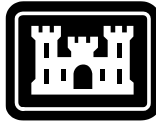


**SANTA ANA RIVER MAINSTEM PROJECT: REACH 9**  
**BNSF BRIDGE**  
County of Riverside, California

**FINAL**  
**SUPPLEMENTAL ENVIRONMENTAL ASSESSMENT**  
**AND**  
**ENVIRONMENTAL IMPACT REPORT ADDENDUM**

*Prepared for:*



**US Army Corps  
of Engineers®**

**Los Angeles District**

**May 2017**



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**FINDING OF NO SIGNIFICANT IMPACT**  
**SANTA ANA RIVER MAINSTEM PROJECT: REACH 9**  
**BNSF BRIDGE**  
**County of Riverside, California**

I have reviewed the Supplemental Environmental Assessment (SEA) and Environmental Impact Report (EIR) Addendum that has been prepared for the Santa Ana River Mainstem Project (SARMP): Reach 9 BNSF Bridge protection in the County of Riverside, California. This SEA/EIR Addendum supplements a 2015 SEA/EIR Addendum for this and other project features entitled “Santa Ana River Mainstem Project: Reach 9, Phases 4, 5A, 5B & BNSF Bridge, Counties of Orange and Riverside, California.” This SEA/EIR evaluates the minor changes to the BNSF Bridge protection features to address expanded permanent project footprint, re-alignment of a permanent maintenance access road off of Green River Road closer to the Green River Mobile Home Park, new temporary access road, and other design refinements.

The U.S. Army Corps of Engineers (Corps) and the SARMP’s non-Federal sponsors (Orange County Flood Control District, Riverside County Flood Control and Water Conservation District, and San Bernardino County Flood Control District) identified that authorized SARMP operations could result in the potential for undercutting, erosion or scour of embankments and bridge piers along and within the Santa Ana River in Reach 9. The 2015 SEA addressed effects related to proposed embankment and bridge protection at four locations identified in that document as Phase 4, Phase 5A, Phase 5B and BNSF Bridge.

The BNSF railroad bridge is located at the transition between the Corps’ Reach 9 Phases 2A and 2B channel improvements. In the 2015 SEA, the selected alternative for Reach 9 BNSF Bridge was described as follows: The components consist of reinforced concrete walls, sheet pile and reinforced concrete diaphragm walls, and grouted stone protection to provide additional scour protection to bridge piers and abutments, and tie into previously constructed bank protection along the east bank of the channel into the existing bridge abutment. Reinforced concrete enclosure walls would be installed around Pier Nos. 2 through 5, and reinforced concrete pier nose extension walls would be constructed immediately upstream of these piers. The BNSF bridge project also provides for construction of the sheet pile and reinforced concrete diaphragm walls with tieback anchors parallel to existing Pier Nos. 1 and 6 to guide the design flow safely under the bridge. Additionally, 24-inch grouted stone bank protection would be installed to tie the existing bridge abutment along the east bank of the river channel (Pier No. 1) into bank protection installed upstream (Phase 2A) and downstream (Phase 2B) of the BNSF bridge. Construction is expected to take approximately 3 years to complete.

This SEA addresses minor modifications to the above project description to include an expanded permanent project footprint (minor expansion of the bridge piers and abutment wall), modifications to the temporary construction/staging work areas on both the east and west side of the Santa Ana River, re-alignment of a permanent maintenance access road closer to the Green River Mobile Home Park, and design refinements to accommodate additional minor project features, such as the addition of permanent survey monuments. The 2017 design alternative would result in approximately 2.30 acres of additional permanent impacts and 6.45 acres of additional temporary impacts, primarily to the upland and developed land use classifications.

Proposed temporary impacts to riparian habitat are reduced by 0.92 acres by the 2017 design alternative. Areas to be temporarily impacted during construction will be restored to the appropriate native habitat type upon completion of construction activities. Construction is proposed to begin in 2017.

The SARMP remains in compliance with all applicable federal and state laws and statutes. This SEA/EIR Addendum was prepared to comply with the National Environmental Policy Act (NEPA) and applicable laws and regulations, and was made available for public review on the Corps website (<http://www.spl.usace.army.mil/Media/Public-Notices/Article/1151623/spl-2017-00002-elj-bnsf-bridge/>) from April 14 to May 12, 2017. Stakeholders and resource agencies were also notified by mail of the document's availability and review period.

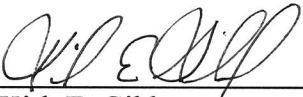
In July 2015, the Corps completed consultation with the U.S. Fish and Wildlife Service (USFWS) under Section 7 of the Endangered Species Act for least Bell's vireo, Santa Ana sucker, and coastal California gnatcatcher. The proposed modifications do not result in additional effects beyond those addressed in that consultation.

Reach 9 Improvements have been evaluated pursuant to Section 404(b)(1) of the Clean Water Act. The Preferred Alternative is the Least Environmentally Damaging Practicable Alternative (LEDPA). Additionally, the Corps applied for a Section 401 Certification under the Clean Water Act on January 23, 2015. Because the Regional Water Quality Control Board (RWQCB) did not respond, pursuant to 33 CFR 336.1(b) the Corps deemed the requirement for certification waived. The proposed modifications do not result in additional or different effects to Waters of the U.S. that would require the Corps to modify the 404(b)(1) Evaluation or seek additional certification.

Reach 9 Improvements also comply with Section 106 of the National Historic Preservation Act. A programmatic agreement (PA) was executed for the SARP in 1993 by the Advisory Council on Historic Preservation to which the State Historic Preservation Office (SHPO) and the Corps are parties. The PA detailed the procedures and stipulations that must be followed, which will be implemented for construction and future maintenance of the Reach 9 Improvements. No additional coordination with the SHPO is required due to the proposed modifications unless an unanticipated discovery is made during construction in which case the Corps would comply with the procedures in 36 CFR 800.13.

Based on the analyses in the SEA/EIR Addendum, no new significant impacts were identified for the proposed minor changes to the Reach 9 SARMP BNSF Bridge protection features. I have considered the available information contained in the SEA/EIR Addendum and determined that the proposed Reach 9 BNSF Bridge improvements will not have a significant impact upon the existing environment or the quality of the human environment. Therefore, preparation of a Supplemental EIS is not required.

22 May 2017  
DATE

  
Kirk E. Gibbs  
Colonel, U.S. Army  
Commander and District Engineer

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## 1 INTRODUCTION

This document has been prepared by the U.S. Army Corps of Engineers (Corps), the Orange County Flood Control District (OCFCD), and the Riverside County Flood Control and Water Conservation District (RCFCWCD) to document minor changes to the Reach 9 Burlington Northern and Santa Fe (BNSF) Railroad Bridge protection feature, provide a more complete analysis of hydrologic effects, and update the status of previous environmental commitments. This feature was first analyzed in the 2015 Final Supplemental Environmental Assessment (SEA) and Environmental Impact Report (EIR) Addendum entitled, “Santa Ana River Mainstem Project (SARMP): Reach 9, Phases 4, 5A, 5B, & BNSF Bridge, Counties of Orange and Riverside, California” (Corps 2015). The 2015 SEA/EIR Addendum addressed several Reach 9 bank and bridge protection measures, including impacts to environmental resources related to both implementation and future maintenance. Alternatives for each measure were described in Chapter 4 of the 2015 SEA/EIR addendum, which is incorporated here by reference. This current Final SEA includes the preferred alternative described in that document, which is now considered the “No Action” plan, and proposed modifications.

An update to Corps 2015 is required to address an expanded permanent project footprint (minor expansion of the bridge piers and abutment wall), modifications to the temporary construction/staging work areas on both the east and west side of the Santa Ana River, re-alignment of a permanent maintenance access road closer to the Green River Mobile Home Park, and design refinements to accommodate additional project features, such as the addition of permanent survey monuments (see section 4.0 for a detailed list of modifications proposed since 2015). The 2017 design alternative would result in increase of approximately 2.30 acres of permanent impacts and 6.45 acres of temporary. Permanent impacts include an additional 0.01, 0.23, and 0.92 acres to perennial stream, riparian, and upland habitat, respectively. Temporary impacts include a reduction of 0.10 acres to perennial stream habitat and an increase of 0.22 acres to upland habitat. Temporary impacts to riparian have been reduced by 0.92 acres since 2015. Areas to be temporarily impacted during construction will be restored to the appropriate native habitat type upon completion of construction activities.

This document has been prepared pursuant to the National Environmental Policy Act (NEPA) (42 United States Code 4321 et seq.), Council on Environmental Quality regulations published at 40 Code of Federal Regulations (CFR) Part 1500, et seq., other environmental laws, Executive Orders, Corps regulations, the California Environmental Quality Act (CEQA) (Public Resources Code Section 21000, et seq.) and the State of California CEQA Guidelines (California Code of Regulations [CCR], Title 14, Section 15000, et seq.). Summary of changes from the Draft SEA/EIR Addendum is presented below:

- Reference to Orange County Sanitation District was deleted in reference to work by others.
- The proposed alignment of the temporary access road was revised to avoid active golf course playing holes, and to minimize impacts to mature trees. Various acreage counts in text and tables were revised to account for re-alignment of this road.

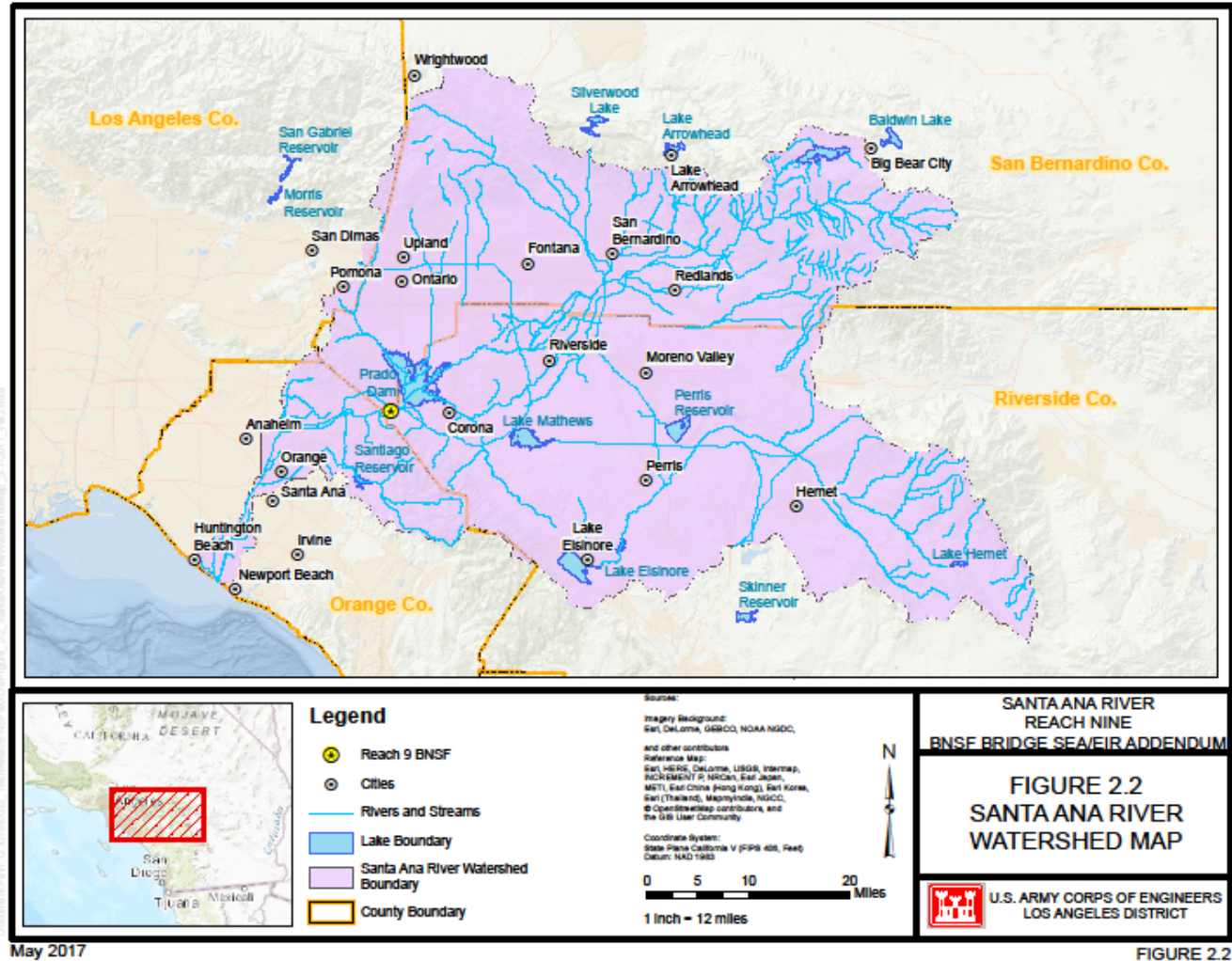
## 2 PROJECT LOCATION

The BNSF bridge (33°52'36.44"N; 117°40'3.67"W) lies approximately 2.25 river miles downstream of the outlet from Prado Dam at the transition between Reach 9, Phases 2A and 2B channel improvements in the City of Corona, Riverside County (Figure 2.1). It was constructed in 1938 as part of relocation efforts for construction of Prado Dam. Two additional bridges, each carrying a set of tracks, were constructed south of the original bridge in 1995. Bridge structures located at this location are referred to throughout this document as the “BNSF Bridge.” Reach 9, Phase 2A is upstream of the BNSF Bridge, and the Green River Mobile Home Park Embankment Protection and Phase 2B (Green River Golf Course) lie downstream. Figure 2.2 shows the entire watershed of the Santa Ana River, and Figure 2.3 shows the vicinity of the subject BNSF Bridge protection project along with the estimated implementation schedule.

Figure 2.1 Reach 9 Santa Ana River BNSF Bridge Regional Map



Figure 2.2 Santa Ana River Watershed Map





### **3 PURPOSE AND NEED**

In accordance with 40 CFR 1502.13, this section provides an explanation of the “underlying purpose and need to which the [Corps] is responding in proposing the alternatives including the proposed action.”

#### **3.1 Statement of Need**

As discussed in Corps 2015, previous Corps investigations have focused on the BNSF bridge piers, which may be susceptible to scour during a 30,000 cfs flow/release (Corps 2013b). No protection features are currently in place at the bridge piers or along the river bank at the BNSF bridge. Long-term bed degradation in this area is estimated at 18 feet below the existing thalweg. As a result, the existing bridge piers may be deficient in protection and susceptible to scour, including long-term scour of the riverbed and additional, local scour around the piers. The piers currently do not extend deep enough to provide sufficient protection against the design flood event. Additional scour protection measures are required to maintain bridge stability and avoid catastrophic collapse of the BNSF bridge during a 30,000 cfs release.

This document addresses design refinements and other changes made to the to the temporary and permanent construction footprint since Corps 2015. Modification to the 2015 design was deemed necessary to provide for increased bridge pier protection and reduce associated construction risk at existing bridge piers, to provide additional buffer for wildlife movement by increasing the distance between a permanent maintenance access and the “B” Canyon drainage, and to install survey monuments to monitor possible lateral migration of the existing channel that was not considered in 2015.

#### **3.2 Statement of Purpose**

Under the BNSF bridge protection project, additional scour protection for the piers and abutments of the existing bridges would be constructed to protect from scour caused by a controlled flood event from Prado Dam (up to 30,000 cfs), including long-term scour of the riverbed and local scour of the piers. The preferred alternative recommended for the BNSF Bridge project would provide new bridge pier and bank protection features to reduce or prevent flood damage to piers and abutments of the BNSF railroad bridge. This would require water diversion and dewatering to install these bridge protection features. It is anticipated that BNSF Bridge work would be awarded in fiscal year (FY) 2017 and that construction would begin in FY 2017 and require approximately 3 years.

## 4 ALTERNATIVES

### 4.1 Pier and Abutment Protection Alternative (Alternative 1, Preferred Alternative)

The preferred alternative (proposed action) is essentially the same plan that was proposed in Corps 2015, except that the work area and permanent footprint would be expanded to accommodate design refinements and additional features including survey monuments. The proposed action also includes re-alignment of a permanent maintenance access road leading off of Green River Road, to provide additional buffer for wildlife movement by increasing the distance between this road and the “B” Canyon drainage. A commitment to move the road was included in Corps 2015, although the specific alignment and implementation schedule were not determined at that time.

The proposed action has removed sheet pile walls for pier protection and abutments that were included in the 2015 design in favor of reinforced concrete slurry diaphragm enclosure walls in the channel, and reinforced concrete slurry diaphragm walls with tie-back anchors to protect the pier groups landward of the abutments. This change is proposed since it was determined that driving sheet piles would be difficult due to presence of cobbles and boulders. This proposed change also reduces construction risk at existing bridge piers due to limited headroom available for pile driving equipment below the bridge. Moreover, a potential conflict of tieback anchors with existing bridge pier and abutment foundations was not considered in 2015, which has been resolved with the addition of a cantilever T-section diaphragm wall in the current proposal where necessary.

The proposed design revisions also incorporate results from recent hydraulic modeling conducted by the Corps' Engineer Research and Development Center (ERDC), which updated scour elevations (local scour depth reduced from 30.1 feet to 14.9 feet). The design refinement includes construction of separate reinforced concrete pier nose extension walls and reinforced concrete slurry diaphragm enclosure walls. Finally, the current proposal includes installation of survey monuments to monitor possible lateral migration of the existing channel that was not considered in 2015.

The total area needed for the preferred alternative includes both temporary construction easements (TCE) and permanent easements. The Corps proposes to expand both the temporary and permanent construction limits that were defined in Corps 2015, as shown in Figure 4.1-1. The total area of the construction easements will change from 25.91 acres as of Corps 2015 to 34.92 acres currently, i.e. an addition of 9.01 acres. Within the newly added easement, clearing of vegetation would still be completed prior to February 15 or after August 15, outside of the nesting season for least Bell's vireo (*Vireo bellii pusillus*) and other migratory birds.

Under this alternative, as specified in the Corps 2015, the existing BNSF bridge would be provided additional scour protection through construction of concrete nose extension for each pier enclosure, grouted stone bank protection with derrick stone, side drains, and access roads and ramps, and temporary diversion and control of water within the river to allow construction of the pier protection features identical to those described in Corps 2015. Since Corps 2015, the pier protection feature has

undergone design change from reinforced concrete walls to concrete slurry diaphragm wall enclosure. Similarly, the bridge abutment protection measure has undergone design change from sheet pile and reinforced concrete diaphragm walls to concrete diaphragm walls only. In addition to the features included in Corps 2015, the current design also includes rip rap slope protection, survey monuments, environmental restoration of construction related disturbed areas with native planting, and restoration of existing golf course landscaping.

As well, a new access road on the west bank of the SAR is being considered in the current proposal that was not included in Corps 2015, and is only included in the discussions of 'Cumulative Impacts' in the current document (see section 5.5). This access road would be utilized for maintenance and emergency vehicle purposes. However, alignment and details of this access road have not been finalized yet. A full analysis of this potential feature, including alternative alignments, will be included in a future SEA/EIR Addendum when these alternatives have been further developed.

Similarly, restoration of golf course fencing, part of which had been removed to accommodate previous embankment protection, has been proposed immediately south of the existing bridge and along Green River Road, although the alignment, openings and further details of this fence have not been finalized yet. This potential fence restoration was not included in Corps 2015, and is only included in the discussions of 'Cumulative Impacts' in the current document (see section 5.5). A full analysis of this potential feature, including alternative designs if appropriate, will be included in a future SEA/EIR Addendum when these alternatives have been further developed.

Figure 4.1-1 Project feature locations and construction easements.

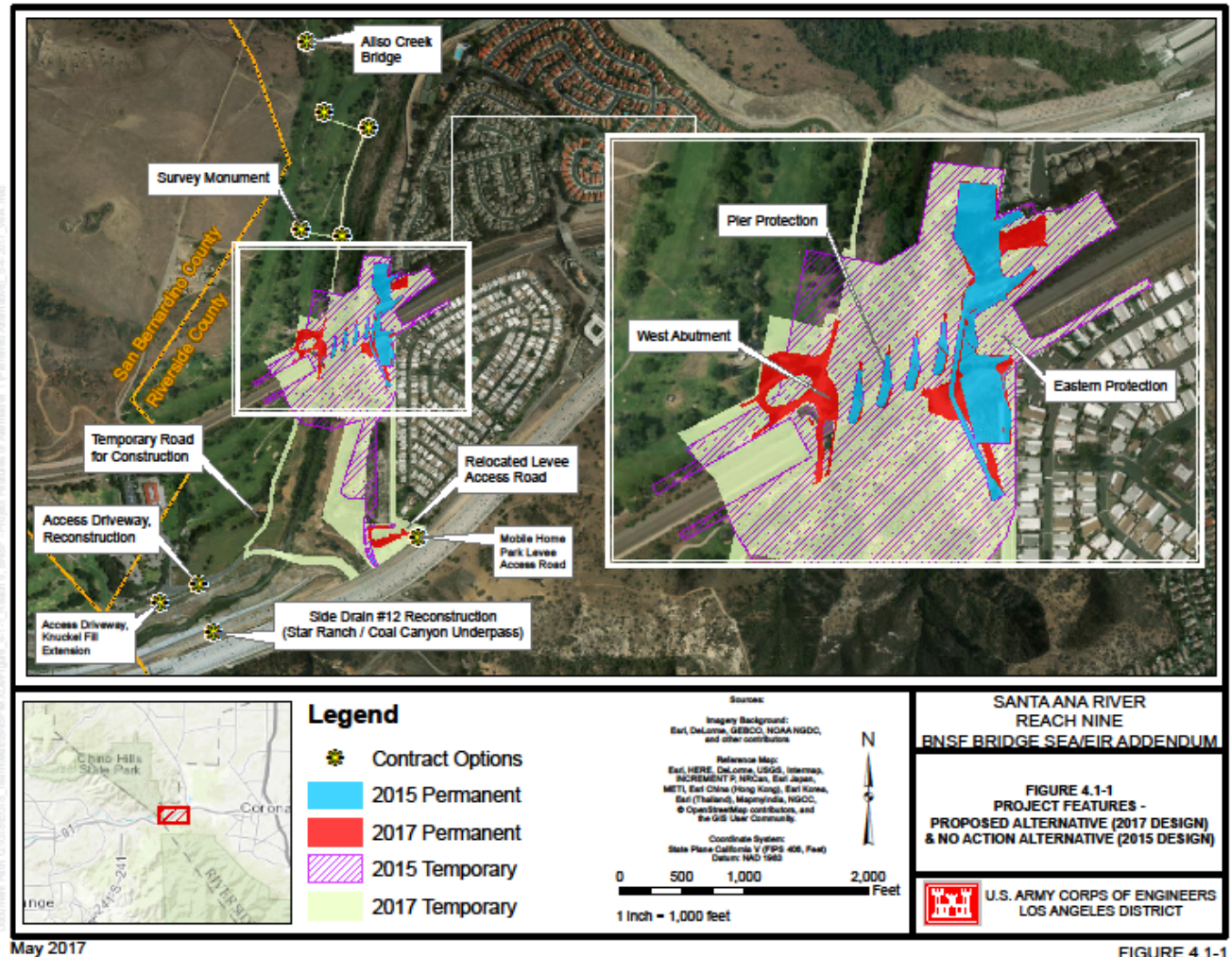


FIGURE 4.1-1



### **Future Operation and Maintenance Associated with the Modifications and Clarification**

All operation and maintenance requirements of the overall project remain the same as described in Corps 2015. The only additional maintenance within the construction easements beyond what is identified in Corps 2015 would be the following:

- i) Survey monuments on the golf course to measure stream lateral migration, and survey monuments embedded in the diaphragm walls at east and west abutment, would be monitored once a year for the life of the project, with the exception of additional as needed monitoring when the stream discharge exceeds 10,000 cfs. Two of the golf course monitors would be accessible via existing west side golf cart access road north of the bridge, while the two remaining golf course monitors would be accessible via golf course turf. The monitors on the diaphragm walls would be accessible via existing access roads to the east and west of the bridge. Standard land surveying equipment would be utilized for this work. The load cells for the tieback anchors at the east and west diaphragm walls, as well as the inclinometers behind the diaphragm walls, would undergo long term monitoring for the life of the project, and would be accessible via existing access roads. Instrumentation on the bridge and the piers (tiltmeters, inclinometers and survey targets) would be temporary and would monitor movement and stability of the bridge during construction only. This temporary instrumentation would be accessed via construction easements during construction of the project.
- ii) Maintenance requirements for a potential new west access road and fence would be addressed in another SEA/EIR Addendum, when those features and alternatives are further developed.

### **Construction Phasing**

The plan of construction phasing remains the same as described in Corps 2015, with the exception that diversion of the active river channel into temporary channels would be limited to the period between August 15 and February 28, unless late winter storms resulting in higher than normal flow require a delay. In that case, the Corps would coordinate with the U.S. Fish and Wildlife Service (USFWS) to ensure that no additional effects to listed species would occur. The method of this diversion, including a fish survey and relocation plan, will be coordinated with USFWS to minimize impacts to native fish. The planned construction phasing is subject to change based on field conditions, weather, availability of materials, and other factors.

### **Water Diversion and Dewatering**

An active river channel and high groundwater table occur in the BNSF Bridge measure, which would require dewatering to install bridge protection features. The active channel of the SAR currently flows between Pier Nos. 4 and 5. Therefore, a water diversion would be required to dewater the active channel for installation of bridge pier nose extensions and enclosure diaphragm walls at these piers. The contractor will be instructed to conduct river diversion during the period of August 15 to February

28 only, unless late winter storms resulting in higher than normal flow require a delay. In that case, the Corps would coordinate with the USFWS to ensure that no additional effects to listed species would occur. The specific method and location of the river diversion will be proposed by the contractor to the Corps, who will coordinate the plan with the USFWS prior to initiating the activity.

### **Construction Schedule**

Construction is expected to take approximately 3 years to complete. This construction duration is the same as that projected in Corps 2015. Clearing and grubbing is proposed to begin in 2017 and would need to be completed outside of the bird breeding season (which in this area is February 15 through August 15). Construction is expected to continue to approximately 2020. Funding constraints, weather delays, and other issues could potentially move the construction timeline beyond 2020. Daily construction would occur between 7:00 a.m. and 6:30 p.m., Monday through Friday, while Saturday work for the same duration may occur with prior approval from the Corps.

## **4.2 No Federal Action Alternative (Alternative 2)**

Under the No Federal Action Alternative, bridge and bank protection structures would be constructed as described in Corps 2015, which is largely similar to the current Preferred Alternative except that the minor design changes that are currently proposed would not be implemented. A No Construction/No Action Alternative was included in Corps 2015. The No Federal Action Alternative as of the currently proposed design would still provide protection against high flows and scour, although the following constraints would need to be resolved in some manner:

- i) Driving sheet piles would be difficult due to presence of cobbles and boulders, and due to limited headroom available for pile driving equipment below the bridge.
- ii) Potential conflict of tieback anchors with existing bridge pier and abutment foundations was not considered.
- iii) Recent hydraulic model results conducted by the Engineer Research and Development Center (ERDC) that resulted in updated scour elevations would not be reflected in design modifications.
- iv) Monitoring possible lateral migration of the existing channel would not be facilitated by construction and use of survey monuments.

Therefore, under the No Federal Action Alternative, construction of the bridge protection features may be difficult, the design would be based on outdated data, and lateral migration would not be monitored as accurately.

## **4.3 Description of Additional Work**

A portion or all of the following activities may be conducted at the same time as construction of the above-listed features, and small portions may be in Corps construction contracts (where work limits overlap). However, this SEA/EIR Addendum assumes that any environmental documentation or permits

have been or would be prepared/obtained by other entities (namely OCFCD). This information is provided herein for purposes of full disclosure and to assist with cumulative impacts analysis.

**Contract Option for Access Driveway Knuckle Fill Extension** – This is an Orange County Betterment activity. Therefore, environmental review and, or documentation for this feature is being conducted by Orange County Flood Control District (OCFCD). OCFCD would be responsible to obtain applicable approvals for the subject feature as well.

**Contract Option for Aliso Creek Bridge** – This is an Orange County Betterment activity. Therefore, environmental review and, or documentation for this feature is being conducted by Orange County Flood Control District (OCFCD). OCFCD would be responsible to obtain applicable approvals for the subject feature as well.

**Contract Option for Green River Golf Club Access Driveway Reconstruction** – The access driveway was previously constructed as a part of the Santa Ana River Reach 9 Phase 2B Project (Green River Golf Club Embankment Protection). Under the current project, the subject contract option will reconstruct 40 ft. of the previously constructed driveway within the Golf Course right of way to rectify a design deficiency that created a ponding area during the previous project. The previous project was constructed as part betterment and part project, and was included within the Final Supplemental Environmental Assessment and Addendum to EIR 583 (September 2009). Therefore, the subject driveway reconstruction is not discussed any further in the current SEA/EIR Addendum.

**Side Drain No. 12 Inlet Modification** – The drain inlet was previously constructed as a part of the Santa Ana River Reach 9 Phase 2B Project (Green River Golf Club Embankment Protection) at the northern edge of Green River Road at Star Ranch/Coal Canyon underpass (at the western end of Green River Road and the eastern/northern terminus of the Santa Ana River Trail). However, ponding has been observed during heavy rains, and the inlet has proved to be deficient. Under the current project, this deficiency will be rectified. The previous project was included within the Final Supplemental Environmental Assessment and Addendum to EIR 583 (September 2009). Therefore, the subject driveway reconstruction is not discussed any further in the current SEA/EIR Addendum.

## **5 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES**

The affected environment and existing conditions within the BNSF project area remain similar to that described in Corps 2015, with a few exceptions that will be described further in this document. This applies to all resource categories. Refer to Corps 2015 for a full description of the affected environment and existing conditions.

Effects to resources within Reach 9 BNSF are similar to those described in Corps 2015. Effects of the 2017 design changes—including the expansion of the construction easement on both east and west side of the Santa Ana River downstream of the BNSF bridge, realignment of the mobile home levee access road, addition of permanent survey monuments, minor expansion of the bridge piers and abutment wall, and change in construction method from sheetpile to bentonite diaphragm wall—would result in additional temporary and permanent effects to vegetation, stream substrate, runoff, infiltration, and water velocity within the BNSF area. However, these effects have been found to be minimal. Environmental commitments, permits, and standard Best Management Practices (BMPs) would further reduce the effects. Effects to hydrology, groundwater, water quality, and biological resources are addressed more specifically to provide an updated accounting of impacts.

Proposed changes would have minimal or no additional effects to geology, soils, water resources, air quality, land use, recreation, transportation, cultural resources, aesthetics and other resources addressed in Corps 2015. Equipment usage and construction duration would remain similar to that estimated in Corps 2015. Public safety would not be affected as a result of the proposed design changes. It was determined that the cultural resource analysis completed for Corps 2015 covers the actions that would occur under this document. The expanded construction easement falls within the Area of Potential Effects already established by the project. As such, these resources are not discussed further in this document.

Cumulative effects were analyzed in Corps 2015. The following reasonably foreseeable future actions have been added to the cumulative effects analysis section: (1) an alternative west maintenance and emergency access road may be constructed within the Green River Golf Club vicinity and (2) a fence just south of the BNSF bridge, which was removed during earlier phases of the Reach 9 project, may need to be replaced with some kind of barrier to human traffic. The details of the alternative west access road and the traffic barrier actions have yet to be developed.

### **5.1 Hydrology**

#### **5.1.1 Environmental Consequences**

##### **Significance Threshold**

As stated in 2015, impacts would be considered significant if the alternative results in:

- Substantial change to base flow characteristics such as surface water elevation, flow velocity, channel capacity, and channel configuration.

**Effects Analysis**

2017 BNSF Bridge Design Alternative (Alternative 1)

Increasing the easement and construction access would temporarily result in increased area of compacted soil and therefore potential to increase runoff. To address this possibility, a Stormwater Pollution Prevention Plan (SWPPP) and associated BMPs such as use of silt curtains will be prepared and implemented to control runoff during construction. Moreover, the slope of the expanded easement area is gentle, which keeps any surface runoff velocity low and therefore allows time for runoff to infiltrate before reaching the stream. Where possible expanded easement areas are approximately one hundred feet from the riparian vegetation, which provides sufficient distance for any increase in runoff to infiltrate into the soil before reaching the river. The temporary access road will be placed as far as possible from riparian vegetation and will attempt to minimize removal of mature trees and impacts to active golf course playing areas. Temporary construction areas will also be revegetated once construction is complete. Revegetation will include golf course planting as well as native upland planting as appropriate.

The proposed changes in pier design would affect low flow water velocity and depth to a very small degree. A HEC-RAS 1D model was built to estimate the effects of the design changes. The results show that changes to velocity and depth are very minor. The increase in water velocity due to the BNSF bridge proposed re-design is sustained for approximately 710 feet. The largest increase in velocity during normal, non-storm flows is 0.3 cubic feet per second (cfs)—from 4.3 cfs under the 2015 design to 4.6 under the 2017 design. Average velocity and maximum channel depth, over a range of flow rates, are presented in [Table 5.1](#) below. No substantial changes to water surface elevation, channel capacity, or channel configuration are expected as a result of changing the pier design.

**Table 5.1 Change in Velocity and Depth at BNSF Bridge due to change in BNSF Bridge Design**

			Direct Effects to Ave. Velocity (ft./sec)				
Flow (cfs)	Annual Probability of Occurrence	At BNSF Bridge Face	Existing Condition	2015 SEA Design	<b>2017 SEA Design</b>	2017-2015	2017-Existing
300	Greater than 50%	At upstream side of bridge face	2.9	2.8	2.9	0.1	0
		At downstream side of bridge face	3.8	4.3	4.6	0.3	0.8
3200	50%	u/s	5.4	5.8	6.1	0.3	0.7
		d/s	5.2	6	6.3	0.3	1.1
6000	20%	u/s	5	5.8	6	0.2	1
		d/s	4.9	6	6.2	0.2	1.3
11000	10%	u/s	5.1	6.4	6.7	0.3	1.6
		d/s	5	6.3	6.5	0.2	1.5

Flow (cfs)	Annual Probability of Occurrence	BNSF Bridge Face	Direct Effects to Max. Channel Depth (ft.)				
			Existing Condition	2015 SEA Design	2017 SEA Design	2017-2015	2017-Existing
300	Greater than 50%	u/s	2.6	2.6	2.6	0	0
		d/s	2.3	2.3	2.2	-0.1	-0.1
3200	50%	u/s	8.9	8.9	8.9	0	0
		d/s	8.8	8.7	8.7	0	-0.1
6000	20%	u/s	12.4	12.3	12.3	0	-0.1
		d/s	12.3	12.1	12	-0.1	-0.3
11000	10%	u/s	16.7	16.6	16.6	0	-0.1
		d/s	16.7	16.5	16.4	-0.1	-0.3

No Federal Action Alternative (Alternative 2)

Since the no action alternative is the preferred alternative from Corps 2015, the potential impacts associated with those project features are disclosed in Corps 2015, and refined in the above analysis.

**5.1.2 Environmental Commitments**

All environmental commitments described in Corps 2015 are still valid and will be adhered to.

**5.1.3 Summary of Significance Thresholds Related to Proposed Alternatives**

The proposed alternatives would have no significant impacts on hydrology, based on the following:

- Proposed alternatives would not substantially change base flow characteristics such as water surface elevation, flow velocity, channel capacity, and channel configuration.

**5.2 Groundwater**

**5.2.1 Environmental Consequences**

**Significance Threshold**

As stated in 2015, impacts would be considered significant if the alternative:

- Substantially reduces the ability to recharge the underlying aquifer, or causes substantial groundwater contamination or substantial groundwater depletion.

**Effects Analysis**

2017 BNSF Bridge Design Alternative (Alternative 1)

Expanding impermeable surface reduces the ability to recharge the underlying aquifer. The increase in impermeable surface between the 2015 design and the 2017 design is not significant (Table 5.2). When taken in context of the total impermeable surface area in the watershed, the effect of increasing impermeable surface by 2.28 acres is not measurable.

**Table 5.2 . Impermeable Surface Comparison Between the proposed 2015 and the 2017 designs.**

	2015 [acres]	2017 [acres]	2017-2015 [acres]
Impermeable surface	2.78	5.06	2.28

Change to the methods for constructing the piers from sheetpile barrier to diaphragm wall involves use of the material bentonite. Bentonite is a non-toxic, naturally occurring clay used as a hydraulic barrier. The purpose of the bentonite is to prevent groundwater intrusion into the subsurface work area and to prevent the excavation pit from collapsing during construction. If the excavation pit walls were to collapse during construction, turbidity in the stream could be extremely high. Use of bentonite would mitigate the risk of excavation pit collapse. Given the coarse substrate at the site, bentonite is superior to sheetpile at preventing groundwater intrusion. Bentonite would also shield groundwater from other potential pollutants during construction. The change in construction method from sheetpile to diaphragm wall would not affect groundwater quality.

No Federal Action Alternative (Alternative 2)

Since the no action alternative is the preferred alternative from Corps 2015, the potential impacts associated with that feature are disclosed in Corps 2015.

**5.2.2 Environmental Commitments**

All environmental commitments described in Corps 2015 are still valid and will be adhered to.

**5.2.3 Summary of Significance Thresholds Related to Proposed Alternatives**

The proposed alternatives would have no significant impacts on groundwater, based on the following:

- Proposed alternatives would not substantially reduce the ability to recharge the underlying aquifer, cause substantial groundwater contamination, or cause substantial groundwater depletion. Groundwater encountered during construction would be pumped back into the active river channel or elsewhere in the floodplain.

**5.3 Surface Water Quality**

**5.3.1 Environmental Consequences**

**Significance Threshold**

As stated in 2015, impacts would be considered significant if the alternative results in:

- Substantial increases in the rate or amount of surface runoff resulting in flooding on-site or off-site, or contributing runoff water that would exceed the capacity of an existing or planned storm water drainage system;
- An increase in the demand for surface water in areas with existing shortages; and/or
- Long-term violation of RWQCB water quality standards or objectives or impairment of beneficial uses of water.

**Effects Analysis**

2017 BNSF Bridge Design Alternative (Alternative 1)

Expansion of impermeable surface, permanent compacted areas, and permanent vegetation removal permanently increases runoff and the transport of sediment and any other contaminants in the flow path. The 2017 design would increase the magnitude of permanent impacts by 2.28 acres and of temporary impacts by 6.8 acres (Table 5.3).

**Table 5.3 Temporary and Permanent Impacts Comparison Between 2015 and 2017 designs.**

Year	2015	2017	2017-2015
Temporary Impacts (Easements)	23.1	29.6	6.5
Permanent Impacts (Impermeable surfaces)	2.8	5.1	2.3

However, the increase in disturbed and impermeable area relative to the total area of disturbed and impermeable surface in the watershed is so small that the effect to pollutant transport would be immeasurable. As described in the Hydrology section, HEC-RAS 1D modelling results show that expansion of the pier walls would cause only very small increases in velocities and therefore additional suspended sediment is expected to be minimal.

Moreover, there are several design criteria and environmental commitments in place to protect against negative effects to water quality. They are as follows:

- Human waste, and any other pollutant or hazardous material, discovered during constructions would be removed from the site.
- Temporary impact areas would be actively restored through vegetation plantings after construction.
- Permanent impact areas with drains, such as road extensions, would be designed to avoid or minimize the potential of the drain to increase fine grained sediment delivery to the stream.
- As stated in the Corps 2015, the contractor would be required to develop and implement a SWPPP, which would reduce impacts to water quality during project construction.
- Sound walls are designed so as not to block streamflow and therefore avoid causing local scour or breaking during a storm event and collide with downstream infrastructure. The walls would be designed to be easily removed prior to a forecasted storm event.
- Moving the Mobile Home Levee Access Road alignment away from B Canyon reduces impacts to water quality by increasing the distance between impermeable surface and the intermittent waterway. Water runs off impermeable surface, collecting contaminants along the flow path. The increase in distance from the channel increases the potential for the water to infiltrate into the soil and deposit contaminants before reaching the water body.



- Increasing the distance between road and channel also reduces the velocity of any runoff from the road, thereby reducing the potential for the water to erode soil and contribute to turbidity as well as reducing the potential for erosion-related damage to infrastructure.
- Construction methods include use of bentonite to facilitate isolation of the work area from water. Bentonite is a non-toxic, naturally occurring clay used as a hydraulic barrier. Bentonite would reduce the risk of excavation trench collapse and subsequent high spikes in turbidity. The system for constructing a diaphragm wall includes removing the bentonite from the site as the concrete is being laid.

#### No Federal Action Alternative (Alternative 2)

Because the no action alternative is the Corps 2015 preferred alternative, the potential impacts associated with that feature are disclosed in Corps 2015.

### **5.3.2 Environmental Commitments**

All environmental commitments described in Corps 2015 are still valid and will be adhered to. In addition, the Corps is working with sponsors to identify and utilize design specifications that avoid or minimize the potential for west-side permanent features to increase sediment delivery to the channel.

### **5.3.3 Summary of Significance Thresholds Related to Proposed Alternatives**

The proposed alternatives would have no significant impacts on surface water, based on the following:

- Proposed alternatives would not substantially increase the rate or amount of surface runoff and cause flooding on-site or off-site, or contribute runoff water that would exceed the capacity of an existing or planned storm water drainage system.
- Proposed alternatives would not increase demand for surface water in areas with existing shortages.
- Proposed alternatives would not result in long-term violations of RWQCB water quality standards or objectives or cause impairment of beneficial uses.

## **5.4 Biological Resources**

A description and analysis of the affected environment and biological resources that occur within Reach 9 BNSF Bridge and its vicinity, including descriptions of common plant communities, wildlife, and special-status species that have either been observed or have the potential to occur in Reach 9 of the SAR was originally provided in the 2001 EIS/EIR and, more recently, in Corps 2015 and the 2015 Biological Opinion. Biological resources are addressed more specifically as follows to provide an updated accounting of project effects since Corps 2015 was drafted.

### 5.4.1 Environmental Consequences

#### Impacts Analyses for 2017 BNSF bridge Improvements (Alternative 1, Preferred Alternative)

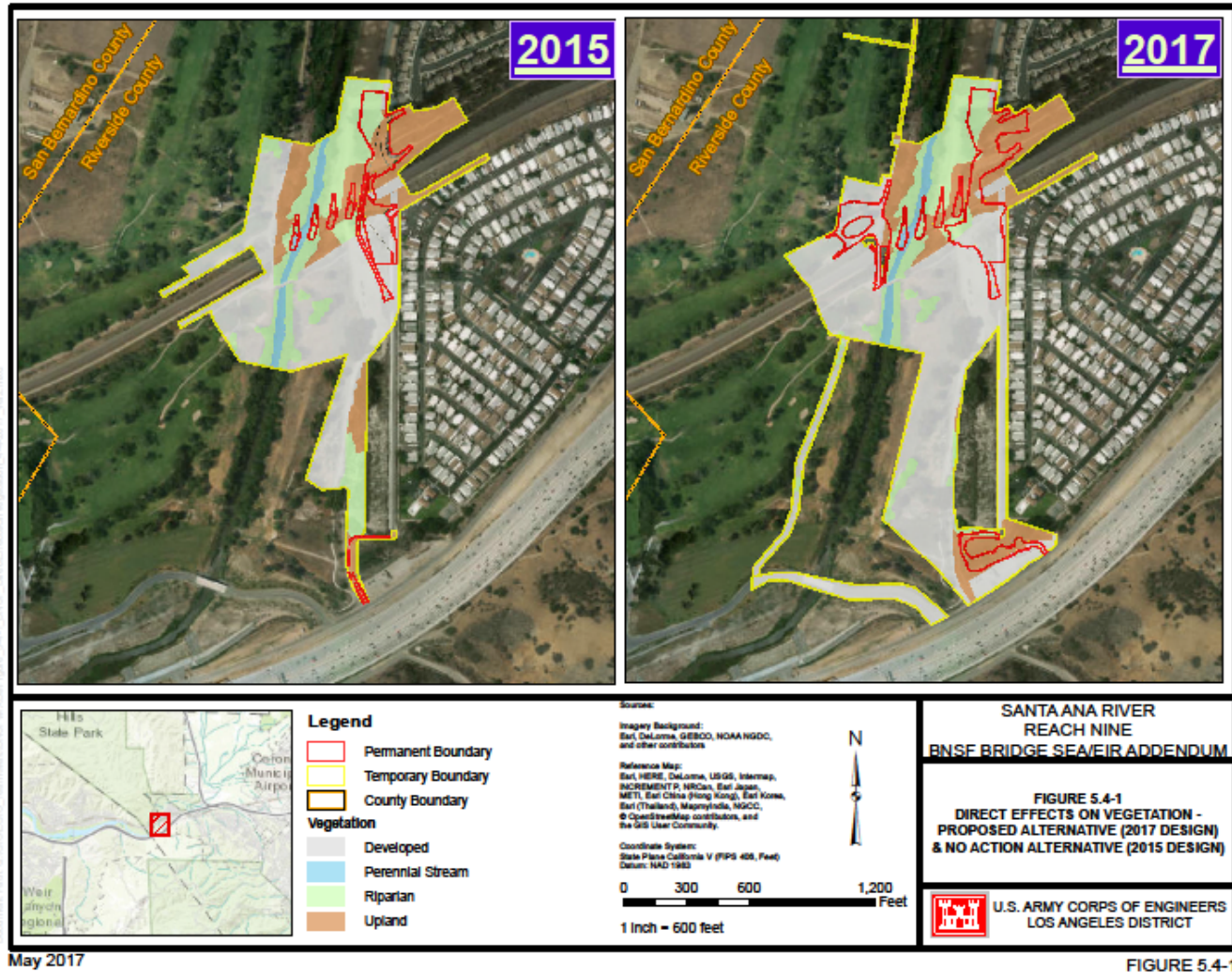
Significance thresholds and impact categories to the biological resources that would occur if the proposed project alternatives were implemented at the Reach 9 BNSF Bridge are fully described in Corps 2015 and the 2015 Biological Opinion. Biological resources may be either directly or indirectly impacted by the project. Direct and indirect impacts may be either permanent or temporary in nature. Project-related impacts specific to the Santa Ana sucker, least Bell's vireo, and general wildlife movement have previously been analyzed in Corps 2015 and the 2015 Biological Opinion.

Because expansion of the 2015 BNSF temporary construction easement, realignment of the mobile home levee access road, and expansion of the bridge piers could result in additional temporary and permanent impacts to vegetation and wildlife, the effects of this additional work are addressed more specifically as follows to provide an updated accounting of any additional impacts to biological resources. For comparison purposes, the 2015 permanent and temporary impacts are shown in separate figures alongside those for 2017. Refinements to vegetation mapping to more accurately reflect vegetation communities at the time analysis occurred (i.e., 2015 and 2017) which resulted in slightly different acre counts for the No Action Alternative as compared to those presented in Corps 2015.

#### Vegetation Communities

Permanent and temporary impacts associated with implementation of the 2017 BNSF Bridge Preferred Alternative 1 are presented in [Figure 5.4-1](#) and [Table 5.4-1](#) below. Within the BNSF Bridge protection action area, the Preferred Alternative would entail 5.06 acres of permanent impacts and 29.86 acres of temporary impacts associated with the TCE/staging area. This is an overall net increase of 2.28 acres of permanent impacts and 6.69 acres of temporary impacts from the 2015 design plan. A comparison of the total impacts by vegetation type between 2015 and 2017 are presented in [Table 5.4-2](#). Note the decrease in total impacts to riparian habitat acreage expected under the 2017 project design.

Figure 5.4-1 Permanent and temporary impacts to vegetation



**Table 5.4-1 BNSF Bridge Pier and Abutment Protection Alternative: Comparison of Permanent and Temporary Impacts between 2015 and 2017.**

<i>Vegetation Communities and Classifications</i>	2015 Permanent Impacts (acres)	2017 Permanent Impacts (acres)	Net Change (+/-) Permanent Impacts (acres)	2015 Temporary Impacts (acres)	2017 Temporary Impacts (acres)	Net Change (+/-) Temporary Impacts (acres)
<b>Perennial Stream</b>	<b>0.06</b>	<b>0.07</b>	<b>+ 0.01</b>	<b>0.94</b>	<b>0.84</b>	<b>- 0.10</b>
<b>Riparian</b>	<b>0.69</b>	<b>0.92</b>	<b>+ 0.23</b>	<b>5.41</b>	<b>4.49</b>	<b>- 0.92</b>
<b>Upland</b>	<b>1.13</b>	<b>2.05</b>	<b>+ 0.92</b>	<b>5.05</b>	<b>5.27</b>	<b>+ 0.22</b>
<b>Developed</b>	<b>0.89</b>	<b>2.02</b>	<b>+ 1.13</b>	<b>11.73</b>	<b>18.98</b>	<b>+ 7.25</b>
<b>Total</b>	<b>2.78</b>	<b>5.06</b>	<b>+ 2.28</b>	<b>23.13</b>	<b>29.58</b>	<b>+ 6.45</b>

*Note: Acreage impacts reported in the 2015 Final SEA/EIR (Corps 2015) Addendum may differ than those reported here due to improvements in GIS mapping. This includes some re-classification (e.g. upland to developed areas) and correction to GIS digitization on the 2015 base map.*

**Table 5.4-2 Comparison of Total Impacts (permanent and temporary combined) between 2015 and 2017 by Vegetation Type**

<i>Vegetation Communities and Classifications</i>	Total 2015 Impact By Habitat Type	Total 2017 Impact By Habitat Type
<b>Perennial Stream</b>	<b>1.00</b>	<b>0.91</b>
<b>Riparian</b>	<b>6.10</b>	<b>5.41</b>
<b>Upland</b>	<b>6.18</b>	<b>7.32</b>
<b>Developed</b>	<b>12.62</b>	<b>21.00</b>

*Permanent impacts.* Under the BNSF Bridge Preferred Alternative 1, none of the new proposed bridge and bank protection features will replace existing features and, as a result, the full extent of each permanent feature contributes to the total permanent impacts calculated for this measure. Changes to permanent impacts under the BNSF Bridge improvements since 2015 include extended pier nose protection measures (Pier Nos. 1-6) and additional eastern bank protection measures (Figure 4.4-1).

Cumulative permanent project impacts increased by a total of 2.28 acres, from 2.78 acres as proposed in 2015 to 5.06 acres as proposed in 2017 (Table 5.4-1). Permanent impacts associated with the 2017 BNSF Bridge Preferred Alternative are primarily to the Upland and Developed land use classifications (includes Ornamental/Landscape and Disturbed or Barren) (see Figure 5.4-1). Changes to permanent impacts to perennial stream habitat are negligible from 2015 to 2017, with a very slight increase in 2017 (0.01 acres) mainly due to construction of the larger bridge pier extensions (see section 4.1.1).

*Temporary impacts.* Temporary impacts were calculated by subtracting permanent impact acreages from total affected acreages. Staging will occur throughout the TCE. Cumulative temporary project impacts increased by a total of 6.45 acres, from 23.13 acres as proposed in 2015 to 29.58 acres as proposed in 2017 (see Table 5.4-1). As in 2015, temporary impacts associated with the BNSF Bridge Preferred Alternative occur primarily to the Developed classification, which includes existing roadways and portions of the golf course (see Table 5.4-1). Although total temporary impacts to upland areas increased by 0.22 acres with

the 2017 design proposal, temporary impacts to perennial stream and riparian areas decreased by 0.10 acres and 0.92 acres, respectively, with the proposed 2017 project design.

The effects of temporary impacts are expected to be similar to those described in Corps 2015 and would occur with the removal of vegetation and during ground-disturbing construction activities, including grading, excavating, and dewatering, and from increased human presence, vehicle traffic, and noise. Mitigation for all impacts to riparian, upland and perennial habitat will continue to be implemented as described in Corps 2015, and summarized below. As such, the proposed modifications are expected to have no additional effect on plant communities beyond those described in Corps 2015.

### ***Mitigation Measures for Impacts to Vegetation and Other Natural Communities***

As presented in Corps 2015 and in section 6.0 of this document ([Table 6.1](#)), a series of mitigation measures would be implemented for Reach 9 elements of the SARMP to compensate for impacts to vegetation and other natural communities. These include on-site habitat restoration and off-site measures (i.e. invasive vegetation removal) to mitigate for temporary and permanent effects to aquatic, riparian, and upland habitats. These measures would reduce the effects of the proposed action by reducing impacts and fully restoring native plant and streambed communities on-site after construction is complete, and by providing adequate compensation by restoring native vegetation and aquatic habitat upstream of the project area. A full list of approved on-site and off-site mitigation measures and environmental commitments for impacts to vegetation can be found in Chapter 6 of Corps 2015. Adherence to identified mitigation measures and environmental commitments would result in no effect to vegetation communities beyond what was previously described in Corps 2015.

In addition, there is a very minor decrease in impact to perennial stream habitat, and any post-construction restored streambed would retain similar or improved habitat characteristics for Santa Ana sucker. The proposed translocations of captive-bred sucker and other measures proposed in Corps 2015 are still considered sufficient to address effects of the modified project description.

Mitigation requirements for effects to vegetation, based on the anticipated permanent and temporary impacts noted in [Table 5.4-1](#) and on the ratios identified in Corps 2015 and summarized below, are presented in [Table 5.4-3](#) below.

In compliance with the Amendment to the 2012 Biological Opinion and as discussed in Chapter 5.5.2.1 of Corps 2015, mitigation measure BR-18 requires the Corps and non-federal sponsors to remove arundo (and other non-native, invasive vegetation) from the watershed and restore riparian habitat to compensate for permanent and temporary impacts to vegetation communities. This will equate to three (3) acres of riverine habitat for each acre of wetland/riparian habitat temporarily disturbed by the project impact, as well as for each acre of non-riparian floodplain habitat permanently affected. In addition, five (5) acres will be restored for each acre of permanent impact to wetland/riparian habitat. The restoration conducted for permanent impacts will be maintained for the life of the project. The 3:1 mitigation requirement for temporary impacts assumes that the restored (mitigation) area will only be actively maintained for 5 years. The Corps also has the option of compensating for temporary impacts to riparian/wetland habitat by restoring 1 acre in an off-site location for each acre affected (1:1), and maintaining the restored area in perpetuity.

Mitigation requirements for the BNSF Bridge Preferred Alternative, based on the anticipated permanent and temporary impacts noted in Table 5.4-1, are presented in Table 5.4-3 below. Mitigation for the Preferred Alternative would include the removal of 15.24 acres of non-native, invasive vegetation if it is determined that requirements of a 1:1 ratio can be met, or 24.22 acres if a 3:1 ratio is selected. Mitigation would be implemented prior to or during construction of the BNSF feature. It is still anticipated that the mitigation contract awarded in 2013 for 215 acres of non-native removal/habitat restoration is sufficient to cover these additional anticipated impacts. However, the acreage of actual disturbance will be documented and compared to acreage restored; any shortfalls will be addressed through additional mitigation.

**Table 5.4-3 BNSF Bridge Pier and Abutment Protection Alternative (Preferred Alternative) Mitigation Requirements (2017 design).**

<i>Vegetation Communities and Classifications</i>	<b>Permanent Impacts (ac)</b>	<b>Mitigation acreage</b>	<b>Temporary Impacts (ac)</b>	<b>Mitigation acreage</b>
Riparian <sup>1</sup>	0.92	4.60	4.49	4.49/13.47
Upland <sup>2</sup>	2.05	6.15	5.27	NA
Developed	2.02	NA	18.98	NA
Total Non-water Vegetation Mitigation		10.75		4.49/13.47
<b>Total Mitigation Required for Vegetation Using 1:1 Ratio for All Impacts =15.24 acres</b>				
<b>Total Mitigation Required for Vegetation Using 3:1 Ratio for All Impacts = 24.22 acres</b>				

<sup>1</sup> Mitigation acreages based on 5:1 ratio for permanent impacts and 1:1/3:1 for temporary impacts.

<sup>2</sup> Mitigation acreages based on 3:1 ratio for permanent impacts. Temporary impacted areas will be restored on-site.

**Special-Status Plant Species**

Potential impacts to special-status plant species from construction of the BNSF bridge are discussed in Corps 2015. No additional impacts to special-status plant species are expected from the project modifications described in this document. Based on previous comprehensive surveys of Reach 9, as well as recent visual observations, no special status plant species are known or likely to occur within the proposed expanded TCE area of the BNSF bridge project.

**Wildlife**

Wildlife species likely to occur within the proposed expanded TCE would be the same or similar to those found in the rest of the project area. Potential effects to specific wildlife species from construction of the BNSF bridge are discussed in Corp 2015.

**Special-Status Wildlife Species**

***Federal and State Listed Species and Designated Critical Habitat***

As presented in Corps 2015, the Reach 9 BNSF Bridge protection measure area may potentially affect three species special-status wildlife and/or habitat for these species. These include the federally threatened

Santa Ana sucker (*Catostomus santaanae*), the federally and State-endangered least Bell's vireo (*Vireo bellii pusillus*), and the federally endangered coastal California gnatcatcher (*Polioptila californica californica*).

Direct and indirect effects to these species from the BNSF Bridge Preferred Alternative would be essentially the same as those addressed and described in Corps 2015 and the 2015 Biological Opinion. Applicable mitigation measures and environmental commitments identified in Corps 2015 and the 2015 Biological Opinion will continue to be implemented and applied through the life of this project. The full list of mitigation measures and environmental commitments to be implemented for BNSF Bridge can be found in Chapter 6 of Corps 2015 and the 2015 Biological Opinion attached to that document. The potential effects of the proposed additional BNSF modifications on sucker, vireo, and gnatcatcher are discussed in turn below.

### ***Santa Ana Sucker***

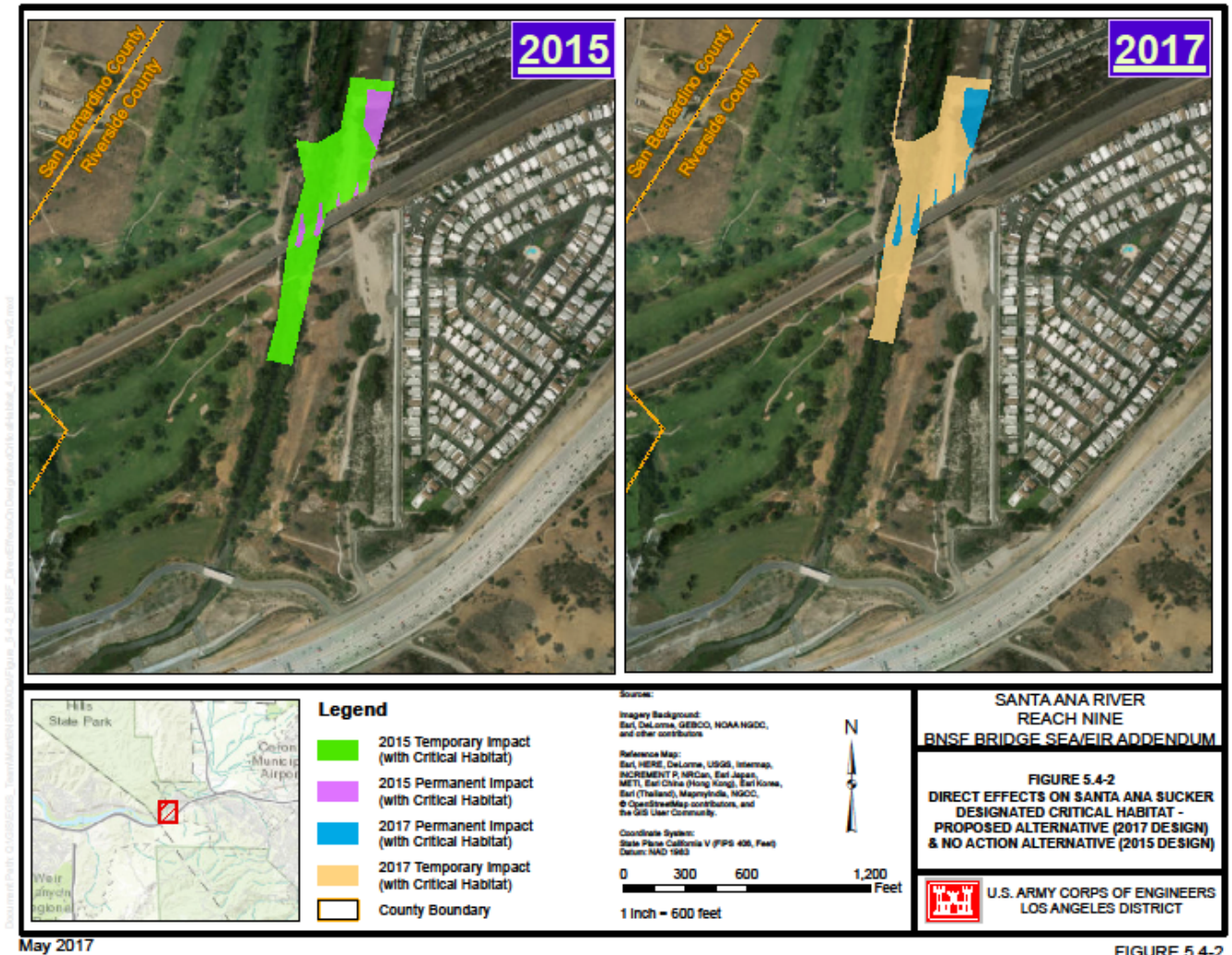
Although Santa Ana sucker have rarely been found within Reach 9 in recent years, there are primary and constituent elements (PCEs) of the species' designated critical habitat extant within the BNSF Bridge Preferred Alternative project area (Figure 5.4.2).

The proposed modifications to the construction design of the BNSF Bridge Preferred Alternative would result in an increase in permanent and temporary impacts to sucker critical habitat. A total of 0.87 acres of sucker critical habitat would be permanently impacted by construction and 5.56 acres of this habitat would be temporarily impacted during implementation (Figure 5.4-2). Designated sucker critical habitat includes the perennial stream channel, high flow channel, and some areas of the floodplain (Figure 5.4-2). Temporarily affected streambed habitat will be restored, and temporarily affected vegetated areas will be restored with native riparian or upland scrub vegetation as appropriate.

Although 0.01 acres of additional permanent impacts to perennial stream habitat will occur with the proposed project modifications, temporary impacts to perennial stream habitat would be reduced, and post-construction restored streambed would retain similar or improved habitat characteristics for Santa Ana sucker. The proposed translocations and other measures proposed in Corps 2015 are still considered sufficient to address effects of the modified project description. Therefore, effects to sucker and sucker critical habitat associated with the modified project are expected to be the same as those identified and disclosed in Corps 2015 and the 2015 Biological Opinion. Moreover, a more detailed hydrologic effects analysis of the new bridge improvement features (see Section 5.0; Tables 5.1-5.3) showed that the proposed additional work would not substantially change the hydrology of the site (i.e., result in a change in base flow characteristics such as water surface elevation, flow velocity, or surface water quality (i.e., increased rates or amount of surface runoff)).

As described in Corps 2015, in addition to on-site habitat restoration measures, off-site mitigation to either translocate suckers to expand the area of occupied habitat or perform additional gravel augmentation within Reach 9 would occur prior to construction of BNSF Bridge improvements. The Corps has been coordinating the timing and details of these and other mitigation efforts with the U.S. Fish and Wildlife Service and other agencies, and a Plan of Action for translocation and in-stream habitat restoration is being developed.

Figure 5.4-2 Direct Effects on Designated Critical Habitat (for Santa Ana sucker) within the BNSF project Area.





### ***Least Bell's Vireo***

Although designated critical habitat for the least Bell's vireo does not occur within Reach 9, the area encompassing the proposed BNSF project does contain known (i.e., previously identified) least Bell's vireo territories. Vireo are highly likely to forage and are known to nest within riparian habitat in this area.

Potential effects to the vireo associated with the project were described previously in the 2001 SEIS/EIR, and 2001 BO and its 2012, 2013 and 2015 amendments. In order to determine if the 2017 expanded construction easement would have additional effects beyond those previously described, an analysis was performed using vireo survey data collected by the Santa Ana Watershed Associated (SAWA) during the 2014 and 2016 nesting seasons. The 2014 survey data were overlaid on the proposed TCE boundary from 2015 (as this is what was used in the 2015 SEA/EIR Addendum and Biological Opinion) and compared to the 2016 survey data (the most recent available) overlaid on the proposed 2017 TCE boundary (Figure 5.4-3). As was done in 2015, vireo effects analysis incorporated a 200-foot buffer on the TCE (500-foot buffer for locations where sheet pile was driven) to ensure potential effects from construction related noise were considered and mitigated or avoided by strategic placement of sound barrier fencing.

In Corps 2015, two (2) vireo territories were observed to be fully contained within the 2015 TCE and two (2) were located within the Area of Potential Effect (APE), a collective area of influence that includes nests/pairs occurring within a 200-foot buffer around the TCE plus (left panel, Figure 5.4-3) three other territories were along the edge of the APE. In 2016, three additional (i.e., new) vireo territories became established in or adjacent to the 2017 TCE, or within the APE (right panel, Figure 5.4-3). One of these territories is within an area of B Canyon that the Corps has helped to restore through removal of non-native vegetation and selective planting of native habitat. However, through proposed adjustments to the TCE that will reduce direct effects to riparian habitat as well as through use of sound walls and noise monitoring, it is anticipated that direct/indirect effects would be limited to a total of five territories within this project area. As the overall vireo population in Reach 9 has also increased from 112 pairs documented in the 2015 SEA to 115 pairs documented in the 2016 surveys, the percentage of pairs that may be affected by the project (as analyzed in the 2015 BO) is not expected to increase. Moreover, the fact that pile driving is no longer a proposed method of construction should also result in a reduced APE. If sound walls are not effective and indirect effects occur to adjacent nesting birds, then additional habitat restoration to compensate for increased noise and vibration during construction would occur in compliance with Corps 2015 and the 2015 Biological Opinion requirements. In that document, "take limits" for vireo were defined in terms of acres of vireo habitat impacted (directly through vegetation removal, or indirectly through noise or vibration effects). Design modifications to the BNSF feature would result in 0.9 acres of reduced temporary impact to riparian habitat compared to the 2015 footprint.

As described in Corps 2015, a series of mitigation measures and environmental commitments would be implemented during construction of the currently proposed features to compensate for or avoid/minimize effects to least Bell's vireo. For example, clearing of the TCE will occur outside of the vireo nesting season; therefore, no direct loss of occupied vireo habitat or nests would occur. In addition, sound levels will be monitored and sound walls will be constructed to reduce indirect impacts to birds outside of the construction area, and additional mitigation will be accomplished for any riparian habitat that is exposed to elevated sound levels above thresholds established in Corps 2015 and the 2015 Biological Opinion. A full

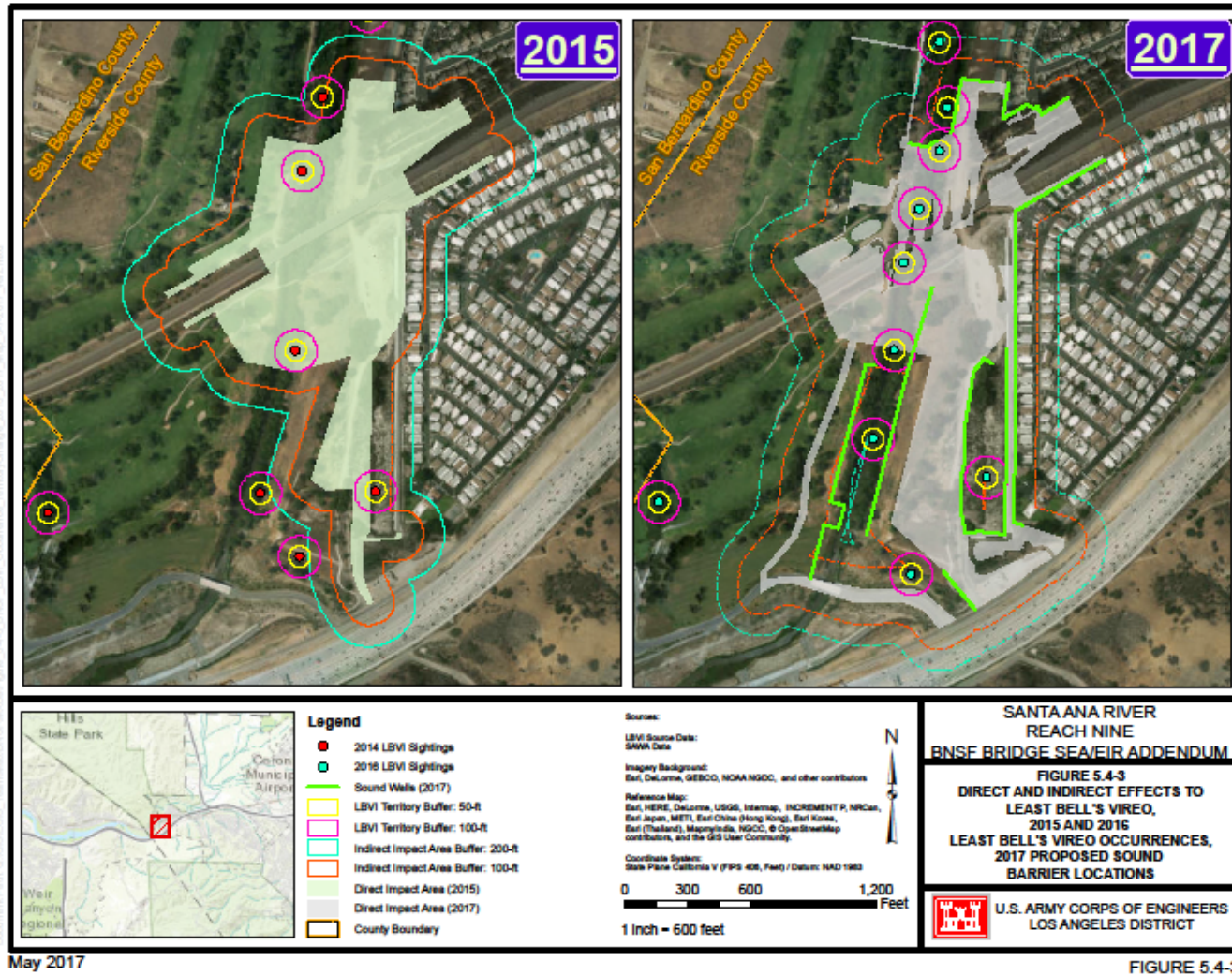
list of mitigation measures and associated environmental commitments can be found in Chapter 6 of this document and in Corps 2015.

With the implementation of these avoidance and minimization measures, effects to least Bell's vireo are expected to be the same as those identified in Corps 2015 and the 2015 Biological Opinion. Designated critical habitat for the species does not occur within the project area, so there will be no adverse modifications to designated critical habitat for the species.

***Coastal California Gnatcatcher***

Because the coastal California gnatcatcher has been observed in portions of Reach 9, upland vegetation within the BNSF project area has the potential to be utilized by gnatcatchers for nesting or foraging, although the suitability for nesting is considered poor. Standardized protocol surveys conducted in Reach 9 in 2015 did not identify the presence of gnatcatchers within of the BNSF bridge protection measure area. In 2016, incidental observations of gnatcatchers were made near Coal Canyon and hillsides adjacent to Reach 9 during focused surveys for least Bell's vireo (SAWA 2016). However, no gnatcatchers were observed within the expanded 2017 TCE or the associated APE. The Corps will conduct protocol surveys for coastal California gnatcatcher in 2017 and will monitor during construction to verify that the "Not Likely to Adversely Affect" determination from the 2015 Biological Opinion is still valid.

Figure 5.4-3 Comparison of 2015 and 2016 Least Bell's Vireo Occurrences, showing (in green) the location of sound barriers (Reach 9, BNSF)



### ***Wildlife Movement.***

Wildlife corridors and movement patterns within the proposed TCE expansion would be similar to those identified for the rest of the project area as described in in the 2011 SEA/EIR Addendum for Reach 9, Phase 2A, the 2009 Final SEA/EIR for Reach 9, Phase 2B, and Corps 2015. Wildlife movement is not expected to be impacted beyond what was analyzed and disclosed in these documents.

As described in the 2015 Biological Opinion, the BNSF Bridge project has the potential to impact wildlife crossing under the bridge and to disrupt wildlife movement through the B Canyon undercrossing under SR-91 (Figure 5.4-4). For this reason, an existing temporary access road located less than 50 feet from the B Canyon undercrossing will be removed and revegetated. Permanent access for O&M of existing structures will be provided through creation of a new permanent access road that is located at least 200 feet from the entrance to the B Canyon undercrossing. Considering that the permanent access road will be used only for periodic access for O&M, it is not anticipated that it will result in substantial disruption of wildlife movement.

The proposed expanded TCE is immediately contiguous with existing construction and does not overlap or block other corridors that were not analyzed in Corps 2015, including culverts that could be used for wildlife passage. Construction will continue to occur during daylight hours, whereas most wildlife movement occurs at night. The proposed temporary expansion and will not further constrict the width of the floodplain. Native vegetation will be restored after construction is complete.

### **No Federal Action Alternative (Alternative 2)**

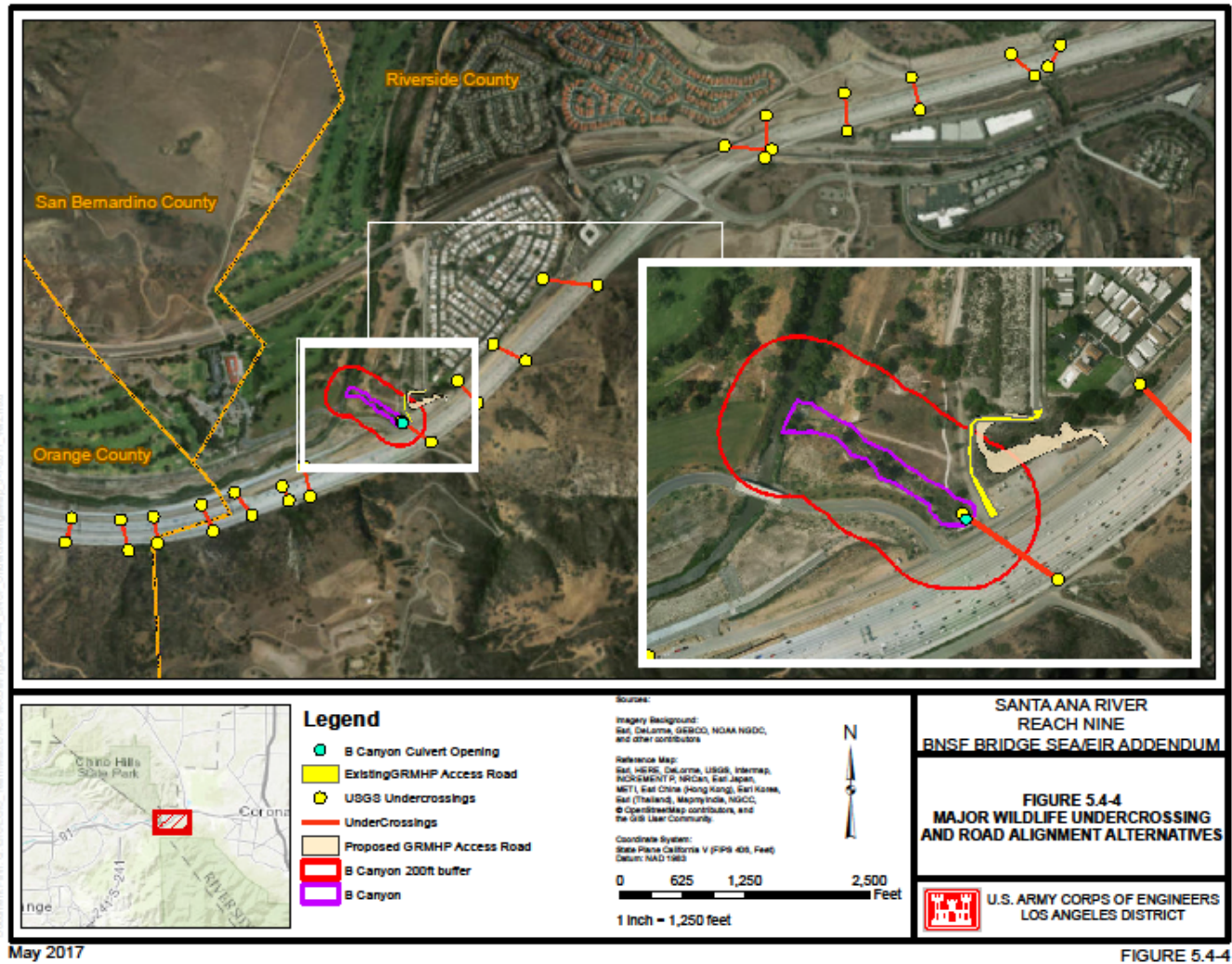
Since the no action alternative is the preferred alternative from Corps 2015, all of the potential impacts associated with that feature are disclosed in Corps 2015.

### **5.4.2 Environmental Commitments**

A series of mitigation measures and environmental commitments that would be implemented to avoid, minimize and compensate for impacts to the biological resources associated with SARMP, including BNSF bridge improvements, can be found in Chapter 6 of the Corps 2015 and the 2015 Biological Opinion. This includes the approved mitigation measures from the 2001 Final SEIS/SEIR and commitments from the 2011 Final SEA/EIR Addendum for the Reach 9, Phase 2A project and 2013 Final SEA/EIR Addendum for the Reach 9, Phase 3 project as they pertain to vegetation and special status wildlife. Implementation of these commitments will ensure that construction of the BNSF Bridge improvements has no increased effect on the biological resources beyond those addressed in Corps 2015 and the 2015 Biological Opinion.

In addition, specific conservation measures for the Santa Ana sucker that include elements of perennial stream restoration for each acre of that is temporarily disturbed during construction-related activities, scour and channel complexity enhancement, and a translocation plan for reintroduction of captively -bred Santa Ana sucker are also addressed in in Corps 2015 and the 2015 Biological Opinion. Corps 2015 and the 2015 Biological Opinion also addresses general conservation measures to maintain wildlife movement through the Action Area, implemented as part of project construction, operations, and maintenance.

Figure 5.4-4 Wildlife Undercrossing Map. The B canyon undercrossing near the BNSF bridge is detailed in the inset



### 5.4.3 Summary of Significance Thresholds Related to Proposed Alternatives

Implementation of the proposed alternatives would have no significant impacts on biological resources beyond those described in Corps 2015 based on the following:

- Although proposed alternatives would result in adverse effects on federally listed species, as well as the loss or disturbance of important habitat for those species, impacts will be fully mitigated on and off-site as described in Corps 2015 and the 2015 Biological Opinion. Temporary construction easements will be re-vegetated, and additional habitat restoration will occur off-site to mitigate for temporal losses and well as permanent impacts. Therefore, effects to listed species will be temporary.
- As a result of this mitigation, proposed alternatives would not result in a net loss in habitat value of a sensitive biological habitat or area of special biological significance.
- Proposed alternatives would not impede the movement or migration of fish or wildlife.
- Proposed alternatives would not result in a substantial loss to the population of any native fish, wildlife or vegetation.
- Proposed alternatives would not result in a substantial loss in overall diversity of the ecosystem.

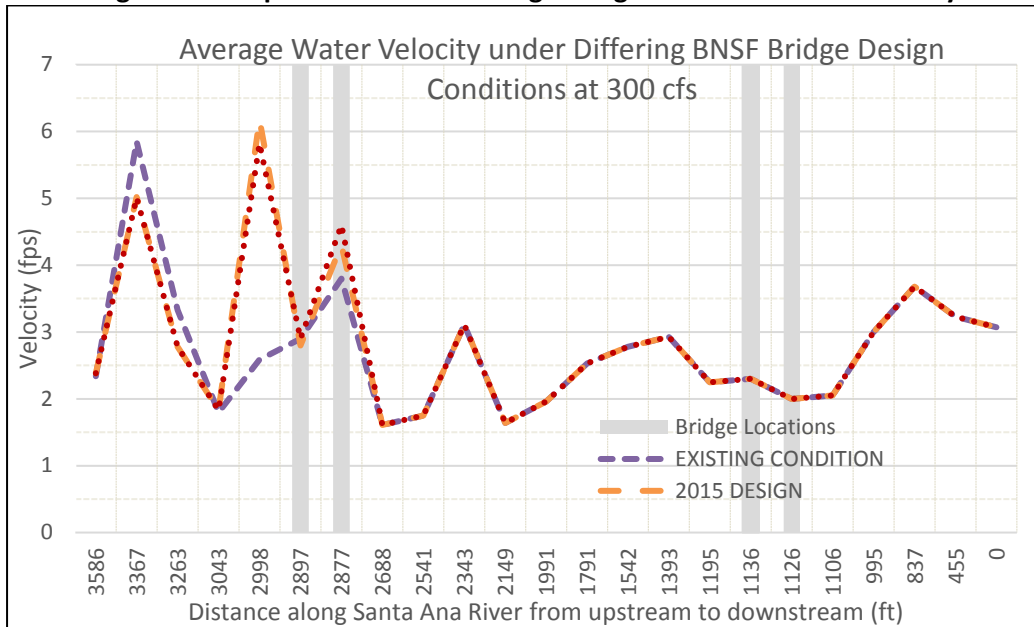
## 5.5 Cumulative Effects

Cumulative environmental effects are most likely to arise when a relationship exists between a proposed and existing action, activity, or project that are expected to occur in a similar location, in a similar time period, and/or involving similar actions. A fairly exhaustive analysis of cumulative impacts and a cumulative list of projects located within approximately 2-miles of the Reach 9 measures is included in Corps 2015. This analysis focused on: (1) the area(s) in which the effects of the proposed project would be felt; (2) the effects that are expected in the area(s) from the proposed project; (3) past, present, and reasonably foreseeable future actions that have or that are expected to have impacts in the same area; (4) the impacts or expected impacts from these other actions; and (5) the overall impact(s) that can be expected if the individual impacts are allowed to accumulate.

### Earth Resources, Water Resources, and Hydrology

As shown in the figure below and discussed in section 5.1, the proposed BNSF bridge design affects water velocity locally and not cumulatively. The increase in water velocity due to the BNSF bridge proposed re-design is sustained for approximately 710 feet. The effect dissipates approximately 1,500 feet upstream of the Phase 2B bridge. Therefore, the BNSF bridge and 2B bridge do not cumulatively effect water velocity.

**Figure 5.5 Proposed 2017 BNSF bridge design Effects on Water Velocity**



Construction activities for the proposed 2017 BNSF design would not result in impacts to earth or water resources, or hydrology above and beyond those determined in the 2001 Final SEIS/EIR and 2015 Reach 9 SEA, which were largely characterized by other flood control projects in and downstream from the Prado Basin.

As mentioned in the introduction, an alternative access road on the west side of the river is being considered, although this element is not included in the current project description as alternative alignments are still being evaluated. The current western access road crosses the railroad tracks and is considered to be unsafe. The alignment and design of the alternative west access road has not yet been determined. Effects to earth and water resources and hydrology resources depend on the details of the alignment and design.

As discussed above in Chapter 5.1 Earth Resources, 5.2 Hydrology, 5.3 Groundwater, and 5.4 Surface Water Quality, implementation the proposed Reach 9 measures would include full compliance with applicable laws and regulations, as well as environmental commitments identified in the 2001 Final SEIS/EIR and in Chapter 6 of this document. As such, potential impacts to earth and water resources and hydrology would be not significant. Earth and water resources and hydrology impacts of the proposed 2017 BNSF design would not singly, or cumulatively, combine with similar impacts of other projects as significant impacts.

Biological Resources

Implementation of the Reach 9 BNSF bridge protection measure analyzed in this SEA/EIR Addendum has the potential to contribute to cumulative biological impacts, although no significant impacts are anticipated. Although proposed mitigation measures and associated environmental commitments would limit impacts to native habitats and species to the greatest extent possible, there is a potential additive effect associated with vegetation removal and ground disturbance when combined with other existing or proposed Reach 9 measures in the vicinity.

In addition to the additional project features described in section 4.0 of this document, two additional actions and/or projects related to the Reach 9 BNSF Bridge are proposed or reasonably anticipated to be implemented in the near future that could have the ability to combine with impacts from the Reach 9 BNSF bridge measures analyzed in this SEA/EIR Addendum (Table 5.5.1).

**Table 5.5 Additional Cumulative Projects in the Reach 9 Measures Activity Area.**

Project Name/Case Number	General Location	Description	Status
<b>Reach 9, BNSF Bridge</b>			
West Bank Access Road (permanent alignment)	Riverside County. Project activities would occur on west bank of SAR, southwest of the BNSF railroad bridge. Site lies between GRGC to the west, and the SAR river channel to the east.	This project would entail construction of a <u>permanent</u> access road on the western side of the river bank. It would provide access for inspection and maintenance of the proposed BNSF improvements located on the west bank of the river, and the survey monuments north of the bridge, and may also be used by emergency vehicles.	Alignment, placement, and further details of this road have yet to be finalized. Alternatives are currently being evaluated.
Fence Installation	Riverside County. Project activities would occur on east bank of SAR, southeast of the BNSF railroad bridge. Site lies between the SAR to the west and the Green River Mobile Home Park (GRMHP) to the east.	Restoration of golf course fencing that had been removed during construction of the Reach 9 Phase 2B feature to accommodate previous embankment protection has been proposed immediately south of the existing bridge and along Green River Road to keep vehicular traffic off of the golf course property.	Alignment, placement and type of openings, and further details of this fence have yet to be finalized.

The environmental commitments as stated in Section 6 of Corps 2015 would reduce impacts of these potential measures and would minimize the addition of any cumulative impacts on biological resources in the vicinity of Reach 9 BNSF bridge. Restored areas are expected to be capable of supporting least Bell’s vireo during future nesting seasons, and aquatic habitats associated with the perennial stream restoration projects related to BNSF bridge and other SARMP features are expected to provide quality habitat for various life history requirements of the Santa Ana sucker. Additionally, wildlife movement will be restored to its full capacity as Reach 9 measures are completed. Impacts to wildlife movement are minimized during construction by limiting work to daylight hours to avoid disturbances when wildlife are most likely to be moving throughout the site and through under-crossings.



## 6 ENVIRONMENTAL COMMITMENTS

A series of mitigation measures and environmental commitments that would be implemented to avoid, minimize and compensate for impacts to the affected environment associated with SARMP, including those specific to BNSF bridge improvements, can be found in Chapter 6 of Corps 2015 and the 2015 Biological Opinion. This includes the approved mitigation measures from the 2001 Final SEIS/SEIR and commitments from the 2011 Final SEA/EIR Addendum for the Reach 9, Phase 2A project and 2013 Final SEA/EIR Addendum for the Reach 9, Phase 3 project. These environmental commitments have been incorporated into the Reach 9 measures for the purpose of minimizing environmental effects to the affected environment. Implementation of these commitments will ensure that construction of the BNSF Bridge improvements has no increased effect on the affected environment beyond those addressed in Corps 2015 and the 2015 Biological Opinion.

The following environmental commitments have been added in 2017:

- In order to avoid additional effects to Vireo, no activities associated with installing the proposed survey monuments would take place during nesting season.
- In order to avoid or minimize the potential for west-side permanent features to increase sediment delivery to the channel, the Corps is working with sponsors to identify specific designs that meet the criterion.

**Table 6.1 Environmental Commitments for Biological Resources from Corps 2015 and 2001 SEIS/SEIR that have been incorporated into the Reach 9 measures.**

ENVIRONMENTAL COMMITMENTS FOR VEGETATION AND HABITAT			
Environmental Commitment No.	Target	Description	Source
BR-18	Vegetation General	In compliance with the 2012 BO Amendment, the Corps and non-federal sponsors will restore (through arundo and other non-native removal) 3 acres of riverine habitat for each acre of wetland/riparian habitat temporarily disturbed by the project impact, as well as for each acre of non-riparian floodplain habitat permanently affected; and shall restore 5 acres for each acre of permanent impact to wetland/riparian habitat. The restoration conducted for permanent impacts will be maintained for the life of the project. <i>The 3:1 mitigation requirement for temporary impacts assumes that the restored (mitigation) area will only be actively maintained for 5 years. The Corps also has the option of compensating for temporary impacts to riparian/wetland habitat by restoring 1 acre in an off-site location for each acre affected (1:1), and maintaining the restored area in perpetuity.)</i>	2001 Final SEIS/EIR
BR-20	Vegetation General	The Corps shall monitor construction activities to ensure that vegetation is removed only in the designated areas. Riparian areas not to be disturbed shall be flagged.	2001 Final SEIS/EIR

<b>ENVIRONMENTAL COMMITMENTS FOR VEGETATION AND HABITAT</b>			
<b>Environmental Commitment No.</b>	<b>Target</b>	<b>Description</b>	<b>Source</b>
EC-BR-1	Vegetation General	Upon development of final construction plans and prior to site disturbance, the Corps shall clearly delineate the limits of construction on project plans. All construction, site disturbance, and vegetation removal shall be located within the delineated construction boundaries. The storage of equipment and materials, and temporary stockpiling of soil shall be located within designated areas only, and outside of natural habitat areas. The limits of construction shall be delineated in the field with temporary construction fencing, staking, or flagging.	2011 Final SEA/EIR Addendum for Reach 9, Phase 2A
BR-18A	Vegetation Riparian	The USACE shall successfully restore each acre of riparian vegetation that is temporarily disturbed during construction-related activities and will keep all temporarily disturbed areas free of exotic plants until riparian vegetation is re-established. If the site has not begun to recover within 5 years (i.e., 50 percent of the disturbed areas are not vegetated with young riparian vegetation), then the site will be replanted with cuttings from native riparian species.	2001 Final SEIS/EIR
BR-24	Vegetation Riparian	During construction, riparian vegetation adjacent to de-watering areas shall be monitored by the Corps for signs of plant stress. Supplemental watering shall be added to this vegetation, as needed.	2001 Final SEIS/EIR
BR-26A	Vegetation Upland	As construction is completed in a given area, the construction contractor shall restore all disturbed upland areas. Container stock of local and appropriate native shrubs and groundcover will be used. Hydroseed will also be applied to supplement the container plants. Hydroseed mixes will be composed of local and appropriate native shrubs and groundcover. The mix of native species in the container plant hydroseed seed palettes shall be approved in advance by the Environmental Resources Branch of the Corps' Los Angeles District. Container plants and hydroseeded areas shall be irrigated as needed for at least one year or until success has been achieved. Weeding will also occur. See BR-18A for further detail regarding weeding requirements.	2001 Final SEIS/EIR
BR-18B	Vegetation Upland	The USACE shall maintain non-riparian areas that are temporarily disturbed or destroyed free of exotic plants for 8 years. Container plants shall be planted and irrigated in upland areas to expedite the restoration process.	2001 Final SEIS/EIR
EC-BR-9	Vegetation Upland	Container plants shall be planted to augment the hydro-seed treatment in upland areas to expedite restoration processes. (See also BR-26A)	2013 Final SEA/EIR Addendum for the Reach 9, Phase 3
EC-BR-7	Vegetation Invasive Removal	Any areas within the Reach 9 measures that are characterized as "Giant Reed Grassland" shall be cleared and grubbed and removed from the construction area to a suitable disposal site.	2013 Final SEA/EIR Addendum for the Reach 9, Phase 3
<b>ENVIRONMENTAL COMMITMENTS FOR SPECIAL STATUS SPECIES</b>			
BR-16	least bell's vireo, southwestern willow flycatcher	Prior to construction, a monitoring program shall be developed and implemented by the Corps that entails surveys for least Bell's vireo and southwestern willow flycatcher in the spring and early summer in the year prior to construction, as well as during the year of construction. [Prior year surveys (through 2016) were conducted by SAWA.] For the current Reach 9 projects, the Corps	2001 Final SEIS/EIR

ENVIRONMENTAL COMMITMENTS FOR VEGETATION AND HABITAT			
Environmental Commitment No.	Target	Description	Source
		will also be conducting gnatcatcher surveys prior to and during construction of each feature. <i>(Ongoing through combined efforts of Corps, OCWD and SAWA.)</i>	
BR-17	least Bell's vireo, coastal California gnatcatcher, and southwestern willow flycatcher	The construction contractor shall only clear vegetation associated with project construction during periods when coastal California gnatcatcher, least Bell's vireo, and southwestern willow flycatcher are not nesting (which in this area is considered August 15 through February 28).	2001 Final SEIS/EIR
BR-21	least Bell's vireo	If any construction is to take place during the time of year when least Bell's vireo or flycatcher is present, the construction contractor shall install noise barriers between construction areas and riparian habitat, where practicable all the TCE, prior to March 1, The Corps shall continue to coordinate with the USFWS to determine whether noise barriers are necessary or prudent for the Reach 9 measures, since the footprint required for construction of the barriers may result in additional habitat removal. These noise barriers shall be kept in place until all construction in the area is completed. Sound monitoring and vireo surveys will be conducted throughout the nesting season to determine if noise barriers or other modifications are warranted (see 2015 Final SEA and Biological Opinion for specific details)	2001 Final SEIS/EIR
EC-BR-2	Raptor Nesting	Prior to construction activities and throughout the construction period, a Corps qualified biologist (or the environmental monitor) shall inspect the construction site and adjacent areas to determine if any raptors are nesting within 500 feet of the construction site. If active nests are found, the Corps biologist will coordinate with USFWS and CDFW to determine appropriate avoidance or minimization measures.	2011 Final SEA/EIR Addendum for the Reach 9, Phase 2A
BR-22	Santa Ana sucker	To minimize impacts on the Santa Ana sucker population, in areas where <u>dewatering</u> is to take place, the construction contractor shall direct discharge water into a stilling basin and allowed to flow through existing vegetation and into the river downstream of the construction area.	2001 Final SEIS/EIR
BR-23	Santa Ana sucker and sucker habitat	During construction, the construction contractor shall implement measures to control sedimentation; these include re-contouring, sandbagging, the development of stilling basins, and other appropriate erosion control measures developed on a site-specific basis.	2001 Final SEIS/EIR
BR-25	Santa Ana sucker	In areas where <u>dewatering</u> or a diversion is necessary, a permitted Santa Ana sucker biologist shall be retained by the Corps to survey for suckers prior to and during any river diversions. If suckers are found, they shall be removed and relocated to appropriate habitats outside of the construction area.	2001 Final SEIS/EIR

<b>ENVIRONMENTAL COMMITMENTS FOR VEGETATION AND HABITAT</b>			
<b>Environmental Commitment No.</b>	<b>Target</b>	<b>Description</b>	<b>Source</b>
BR-26B	Santa Ana sucker habitat	The Corps shall successfully restore each acre of perennial stream that is temporarily disturbed during construction related activities. Restoration of perennial stream habitats would include: <ul style="list-style-type: none"> <li>• Replacement of pre-construction substrates and microhabitat features</li> <li>• Maintenance or re-establishment of natural channel morphology (e.g., stream meanders, pool-riffle complexes)</li> <li>• Maintenance or re-establishment of perennial flows</li> <li>• Verification that the structure and composition of the restored area are similar to pre-construction conditions.</li> </ul>	2001 Final SEIS/EIR
BR-26C	Santa Ana sucker habitat (off-site mitigation)	The Corps shall create and/or enhance 1 acre of perennial stream habitat within the SAR or its tributaries for each acre of unvegetated perennial stream that is temporarily or permanently disturbed during construction-related activities. Creation/enhancement activities could include, but are not limited to, the following: <ul style="list-style-type: none"> <li>• The development of pool-riffle complexes by placing clusters of various sized boulders within the river channel to provide limited cover and areas of reduced water velocity</li> <li>• The creation of potential sucker habitat below Prado Dam within one or more tributaries of the SAR</li> <li>• The creation of lateral stream habitats that is essential for the survival of larval suckers.</li> <li>• In coordination with the USFWS, the Corps has agreed to implement alternative measures in lieu of BR-26C for impacts to perennial stream that occurred during construction of the Reach 9 Phase 3 project (addressed in separate environmental documentation) and that are anticipated to occur during construction of BNSF bridge pier protection. These measures are listed at the end of this section.</li> </ul>	2001 Final SEIS/EIR
Santa Ana sucker conservation measure	Santa Ana sucker habitat (on-site mitigation)	The Corps shall successfully restore each acre of perennial stream that is temporarily disturbed during construction-related activities. Restoration shall include: 1) replacement of pre-construction substrates and microhabitat features; 2) maintenance or re-establishment of natural channel morphology (e.g., stream meanders, pool-riffle complexes); 3) maintenance or re-establishment of perennial flows; and 4) verification that the structure and composition of the restored area is similar to pre-construction conditions. A conceptual habitat restoration plan shall be reviewed and approved by the USFWS prior to initiating construction activities that will affect perennial stream habitat for the sucker.	2015 Final SEA/EIR Addendum
Santa Ana sucker conservation measure	Santa Ana sucker	Restoration activities for the Santa Ana sucker will be conducted between August 15 and February 28, outside the sucker spawning season, or in a manner that otherwise avoids adverse effects to the sucker.	2015 Final SEA/EIR Addendum

ENVIRONMENTAL COMMITMENTS FOR VEGETATION AND HABITAT			
Environmental Commitment No.	Target	Description	Source
Santa Ana sucker conservation measure	Santa Ana sucker habitat (off-site mitigation)	To offset temporary impacts to 2.54 acres of perennial stream habitat from the completed Reach 9 Phase 3 project, the Corps will create six or more 'habitat nodes' in the reach of the Santa Ana River between the Riverside levees and I-15 Freeway, to improve the viability of the extant population of Santa Ana suckers this area	2015 Final SEA/EIR Addendum
Santa Ana sucker conservation measure	Santa Ana sucker and sucker habitat (off-site mitigation)	To offset impacts to Santa Ana sucker from the BNSF bridge protection segment and to help to sustain and enhance the viability of the overall population in the river into the future, the Corps will either (A) expand the range of the species through active reintroduction of captively bred Santa Ana sucker to suitable unoccupied habitat within its historical range in the Santa Ana River; OR (B) perform gravel/cobble augmentation within Reach 9.	2015 Final SEA/EIR Addendum
EC-BR-11	Wildlife Movement	Work hours will be limited to day time hours to reduce potential direct and indirect impacts to wildlife movement.	2013 Final SEA/EIR Addendum for the Reach 9, Phase 3
EC-BR-13	Wildlife Movement	Switchback ramps will be incorporated into the embankment to facilitate wildlife movement into and out of Phase 4 as wildlife transitions between 60-inch culverts being altered by the project, and the floodplain. Ramps shall provide access to the base of the structure, as well as a ramp to the top of the structure.	2013 Final SEA/EIR Addendum for the Reach 9, Phase 3

## 7 ENVIRONMENTAL COMPLIANCE

### 7.1 Relevant Federal, State, and Local Statutes, Laws, and Guidelines

The following section provides a brief summary of the laws, regulations, Executive Orders, and other guidelines that are relevant to the proposed project activities and alternatives. Included in this summary is a discussion of the consistency of the proposed project with each of the plans, policies, and regulations listed below.

#### **Federal Laws and Regulations**

##### The National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA)

This SEA/EIR Addendum was prepared in accordance with both NEPA and CEQA. Pursuant to Section 15164 of the State CEQA Guidelines, an addendum to an approved EIR shall be prepared if “none of the conditions described in Section 15162 of the guidelines calling for preparation of a subsequent EIR have occurred, only if minor technical changes or additions are necessary to make the EIR under consideration adequate under CEQA, and the changes to the EIR made by the addendum do not raise important new issues about significant effects on the environment.”

The subject SEA documents that the above conditions have been met. The proposed modifications will not significantly impact any resources other than those described in the previously prepared environmental documents. Preparation of an SEIS/EIR is, therefore, not required.

##### Clean Water Act

Reach 9 improvements have been evaluated pursuant to Section 404(b)(1) of the Clean Water Act. The Preferred Alternative, which is very similar to the Preferred Alternative evaluated in the 2015 SEA/EIR Addendum, is the Least Environmentally Damaging Practicable Alternative (LEDPA). Additionally, the Corps applied for a Section 401 Certification under the Clean Water Act on January 23, 2015. Because the Regional Water Quality Control Board (RWQCB) did not respond, pursuant to 33 CFR 336.1(b), the Corps deemed the requirement for the certification waived. The proposed modifications to Reach 9 BNSF Bridge project do not result in additional or different effects to Waters of the U.S., and therefore do not require the Corps to modify the 404(b)(1) Evaluation to seek additional certification.

##### National Historic Preservation Act (NHPA) of 1966, as amended

The Reach 9 BNSF Bridge measure is in compliance. The Corps is in compliance with Section 106 of the act. A programmatic agreement (PA) was executed for the Santa Ana River Project in 1992 by the Advisory Council on Historic Preservation. The PA detailed the procedures to be followed for each feature of the project. The feature described herein is in compliance with the stipulations of the PA. No additional coordination with the SHPO is required unless an unanticipated discovery is made during construction. In that event the Corps would comply with the procedures in 36 CFR 800.13.

#### The Federal Endangered Species Act (FESA), as Amended

Potential effects of the proposed Reach 9 BNSF Bridge measures on federally-listed species (least Bell's vireo, Santa Ana sucker and California gnatcatcher) and on designated critical habitat were addressed in consultation with USFWS in 2015. The proposed TCE amendments result in an overall reduction to temporary impacts to riparian habit and are not expected to change the number of least Bell's vireo territories that may be affected from clearing and grading of habitat beyond amounts analyzed in USFWS 2015. No substantial additional effects to California gnatcatcher or Santa Ana sucker or associated critical habitat would occur, and all effects will be mitigated in accordance with the 2015 Biological Opinion. Therefore, the Corps has determined that the proposed modifications would not cause effects to listed species or designated critical habitat that were not considered in the BO, and that no further consultation is required at this time. The Reach 9 BNSF Bridge project remains in compliance with the ESA.

#### Migratory Bird Treaty Act (MBTA)

Clearing of vegetation would occur outside of the migratory bird nesting season. Therefore the project remains in compliance with this Act.

#### Farmland Protection Policy Act

The BNSF Bridge project area is characterized by Nonagricultural or Natural Vegetation, and Urban and Built-Up Land as identified by the California Department of Conservation's Farmland Mapping and Monitoring Program. No Prime Farmland, Unique Farmland, and Farmland of Statewide Importance were identified in the project area. The proposed TCE amendments do not overlap with Prime or Unique Farmland, or Farmland of Statewide Importance. As construction would not result in a permanent conversion of farmland to development or a substantial loss of soils, impacts are considered insignificant.

#### Executive Order 13112, Invasive Species

The expanded TCE, along with all temporary construction areas, will be restored and managed for 5-8 years after construction (in compliance with environmental commitments listed in Corps 2015) to minimize re-infestation by invasive species.

#### California Endangered Species Act (CESA)

No additional effects are anticipated from the proposed modification beyond those addressed in Corps 2015.

## **8 COORDINATION**

Reach 9 BNSF Bridge Protection feature have been fully coordinated with numerous agencies, organizations, and individuals, including USFWS, CDFW, State Parks (also known as California Department of Parks and Recreation), SHPO, Santa Ana RWQCB, Caltrans, Orange County agencies, Riverside County agencies, and local cities (as described in Corps 2015). The 2017 Draft SEA/EIR Addendum was also

distributed to these same public agencies and interested parties as identified in the Distribution List, Appendix A.

## 9 LIST OF PREPARERS AND REVIEWERS

Name	Role
Hayley Lovan	Biologist, Chief, Ecosystem Planning Section
Christopher Jones	Biologist and Environmental Coordinator, Ecosystem Planning Section
Jennifer McAdoo	Environmental Coordinator, Ecosystem Planning Section
Dr. Christopher Solek	Biologist, Ecosystem Planning Section
Priyo Majumdar	Environmental Coordinator, Regional Planning Section

## 10 CONCLUSION

Based on the analysis and conclusions set forth in this SEA, environmental impacts from the proposed modifications to the BNSF Bridge embankment protection project are expected to be less than significant. Therefore, preparation of an Environmental Impact Statement is not required.

## 11 REFERENCES

Aspen Environmental. Coastal California Gnatcatcher Survey data 2015- 2016.

Santa Ana Watershed Association (SAWA). Least Bell's Vireo Survey data 2015- 2016.

U.S. Army Corps of Engineers (Corps). 2015. Final Supplemental Environmental Assessment and Environmental Impact Report Addendum for the Santa Ana River Mainstem Project: Reach 9 Phases 4, 5A, 5B, & BNSF Bridge. July.

\_\_\_\_\_. 2013. Final Supplemental Environmental Assessment and Addendum to Environmental Impact Report (EIR) 583. Santa Ana River: Reach 9 Phase 3. March 2013.

\_\_\_\_\_. 2011. Supplemental Environmental Assessment (SEA) and Environmental Impact Report (EIR) Addendum for the Reach 9, Phase 2A portion of the Santa Ana River Mainstem Flood Control Project (SARP).

\_\_\_\_\_. 2001. Prado Basin and Vicinity, Including Reach 9 and Stabilization of the Bluff Toe at Norco Bluffs, Supplemental Environmental Impact Statement/Environmental Impact Report, and Appendices. November.

U.S. Fish and Wildlife Service (USFWS). 2015. Re-initiation of Formal Section 7 Consultation on the Santa Ana River Mainstem Flood Control Project to Address Proposed Reach 9 Bank and Bridge Protection Components (Phases 4, SA, 5B, and BNSF Bridge Project) along the Santa Ana River in San Bernardino, Riverside and Orange Counties, California. July 23, 2015.



U.S. Fish and Wildlife Service (USFWS). 2001. Biological Opinion on the Prado Mainstem and Santa Ana River Reach 9 Flood Control Projects and Norco Bluffs Stabilization Project, Orange, Riverside, and San Bernardino Counties, California. December 5.



## **Appendix A**

### **Distribution Mailing List**



**Federal Agencies**

U.S. Environmental Protection Agency  
Deanna W. Wieman, Deputy Director  
Cross Media Division  
Mail Code CMD-2 75  
Hawthorne Street  
San Francisco, CA 94105

Mr. Mendel Stewart, Field Supervisor  
U.S. Fish & Wildlife Service  
2177 Salk Avenue, Suite 250  
Carlsbad, CA 92008

Ms. Rosemary Burk  
U.S. Fish and Wildlife Service  
Palm Springs Office  
777 E. Tahquitz Canyon Way, Suite 208  
Palm Springs, California 92262

Lisa Lyren, Supervisory Ecologist  
U.S. Geological Survey-BRD Western  
Ecological Research Center  
777 E. Tahquitz Canyon Way  
Palm Springs, California 92262

**State Agencies**

State Clearinghouse  
Office of Planning and Research  
P.O. Box 3044  
Sacramento, CA 95812-3044

Kathleen Andrews  
CA. Dept. of Conservation  
District 1, Division of Oil, Gas and  
Geothermal Resources  
5816 Corporate Avenue, Suite 200  
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Marilyn Fluharty  
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Kim Freeburn-Marquez  
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Ontario, CA 91764

Julianne Polanco  
State Historic Preservation Officer  
Office of Historic Preservation  
1725 23rd Street, Suite 100  
Sacramento, CA 95816

Mr. Kurt V. Berchtold  
Regional Water Quality Control Board  
Region 8  
Attn: Marc Brown  
3737 Main Street, Suite 500  
Riverside, CA 92501-3339

Native American Heritage Commission  
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Enrique Arroyo, District Planner  
Department of Parks and Recreation  
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Ryan Chamberlain, Director  
Caltrans District 12  
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#### Organizations/Groups

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Santa Ana Watershed Association  
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P.O. Box 9256  
Newport Beach, CA 92658

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Riverview Drive  
Rubidoux, CA 92509

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Audubon Society  
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Green River Housing Estates  
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Associa – Professional Community  
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Green River Golf Club  
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Irvine, CA 92607

Libraries

Orange County Public Library  
Villa Park Library  
17865 Santiago Blvd.  
Villa Park, CA 92861

Yorba Linda Library  
18262 Lemon Drive  
Yorba Linda, CA 92686

Main Library  
City of Anaheim  
500 West Broadway  
Anaheim, CA 92805

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CSU Fullerton Library  
800 N. State College  
Fullerton, CA 92833

Corona Public Library - Nora Jacob  
650 South Main Street  
Corona, CA 91720

Norco Public Library  
3954 Old Hamner Avenue  
Norco, CA 91760

Riverside Public Library  
Attn: Government Documents  
3581 Mission Inn Avenue  
Riverside, CA 92501

Chino Branch Library  
13180 Central Avenue  
Chino, CA 91710

*Native American Contacts*

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Gabrielino Tongva Nation  
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## **Appendix B**

### **Comments and Responses**



Santa Ana River, Reach 9, BNSF Bridge

Comments on the April 2017 Public Draft SEA/EIR Addendum

Agency	Comment Date	Nature of Comments	Response to Comment
United Coalition to Protect Panhe	May 12, 2017	Assumption that cultural resources will not be impacted. Recommends to be contacted if buried cultural materials are discovered during construction; recommends such discovered materials to be avoided and preserved in place.	Comment noted. The contract specifications that have been prepared for the project include requirements for avoidance and preservation of discovered cultural resources. The Corps' archeologist, who will be monitoring construction activities, will add the commenter to the list of entities to be contacted in the event of discovery.