be directed to the attention of Hector Valencia (916) 227-4555, Joseph Klamecki (916) 227-7055, or Mark DeSalvatore (916) 227-5391 at the Office of Geotechnical Design-South 2, Branch B.

Prepared by:

Date: 7-22-13

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Mark DeSalvatore – OGDS2   
John Stayton – DES Office Engineer, Office of PS&E  
Structure Construction R.E. Pending File  
Geotechnical Archive

## Memorandum

*Flex your power!  
Be energy efficient!*

**To:** BART GUNTER  
Division of Engineering Services  
Office of Bridge Design – South 2  
Bridge Design Branch 19

**Date:** July 10, 2013

**File:** 08-SBd-138-PM 14.94  
EA No. 08-3401U1  
EFIS No. 0800000609  
Cajon Creek Bridge (Widen)  
Br. No. 54-0561

**From:** DEPARTMENT OF TRANSPORTATION  
DIVISION OF ENGINEERING SERVICES  
GEOTECHNICAL SERVICES  
OFFICE OF GEOTECHNICAL DESIGN – SOUTH 2  
DESIGN BRANCH B, MS #5

**Subject:** Foundation Report for Cajon Creek Bridge (Widen)

This report is in response to a request from the Office of Bridge Design South 2, to provide foundation recommendations for the proposed widening of Cajon Creek Bridge (Br. No. 54-0561) on Route 138 at PM 14.94. The foundation recommendations provided in this report supersedes all previously generated preliminary foundation reports for this structure, and are based on a review of the General Plan (dated 5/19/13), Foundation Plan (dated 6/10/13), Final Hydraulic Report (dated 2/28/13), Final Hydraulic Report Addendum (dated 3/15/13), Foundation Investigation Report (dated 6/17/66), Seismic Design Recommendations (dated 2/27/13), 1968 “As-Built” plans, 1968 “As-Built” Log of Test Borings (LOTB), local geological maps, and a recent subsurface investigation beginning in 2010 and concluding in 2013. All elevations referenced in this report are in feet and based on the 1929 National Geodetic Vertical Datum (NGVD29).

### **Project Description**

The Cajon Creek Bridge is located on State Route 138 at post mile 14.94, in southwestern San Bernardino County, approximately 1100 feet (0.2 miles) west of the Interstate 15 / State Route 138 Interchange. The widening of Cajon Creek Bridge is part of a widening project of State Route 138 from 2 lanes to 4 lanes, from PM 69.4 to PM 74.9 in Los Angeles County and from PM 0.0 to PM 15.2 in San Bernardino County. The widening of Cajon Creek Bridge will accommodate one additional lane to Route 138 in the west and eastbound directions. According to the current General Plan, the proposed widening will add 7.5 ft to the left and right side of the existing structure. The proposed widening will consist of a 3 span, single reinforced concrete box girder type structure. The proposed bridge has a maximum planned length of 231.55 ft and a width of 81 ft.

## **Regional Geology**

The bridge site is located within the Transverse Ranges Province between the San Bernardino Mountains and San Gabriel Mountains, approximately 1.9 miles northeast of the San Andreas Fault. The bridge site is generally described as a dissected alluvial valley composed of silt, sand, gravel, and minor cobbles bounded by outcrops of steeply dipping non-marine sedimentary rock, and underlain by granitic rock at depth. The Geologic Map of the Cajon Quadrangle, San Bernardino County (Dibblee, 2003) reveals that the bridge site is located on late Holocene granular alluvium. The non-marine sedimentary rock which outcrops in the vicinity generally consists of middle Miocene sandstone and conglomerate, formally known as the Cajon Valley Formation, and is locally known as the picturesque "Mormon Rocks". The basement granitic rock is identified as a Cretaceous granodiorite to a quartz diorite granitic rock and is present directly east and southwest of the bridge site.

## **Project Site Geology**

The subsurface field investigation for the existing structure was performed in May of 1966, and consisted of four 2.25 inch diameter penetration borings, and one 3-inch diameter mud rotary boring (B-1). Mud rotary boring B-1 was drilled in the middle of the Cajon Creek channel at the bridge site. Boring B-1 revealed that the underlying material within the channel at this bridge site is generally loose fine sand with silt, and dense to very dense gravelly sand with thin interbeds of fine sand and silt. This material is interpreted as granular alluvium as described in the regional geology section of this report. The maximum explored depth of boring B-1 was approximately 36 ft (elev. 3074.5 ft).

The proposed bridge widening required a subsurface investigation which included three borings drilled in August of 2010 and February of 2013. In August of 2010, two exploratory borings (RC-10-001 and RC-10-002) were drilled near Abutment 1 and Abutment 4 respectively. Each mud rotary exploratory boring was advanced utilizing a 94mm diameter, fully cased, wire-line, punch-core drilling system. Borings RC-10-001 and RC-10-002 were drilled with an Acker MPCA drill rig equipped with a Boart Longyear auto hammer. Boring RC-10-001 was drilled approximately 10 ft behind Abutment 1 within the westbound merging lane of State Route 138. At this boring location, medium dense poorly graded gravel with silt and sand, medium dense poorly graded sand with gravel and trace cobbles, dense silty sand, and coarse sand with trace amounts of cobbles was encountered to the approximate depth of 29.5 ft (elev. 3100.8 ft). Below the depth of 29.5 ft, medium dense silty sand, dense poorly graded sand with silt, and dense silty sand was encountered down to the approximate depth of 45.0 ft (elev. 3085.29 ft). Below the depth of 45.0 ft, very dense poorly graded sand, and very dense poorly graded sand with gravel and trace cobbles were encountered down to the maximum explored depth of 81.2 ft (elev. 3049.1 ft). Boring RC-10-002 was drilled approximately 45 ft north-northeast of Abutment 4. At this boring location, very thickly bedded layers of medium dense to dense silty sand, and dense to very dense poorly graded sand with gravel and minor small cobbles were encountered down to the maximum explored depth of the 88.0 ft (elev. 3034.1 ft).

In February of 2013, one exploratory boring (RC-13-003) was drilled within the Cajon Creek channel approximately 37 ft southeast of existing Pier 2. The mud rotary exploratory boring was drilled utilizing a 94mm diameter, fully cased, wire-line, punch-core drilling system. Boring RC-13-003 was drilled with a CS1000 drill rig equipped with a Diedrich auto hammer. At this boring location, medium dense poorly graded sand with silt and gravel overlying medium stiff lean clay with sand was encountered to the approximate depth of 5.5 ft (elev. 3098.7 ft). Below the depth of 5.5 ft, dense and medium dense, silty sand and silt with sand was encountered to the approximate depth of 13.0 ft (elev. 3091.2 ft). Below the depth of 13.0 ft, very dense silty sand with gravel and cobbles overlying very dense sandy silt was encountered to an approximate depth of 23.5 ft (elev. 3080.7 ft). Below the depth of 23.5, very dense, poorly graded sand with silt, gravel and cobbles was encountered to an approximate depth of 32.5 ft (elev. 3071.7 ft). Below the depth of 32.5 ft, very dense well graded sand with silt, gravel and cobbles overlying silty sand with gravel was encountered to the maximum explored depth of 71.0 ft (elev. 3033.2 ft).

For more specific details regarding subsurface conditions, soil descriptions, and boring locations refer to the LOTB sheets for the recent borings and the 1966 "As-Built" LOTB sheet.

### Ground Water

During the 2010 and 2013 subsurface investigations, ground water was measured in borings RC-10-002 and RC-13-003. No attempt to measure ground water was performed in boring RC-10-001 and was immediately backfilled after completion of drilling operations. Ground water elevations and dates recorded within borings RC-10-002 and RC-13-003 are presented in the following Table 1.

Table 1: Measured Ground Water in Boring RC-10-002

| Boring    | Measured Ground Water Depth (ft) | Ground Water Elevation (ft) | Measurement Date |
|-----------|----------------------------------|-----------------------------|------------------|
| RC-10-002 | 38.9                             | 3083.2                      | 8/11/10          |
| RC-10-002 | 33.5                             | 3088.6                      | 1/26/11          |
| RC-13-003 | 21.1                             | 3083.1                      | 2/6/13           |

According to the 1966 "As-Built" LOTB, groundwater was either not encountered or not recorded during the original subsurface field investigation. During the original footing excavation for the Pier 2 and Pier 3 foundations, ground water was encountered at elevation 3088 ft and pumps were installed to dewater the excavations for the pier footings. Therefore, Type D excavation should be anticipated during construction of Pier 2 and Pier 3 footings. Ground water surface elevations at this site are subject to fluctuations depending on the amount of precipitation during a season and/or intensity of storm events.

**Scour Potential**

The bridge site spans the Cajon Creek channel which is an intermittent creek that has a potential for scour. According to the Final Hydraulic Report Addendum, the local scour is estimated as 9.9 ft at the Pier 2 support location, 8.7 ft at the Pier 3 support location, and the degradation is estimated at 3.9 ft across the channel. The proposed widened structure is designed such that the proposed top of footing elevations are situated at or below the total scour depth listed in the Final Hydraulic Report Addendum. The Final Hydraulic Report Addendum states, assuming a remaining 32 year life of the structure, that there is a possibility for the existing structure to become scour critical. For further details, please refer to the above mentioned report.

**Corrosion**

Corrosion samples were taken from the borings conducted during the 2010 subsurface investigation. Corrosion results for the samples tested are not considered corrosive by current Caltrans standards and the results are provided in Table 2.

**Table 2: Corrosion Summary**

| SIC Number (TL101) | Sample Location                         | Sample Type | Sample Depth (ft) | Minimum Resistivity (ohm-cm) | pH   | Chloride Content (ppm) | Sulfate Content (ppm) |
|--------------------|---|-------------|-------------------|------------------------------|------|------------------------|-----------------------|
| C599373            | RC-10-002<br>(Elev. 3122.1 – 3102.1 ft) | Soil        | 0 - 20            | 8450                         | 8.52 | Not tested             | Not tested            |
| C599374            | RC-10-002<br>(Elev. 3080.6 – 3054.1 ft) | Soil        | 41.5 - 68         | 3820                         | 8.49 | Not tested             | Not tested            |

Note: Caltrans currently defines a corrosive environment as an area where the soil has either a chloride concentration of 500 ppm or greater, a sulfate concentration of 2000 ppm or greater, or has a pH of 5.5 or less. With the exception of MSE walls, soil and water are not tested for chlorides and sulfates if the minimum resistivity is greater than 1,000 ohm-cm.

**Fault and Seismic Data**

The project site is potentially subject to ground shaking due to the presence of nearby active faults. Based on the 2007 Caltrans Fault Database, the site is located approximately 1.9 miles (3.1 km) northeast of the San Andreas Fault, Mojave Section (Fault ID 314: Mmax = 7.8, strike slip type, dip angle= 90 deg) which is the controlling fault for the deterministic seismic procedure.

Based on the 2010 and 2013 subsurface investigation and “As-Built” LOTB’s, the average shear wave velocity ( $V_{S30}$ ) for the upper 100 feet of soil is estimated as 320 m/s. For further details regarding the information listed above, please refer to the Seismic Design Recommendations (SDR).

**Design Response Spectrum**

Based on the SDR, the Design Response Spectrum is controlled solely by the probabilistic approach. Spectral acceleration values for the probabilistic approach were obtained from the

2008 USGS Interactive Deaggregations (Beta) web tool. Adjustments for near site conditions and near fault effects were implemented when applicable. The peak ground acceleration (PGA) is estimated at 1.1g. For more details, refer to the SDR.

### **Liquefaction Potential**

The potential for soil liquefaction under strong ground shaking is considered low at this site.

### **Seismic Settlement**

The amount of settlement due to strong ground shaking is estimated to be less than 1 inch.

### **Surface Fault Rupture Hazard**

The site is not located within Alquist-Priolo Fault Rupture Hazard Zones. Thus, the potential for surface rupture hazard is considered negligible.

If you have any questions regarding the fault and seismic data provided in this report, please contact AnhDan Le (916) 227-7211 or Angel Perez-Cobo (916) 227-7167 at the Office of Geotechnical Design South-2.

### **Existing Foundation**

Built in 1969, Cajon Creek Bridge is a three span structure with abutments and piers supported on spread footings. The existing Abutment 1 and Abutment 4 are open, end diaphragm abutments. As shown on the 1969 "As-Built" Foundation Plan sheet, the bottom of footing elevations for Abutment 1 and Abutment 4 are 3116 ft and 3119.5 ft, respectively. An allowable footing pressure of 2.0 tsf was used for design at the Abutment 1 and Abutment 4 support locations. Please note that State Route 138 stationing increases westward on the "As-Built" plans.

Pier 2 and Pier 3 support locations each consist of a 2 ft thick reinforced concrete pier wall on a stepped continuous spread footing. As shown on the 1969 "As-Built" Foundation Plan, the bottom of footing elevation south of the structure centerline for Pier 2 and Pier 3 is 3087 ft. The bottom of footing elevation north of the structure centerline for Pier 2 and Pier 3 is 3090 ft. An allowable footing pressure of 3.5 tsf was used for design at the Pier 2 and Pier 3 support locations.

### **Foundation Recommendations**

The following recommendations for the proposed left and right side widening of Cajon Creek Bridge (Br. 54-0561) are based on the structure plans and design information provided to our office by the Office of Bridge Design South 2, Branch 19. Close-ended driven pipe piles are the recommended foundation type at the Abutment 1 and 4 locations. Spread footings are the recommended foundation type at the Pier support locations.

**Abutment 1 and Abutment 4 Locations**

At the Abutment 1 and Abutment 4 support locations, driven “Modified” Class 140, Alternative “W” steel pipe piles are recommended to be used for support. The “Modified” Class 140, Alternative “W” steel pipe pile shall be specified with a circular steel plate or conical steel tip welded to the bottom of the pile, similar to the tip detail of Alternative “V” pipe pile as shown in the 2010 Standard Plans. The following Table 3 and Table 4, presents the Abutment 1 and Abutment 4 foundation design information provided by Structure Design. The specified nominal axial structural resistance for the driven steel pipe piles will meet or exceed the required nominal resistance in compression listed in Table 5.

**Table 3: General Foundation Information Provided by Structure Design (MTD 3-1, Attachment 1, 2008)**

| Support No. (1)    | Design Method | Pile Type (2)                            | Finished Grade Elevation (ft) | Pile Cut-off Elevation (ft) | Pile Cap Size (ft) |       | Permissible Settlement Under Service Load (in) | Number of Piles per Support |
|--------------------|---------------|--|-------------------------------|-----------------------------|--------------------|-------|--|-----------------------------|
|                    |               |  |                               |                             | B                  | L     |  |                             |
| Abutment 1 (Left)  | WSD           | Modified Class 140 Alt W PP (14 x 0.438) | 3129                          | 3117.42                     | 3.5                | 10.33 | 1  | 2                           |
| Abutment 1 (Right) | WSD           | Modified Class 140 Alt W PP (14 x 0.438) | 3130                          | 3118.42                     | 3.5                | 10.08 | 1  | 2                           |
| Abutment 4 (Left)  | WSD           | Modified Class 140 Alt W PP (14 x 0.438) | 3125                          | 3113.92                     | 3.5                | 11.00 | 1  | 2                           |
| Abutment 4 (Right) | WSD           | Modified Class 140 Alt W PP (14 x 0.438) | 3126                          | 3115.92                     | 3.5                | 10.75 | 1  | 2                           |

Note: (1) Left and Right are in reference to looking eastward up station.

(2) “Modified” Class 140, Alternative “W” pipe pile is to be driven with either a flat or conical steel tip welded to the pile tip.

**Table 4: Foundation Design Loads Provided by Structure Design (MTD 3-1, Attachment 2, 2008)**

| Support Location (1) | Service-I Limit State (kips) |              |                 | Strength Limit State (Controlling Group, kips) |              |             |              | Extreme Event Limit State (Controlling Group, kips) |              |             |              |
|----------------------|------------------------------|--------------|-----------------|--|--------------|-------------|--------------|---|--------------|-------------|--------------|
|                      | Total Loads                  |              | Permanent Loads | Compression                                    |              | Tension     |              | Compression   |              | Tension     |              |
|                      | Per Support                  | Max Per Pile | Per Support     | Per Support                                    | Max Per Pile | Per Support | Max Per Pile | Per Support   | Max Per Pile | Per Support | Max Per Pile |
| Abutment 1 (Left)    | 270                          | 135          | 192             | N/A  | N/A          | N/A         | N/A          | N/A   | N/A          | N/A         | N/A          |
| Abutment 1 (Right)   | 270                          | 135          | 192             | N/A  | N/A          | N/A         | N/A          | N/A   | N/A          | N/A         | N/A          |
| Abutment 4 (Left)    | 270                          | 135          | 192             | N/A  | N/A          | N/A         | N/A          | N/A   | N/A          | N/A         | N/A          |
| Abutment 4 (Right)   | 270                          | 135          | 192             | N/A  | N/A          | N/A         | N/A          | N/A   | N/A          | N/A         | N/A          |

Note: (1) Left and Right are in reference to looking eastward up station.

For Abutment 1 and Abutment 4, the specified pile tip elevations for the "Modified" Class 140, Alternative "W" steel pipe piles, are shown in Table 5.

**Table 5: Abutment 1 and Abutment 4 Foundation Design Recommendations**

| Support Location <sup>(1)</sup> | Pile Type <sup>(2)</sup>                 | Cut-Off Elevation (ft) | LRFD Service-I Limit State Load per Support (kips) |           | LRFD Service-I Limit State Total Max Load per Pile (kips) (Compression) | Required Nominal Resistance (kips) | Design Tip Elevation <sup>(3)</sup> (ft) | Specified Tip Elevation (ft) |
|---------------------------------|--|------------------------|--|-----------|---|------------------------------------|--|------------------------------|
|                                 |  |                        | Total  | Permanent |   |                                    |  |                              |
| Abutment 1 (Left)               | Modified Class 140 Alt W PP (14 x 0.438) | 3117.42                | 270  | 192       | 135   | 270                                | 3076 (a)                                 | 3076                         |
| Abutment 1 (Right)              | Modified Class 140 Alt W PP (14 x 0.438) | 3118.42                | 270  | 192       | 135   | 270                                | 3076 (a)                                 | 3076                         |
| Abutment 4 (Left)               | Modified Class 140 Alt W PP (14 x 0.438) | 3113.92                | 270  | 192       | 135   | 270                                | 3074 (a)                                 | 3074                         |
| Abutment 4 (Right)              | Modified Class 140 Alt W PP (14 x 0.438) | 3115.92                | 270  | 192       | 135   | 270                                | 3073 (a)                                 | 3073                         |

Note: (1) Left and Right are in reference to looking eastward up station.  
 (2) "Modified" Class 140, Alternative "W" pipe pile is to be driven with either a flat or conical steel tip welded to the pile tip.  
 (3) Design tip elevation is controlled by: (a) Compression

**Pier 2 and Pier 3 Locations**

Pier 2 and Pier 3 left and right widening will each consist of an extension of the existing pier walls and spread footings. The following tables 6, 7, and 8, present the Pier 2 and Pier 3 spread footing design information and the controlling load combinations for Service-I, Strength/Construction, and Extreme Limit States provided by Structure Design. The bottom of footing elevations provided by Structure Design were designed to place the proposed top of footing elevations to match the same top of footing elevations of the existing structure.

**Table 6: Pier 2 and Pier 3 Spread Footing Design Data Sheet Provided by Structure Design (MTD 4-1, Attachment 1, 2008)**

| Support Location <sup>(1)</sup> | Design Method | Finish Grade Elevation (ft) | Bottom of Footing Elevation (ft) | Footing Dimension (ft) |       | Permissible Settlement Service-I Load (in) |
|---------------------------------|---------------|-----------------------------|----------------------------------|------------------------|-------|--|
|                                 |               |                             |                                  | B                      | L     |  |
| Pier 2 (Left)                   | LRFD          | 3107                        | 3089                             | 12                     | 16.17 | 1  |
| Pier 2 (Right)                  | LRFD          | 3104.7                      | 3086                             | 12                     | 15.5  | 1  |
| Pier 3 (Left)                   | LRFD          | 3106                        | 3089                             | 12                     | 14.5  | 1  |
| Pier 3 (Right)                  | LRFD          | 3103.5                      | 3086                             | 12                     | 13.92 | 1  |

Note: (1) Left and Right are in reference to looking eastward up station.

**Table 7: Pier 2 and Pier 3 LRFD Service-I Limit State Loads for Controlling Load Combination Provided by Structure Design (Draft MTD 4-1, Attachment 4, 2010)**

| Support No.    | Total Load                   |                   |                   |                 |                 | Permanent Load               |                   |                   |                 |                 |
|----------------|------------------------------|-------------------|-------------------|-----------------|-----------------|------------------------------|-------------------|-------------------|-----------------|-----------------|
|                | $P_{Total}$<br>(kips)<br>Net | $M_X$<br>(kip-ft) | $M_Y$<br>(kip-ft) | $V_X$<br>(kips) | $V_Y$<br>(kips) | $P_{Total}$<br>(kips)<br>Net | $M_X$<br>(kip-ft) | $M_Y$<br>(kip-ft) | $V_X$<br>(kips) | $V_Y$<br>(kips) |
| Pier 2 (Left)  | 1235                         | 0                 | 0                 | N/A             | N/A             | 920                          | 0                 | 0                 | N/A             | N/A             |
| Pier 2 (Right) | 1216                         | 0                 | 0                 | N/A             | N/A             | 902                          | 0                 | 0                 | N/A             | N/A             |
| Pier 3 (Left)  | 1185                         | 0                 | 0                 | N/A             | N/A             | 871                          | 0                 | 0                 | N/A             | N/A             |
| Pier 3 (Right) | 1167                         | 0                 | 0                 | N/A             | N/A             | 852                          | 0                 | 0                 | N/A             | N/A             |

**Table 8: Pier 2 and Pier 3 LRFD Strength/Construction, and Extreme Event Loads for Controlling Load Combination Provided by Structure Design (Draft MTD 4-1, Attachment 4, 2010)**

| Support No.    | Strength/Construction Limit State<br>(Controlling Group) |                   |                   |                 |                 | Extreme Event Limit State<br>(Controlling Group) <sup>(1)</sup> |                   |                   |                 |                 |
|----------------|--|-------------------|-------------------|-----------------|-----------------|---|-------------------|-------------------|-----------------|-----------------|
|                | $P_{Total}$<br>(kips)<br>Gross                           | $M_X$<br>(kip-ft) | $M_Y$<br>(kip-ft) | $V_X$<br>(kips) | $V_Y$<br>(kips) | $P_{Total}$<br>(kips)<br>Gross                                  | $M_X$<br>(kip-ft) | $M_Y$<br>(kip-ft) | $V_X$<br>(kips) | $V_Y$<br>(kips) |
| Pier 2 (Left)  | 1627   | 0                 | 0                 | N/A             | N/A             | 920   | 1551              | N/A               | N/A             | 54              |
| Pier 2 (Right) | 1604   | 0                 | 0                 | N/A             | N/A             | 920   | 1551              | N/A               | N/A             | 60              |
| Pier 3 (Left)  | 1565   | 0                 | 0                 | N/A             | N/A             | 920   | 1551              | N/A               | N/A             | 50              |
| Pier 3 (Right) | 1541   | 0                 | 0                 | N/A             | N/A             | 920   | 1551              | N/A               | N/A             | 52              |

The recommended Factored Gross Nominal Bearing Resistances, Permissible Net Contact Stresses, and bottom of footing elevations for Pier 2 and Pier 3, are listed below in Table 9.

**Table 9: Pier 2 and Pier 3 LRFD Spread Footing Recommendations**

| Support Location | Footing Size (ft) |       | Bottom of Footing Elevation (ft) | Minimum Footing Embedment Depth (ft) | Total Permissible Support Settlement (in) | Service Limit State                           | Strength Limit State ( $\phi_s=0.45$ )                | Extreme Event Limit State ( $\phi_s=1.0$ )            |
|------------------|-------------------|-------|----------------------------------|--------------------------------------|---|---|---|---|
|                  | B                 | L     |                                  |                                      |   | Permissible Net Contact Stress $q_{pn}$ (ksf) | Factored Gross Nominal Bearing Resistance $q_R$ (ksf) | Factored Gross Nominal Bearing Resistance $q_R$ (ksf) |
| Pier 2 (Left)    | 12                | 16.17 | 3089                             | 18                                   | 1   | 7.2   | 12.3  | 36.9  |
| Pier 2 (Right)   | 12                | 15.5  | 3086                             | 18.7                                 | 1   | 10.1  | 12.9  | 38.5  |
| Pier 3 (Left)    | 12                | 14.5  | 3089                             | 17                                   | 1   | 7.5   | 12.0  | 35.5  |
| Pier 3 (Right)   | 12                | 13.92 | 3086                             | 17.5                                 | 1   | 10.5  | 12.5  | 36.8  |

In Table 9, the spread footing recommendations for Pier 2 and Pier 3 are based on the following design criteria in accordance with Draft MTD 4-1, 2010:

- 1) The final designed spread footing will have an effective footing area such that the Net Uniform Bearing Stress ( $q_{n,u}$ ) does not exceed the recommended design values for the Permissible Net Contact Stress ( $q_{pn}$ ) for Service-I Limit State.
- 2) The final designed spread footing will have an effective footing area such that the Gross Uniform Bearing Stress ( $q_{g,u}$ ) does not exceed the recommended design values for the Factored Gross Nominal Bearing Resistances ( $q_R$ ) for Strength and Extreme Limit States.
- 3) The recommended bottom of footing elevations listed in Table 9 were designed and situated as to place the top of footing at or below the total potential scour depth in 32 years listed in the Final Hydraulic Report Addendum (dated 3/15/13).
- 4) The spread footings are to be constructed at or below the recommended bottom of footing elevations and minimum footing embedment depths are maintained, as show in Table 9.

If any of the above loading conditions are changed, minimum footing widths or embedment depths are reduced, or bottom of footing elevations raised, the Office of Geotechnical Design-South 2, Branch B, is to be contacted for reevaluation.

The Pile Data Table for Abutment 1 and Abutment 4 is presented in Table 10, and is to be shown on the project plans. The nominal axial structural resistance for the driven steel pipe piles specified will meet or exceed the required nominal resistance in compression.

**Table 10: Pile Data Table**

| Support Location   | Pile Type                                | Required Nominal Resistance (kips) |         | Design Tip Elevation (ft) | Specified Tip Elevation (ft) | Nominal Driving Resistance (kips) |
|--------------------|--|------------------------------------|---------|---------------------------|------------------------------|-----------------------------------|
|                    |  | Compression                        | Tension |                           |                              |                                   |
| Abutment 1 (Left)  | Modified Class 140 Alt W PP (14 x 0.438) | 270                                | 0       | 3076 (a)                  | 3076                         | 270                               |
| Abutment 1 (Right) | Modified Class 140 Alt W PP (14 x 0.438) | 270                                | 0       | 3076 (a)                  | 3076                         | 270                               |
| Abutment 4 (Left)  | Modified Class 140 Alt W PP (14 x 0.438) | 270                                | 0       | 3074 (a)                  | 3074                         | 270                               |
| Abutment 4 (Right) | Modified Class 140 Alt W PP (14 x 0.438) | 270                                | 0       | 3073 (a)                  | 3073                         | 270                               |

Note: (1) Design tip elevation is controlled by: (a) Compression  
 (2) Left and Right widening are in reference to looking eastward up station.  
 (3) "Modified" Class 140, Alternative "W" pipe pile is to be driven with either a flat or conical steel tip welded to the pile tip.

**General Notes:**

1. All support locations are to be plotted on the Log of Test Borings, in plan view, as stated in "Memos to Designers" 4-2. The plotting of the support locations should be made prior to the foundation review.
2. Due to the possibility of groundwater being encountered during construction of the proposed pier footings, structure excavation Type "D" is recommended to be shown on the plans.
3. "Modified" Class 140, Alternative "W" steel pipe pile details are to be shown on the project plans. All "Modified" Class 140, Alternative "W" steel pipe piles are to be shown on the plans having a circular steel plate or conical steel tip with a minimum thickness of 3/4 inch welded to the pile tip, similar to the Alternative "V" pile tip detail shown in the 2010 Standard Plans.

**Construction Considerations:**

**Pre-drilled Holes**

1. At Abutments 1 and 4 locations, pre-drilling through the existing fill material down to the elevations listed in Table 11 will be required prior to driving each pipe pile. All pre-drilling through the existing fill shall be done in accordance with Standard Specification Section 49-

2.01C(4), "Pre-drilled Holes". For details regarding the soils that will need to be excavated to reach the bottom of the pre-drilled elevations shown in Table 11, refer to the geology section of the report, "As-Built" LOTB's, and the project plan LOTB's.

**Table 11: Pre-drill Hole Elevations**

| Structure Support Location | Bottom of Pre-drilled Hole Elevation (ft) |
|----------------------------|---|
| Abutment 1 (Left)          | 3091                                      |
| Abutment 1 (Right)         | 3089                                      |
| Abutment 4 (Left)          | 3091                                      |
| Abutment 4 (Right)         | 3089                                      |

### **Driven Piles**

1. Pile acceptance is to be based on Standard Specifications 49-2.01A(4)(b) "Pile Driving Acceptance Criteria". At the Abutment 1 and Abutment 4 locations, any pile that achieves 1½ times the required nominal resistance in compression, as shown on the contract plans, within 5 feet of the specified pile tip elevation, may be considered satisfactory and cut off with written approval from the Engineer.
2. At the abutment locations, the contractor should anticipate hard and erratic driving due to the presence of variable loose to very dense sand, gravel, and cobbles as described in the geology section of this report and shown in the Log of Test Boring sheets. Field cutting and possibly splicing of steel pipe piles should be anticipated due to these variations in the subsurface conditions.

### **Spread Footings**

1. At the Pier 2 and Pier 3 support locations, the spread footings are to be constructed on the native alluvium soil compacted to 95% relative compaction at the bottom of footing elevations listed in Table 9. Compaction of the native alluvium soil to 95% relative compaction will provide the contractor a stable working surface during construction and minimize the potential for disturbance of the footing surface. The structural concrete is to be placed neat against the compacted native alluvium soil at the bottom of the footing excavation.
2. Due to the pier locations located inside the Cajon Creek, the contractor should anticipate the possibility that surface and/or ground water may be encountered during construction of the piers. Ground water elevations at this bridge site are subject to seasonal fluctuations and will be encountered at higher or lower elevations depending on conditions at time of construction
3. During construction, the contractor should anticipate the possibility of water flowing in the creek, and should protect the pier footing excavations from being flooded from surface water flowing in from the creek.

BARTT GUNTER  
July 10, 2013  
Page 12

Cajon Creek Bridge (Widen)  
Br. No. 54-0561  
EA No. 08-3401U1

4. All footing excavations at Pier 2 and Pier 3 are to be inspected and approved by a representative of the Office of Geotechnical Design South 2, Branch B. For contact information please refer to the end of the report. The inspections are to be made after the excavation has been completed down to the bottom of footing elevation listed in Table 9 and prior to placing any steel rebar or concrete in the excavations. The contractor is to allow seven (7) working days for the inspection of the excavation to be completed. Structures construction personnel are to provide the Office of Geotechnical Design South 2, Branch B a one-week notification prior to beginning the seven-day contractor waiting period.

The recommendations contained in this report are based on specific project information regarding structure type, support locations, and design loads that have been provided by Bridge Design Branch 19. If any conceptual changes are made during the final project design, the Office of Geotechnical Design-South 2, Branch B should review those changes to determine if this report is still applicable. Any questions regarding the recommendations within this report should be directed to the attention of Hector Valencia (916) 227-4555, Joseph Klamecki (916) 227-7055, or Mark DeSalvatore (916) 227-5391 at the Office of Geotechnical Design-South 2, Branch B.

Prepared by:                      Date: 7-10-13

Reviewed by:                      Date: 7-10-13



Joseph A. Klamecki  
Engineering Geologist  
Office of Geotechnical Design-South 2  
Branch B



Hector Valencia, P.E., #C65257  
Engineering Geologist  
Office of Geotechnical Design-South 2  
Branch B



cc: Mark Lancaster – Dist 8 Project Manager  
Bruce Kean – Dist 8 Materials Engineer  
Abbas Abghari – OGDS2  
Mark DeSalvatore – OGDS2  
John Stayton – DES Office Engineer, Office of PS&E  
Structure Construction R.E. Pending File  
Geotechnical Archive

State of California – Department of Transportation  
Division of Engineering Services  
Structure Design Services

Structure Hydraulics and Hydrology

## FINAL HYDRAULIC REPORT

# Wildlife Animal Undercrossing No.2

Located on US Route 138 over Cajon Creek in the County of San Bernardino

Bridge No. 54-1288(New Structure)

08-SBd-138-PM 13.92

EA 08 0000 0609

July 1, 2013

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PREPARED BY:  
Ronald McGaugh

REVIEWED BY:  
Ginger Lu

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This report has been prepared under my direction as the professional engineer in responsible charge of the work, in accordance with the provisions of the Professional Engineers Act of the State of California

REGISTERED ENGINEER

*Ronald L. McGaugh*

REGISTRATION NUMBER C 61217



**General:**

It is proposed to replace the existing culvert along State Route 138. The proposed structure for the Wildlife Animal Undercrossing No.2 will be a single span structure. with a total length of 30 feet, and width of approximately 88 feet.

This evaluation is based on a review of Caltrans Bridge Maintenance Records, As-Built plans, hydrologic and hydraulic reports submitted for FEMA, and APS plans submitted by Structure Design. The General Plan used for this study is dated June 2013.

The data and references of this hydraulic report are obtained from the following sources:

- Caltrans' Bridge Maintenance Records.
- Preliminary Hydraulic Report for Cajon Creek Bridge 54-0561 dated January 2010. The watershed for the Wildlife Animal Undercrossing No.2 is a subset of the Cajon Creek watershed.
- Field photo documentation and bridge site submittal information received by this office dated September 2009.
- Historical cross sections for Cajon Creek Bridge 54-0561.
- US Geological Survey (Regional Regression Method) Magnitude and Frequency of Floods in California Based on Data through Water year 2006--Bulletin 77-21. Used for the National Stream Statistics Program.
- HEC 18, Evaluating Scour at Bridges, 5<sup>th</sup> Edition.

All elevations for this structure are based on the preliminary design information provided by Preliminary Investigations and Caice files provided by District 8- NVGD 29

**Flood History:**

The existing culvert was occasionally overtopped which inundated the roadway for a short time. Beyond that there were no flood problems reported.

**Basin:**

The watershed basin for this project drains approximately 0.62 square miles. The watershed is primarily a portion of the Cajon Creek Watershed located on the northern slopes of the San Gabriel Mountains west of Cajon Valley. This watershed is bounded easterly by Wrightwood and northerly by Bald Mesa. There is no tributary above this watershed. Elevations range from approximately 3400 feet at the higher elevations to approximately 3200 feet at the site. Average channel slope near the bridge site is estimated at 3%. This basin is mostly undeveloped rural and medium densely forested lands. Average annual precipitation, based on the 2000 annual precipitation data base, within the watershed is about 46 inches.

**Drift:**

Historical flow did not indicate a problem with drift but due to the rapid runoff, steep slopes, and moderate debris yield it is still recommended to have 1 foot of freeboard for the proposed structure.

**Discharge:**

Since this watershed is unengaged the National Streamflow Statistics program (NSS) was used to estimate the discharge. This yielded a  $Q_{100}$  flow value of approximately 1,677 cfs. The  $Q_{50}$  flow value is approximately 1,200 cfs.

**Streambed:**

The existing channel carrying the anticipated flow to the proposed structure is relatively straight. From the General Plan and watershed flow considerations, it is anticipated that the bridge will have minimal hydraulic skew normal to the centerline of the channel. The natural channel bottom consists of sand, cobbles, gravel, boulders and is relatively scour resistant.

**Modeling:**

The HEC-RAS model developed for this study included the proposed grading for the structure. The Proposed structure and planned grading will adequately address the existing over topping issues.. There are also 4 retaining walls adjacent to the structure, that share a common footing elevation with the abutments.

**Water Surface Elevations:**

The estimated stage for the  $Q_{100}$  for the proposed bridge is 3281.58 feet. This estimation is based on the generated HEC-RAS analysis using Preliminary Investigations CAiCE surveys, NVGD 29. .

Modeled results include:

- $Q_{100}$  =1,677 cfs
- Max Water surface elevation of 3281.58 ft
- Minimum soffit elevation of 3282.58 ft
- Average velocity of 7.9 ft/s
- Approach longitudinal slope of 0.2 ft/ft
- Minimum of 1 foot of freeboard
- Minimum Unobstructed waterway of 250 ft<sup>2</sup>

**Scour:**

For this single span structure all scour depths are measured from the proposed finished grade. Abutment 1 scour is calculated to be 8.17 ft. and abutment 2 scour is calculated to be 7.80 ft. at the upstream face of the structure. Finished grading as indicated on the General Plans will result in the structure not causing any contraction scour. It is not anticipated that there will be lateral movement of this channel. For scour depths at the retaining wall please see **Table 1**

**Table 1** Scour depths along all retaining walls

| Upstream            |            |            | Downstream          |            |            |
|---------------------|------------|------------|---------------------|------------|------------|
| Wall height section | Abutment 1 | Abutment 2 | Wall height section | Abutment 1 | Abutment 2 |
| H=28                | 2          |            | H=28                | 3          |            |
| H=24                | 1          |            | H=24                | 2          |            |
| H=20                | 0          |            | H=20                | 1          |            |
| H=26                |            | 2          | H=26                |            | 3          |
| H=22                |            | 1          | H=22                |            | 2          |
| H=18                |            | 0          | H=18                |            | 1          |

All scour depths are measured from the proposed finished grade.

Historical cross sections of the existing nearby structure indicate negligible degradation, but 1 ft will be used for a conservative estimate. Please refer to the scour summary at the end of this report.

### Summary & Recommendations:

The proposed structure meets current hydraulic requirements for this crossing. A hydrologic summary of the bridge site is provided in Table 2 below.

| <b>Table 2</b>   |         |
|--|---------|
| <b>HYDROLOGIC/HYDRAULIC SUMMARY for Wildlife Animal Undercrossing No.2</b>   |         |
| Drainage Area: 0.62 mi <sup>2</sup>  |         |
| 30 foot-wide channel<br>slope 0.03 +ft/ft  |         |
| Water Surface elevation (ft)   | 3281.58 |
| Design Q <sub>100</sub> Discharge (cfs)  | 1677    |
| Design Q <sub>50</sub> Discharge (cfs)   | 1200    |
| Minimum soffit Elevation (feet)  | 3282.58 |
| Average Velocity (ft/s)  | 7.9     |
| Flood plain data are based upon information available when the plans were prepared and are shown to meet federal requirements. <b>The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation. Addendums may be necessary as Foundation Reports are completed.</b> |         |

This structure at the time of writing this report assumes a 75 year average bridge life.

**Table 3: Scour Summary for Q<sub>100</sub>**

| Scour Type   | Scour Depth ft |            | Scour Elevation ft |            |
|--|----------------|------------|--------------------|------------|
|  | Abutment 1     | Abutment 2 | Abutment 1         | Abutment 2 |
| Existing Original ground at proposed abutment base |                |            | 3278±              | 3275±      |
| Local Scour  | 8.1            | 7.7        | 3267               | 3269       |
| Degradation  | 1              | 1          | 3266               | 3268       |
| Contraction Scour                                  | 0              | 0          | 0                  | 0          |
| Total Potential Scour Depth in 75 years            | 9.1            | 8.7        | 3266±              | 3268±      |

**Table 4: Maximum scour depths along all retaining walls**

| Wall height section | Upstream            |                     | Downstream          |                     |
|---------------------|---------------------|---------------------|---------------------|---------------------|
|                     | Abutment 1 Elev(ft) | Abutment 2 Elev(ft) | Abutment 1 Elev(ft) | Abutment 2 Elev(ft) |
| H=28                | 3269                |                     | H=28 3267           |                     |
| H=24                | 3273                |                     | H=24 3271           |                     |
| H=20                | 3277                |                     | H=20 3275           |                     |
| H=26                |                     | 3269                | H=26                | 3267                |
| H=22                |                     | 3273                | H=22                | 3271                |
| H=18                |                     | 3277                | H=18                | 3275                |

State of California – Department of Transportation  
Division of Engineering Services  
Structure Design Services

Structure Hydraulics and Hydrology

## FINAL HYDRAULIC REPORT

# Cajon Creek Bridge

Located on US Route 138 over Cajon Creek in the County of San Bernardino

Bridge No. 54-0561 (Widening)

08-SBd-138-PM 0.0/R15.2

# Sheep Creek Bridge

Located on US Route 138 over Sheep Creek in the County of Los Angeles

Bridge No. 54-1286 (Replacement)

07-LA-138-PM 69.4/75.0

EA 08 0000 0609

January 28, 2013

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PREPARED BY:  
Ronald McGaugh

REVIEWED BY:  
XXXXXXXXXXXXXXXXXX

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This report has been prepared under my direction as the professional engineer in responsible charge of the work, in accordance with the provisions of the Professional Engineers Act of the State of California

REGISTERED ENGINEER



REGISTRATION NUMBER C 61217



# Cajon Creek Bridge

## General:

It is proposed to widen the existing three span bridge structure along State Route 138. The proposed structure widening for Cajon Creek Bridge will increase the overall width to 80 feet 11.5 inches by the addition of two separate CIP/RC box girders; each 5 feet widening attached on each side of the existing structure. The bents will be supported by 2-foot thick pier walls on spread footings, and the abutments on spread footings, consistent with existing conditions.

This evaluation is based on a review of Caltrans Bridge Maintenance Records, As-Built plans, hydrologic and hydraulic reports submitted for FEMA, and APS plans submitted by Structure Design. The General Plan is dated May 2010 in English units.

The data and references of this hydraulic report are obtained from the following sources:

- Caltrans' Bridge Maintenance Records.
- Preliminary Hydraulic Report dated January 2010.
- Field photo documentation and bridge site submittal information received by this office dated September 2009.
- Historical cross sections for Cajon Creek Bridge 54-0561.
- US Geological Survey (Regional Regression Method) Magnitude and Frequency of Floods in California--Bulletin 77-21. Used for the National Stream Statistics Program.
- HEC 18, Evaluating Scour at Bridges, 4<sup>th</sup> Edition.

All elevations for this structure are based on the preliminary design information provided by Structure Design.

## Flood History:

There are no flood problems that affect the existing structure at this location.

## Basin:

Cajon Creek drains approximately 24.7 square miles. The watershed is primary the northern slopes of the San Gabriel Mountains west of Cajon Valley. This watershed is bounded easterly by Wrightwood and northerly by Bald Mesa. There is no tributary above the Cajon Creek Bridge watershed. Elevations range from approximately 6700 feet at the higher elevations to approximately 3100 feet at the site. This watershed seems to have potential for moderate debris yield. Average channel slope near the bridge site is estimated at 3%. This basin is mostly undeveloped rural and medium densely forested lands. Average annual precipitation within the watershed is about 23 inches.

## Drift:

Historical flow did not indicate a problem with drift but due to the rapid runoff and the steep slopes, it is still recommended that at least 2 foot of freeboard is needed for this structure.

# Cajon Creek Bridge

## **Discharge:**

Since this watershed is un-gauged the National Streamflow Statistics program (NSS) was used to estimate the discharge. This yielded a  $Q_{100}$  flow value of approximately 13,157 cfs. The  $Q_{50}$  flow value is approximately 9,177 cfs.

## **Streambed:**

The existing channel carrying the anticipated flow to the proposed structure is relatively straight. From the General Plan it is anticipated that the bridge will have minimal hydraulic skew normal to the centerline of the channel. The natural channel bottom consists of sand, cobbles, gravels, boulders and is relatively scour resistant. Flow for this stream is anticipated with heavy sediment transport.

## **Water Surface Elevations:**

The estimated stage for the  $Q_{100}$  for the proposed bridge is 3113.9 feet. This estimation is based on the generated HEC-RAS analysis using District 5 CAICE surveys.

## **BREASE Model parameters Include**

- Skew less than 15 degrees
- 'n' = 0.04
- Slope of 0.018 ft/ft
- Bridge length of 223 feet
- Bridge width of 80 ft -11.5 in
- Structure depth of 5 ft

## **Modeled results include:**

- $Q_{100}$  = 13,157 cfs
- Max Water surface elevation of 3113.9 ft
- Minimum soffit elevation of 3115.9 ft
- Average velocity of 20.1 ft/s
- Froude number of 1.2
- Minimum of 2 foot of freeboard
- Unobstructed waterway of 785 ft<sup>2</sup>

## **Scour:**

This is three span bridge of adequate size. From this model the abutments will be placed at least 10 feet from the edge of the flow. This will result in no scour at the abutments. This structure does not cause any contraction scour. It is not anticipated that there will be lateral movement of this channel. Historical cross sections of the existing structure indicate a degradation rate of about 0.18 ft/ft per year. Please refer to the scour summary at the end of this report.

**Summary & Recommendations:**

The proposed structure meets current hydraulic requirements for widening. There is a possibility for this structure to become scour critical assuming remaining 32 year life of the structure. The proposed widening of the existing bridge will not adversely affect the hydraulic capacity of the existing channel. A hydrologic summary of the bridge site is provided in Table 1 below.

| <b>HYDROLOGIC/HYDRAULIC SUMMARY for CAJON CREEK BRIDGE</b>   |        |
|--|--------|
| Bridge 54-0561   |        |
| Drainage Area: 24.7 mi <sup>2</sup>  |        |
| 120 foot-wide channel<br>slope 0.018ft/ft  |        |
| Design Q <sub>100</sub> Discharge (cfs)  | 13,157 |
| Design Q <sub>50</sub> Discharge (cfs)   | 9,177  |
| Minimum soffit Elevation (feet)  | 3115.9 |
| Average Velocity (ft/s)  | 20.1   |
| Flood plain data are based upon information available when the plans were prepared and are shown to meet federal requirements. <b>The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation. Addendums may be necessary as Foundation Reports are completed.</b> |        |

This structure at the time of writing this report assumes 32 years remaining of a 75 year average bridge life.

**Table 2: Scour Summary for Q<sub>100</sub>**

| Scour Type                              | Scour Depth ft |        |        |            | Scour Elevation ft |        |        |            |
|---|----------------|--------|--------|------------|--------------------|--------|--------|------------|
|   | Abutment 1     | Pier 2 | Pier 3 | Abutment 4 | Abutment 1         | Pier 2 | Pier 3 | Abutment 4 |
| Existing Original ground                |                |        |        |            | 3121±              | 3107.5 | 3108.5 | 3123±      |
| Local Scour                             | 0              | 9.9    | 8.7    | 0          |                    | 3097.6 | 3099.8 |            |
| Degradation                             |                | 5.8    | 5.8    |            |                    |        |        |            |
| Contraction Scour                       | 0              | 0      | 0      | 0          |                    |        |        |            |
| Total Potential Scour Depth in 32 years |                |        |        |            | 3121±              | 3091.8 | 3094.0 | 3123±      |

# Sheep Creek Bridge

## **General:**

It is proposed to replace the existing seven span structure with a three span bridge structure along State Route 138. The proposed replacement structure for Sheep Creek Bridge is a three-span CIP/PT Box Girder with a superstructure depth of 3.25 feet, a length of 200 feet, and an overall width of 81 feet. The replacement structure will be supported by 4-foot diameter columns resting on 10 ft wide spread footings for the piers and by 2-foot diameter CIDH concrete piles at the abutments. The General Plan submitted by Structure Design is dated May 2010 in English units.

The data and references of this hydraulic report are obtained from the following sources:

- General Plans Dated May 18, 2010
- Caltrans' Bridge Maintenance Records.
- Preliminary Hydraulic Report dated January 2010.
- Field photo documentation and bridge site submittal information received by this office dated September 2009.
- Historical cross sections for Sheep Creek Bridge 54-0810.
- US Geological Survey (Regional Regression Method) Magnitude and Frequency of Floods in California--Bulletin 77-21. Used for the National Stream Statistics Program.
- HEC 18, Evaluating Scour at Bridges, 4<sup>th</sup> Edition.

All elevations for this structure are based on the preliminary design information provided by Structure Design.

## **Flood History:**

There are no flood problems that affect the existing structure at this location. There is a check dam located approximately 40 feet downstream of the existing structure.

## **Basin:**

Sheep Creek at the bridge site drains approximately 14.8 square miles. The watershed is primary the northern slopes of the San Gabriel Mountains north-west of Wrightwood California and northerly by Bald Mesa. There is no tributary above the Cajon Creek Bridge watershed. Elevations range from approximately 8400 feet at the higher elevations to approximately 4300 feet at the site. This watershed seems to have potential for moderate debris yield. Average channel slope near the bridge site is estimated at 4%. This basin is mostly undeveloped rural and forested lands. Average annual precipitation within the watershed is about 15 inches.

## **Drift:**

Historical flow did not indicate a problem with drift but due to the rapid runoff and the steep slopes, it is still recommended that at least 2 foot of freeboard is needed for this structure.

## **Discharge:**

Since this watershed is ungaged the National Streamflow Statistics program (NSS) was used to estimate the discharge. This yielded a  $Q_{100}$  flow value of approximately 11,200 cfs. The  $Q_{50}$  flow value is approximately 7,821 cfs.

# Sheep Creek Bridge

## **Streambed:**

The existing channel carrying the anticipated flow to the proposed structure is relatively straight. From the General Plan It is anticipated that the bridge will have minimal hydraulic skew normal to the centerline of the channel. The natural channel bottom consists of sand, cobbles, small to large gravels and is relatively scour resistant. Flow for this stream is anticipated with heavy sediment transport.

## **Water Surface Elevations:**

The estimated stage for the  $Q_{100}$  for the proposed bridge is 4344.6 feet. This estimation is based on the generated HEC-RAS analysis using District 5 CAiCE surveys.

### BREASE Model parameters include:

- Skew less than 15 degrees
- 'n' =0.035
- Slope of 0.025 ft/ft ( at bridge site)
- Bridge length of 200 feet
- Bridge width of 81 feet
- Structure depth of 3.75 feet ft

### Modeled results include:

- $Q_{100}$  =11200 cfs
- Max Water surface elevation of 4344.6 ft
- Minimum soffit elevation of 4346.6 ft
- Average velocity of 20.0 ft/s
- Froude number of 1.0
- Minimum of 2 foot of freeboard
- Unobstructed waterway of 625 ft<sup>2</sup>
- Footing elevations of 4329 ft

## **Scour:**

This is three span bridge of adequate size. From this model the abutments will be placed at least 10 feet from the edge of the flow. This will result in no scour at the abutments. It is anticipated that this proposed structure will not cause any contraction scour. It is not anticipated that there will be minimal lateral movement of this channel. Historical cross sections of the existing structure do not show degradation at the bridge site. However to be conservative we are going to use 1 ft. of degradation for design purposes. Please refer to the scour summary at the end of this report.

Also for this structure it is recommended that piers 2, 4, 5, and 7 be removed to at least 3 feet below the planned invert grade of the channel. From the General Plan piers 3 and 6 are planned to be completely removed completely.

**Summary & Recommendations:**

The proposed structure meets current hydraulic requirements. The proposed structure will not adversely affect the hydraulic capacity of the existing channel. A hydrologic summary of the bridge site is provided in Table 2 below.

| <b>Table 3 HYDROLOGIC/HYDRAULIC SUMMARY for SHEEP CREEK BRIDGE</b>   |        |
|--|--------|
| Bridge 54-1286   |        |
| Drainage Area: 14.8 mi <sup>2</sup>  |        |
| 145 foot-wide channel<br>slope 0.025ft/ft  |        |
| Design Q <sub>100</sub> Discharge (cfs)  | 11,200 |
| Design Q <sub>50</sub> Discharge (cfs)   | 7,821  |
| Minimum soffit Elevation (feet)  | 4346.6 |
| Minimum top of footing (feet)  | 4329   |
| Average Velocity (ft/s)  | 20.0   |
| Flood plain data are based upon information available when the plans were prepared and are shown to meet federal requirements. <b>The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation. Addendums may be necessary as Foundation Reports are completed.</b> |        |

For this replacement structure degradation is assumed on a 75 year average bridge life.

| <b>Table 4: Scour Summary for Q<sub>100</sub></b> |                |        |        |            |                    |        |        |            |
|---|----------------|--------|--------|------------|--------------------|--------|--------|------------|
| Scour Type  | Scour Depth ft |        |        |            | Scour Elevation ft |        |        |            |
|   | Abutment 1     | Pier 2 | Pier 3 | Abutment 4 | Abutment 1         | Pier 2 | Pier 3 | Abutment 4 |
| Existing original ground                          |                |        |        |            | 4350±              | 4333.0 | 4333.0 | 4350±      |
| Local Scour                                       | 0              | 7.4    | 7.4    | 0          |                    | 4325.6 | 4325.6 |            |
| Degradation                                       |                | 1      | 1      | 0          |                    | 0      | 0      |            |
| Contraction Scour                                 | 0              | 0      | 0      | 0          |                    |        |        |            |
| Total Potential Scour Depth in 75 years           |                |        |        |            | 4350±              | 4324.6 | 4324.6 | 4350±      |

State of California – Department of Transportation  
Division of Engineering Services  
Structure Design Services

Structure Hydraulics and Hydrology

# FINAL HYDRAULIC REPORT ADDENDUM

## Cajon Creek Bridge

Located on US Route 138 over Cajon Creek in the County of San Bernardino

Bridge No. 54-0561 (Widening)

08-SBd-138-PM 0.0/R15.2

## Sheep Creek Bridge

Located on US Route 138 over Sheep Creek in the County of Los Angeles

Bridge No. 54-1286 (Replacement)

07-LA-138-PM 69.4/75.0

EA 08 0000 0609

March 15, 2013

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PREPARED BY:  
Ronald McGaugh

REVIEWED BY:  
Ginger Lu

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This report has been prepared under my direction as the professional engineer in responsible charge of the work, in accordance with the provisions of the Professional Engineers Act of the State of California

REGISTERED ENGINEER

*Ronald L Mc Gaugh*

REGISTRATION NUMBER C 61217



# Cajon Creek Bridge

## Summary & Recommendations:

The proposed structure meets current hydraulic requirements for widening. There is a possibility for this structure to become scour critical assuming remaining 32 year life of the structure. The proposed widening of the existing bridge will not adversely affect the hydraulic capacity of the existing channel. A hydrologic summary of the bridge site is provided in Table 1 below.

| HYDROLOGIC/HYDRAULIC SUMMARY for CAJON CREEK BRIDGE  |        |
|--|--------|
| Bridge 54-0561   |        |
| Drainage Area: 24.7 mi <sup>2</sup>  |        |
| 120 foot-wide channel<br>slope 0.018ft/ft  |        |
| Design Q <sub>100</sub> Discharge (cfs)  | 13,157 |
| Design Q <sub>50</sub> Discharge (cfs)   | 9,177  |
| Minimum soffit Elevation (feet)  | 3115.9 |
| Average Velocity (ft/s)  | 20.1   |
| Flood plain data are based upon information available when the plans were prepared and are shown to meet federal requirements. <b>The accuracy of said information is not warranted by the State and interested or affected parties should make their own investigation. Addendums may be necessary as Foundation Reports are completed.</b> |        |

This structure at the time of writing this report assumes 32 years remaining of a 75 year average bridge life.

Table 2: Scour Summary for Q<sub>100</sub>

| Scour Type                              | Scour Depth ft |        |        |            | Scour Elevation ft |        |        |            |
|---|----------------|--------|--------|------------|--------------------|--------|--------|------------|
|   | Abutment 1     | Pier 2 | Pier 3 | Abutment 4 | Abutment 1         | Pier 2 | Pier 3 | Abutment 4 |
| Existing Original ground                |                |        |        |            | 3121±              | 3107.5 | 3108.5 | 3123±      |
| Local Scour                             | 0              | 9.9    | 8.7    | 0          |                    | 3097.6 | 3099.8 |            |
| Degradation                             |                | 3.9    | 3.9    |            |                    |        |        |            |
| Contraction Scour                       | 0              | 0      | 0      | 0          |                    |        |        |            |
| Total Potential Scour Depth in 32 years |                |        |        |            | 3121±              | 3093.7 | 3095.9 | 3123±      |

**ASBESTOS CONTAINING MATERIALS AND  
LEAD-BASED PAINT SURVEY REPORT  
Five Bridges along State Route 138  
08-SBd-138-PM 69.4/74.9**

**Prepared for:  
California Department of Transportation, District 8  
Task Order No. 22  
Contract No. 08A1542  
EA No.: 3401U0**

**Prepared by:  
Stantec Consulting Corporation  
Redlands, California  
Ms. Tammy Lapp  
Stantec Task Order Manager  
Certified Asbestos Consultant/Cal-DOSH**

**November 20, 2009**

## 1.0 EXECUTIVE SUMMARY

This document describes the results of an asbestos containing materials (ACM) and lead-based paint (LBP) survey performed at the request of the California Department of Transportation, District 8 (Caltrans), for five bridges located along State Route 138, in the counties of Los Angeles and San Bernardino, state of California. The ACWLBP surveys were performed to support Caltrans proposed widening of the existing highway from two lanes to four lanes on the existing alignment. The five bridges are identified as follows:

- **Cajon Creek Bridge (No. 54-0561)**
- **Pine Lodge East Overhead Bridge (No. 54-1057)**
- **Pine Lodge West Overhead Bridge (No. 54-1056)**
- **Sheep Creek Bridge (No. 54-0810)**
- **California Aqueduct Bridge (No. 53-2174)**

For the asbestos survey, all samples were analyzed using Polarized Light Microscopy (PLM) techniques in accordance with methodology approved by the United States Environmental Protection Agency (US EPA). According to the US EPA, ACM is defined as material containing more than one percent asbestos. The lower limit of reliable detection for asbestos using the PLM method is approximately one percent by volume; however, California Division of Occupational Safety and Health Administration (Cal-OSHA) defines ACMs as those materials having an asbestos content greater than one-tenth of one percent (>0.1%).

The following is a description of materials that contain greater than one-percent asbestos (USEPA Regulated Asbestos Containing Materials (RACM), Category 1) that may become friable if disturbed (such as by demolition activities):

**Guardrail Post Shims** – Fibrous shims, of varied thickness, are used beneath selected guardrail posts for leveling purposes. The shims measure approximately 8-inches x 8-inches and were observed to be comprised of a fibrous material. Laboratory analysis indicates that the shim material contains between 60 to 70 percent asbestos. The material could be crushed by hand pressure, and are therefore considered a friable ACM Material. These fibrous shims were observed on two of the five bridges; the Cajon Creek and Sheep Creek bridges. A total of thirty-one posts on the Cajon Creek and Sheep Creek bridges were observed to have ACM shims. These ACM shims represent an estimated combined total area of approximately 15.5 square feet of asbestos containing material.

Prior to demolition activities, a licensed asbestos abatement firm should be contracted to remove and dispose of identified asbestos containing materials. This work should be completed in accordance with the South Coast Air Quality Management District (SCAQMD) guidelines.

For the lead-based paint survey, samples were analyzed by Environmental Management Consultant's Standard of Procedure (EMC SOP) Method #L01/1, after US EPA SW-846 Method 7420. The US EPA defines Lead-Based Paint as: paint, varnish, shellac, or other coating on surfaces that contains 0.5 percent or more lead by weight.

Attempts were made to access all areas of the structure; however, during demolition activities, suspect ACMLBP materials may be uncovered or discovered in areas that are currently not readily accessible. If found, these ACMLBP materials should be sampled and analyzed prior to disturbance.



# ***Caltrans***

## **Information Brochure**

**Protection  
Of the  
DESERT TORTOISE  
(*Gopherus agassizii*)  
During  
LIMITED SCOPE  
PROJECTS**

**THE**  
**DESERT TORTOISE**  
(A THREATENED SPECIES)

**“IS PROTECTED BY LAW”**

**ANY UNAUTHORIZED PERSON  
WHO COLLECTS, HANDLES  
OR DELIBERATELY MOLESTS A  
TORTOISE  
CAN  
BE  
PROSECUTED**

**VIOLATIONS CAN RESULT IN**

- 1) FINES UP TO \$50,000  
AND/OR**
- 2) IMPRISONMENT UP TO 1 YEAR**

***APPLICABLE LAWS INCLUDE:***

The Federal Endangered Species Act of 1973  
(16 U.S.C. 1531-1543)

and

The California Endangered Species Act

THIS BROCHURE IS INTENDED TO PROVIDE YOU WITH INFORMATION AND GUIDANCE  
TO AVOID VIOLATION OF THE ENDANGERED SPECIES ACTS

**RESOURCE AGENCY FORMAL CONSULTATION**

Limited scope projects normally have a low risk of encountering or harming a tortoise and no "TAKE" is anticipated. Therefore, Formal Consultation between Caltrans and the U.S. Fish and Wildlife Service under Section 7 of the federal Endangered Species Act has not been undertaken for this project to authorize "TAKE" during the conduct of this project.

**"TAKE" is defined as:**

**Harassing, Harming, Pursuing, Hunting, Shooting, Wounding, Killing, Capturing, Collecting, or attempting to engage in any such conduct. Engaging in any of these activities can place you in violation of the law.**

Tortoises found within Caltrans Right of Way are not exempt from this protection.

## WHAT TO DO AND NOT DO.

**CHECK UNDER MOTORIZED EQUIPMENT & VEHICLES** – that have been parked over night or stationary for some length of time before moving the vehicle.

**CHECK AROUND MATERIAL STACKS & UNITS** - that have been stored in the open before moving them.

**VISUALLY CHECK AROUND THE WORK AREA** – for the presence of live tortoise that may have wandered into the disturbance zone. It is not intended to divert your attention from your work tasks and create a hazard for your or others on the job, but it is good practice to utilize a few seconds and visually scan the area around you when it is safe to do so.

**IF A TORTOISE IS PRESENT** – stop all work activities that could harm the tortoise and contact the Resident Engineer or designated contact person, or on-site biologist to have the tortoise removed to safety. Contact your supervisor (contractor's) for direction on proceeding with work activities.

**DO NOT HANDLE OR MOVE A TORTOISE** – yourself. Only a qualified biologist is authorized to do so.

**DO NOT RETURN A TORTOISE** – to the wild that has been held in captivity. They may have been infected with a pneumonia type virus that is the cause of pneumonia infections in humans. The tortoise is highly susceptible to this virus which attacks the lungs and the tortoise has no means to cure itself. More tortoises die from pneumonia than any other cause. Symptoms of infection include runny or bubbly nose, loss of appetite and gasping for breath. Returning them to the wild increases the potential for exposure of the virus into an otherwise healthy tortoise population.

**HELP MAKE THE LITTER CONTROL REQUIREMENTS ON THIS PROJECT** – work by using the closeable trash containers to dispose of left over food scraps, wrappers, cans bottles, etc., or secure and remove them from the project with you when you leave the job site. The purpose of litter control is to avoid attracting Ravens which are highly efficient hunters and killers of baby tortoises.

**DO NOT NEEDLESSLY VENTURE OUT OF THE DESIGNATED WORK AREA** – into adjoining habitat areas unless directed to do so after the area has been approved for such activity. Doing so, disturbs habitat which is also protected under the Endangered Species Acts.

**ASK YOUR SUPERVISOR** - if any other environmentally related special provisions have been placed in the contract exist that you should know about. We do recommend that environmental protection measures be reiterated and discussed at on-site "tail gate" meetings with safety and other project related issues brought up by your supervisor(s).

**WE THANK YOU FOR YOUR COOPERATION  
AND CARE**

**IN KEEPING WITH AMERICA'S DESIRE TO PROTECT THE ENVIRONMENT**