

National Park Service
U.S. Department of the Interior

Death Valley National Park
California



Bonnie Clare Road Reconstruction Environmental Assessment

November 2017



Bonnie Clare Road Reconstruction Death Valley National Park

Environmental Assessment

SUMMARY

The National Park Service (NPS), in cooperation with the Federal Highway Administration (FHWA), is proposing to reconstruct approximately 7.6 miles of Bonnie Clare Road in Death Valley National Park (park) from the park boundary at the Nevada-California border to its intersection with Ubehebe Crater Road. The proposed project is needed because the majority of this section of Bonnie Clare Road was damaged or destroyed by flooding in October 2015.

This Environmental Assessment (EA) evaluates two alternatives: a no action alternative and the NPS's preferred alternative. Under the no action alternative, the road would not be reconstructed and would remain closed to the public. Under the preferred alternative, the reconstructed road would have two 10-foot-wide paved travel lanes, each with a 1-foot shoulder. From the existing water intake facility to Scotty's Castle (approximately 1.5 miles), a water line and utility lines would be placed beneath one travel lane of the road. A dirt berm that protects the water intake facility also would be repaired and fortified to divert future flood flows away from the spring house and other features at the existing water intake facility. The reconstructed road would generally follow the alignment of the pre-flood road, with some modifications as needed to elevate the road above the new flow line of Grapevine Canyon. Buried concrete Jersey barriers, riprap embankment protection, and some minor stream realignment and restoration also would occur to make the reconstructed road more resilient against future floods.

This EA has been prepared in compliance with the National Environmental Policy Act (NEPA) to provide the decision-making framework that (1) analyzes a reasonable range of alternatives to meet the objectives of the proposal, (2) evaluates potential issues and impacts on resources and values, and (3) identifies mitigation measures to lessen the degree or extent of these impacts. See also *Appendix A: CEQA Mandatory Findings of Significance* for an analysis of impacts pursuant to the California Environmental Quality Act (CEQA; Appendix A).

Resource topics analyzed in detail include cultural landscapes, wetlands and floodplains, special status species, and visitor use and safety. All other resource topics were dismissed because the proposed project would have little or no impact on those resources. Public scoping was conducted in accordance with NEPA.

Public Comment

If you wish to comment on this EA, you may post comments online at <http://parkplanning.nps.gov/deva> or mail or hand deliver comments to Superintendent, Death Valley National Park, P.O. Box 579, Death Valley, CA 92328. This EA will be on public review for a minimum of 30 days.

Before including your address, phone number, email address, or other personal identifying information in your comment, you should be aware that your entire comment—including your personal identifying information—may be made publicly available at any time. Although you can ask us in your comment to withhold your personal identifying information from public review, we cannot guarantee that we will be able to do so. Comments will not be accepted by fax, by email, or in any other ways than those specified above. Bulk comments in any format (hard copy or electronic) submitted on behalf of others will not be accepted.

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INTRODUCTION

The National Park Service (NPS), in cooperation with the Federal Highway Administration (FHWA), is proposing to reconstruct approximately 7.6 miles of Bonnie Clare Road in Death Valley National Park (park) from the park boundary at the California/Nevada border to its intersection with Ubehebe Crater Road and the Grapevine Ranger Station (Figure 1). Bonnie Clare Road serves as an access point for the northeastern portion of the park and is the most direct travel route for visitors coming from northern Nevada. The road provides access to the Grapevine Mountain Range in the park, which includes historic Scotty's Castle and several backcountry sites.

In 2012, an environmental assessment (2012 EA) and Finding of No Significant Impact (FONSI) were prepared for the reconstruction and resurfacing of Bonnie Clare Road through Grapevine Canyon from the park boundary at the California/Nevada border to the intersection with Ubehebe Crater Road (NPS 2012a, NPS 2012b). Bonnie Clare Road was reconstructed in 2013 to address extensive deterioration of the road surface and improve the safety of the road. In October 2015, heavy rains resulted in flash flooding in Grapevine Canyon that damaged or destroyed the majority of Bonnie Clare Road. Bonnie Clare Road is currently closed from the park boundary at the state line to just north of the Grapevine Ranger Station.

The purpose of this EA is to examine the environmental impacts and cultural resource effects associated with the current proposed action to reconstruct Bonnie Clare Road. The NPS considered revising the 2012 EA; however, the current project includes actions and potential impacts that were not analyzed in the 2012 EA. Therefore, a new EA was prepared. The affected environment for most resources is described in detail in the 2012 EA. Changes to the affected environment since the 2012 EA and FONSI have resulted mainly from the effects of the flooding in October 2015. Where appropriate in this EA, information from the 2012 EA is updated with new information or summarized and incorporated by reference to avoid undue repetition.

Purpose and Need

The purpose of the proposed project is to reestablish a safe and sustainable driving route from the Beatty, Nevada entrance of the park to the North Highway that is resilient to flood damage and cost effective.

The proposed project is needed because the majority of this section of Bonnie Clare Road was damaged or destroyed in October 2015 when the area experienced a major rainstorm and subsequent flash flood. The flood destroyed approximately 70 percent of Bonnie Clare Road, which is currently closed to the public until the road can be reconstructed. In addition, reconstructing the road is critical to the reopening of Scotty's Castle.



Figure 1. Bonnie Clare Road reconstruction project area.

Issues and Impact Topics

Environmental issues (issues) were identified during scoping. Issues are environmental problems, concerns, and opportunities regarding the proposal to reconstruct Bonnie Clare Road, or regarding alternatives to the proposal. The issues describe the relationship between the actions in the proposal and alternatives and the specific resources that would be affected by those actions. The issues are organized by “impact topics,” which are headings that represent the affected resources associated with the issues that are analyzed in detail. As a general rule, issues were retained for consideration and discussed in detail if:

- the environmental impacts associated with the issue are central to the proposal or of critical importance;
- a detailed analysis of environmental impacts related to the issue is necessary to make a reasoned choice between alternatives;
- the environmental impacts associated with the issue are a big point of contention among the public or other agencies; or
- there are potentially significant impacts on resources associated with the issue.

Issues and impact topics that meet all or some of these conditions are discussed below under *Issues and Impact Topics Retained for Further Analysis*. If none of the considerations above apply to an issue or impact topic, it was dismissed from detailed analysis as described below under *Impact Topics Dismissed from Further Analysis*.

Issues and Impact Topics Retained for Further Analysis

The issues and corresponding impact topics retained for analysis in this EA are presented in Table 1.

Table 1. Issues and impact topics retained for further analysis.

Issues	Impact Topics Related to the Issues
Components of the cultural landscape in Grapevine Canyon include Bonnie Clare Road, the Upper Vine Ranch Perimeter Fence, Indian Camp, the Historic Entrance to Scotty’s Castle, and Cottonwood Corner (NPS 2012a). Road construction, drainage improvements, construction access, and other project activities could result in impacts on the cultural landscape, including Bonnie Clare Road and Death Valley Scotty Historic District. Because historic structures, historic districts, and the cultural landscape are closely intertwined in the project area, historic structures and historic districts will be addressed under the cultural resources impact topic as contributing features to the cultural landscape.	Cultural Resources
Bonnie Clare Road is within the floodplain of Grapevine Canyon, and vegetated and unvegetated wetlands are present near the road. Road construction, drainage improvements, construction access, and other project activities could result in impacts on wetlands and floodplains.	Wetlands and Floodplains

Potential habitat for special status species, including the federally listed least Bell's vireo (<i>Vireo bellii pusillus</i>) and southwestern willow flycatcher (<i>Empidonax traillii extimus</i>) is present in Grapevine Canyon. Road reconstruction activities could affect these species or their habitat.	Special Status Species
Bonnie Clare Road serves as an access point for the northeastern portion of the park and is the most direct travel route for visitors entering the park from nearby portions of Nevada. Reconstructing the road would allow the road to reopen, resulting in substantial changes to the visitor experience and safety compared to current conditions.	Visitor Use and Safety

Impact Topics Dismissed from Further Analysis

Several potential issues and impact topics were raised during internal and public scoping but were not retained for additional analysis. Using the same considerations noted previously, the interdisciplinary team analyzed these issues and determined they did not warrant more detailed discussion in this EA. Table 2 briefly discusses impact topics with minor effects that were dismissed from further analysis along with a brief explanation of the reasons for dismissal.

Table 2. Impact topics dismissed from further analysis.

Topic	Reason Dismissed
Air Quality and Climate Change	<p>Earthwork and equipment operation during construction would temporarily increase dust and vehicle emissions. Hauling construction and fill material and operating equipment during construction would result in increased vehicle exhaust and emissions (hydrocarbons, nitrogen oxide, and sulfur dioxide emissions), which would be expected to rapidly dissipate. Resource protection measures for dust control would reduce the potential for fugitive dust.</p> <p>Greenhouse gases (GHG) emitted during project construction would consist of truck and equipment exhaust, but emissions would be short-term and would end with the cessation of construction. Any effects of construction-related GHG emissions on climate change would not be discernible at a regional scale, as it is not possible to meaningfully link the GHG emissions of such individual project actions to quantitative effects on regional or global climatic patterns.</p> <p>Restoring historic travel into the park would not increase the amount of vehicular traffic on Bonnie Clare Road. As such, the project would not change historic low levels of GHG or air pollutant generation from vehicles driving into the park over the long term. Therefore, air quality and climate change were dismissed from detailed discussion in this EA.</p>

Topic	Reason Dismissed
Vegetation, including Special Status Plant Species	<p>Pre-flood vegetation in the Grapevine Canyon area is described in detail in the 2012 EA. Vegetation in Grapevine Canyon before the flash floods in October 2015 consisted mostly of desert scrub plant communities including creosote bush (<i>Larrea tridentata</i>), saltbush (<i>Atriplex</i> spp.), and burrobush (<i>Hymenoclea salsola</i>) on the slopes and within the floodplain of the wash (NPS 2012a). Desert scrub vegetation is common in the park, covering about 75 percent of the park landscape (NPS 2002). Most vegetation within the wash was destroyed during the flooding in 2015, and road reconstruction would occur within areas previously disturbed by the flood. Surviving vegetation is located mostly outside of the limits of disturbance for the project.</p> <p>During botanical surveys of the road corridor in April 2010 and April 2011, five plants of littleleaf rockcress (<i>Arabis microphylla</i> var. <i>microphylla</i>), a California 4.3 (limited distribution) species, were observed on a volcanic rock outcrop approximately 0.10 mile west of the eastern terminus of the historic fence in Grapevine Canyon (NPS 2012a). These plants were on an outcrop that was graded during reconstruction of the road in 2013, and are no longer present. No other special status plant species were documented during the surveys.</p> <p>Impacts on desert scrub vegetation would occur at the northern end of the project, where a 1.5-mile section of the road would be realigned up to about 50 feet further from the wash onto an alluvial bench. Vegetation on this alluvial bench was not destroyed during the flash floods in 2015. About 0.37 acre of desert scrub vegetation would be permanently removed by construction of the road. This loss of vegetation would be partly offset by obliterating and revegetating the previous road alignment.</p> <p>Mitigation measures to avoid and minimize impacts on vegetation, including revegetation with native species and control of invasive species, would be implemented as described under <i>Mitigation Measures</i>. Because permanent loss of vegetation would occur to a relatively small area, would affect a plant community that is abundant in the park, and would be partly offset by revegetation of the previous road alignment, this topic was dismissed from detailed discussion in this EA.</p>

Topic	Reason Dismissed
Wildlife	<p>Wildlife occurrence and habitat conditions in the project area are described in detail in the 2012 EA. Grapevine Canyon supports a variety of wildlife species including many mammal, bird, amphibian, and reptile species due to the variety of upland, wetland, and riparian habitats present.</p> <p>Construction activities would result in temporary disturbances to bighorn sheep and other wildlife due to human presence, noise generation, and vibration from heavy equipment that may displace some wildlife during the construction period. Individual reptiles and small mammals could be crushed or buried during earthmoving and road reconstruction activities, and others would disperse into the adjacent habitat, causing competitive stress. When construction is complete, wildlife is expected to return to the area. Reconstruction of the road would occur mostly within previously disturbed areas, except for a 1.5-mile section where the road alignment would be realigned further from the wash onto an alluvial bench, resulting in permanent loss of about 0.37 acre of desert scrub habitat. This loss of habitat would be partly offset by obliterating and revegetating the previous road alignment.</p> <p>Mitigation measures, such as timing restrictions to avoid the bird breeding season, would be implemented to minimize impacts on migratory birds and other wildlife as described under <i>Mitigation Measures</i>. Temporarily disturbed areas would be revegetated following construction. Potential impacts on species of special concern, including the least Bell's vireo and southwestern willow flycatcher, are discussed under <i>Species of Special Concern</i>. Because direct impacts on wildlife would be limited to the construction period and habitat loss would be negligible given the large amounts of similar habitat in the park, this topic was dismissed from detailed analysis in this EA.</p>
Archeological Resources	<p>Archeological resources in the project area are described in detail in the 2012 EA. A new survey of archeological resources conducted in February and March 2017 recorded 17 isolated occurrences and reexamined 20 archeological sites previously recorded along Bonnie Clare Road (Boston Archaeological Consulting et al. 2017). No new sites were encountered during the survey. Bonnie Clare Road would be reconstructed on its previous alignment within previously disturbed areas, except for one 1.5-mile section near the California/Nevada state line, where the road would be relocated to an alluvial terrace further from the wash. This terrace was surveyed in 2017 and no new sites were found (Boston Archaeological Consulting et al. 2017). The project was modified during construction to avoid impacts on known archeological sites. Resource protection measures such as marking and avoiding known sites and monitoring by a qualified archeologist during construction would be implemented to avoid unintentional impacts. Because adverse effects would be avoided by implementing the measures described under <i>Mitigation Measures</i>, including monitoring during construction, this topic was dismissed from detailed analysis in this EA.</p>

Topic	Reason Dismissed
Ethnographic Resources	<p>Road reconstruction work would occur within the Grapevine Canyon Archeological District, for which a Consensus Determination of Eligibility was prepared in 2012 (NPS 2012c). Ethnographic resources of importance to the Timbisha Shoshone Tribe have been identified within the Grapevine Canyon Archeological District and are listed as contributing features to the archeological district.</p> <p>The NPS is consulting with federally recognized tribes traditionally associated with the park, and copies of this EA will be forwarded to the tribes for review or comment. During project design, the proposed road alignment was modified to avoid impacts on known ethnographic resources. A report was prepared to verify and update existing information collected for the 2012 EA and to document concerns and recommendations of the Timbisha Shoshone Tribe (Bengston 2017). Impacts on ethnographic resources would be avoided by implementing the mitigation measures described under <i>Mitigation Measures</i>, including avoiding cuts to the canyon walls and requiring the presence of tribal monitors during construction. Because the project would not involve cuts to the canyon walls and the measures described under <i>Mitigation Measures</i> would be implemented to avoid known ethnographic sites, no impacts on ethnographic resources are anticipated.</p>
Water Resources	<p>Construction activities would result in impacts on water quality in Grapevine Canyon from the introduction of sediment during installation of underdrains at seeps and other construction activities. Mitigation measures described in the <i>Mitigation Measures</i> section would be implemented to capture sediment and minimize these impacts. There would be no long-term impacts on water quality. A small amount of water would be used during construction for dust suppression. Reconstruction of the road would not result in a long-term change in water consumption. For these reasons, this topic was dismissed from detailed analysis in this EA.</p>
Socioeconomics	<p>Project activities would result in construction-related expenditures for labor, supplies, equipment, and material. Construction spending would have a slight beneficial effect on the regional economy. The project would not add additional capacity to Bonnie Clare Road or other travel routes in the park and, therefore, would not result in growth-inducing impacts. There would be no long-term effects on socioeconomics; therefore, this topic was dismissed from detailed analysis in this EA.</p>
Indian Trust Resources	<p>No Indian trust resources are in the park; therefore, this topic was dismissed as an impact topic in this EA.</p>
Environmental Justice	<p>Furnace Creek, Beatty, and other communities near the park contain both minority and low-income populations; however, environmental justice was dismissed as an impact topic because no actions in the alternatives would have disproportionately high health or environmental effects on minority or low-income populations or communities.</p>

ALTERNATIVES

Two alternatives, the no action alternative and the preferred alternative, were carried forward for evaluation in this EA. A number of options for reconstructing Bonnie Clare Road were considered and dismissed (see *Alternatives Considered and Dismissed*).

Alternative A—No Action

The no action alternative describes the conditions that would continue to exist in the project area if no improvements, repairs, or changes in management were made. As previously described, about 70 percent of the 7.6-mile section of Bonnie Clare Road from the state line to Ubehebe Crater Road has been destroyed. This includes about 62 percent of the road that was completely destroyed and another 8 percent that was heavily damaged to the point where partial reconstruction is needed. Fragments and debris from the former road are still present in places. Currently, an informal gravel road, passable with a high-clearance four-wheel-drive vehicle, generally follows the former alignment of Bonnie Clare road in the sections that have been destroyed. Under the no action alternative, the damaged or destroyed sections of Bonnie Clare Road would not be reconstructed. The existing informal gravel road would remain but would not be open to the public. The heavily damaged existing sections of Bonnie Clare Road would not be removed. Although the road would be closed to the public, NPS and other authorized vehicles would continue to access Scotty's Castle from the south for maintenance and security purposes by driving along the damaged road that currently exists.

Alternative B—Reconstruct Bonnie Clare Road (Proposed Action and Preferred Alternative)

General Description of Road Reconstruction

The preferred alternative would reconstruct about 7.6 miles of the road from milepost (MP) 0.0 (the park boundary at the California/Nevada state line) southwest to MP 7.6 (approximately the intersection with Ubehebe Crater Road). Debris from the destroyed road would be incorporated into the roadbed for the reconstructed road or disposed of outside the park as appropriate. A new aggregate base course and new asphalt pavement would be placed to reconstruct the destroyed sections of road (Figure 2 and Figure 3). The reconstructed road would have two 10-foot-wide travel lanes and 1-foot-wide shoulders, for a total paved width of 22 feet, except where noted below.

The reconstructed road would generally follow the previous road alignment and would be modified at some of the curves. Slight realignment of the segments from MP 0.5 to MP 1.1 and from MP 1.1 to MP 2.0 would relocate the road to an alluvial terrace further from the wash and would make the road more resilient to damage from future floods. The roadway vertical profile would remain unchanged for the majority of the project length. New rock and wall cuts would be avoided. Paved ditches with curbs would be constructed or maintained to avoid the need for slope cuts. Paved ditches would be 2 feet wide with a concrete curb. Where the channel bed has dropped, the road would be lowered to prevent the road from impounding water. Sustainable design principles that minimize impacts on the natural environment would be used by building new structures into the natural configuration of the land so that grading and compaction are reduced, existing topography is preserved to benefit natural hydrologic functions, concentrated runoff is minimized, and runoff is evenly distributed to the extent possible.

Features installed to minimize erosion would include revetment mattresses, buried concrete Jersey barriers, and riprap embankment protection installed in select locations to minimize scour of the road from future flows. An underdrain would be installed where a spring emerges under the existing road surface. A staging area would be established at about MP 1.5, and the existing alignment would also be used as needed for staging. General staging would also occur as needed in the “boneyard” in the Grapevine Developed Area. FHWA would likely have an office at the Grapevine Ranger Station during construction.

Clean fill material would be obtained from existing piles of flood debris at the Scotty’s Castle parking lot and in the Grapevine Developed Area. These piles of material would be used during construction until depleted. Additional fill material would likely be needed and would be brought in from off-site commercial sources.

All project activities would be restricted to the Area of Potential Effect for direct effects, as defined in the Section 106 initiation letter submitted to the State Historic Preservation Office (SHPO) on March 29, 2017.

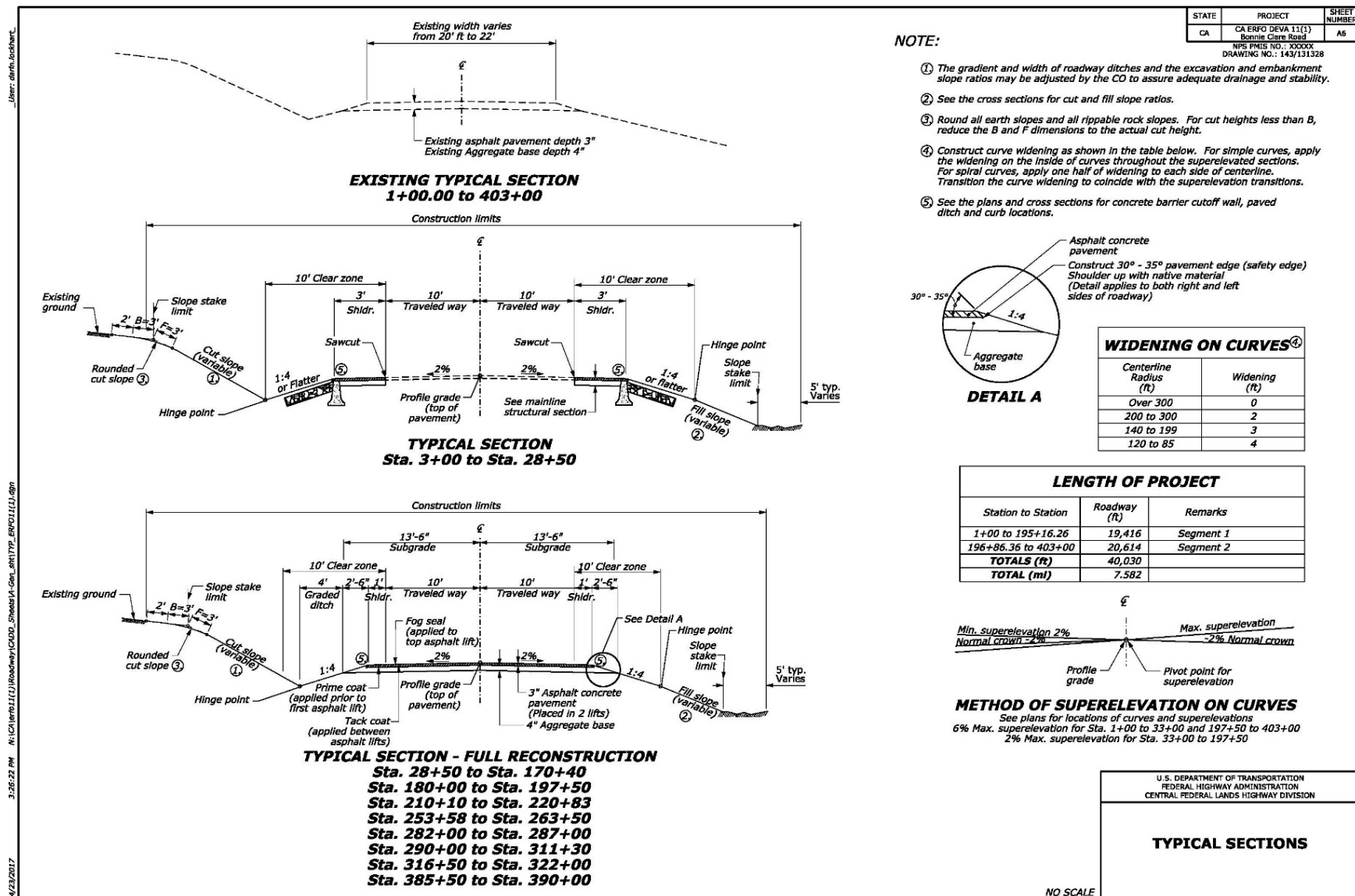
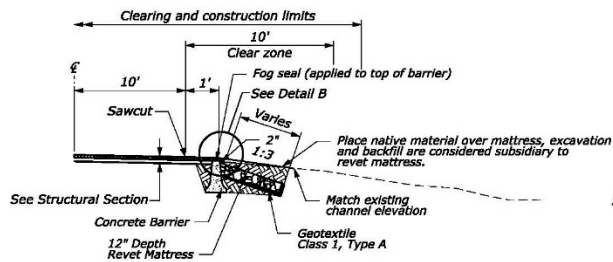
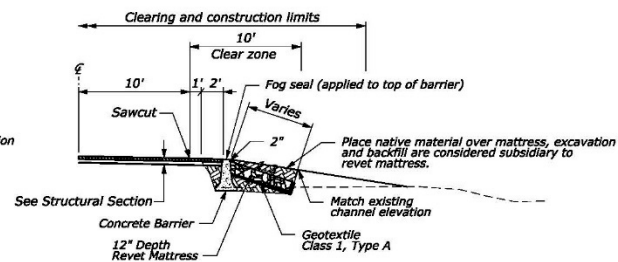


Figure 2. Alternative B—reconstruct Bonnie Clare Road, typical sections.

STATE	PROJECT	SHEET NUMBER
CA	CA ERFD DEVA 11(1) Bonnie Clare Road	A7
NPS PMIS NO.: XXXXX DRAWING NO.: 143/131328		



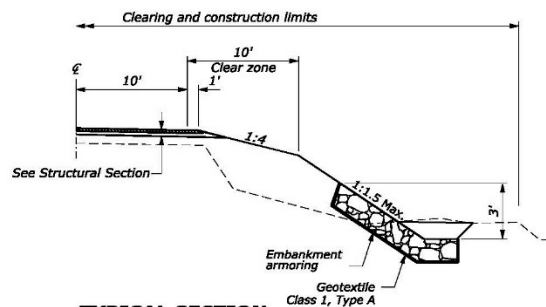
**TYPICAL SECTION
CONCRETE BARRIER CUTOFF WALL
REVE MATTRESS SHOULDER ARMORING**



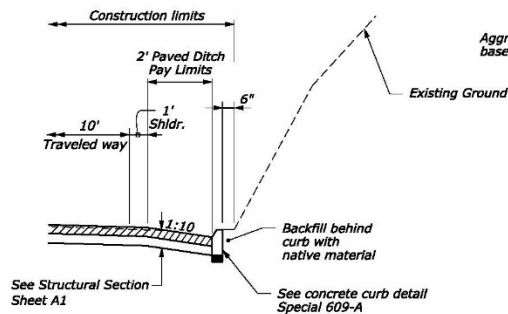
**TYPICAL SECTION
REVE MATTRESS SHOULDER ARMORING
IN LOCATIONS WITH EXISTING PAVEMENT**
Sta. 3+00 to Sta. 28+50, LT
Sta. 6+00 to Sta. 12+00, RT
Sta. 15+00 to Sta. 28+50, LT
Sta. 316+50 to Sta. 317+50, RT

NOTE:

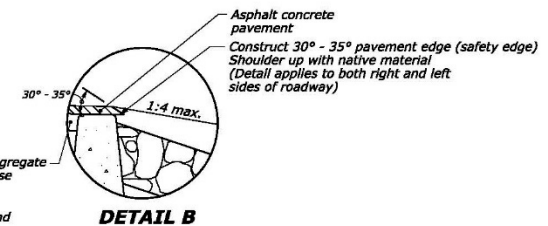
1. Excavation for placement of revet (gabion) mattress will not be measured for payment.
2. Use anchor stakes that are 2" dia. X 4' galvanized pipe or 2 1/2" x 2 1/2" x 1#4" x 4' galvanized steel angle iron. Use 6' long anchor stakes for stacked mattresses.
3. Tie all revet mattresses together.
4. Furnish geotextile materials conforming to Subsection 714.01 (a).



**TYPICAL SECTION
EMBANKMENT ARMORING**



PAVED DITCH AND CONCRETE CURB



U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
CENTRAL FEDERAL LANDS HIGHWAY DIVISION

TYPICAL SECTIONS

Figure 3. Alternative B—reconstruct Bonnie Clare Road, typical sections.

Milepost 0.0 (California/Nevada State Line) to Milepost 3.7

The existing parking area at the California/Nevada state line entrance was undermined by erosion resulting from the 2015 flood. The existing concrete pad to fill the void beneath the pad created by flood flows would be filled.

The road alignment would be fully reconstructed within this section. Revetment mattresses and buried concrete Jersey barrier would be installed on both sides of the road to protect against future damage to the road from erosion during flood events. Paved ditches with concrete curb would be added in select locations to eliminate cuts to rock walls. Concrete curb would match the design and color of the remaining intact curb. The reconstructed road would follow the previous alignment, with the exception of the segment from MP 0.5 to MP 1.1 and from MP 1.1 to MP 2.0, where the road would be relocated to an alluvial terrace further from the wash.

Three buried boulder grade control structures would be constructed within the channel of Grapevine Canyon Wash just downstream of the road from about MP 3.1 to MP 3.2 to protect the road from future downcutting. The boulder grade control structures would be about 70 to 100 feet long and 10 feet wide.

A staging area would be established at about MP 1.5 near the California/Nevada state line, in an area where the canyon is relatively wide. The road alignment would be shifted about 50 feet to the west, and areas east of the new alignment, consisting mostly of the previous road alignment, would be used for staging materials.

Milepost 3.7 to Milepost 6.1 (Adjacent to Death Valley Scotty Historic District and Scotty's Castle)

This portion of Bonnie Clare Road was not as extensively damaged as the section from MP 0.0 to MP 3.7. Work would consist of partial reconstruction of the road, with ditch reconditioning, embankment repair, and placement of riprap as needed. The road width would remain unchanged from the previous road project in 2012-2013. From MP 3.7 to MP 4.0 and from MP 4.3 to MP 4.8, roadside ditches would be reconditioned and the road embankment would be repaired. The road sections from MP 4.0 to MP 4.3, from MP 4.8 to MP 5.0, and from MP 5.3 to MP 5.9 would be reconstructed and the riprap embankment protection would be placed along the right embankment (southbound). The right lane would be reconstructed for a short section from MP 6.0 to MP 6.1. The reconstructed road would follow the same alignment and would be at the same grade as existed before the flooding in 2015.

An underdrain would be constructed at about MP 4.0 where a spring emerges from under the road surface. The underdrain would be constructed with perforated pipe buried about 5 feet deep, with an outlet pipe to direct the flow to the toe of the road fill on the downstream side of the road.

A water line and utility lines would be placed beneath the southbound travel lane of the road from about MP 3.8 (the existing water intake facility and spring) to about MP 4.5 (near Scotty's Castle). The water line and utility lines would originate at the water intake facility and would tie into the existing water system at Scotty's Castle. The water and utility lines from the water intake

facility to the road (about 350 feet) and from the road to Scotty's Castle (about 1,100 feet) would be placed underground using trenching. After crossing the wash at about MP 4.5, the waterline and utility line would continue via trenching to connect to the existing water vault at Scotty's Castle. The existing temporary aboveground waterline would be removed. The trenched areas would be restored to preconstruction conditions after work is complete. The water line and utility lines would be placed in a 3-foot-wide by 6-foot-deep trench.

The preferred alternative would include reconstructing the damaged portion of fence along Bonnie Clare Road from MP 3.5 to 6.0. The fence would be reconstructed on the alignment that existed prior to the 2015 flood, with a few minor modifications required due to changes in the vertical and horizontal location of the channel bottom resulting from the flood. Reconstruction would proceed in compliance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes* and the *Final Fence Preservation Treatment Plan* (NPS 2012d).

At approximately MP 4.7, the bridge at the entrance to Scotty's Castle is threatened by erosion and downcutting of the Grapevine Canyon Wash channel. Proposed work to protect the bridge from future erosion would include:

- Armoring would be placed in the channel from 100 to 200 feet downstream of the bridge and would be buried. The banks of the channel also would be armored to prevent flanking. The armoring would consist of buried articulating concrete blocks (ACBs).
- The channel would be armored with buried ACBs a minimum of 25 feet upstream of the bridge.
- The channel banks at the bridge abutments would be armored with buried ACBs for a minimum of 25 feet upstream and downstream from the bridge.
- A headcut (sudden change in elevation at the leading edge of a gully) about 75 feet upstream of the bridge would be armored with buried ACBs to prevent further erosion.

The total area of disturbance at the bridge would extend about 75 feet upstream of the bridge, 200 feet downstream of the bridge, and 50 feet on either side of the channel.

An existing underdrain at Cottonwood Corner, approximately MP 5.9, would either be left in place or reconstructed in the same way as existed after the 2012-2013 project. A temporary vehicle turnaround area would be established on the east side of the road at Cottonwood Corner. The turnaround would be used only for construction purposes and would be restored after construction is complete. No storage of materials would occur at this site because it is within a side wash to the canyon.

Milepost 6.1 to Milepost 7.6 (Below Scotty's Castle)

The section of the road below Scotty's Castle was not as extensively damaged as the section from MP 0.0 to MP 3.7. Work would mostly consist of ditch reconditioning and embankment repair as needed, and placement of riprap embankment protection. One short section of the road at a low water crossing from about MP 7.3 to MP 7.4 would be reconstructed and protected with revetment mattresses and buried concrete Jersey barrier.

Several stream-training structures would be installed along the road and stream channel edge at about MP 7.4, just upstream of the intersection with Ubehebe Road, to reduce erosion and direct stream flows away from the road and toward the Grapevine Canyon Wash channel (Figure 4 and Figure 5).

- An earthen berm would be constructed on the right side of the road (southbound). The berm would be about 550 feet long, 2 feet high, and 2 feet wide along the top, and would have 2:1 (horizontal: vertical) side slopes.
- A 6-foot-high by 6-foot-wide by 10-foot-long rock feature would be placed on the left side of the road to prevent further erosion in an eroded area. The rock feature would be a dry-stacked rockery designed to mimic a rock outcrop that existed prior to the flood and would prevent water from flowing down the left side of the road and flooding the park facilities at Grapevine.
- An existing ditch would be filled in from the road to the valley wall on the left side of the road, creating a flat surface from the road to the wall.
- An existing berm would be removed on the right side of the road. The existing berm is about 74 feet long and 10 feet wide. A 10-foot-wide channel would be graded to drain water from a low water crossing to the channel.
- Four riprap spurs would be constructed with one end along the eroded channel bank and one end projecting into the channel (Figure 4). The most upstream spur would be 30 feet long and angled 45 degrees to the existing bank. The other three spurs would be 20 feet long and would be perpendicular to the existing bank. Each spur would be 3 feet wide along the top, 5 feet high, and have 2:1 side slopes. Spurs would be constructed of Class 5 riprap.

Spring House Berm and Test Well

A dirt berm that protects the water intake facility by diverting flood flows away from the Spring House and other features at the existing water intake facility would be repaired and fortified (Figure 6). The existing berm is about 2 to 3 feet high and would be reconstructed to be about 6 feet high. The reconstructed berm would be about 367 feet long, 5 feet wide at the top, and 36 feet wide at the base. The berm would tie in with the hillside north of the Spring House and would curve around to the south and west to protect the Spring House, Chlorination Building, and water tanks from flooding. The upstream (east) face of the berm would be protected with a rock-filled gabion basket about 1 foot thick. Access to construct the berm would be along the existing access road to the Spring House at about MP 3.75. Following construction, the access road would be returned to preconstruction conditions.

The park would install a test well near Staininger Spring (Figure 7). The test well would be used to test the feasibility of converting the Scotty's Castle water supply from direct spring capture to a well. This would potentially allow for the restoration of spring flow to support aquatic ecosystems and riparian habitats.

A drill rig would access the well site on the existing maintenance road to the Chlorination Building and Spring House. Staging would be limited to the existing road and parking area at the

water system infrastructure. The well would involve drilling a 14-inch-diameter borehole down 20 feet to allow installation of a 10-foot-long surface casing. Then, drilling will continue below 20 feet with a 10-inch-diameter borehole to a depth of no more than 400 feet. The well would be on a 2-foot-diameter and 4-inch-thick concrete pad. The well would rise 3 feet above ground and would be 10 inches in diameter. Drill cuttings (material removed from the drill hole) would be removed by park maintenance staff and added to the clean fill material stockpiles at Scotty's Castle or at the Grapevine Ranger Station.

General Construction Schedule

Construction would begin in summer or fall of 2018, with completion planned for fall 2019.

Wetland Compensation

Compensation for wetland impacts would be accomplished by reestablishing wetlands in four locations as described in detail in the Floodplain and Wetland Statement of Findings (Appendix B) and in the *Compensatory Mitigation and Monitoring Plan* (FHWA 2017a). Mitigation would include reestablishing spring flow channels, redirecting spring flows to wetland and riparian areas, obliterating abandoned sections of road to reestablish riverine wetlands, and installing vertical mulch to promote revegetation. A total of about 7.8 acres of riverine wetlands would be reestablished (FHWA 2017a). Wetland compensation would be constructed concurrently with reconstruction of the road.

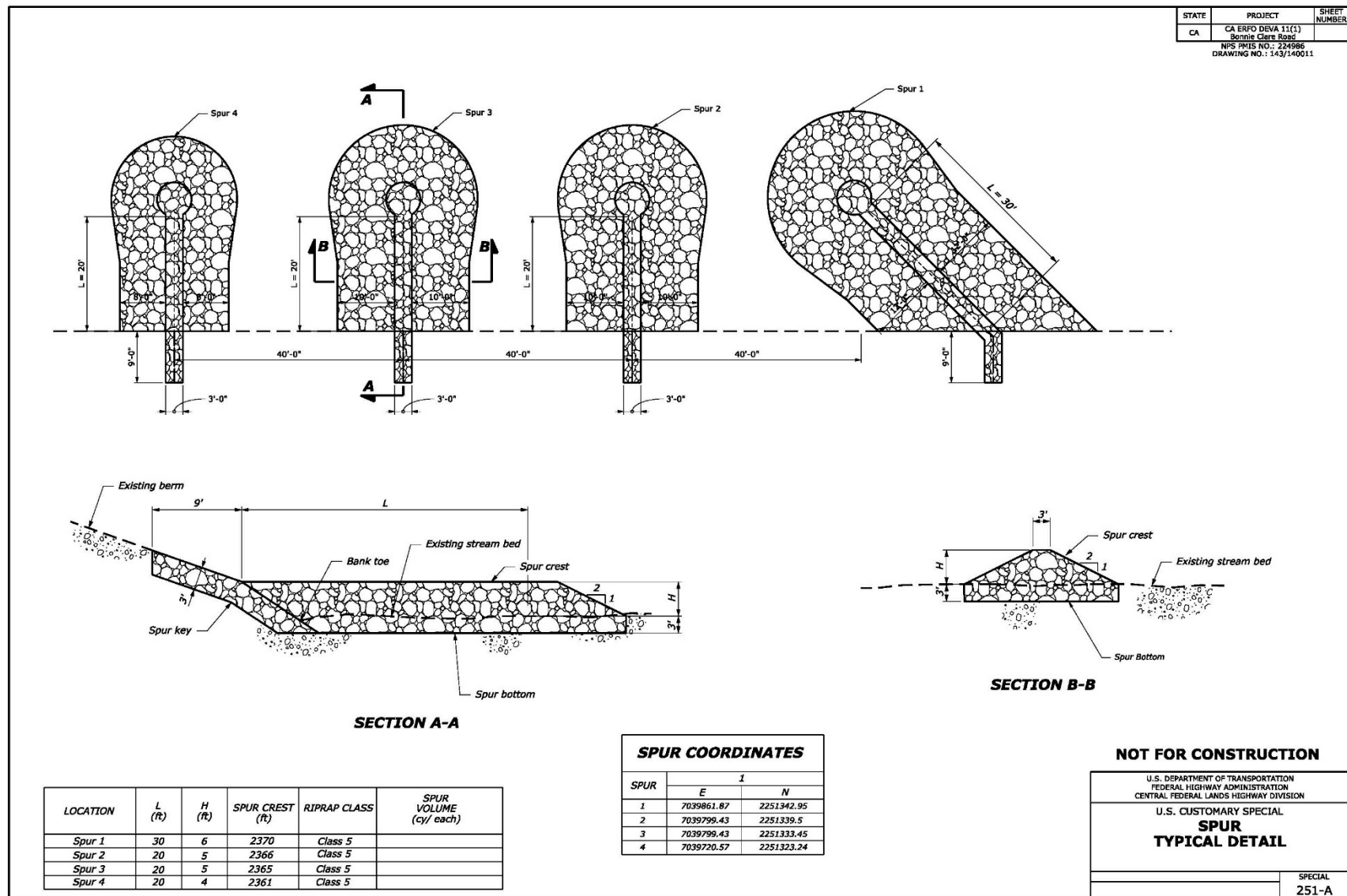


Figure 4. Typical spur detail.

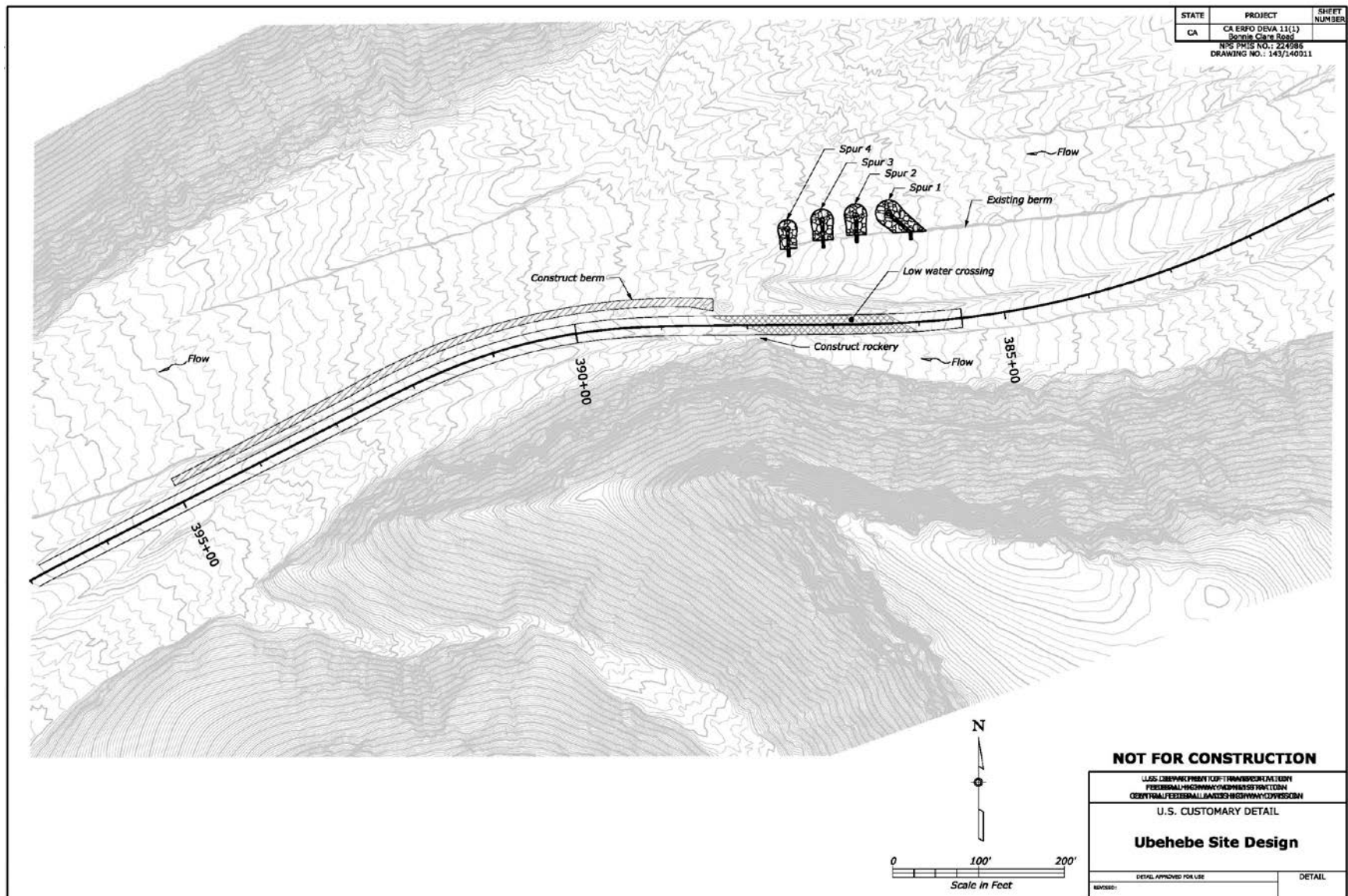


Figure 5. Stream-training structures.

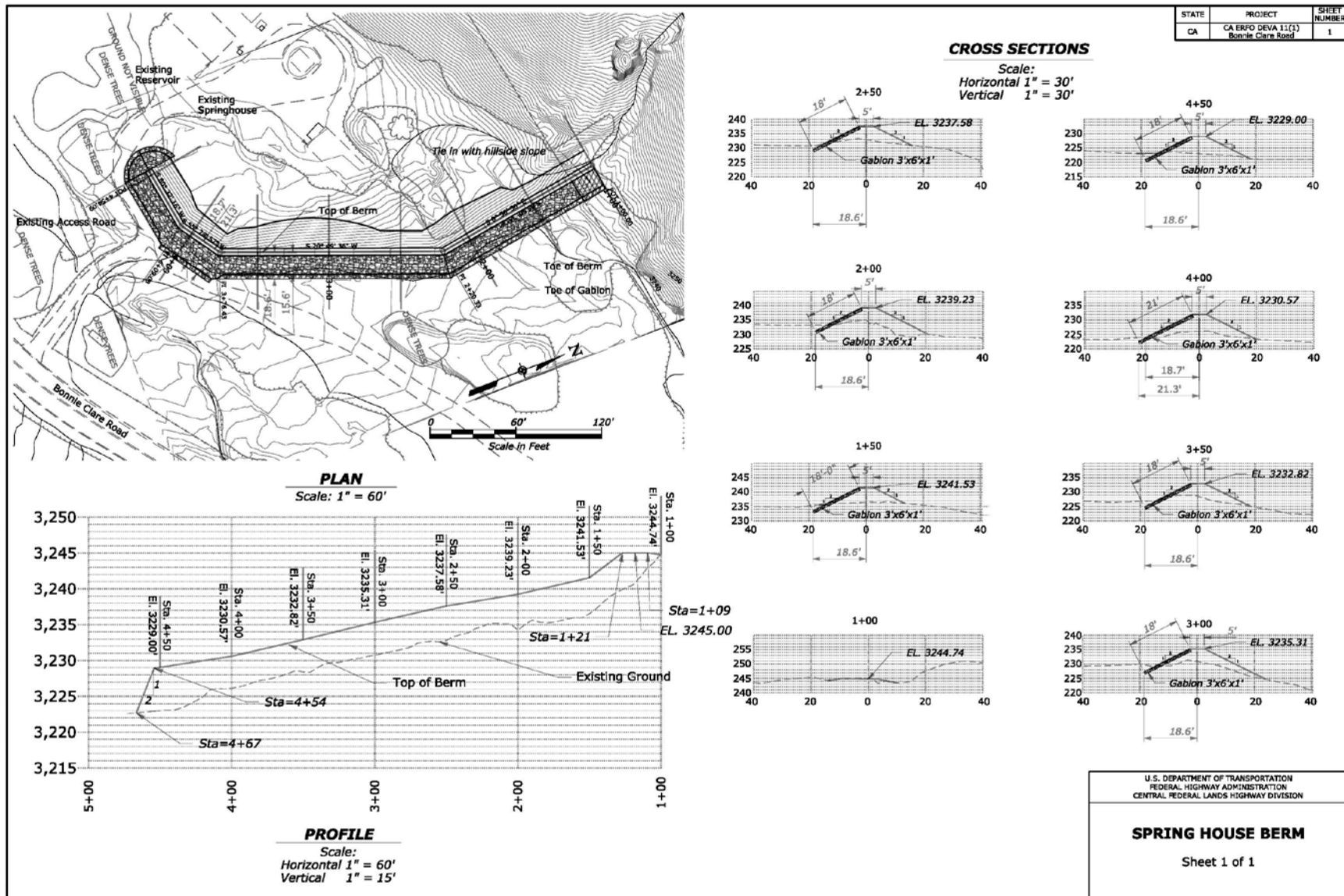


Figure 6. Alternative B—Spring House berm.

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California



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Figure 7. Alternative B—test well.

Mitigation Measures

The following mitigation measures would be implemented to minimize the degree or severity of adverse effects (Table 3).

Table 3. Mitigation measures

Floodplains
<ul style="list-style-type: none"> Where roadways would be obliterated, floodplain complexity would be introduced by roughening, which would include partially burying boulders, partially burying salvage brush bundles to capture fine sediments and seeds, and reestablishing floodplain benches.
Wetlands
<ul style="list-style-type: none"> Impacts on wetlands would be avoided in selected locations by realigning the road out of wetlands to the greatest extent possible during project design. Wetlands would be restored in selected locations by obliterating the previously existing road and reestablishing the stream channel. Compensatory mitigation would be constructed in four locations as described in detail the Floodplain and Wetland Statement of Findings (Appendix B) and in the Compensatory Mitigation and Monitoring Plan (FHWA 2017a). BMPs for wetlands would be implemented as required in Appendix 2 of the NPS Procedural Manual #77-1: Wetland Protection (NPS 2016a). These BMPs are listed in the Floodplain and Wetland Statement of Findings (Appendix A).
Water Quality and Soils
<ul style="list-style-type: none"> BMPs for drainage and sediment control, as identified and used by the FHWA and the NPS, would be implemented to prevent or reduce pollution from diffuse sources and minimize soil loss and sedimentation in drainage areas (Appendix C).
Wildlife and Species of Concern
<ul style="list-style-type: none"> To protect herptile habitat and individuals, road construction activities should (1) carefully address roadside rocks, which serve as both cover and basking sites for herptiles, and (2) replace any talus or rocks that are removed during construction to provide herptile habitat. Beginning April 10, all construction activities would cease in areas within a 0.25-mile buffer of suitable habitat for least Bell's vireo and southwestern willow flycatcher, and a qualified biologist would conduct surveys for these species. Surveys would be based on the U.S. Fish and Wildlife Service's (USFWS) most recent survey guidelines and protocols for the least Bell's vireo (USFWS 2001) and southwestern willow flycatcher (Sogge et al. 2010). The survey protocol for southwestern willow flycatcher protocol recommends conducting surveys during three survey periods: May 15 to June 1, June 1 to June 24, and June 24 to July 17 (Sogge et al. 2010). The NPS would not conduct surveys during the third survey period unless birds were detected during the first two survey periods. If neither species is detected during surveys, construction activities would resume in areas adjacent to suitable habitat. However, if either species is detected, and surveys confirm that birds are nesting or nesting is a possible outcome, then the NPS would resume construction activities adjacent to suitable habitat after (1) the avian nesting and breeding season ends (i.e., August 16), or (2) a qualified biologist has determined that the birds are not attempting to nest again or any young have fledged.
Vegetation
<ul style="list-style-type: none"> Disturbed areas, including roadside berms, would be returned to natural conditions using active restoration to repair selected disturbed areas and control invasive species. Disturbed areas would be monitored for 5 years by the NPS after construction to determine if remedial actions such as the installation of erosion-control structures or control of nonnative plant species are necessary.

Invasive Plant Species

- Invasive non-native plant species would be controlled in high-priority areas, and other undesirable species would be monitored and controlled as necessary. To prevent the introduction and minimize the spread of nonnative vegetation and noxious weeds, measures would be implemented during construction: (1) minimize soil disturbance; (2) pressure wash or steam clean all construction equipment to ensure that all machinery, rocks, gravel, or other materials are cleaned and weed free before entering the park; (3) brush down all construction equipment after every trip while transporting material outside the construction limits; (4) cover all haul trucks bringing fill materials from outside the park to prevent seed transport; (5) limit vehicle parking to existing roadways, parking lots, or access routes; (6) limit disturbance to roadsides and culvert areas, including limiting equipment to the roadbed area—no machinery or equipment would access areas outside work area boundaries; and (7) obtain all fill, rock, or additional topsoil from the project area, if possible. If not possible, obtaining weed-free sources from NPS-approved sources outside the park would be required.
- Disturbed areas would be monitored for 5 years following construction (until the disturbance has subsided) to identify growth of noxious weeds or nonnative vegetation, and any individuals or patches observed would be treated. Treatment of nonnative vegetation would be completed in accordance with Director's Order 13: Integrated Pest Management Guidelines.
- In an effort to avoid introduction of nonnative or noxious plant species, no imported topsoil or hay bales would be used during revegetation, if attempted. On a case-by-case basis, the following materials may be used for any erosion-control dams that may be necessary: certified weed-free rice straw, cereal grain straw that has been fumigated to kill weed seed, and wood excelsior bales. All heavy equipment will be inspected and approved by qualified NPS staff before entering the park.
- Excess soil material generated during construction that is infested with the invasive species *Halogeton glomeratus* would be buried a minimum of 18.0 inches deep and covered with clean soil at the designated mixing table site. This species has been identified adjacent to the construction area on Bureau of Land Management land, on a few sites in the proposed construction corridor, and is a serious threat to the park.

Cultural Resources

- Temporary fencing would be placed between the construction limits and known archeological sites to prevent inadvertent damage to sites during construction.
- In selected areas where existing archeological sites are threatened by erosion, the existing cutbank slopes would be covered with geotextile fabric and the fabric covered with clean fill material or rock gabion and clean fill material at an angle less than 2:1 to prevent continued erosion. Sites proposed for these treatments are identified in the Class III Cultural Resources Survey and Mitigation Plan (Boston Archeological Consulting et al. 2017).
- Ground-disturbing activities would be monitored by a qualified archeologist and a tribal monitor.
- If previously undocumented archeological features are encountered during project implementation, all necessary steps would be taken to protect them, and work in that location would be immediately suspended until the park compliance archeologist or another archeologist meeting the Secretary of the Interior's Standards has evaluated the find.
- In the unlikely event that human remains are encountered during project implementation, all work would be suspended immediately until measures stipulated in the park's Native American Graves Protection and Repatriation Act (NAGPRA) Inadvertent Discovery Plan are completed and the NAGPRA is followed.
- Trees and shrubs (particularly cottonwood, willow, fig, and mesquite) adjacent to the construction limits at Cottonwood Corner would be flagged and avoided. If removing trees or shrubs became necessary, trees and shrubs would be documented in terms of their location, species, and size. Documentation would also include digital photographs of each individual tree or shrub impacted by construction activities. Diameter at breast height would be recorded for trees. Protection measures would be put into place to protect these trees and shrubs to the greatest extent possible. If any need to be removed or their roots are damaged severely during the construction process, then replacement trees and shrubs of the same species would be planted in the same or a very similar location to restore the overall character

of the Cottonwood Corner oasis. Ideally the replacement species would be sourced from plant material in an unaffected area of Cottonwood Corner. If replanting is necessary, a historical landscape architect would be consulted.

Visitor Use and Experience

- Traffic delays from construction activities would be limited to a 30-minute maximum.

Air Quality and Soundscapes

- Fugitive dust plumes would be reduced by water sprinkling the soil during earth-disturbing activities. Possible sources of water for construction would be Scotty's Castle or Beatty, Nevada. Water acquired from outside sources would be treated for aquatic invasive species and pathogens if needed.
- Unnecessary construction vehicle engine idling would be limited to reduce noxious emissions.

Alternatives Considered and Dismissed

Alternatives dismissed were evaluated during a value analysis (VA) study in June 2016 (NPS 2016b). Alternatives considered in the VA were:

- Replace Bonnie Clare Road on original alignment with gravel surface;
- Reconstruct Bonnie Clare Road on original alignment with paved surface;
- Relocate Bonnie Clare Road adjacent to new wash edge and elevate the alignment 5 feet above anticipated flow line;
- Relocate Bonnie Clare Road out of the flood zone; and
- Close the road.

The alternatives considered for project implementation and dismissed from further analysis, are described below.

Replace Bonnie Clare Road on Original Alignment with Gravel Surface

Under this alternative, Bonnie Clare Road would be replaced on its original alignment with a gravel surface road, which would be regularly maintained by the park. A gravel road would require a substantial amount of maintenance by park staff, which is already strained with maintaining all roads throughout the park. A gravel road would not provide easy access for tour buses and recreational vehicles (RVs) and would be at risk of road failure from low-intensity rainfall because it would have no protection against flooding. This alternative was dismissed from analysis in this EA because it does not meet the project purpose and need to reestablish a safe, sustainable, resilient, and efficient driving route.

Reconstruct Bonnie Clare Road on Original Alignment with Paved Surface

Bonnie Clare Road from the California/Nevada state line to the junction with Ubehebe Crater Road was reconstructed in 2012-2013 based on designs completed in 2012, before being heavily damaged during flooding in October 2015. NPS and FHWA considered reconstructing the road according to the 2012 designs; however, this would be impracticable because the hydrology and elevations changed as a result of the flood. Alternative B, analyzed in this EA, is generally based on the alignment from 2012-2013, with some modifications as necessary due to changed conditions resulting from the flood and to improve resiliency to future floods.

Relocate Bonnie Clare Road Adjacent to New Wash Edge and Elevate the Alignment 5 Feet above Anticipated Flow Line

Although this alternative was recommended in the VA, it was dismissed because it would result in more cultural resource impacts, including impacts on ethnographic resources from cuts to the canyon walls, impacts on archeological sites, and impacts on the cultural landscape, compared with the preferred alternative. Alternative B, analyzed in this EA, uses some elements of this option by incorporating a slight realignment of the segments from MP 0.5 to MP 1.1 and from MP 1.1 to MP 2.0, relocating the road to an alluvial terrace further from the wash, and making the road more resilient to damage from future floods.

Relocate Bonnie Clare Road Out of the Flood Zone

Under this alternative, the road would be relocated out of the floodplain, and structures such as bridges or box culverts would be constructed as necessary to convey flows under the road. Extensive road cuts and other impacts in previously undisturbed areas would be required, resulting in unacceptable impacts on archeological and ethnographic resources. While this alternative would meet the purpose and need for the project, it was dismissed because it would result in unacceptable cultural resource impacts, including substantial impacts on ethnographic resources from cuts to the canyon walls, impacts on archeological sites, and impacts on the cultural landscape from completely changing the road alignment.

Close the Road

This alternative was dismissed because it would not meet the project purpose and need to reestablish a safe and sustainable driving route from the Beatty, Nevada entrance of the park to the North Highway. This alternative would also inhibit public access to Scotty's Castle, resulting in substantial adverse impacts to the visitor experience.

AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

This section describes the affected environment (existing setting or baseline conditions) and analyzes the potential environmental consequences (impacts or effects) that would occur as a result of implementing the no action and action alternatives. Cumulative effects are analyzed for each resource topic carried forward.

Cumulative Impact Scenario

The Council on Environmental Quality (CEQ) regulations that implement the National Environmental Policy Act (NEPA) require assessment of cumulative impacts in the decision-making process for federal projects. Cumulative impacts are defined as “the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions” (40 CFR 1508.7). Cumulative impacts are considered for the no action and action alternatives.

Cumulative impacts were determined by combining the impacts of the actions included in the alternatives with other past, present, and reasonably foreseeable future actions. Therefore, it is necessary to identify other past, present, or reasonably foreseeable future actions in the park that could result in cumulative impacts. The following past, present, or reasonably foreseeable actions were identified:

- Replacement of the waterline supplying water to Death Valley Scotty Historic District, completed in 2011.
- Reconstruction of Bonnie Clare Road, reconstruction of Grapevine Ranger Station parking lot and sidewalks, and resurfacing of Mesquite Spring Campground Road, completed in 2013.
- Rehabilitation and repairs to Death Valley Scotty Historic District, anticipated for 2018–2020. This project would include rehabilitating and repairing buildings and landscape features within the historic district and replacing facilities needed for security, electrical and communication utilities, temperature control, and visitor interactions.

A report on Climate Change Trends, Vulnerabilities, and Ecosystem Carbon in Death Valley National Park projects an increase in 20-year storms (a storm with more precipitation than any other storm in 20 years) to once every 5 to 10 years (Gonzalez 2016). This increase in extreme storms and, in turn, chances of the road washing out again, increase with climate change. However, any future road repair or reconstruction is not included within the cumulative impact scenario because the degree and extent of future storm damage to the road is speculative. If Bonnie Clare Road receives flood damage in the future, the NPS would engage in additional planning to determine future actions for the road.

Cultural Resources

Types of NPS cultural resources include archaeological resources, cultural landscapes, historic structures, museum objects, and ethnographic resources. As described in the first chapter, impacts on archaeological and ethnographic resources would be mitigated and were dismissed from a detailed analysis. This project would have no effect on museum objects. This project would benefit museum objects because many will be returned to the Scotty's Castle visitor center. Effects would occur to structures and cultural landscapes within historic districts; thus, that analysis follows below.

Affected Environment

Cultural Landscapes

Bonnie Clare Road

The cultural landscape of Bonnie Clare Road was documented in a 2012 Cultural Landscape Inventory that received SHPO concurrence (NPS 2012e). The road was severely damaged and sections destroyed in a 2015 flood. As previously described, about 70 percent of the 7.6-mile section of Bonnie Clare Road from the state line to Ubehebe Crater Road has been destroyed. This includes about 62 percent of the road that was completely destroyed and another 8 percent that was heavily damaged to the point where partial reconstruction is needed.

The analysis area for cultural landscapes is the cultural landscape boundary for Bonnie Clare Road, which was determined to be a 7.6-mile segment of road located within the park that extends from the Nevada/California border (also the eastern boundary of the park) through Grapevine Canyon to the junction with Ubehebe Canyon Road, including 4.97 miles of the road that would be reconstructed with only minor changes in design as needed to improve the resilience of the road against future flood events. The boundary extends 50 feet from the original centerline on both sides of the road for a 100-foot corridor, which encompasses the entire width of the road, including the paved road, unpaved shoulders, unpaved ditches, unpaved pullouts, and rock cuts. The exception to the 100-foot corridor is where Scotty's Castle (part of Death Valley Scotty Historic District) Upper Vine Ranch perimeter fence parallels the road for nearly 2.5 miles. The Upper Vine Ranch perimeter fence, while associated with the Death Valley Scotty Historic District, would be reconstructed as part of this project.

The road meanders through the narrow canyon with steep rock faces. It was built along an American Indian trade route, which later became a wagon trail connecting the Ubehebe Mining District to the railroad transportation route in Bonnie Clare, Nevada. The wagon trail became a dirt road in the early 20th century. In 1929 and 1930, Albert Johnson, the proprietor of Scotty's Castle, performed the first known deliberate construction on the road by realigning the 2.6-mile section of dirt road that delineates the southern boundary of his property. Death Valley National Monument was created in 1933, and Civilian Conservation Corps crews performed major repairs and maintenance on the road from 1933 until 1942. In 1948, the 3-mile section of road from the junction with Ubehebe Crater Road to Scotty's Castle was paved by park personnel. In 1951, park personnel reconstructed the remaining section of Bonnie Clare Road from Scotty's Castle to the Nevada/California boundary. Bonnie Clare Road was determined

eligible for listing in the National Register of Historic Places (NRHP) and received SHPO concurrence for this determination under Criteria A and C for the period of 1947–1951. Under Criterion A, Bonnie Clare Road is locally significant as a circulation corridor that was improved and reconstructed during the Pre-Mission 66 period of development in the park, which spans from 1945-1955 and predates the Mission 66 program which ran from 1956-1966. Under Criterion C, the road is locally significant for how it embodies the early Mission 66 road design and construction efforts in Death Valley National Park.

In 2012–2013 Bonnie Clare Road was reconstructed following an overall rehabilitation approach to minimize impacts on the historic character of the pre-Mission 66 era road. Not all impacts were avoided, but all adverse effects were resolved through the execution and implementation of a memorandum of agreement between the NPS and SHPO (NPS 2012f). Primary impacts included adjusting the alignment of the road in some curved sections, expanding the paved road width from 20 to 22 feet, adding curbs and paved ditches along some sections of the road, and moving and reconstructing a portion of the Upper Vine Ranch perimeter fence. Road design tenets of the Mission 66 era were adhered to for the 2013 road reconstruction project including minimizing cut and fill, blending final grading into the surrounding natural landscape, using native plants to rehabilitate the shoulders and reduce scarring, and minimizing tree removals. Some mitigation measures included maintaining the road’s vertical profile for a majority of the project’s length, tinting curbs that were installed to reduce their visual impact, and matching the angle of any rock cuts to match those done during the early Mission 66 era.

The Bonnie Clare Road cultural landscape is composed of character-defining features associated with five landscape characteristics: natural systems and features, spatial organization, topography, land use, and views and vistas.

Natural Systems and Features

The development of Bonnie Clare Road was influenced by natural systems and features such as geomorphology, geology, hydrology, and native vegetation. The canyon walls influenced the historic road alignment and road profile. The rock formations and narrow canyon are also key natural features and add to the scenic experience for those traveling along the road, and remain intact after the flood event.

Bonnie Clare Road is located in the level canyon floor and was routed around natural springs to follow the naturally gentle grade of Grapevine Canyon. The road is located along the southern toe of the canyon wall, rising and falling over drainages of the canyon’s slopes, and is a response to the natural contours of the canyon landform. These contours change over time as heavy rains and flash floods move great quantities of rock and soil down the canyon drainages and through the canyon bottom.

The geologic diversity of the canyon is easily seen from Bonnie Clare Road, from the tall mountains that extend up from the canyon on either side, to the cuts that have been made in order to accommodate the road, exposing the layers of rock that have folded and settled over time. The relationship of the road with the exposed rock and vertical cuts allows visitors to experience the geology and colorful landscape as they travel through the canyon, which remains intact. Cathedral Rock is one of the defining geological formations that the traveler sees on the way to Scotty’s Castle. In cases where there is a vertical element close to the edge of the road, the road feels narrower and provides a more intimate experience with the canyon’s geology.

Additionally, expansive views of Death Valley and the Nevada desert are framed by the canyon as it opens up to the east and west. The relationship of the road to the geology of the canyon is continually modified by the hydrology of the canyon.

Rainfall in Death Valley is not frequent, but intense rain events can cause flash floods like the one in 2015 that damaged Bonnie Clare Road since there is little or no vegetation to hold runoff. Massive alluvial fans at the valley margins and gully cutting attest to these events. The starting point for Bonnie Clare Road, at the intersection with the road to Ubehebe Crater, is one massive alluvial fan created from a continuous cycle of precipitation flowing downhill through Grapevine Canyon and spilling out into the valley below. This process remains intact. During the 1947–1951 road construction project, sections of the road were raised to mitigate periodic flood events that had occurred prior to the mid-20th century.

Native vegetation varies according to elevation and the amount of available moisture. In Grapevine Canyon, the Creosote Bush Mixed Shrub system dominates the plant communities on the lower mountain slopes, alluvial fans, and the canyon floor south of the road. The canyon floor north of the road is covered primarily by plants in the Low and Mid Desert Wash system communities resulting from the increased availability of water from the springs and wetlands as well as intermittent flooding from the upper elevations and surrounding mountains. Native vegetation in the canyon includes mesquite, desert willow, Mojave rabbitbrush, Parish goldeneye, desert tea, white burrobush, bladder sage, Virgin River brittlebush, chamisa, California buckwheat, and California broomsage. The vegetation at the springs along Bonnie Clare Road provides a distinct setting that is unlike surrounding desert vegetation. Though some areas of vegetation were impacted by the 2015 flood event, these plant communities remain in the area around the road.

Spatial Organization

Spatial organization includes the road's alignment, grade, asphalt paving and width, and response to the natural systems and features described previously. It also includes the undulating grade of the lower section between Cottonwood Corner and Scotty's Castle, the general width of the road between 20 and 22 feet, soft unpaved shoulders and pullouts, and the Upper Vine Ranch perimeter fence. One primary characteristic is the road's alignment including tight curves in the upper (eastern) part of the canyon, straight sections, curves that follow the canyon slopes past Scotty's Castle, the bend at the historic entrance to Scotty's Castle, and the road's alignment between Cottonwood Corner (including the S-curve) and Scotty's Castle. The undulating grade of the road between Scotty's Castle and Cottonwood Corner is also character-defining. Other spatial features include the road's 20- to 22-foot asphalt-paved width and the relationship of the road to the Upper Vine Ranch perimeter fence at Scotty's Castle. The road was designed in the early Mission 66 era as a minor two-lane paved park road width of 20 feet with 10-foot driving lanes. Major paved two-lane roads designed during that era were designed with a road width of 22 feet and 11-foot lanes. Since the end of the period of significance, the road has been repaired many times resulting in a fluctuation of paved road widths between 20 and 22 feet, which is noted in the Cultural Landscapes Inventory as a character-defining feature. The Mission 66 era road was designed with 3-foot unpaved shoulders, though some variation in width likely occurred between open areas where shoulders expanded and canyons where they were hemmed in. Pullouts often followed those created during the road's initial construction in the 1930s. Originally, there were no curbs or paved ditches, which contributed to the rural and remote character of the road. Modifications were made to some portions of the road's

alignment, grade and shoulder width and materials during the 2012-2013 road reconstruction project, but retained its overall integrity.

Land Use

Grapevine Canyon has been used as a transportation corridor since prehistoric times, but its NRHP significance is tied to the early Mission 66 era. Between 1947 and 1951 the road was reconstructed from a narrow gravel road to a 20-foot-wide paved park road that served visitors and provided access to Scotty's Castle. Though currently difficult, the corridor is still used for transportation.

Topography

Character-defining features associated with the topography of the road include grade, vertical rock cuts, vertical profile, and fill used on the approach to Scotty's Castle. Bonnie Clare Road begins at roughly 2,300 feet in elevation and ends at 3,900 feet in elevation with the climb in elevation reached with minimal modification to the existing topography because the road was designed to follow the low points of the canyon, which remains. The early Mission 66 era designs for the road kept the road below the 7 percent maximum grade associated with that era, with most grades averaging between 3 and 4 percent. A major component of the road's Mission 66 era design is its cross-section with an average 30-foot-wide bench, ¼-inch to 1-foot crown, 10-foot-wide paved travel lanes, 3-foot-wide soft shoulders, and 2-foot-wide unpaved ditch at the cut slope. When the road was reconstructed during the early Mission 66 era, wider curves were constructed to increase sight distances and travel speeds, resulting in selected rock faces being cut at the toe of the slope to provide space for these alignment changes. As stated earlier in association with spatial organization, modifications were made to some portions of the road's grade and vertical profile during the 2012-2013 road reconstruction project, but retained its overall integrity. One of the tenets of the early Mission 66 era was to minimize the amount of cut and fill needed to build or rebuild roads to minimize the impact of topographic features along the road by blending them into the natural topography, which was achieved for Bonnie Clare Road.

Views and Vistas

Views and vistas along Bonnie Clare Road include those that are naturally occurring and those that were enhanced by the road's design to incorporate key views and vistas along its route. These views were not affected by the 2015 flood. They include:

- Chimes Tower and Entrance Gate while Traveling from Cottonwood Corner to Scotty's Castle,
- Tin Mountain Panoramic View Driving through Grapevine Canyon to the Valley, and
- Cottonwood Corner and Cathedral Rock—Views to and from Scotty's Castle to the Valley.

Death Valley Scotty Historic District

A portion of the analysis area falls within the Death Valley Scotty Historic District (DVSHD). Information in this section is based on the DVSHD National Register of Historic Places Inventory-Nomination Form and Amendment (NPS 1978 and NPS 2009) and cultural landscapes inventories conducted in 2005 and 2014 (NPS 2005 and NPS 2014). The historic district is listed under Criterion B at the local level for its association with Death Valley Scotty, Criterion C at the state level for the unusual and extravagant use of Spanish Mission architecture built in a remote desert location, and Criterion D. The district's period of significance is from 1922 to 1954.

According to the 2013 draft National Register amendment, which has not been updated since the 2015 flood event the historic district includes 38 contributing resources and 8 noncontributing resources in two noncontiguous parcels: 284-acre Scotty's Castle (Upper Vine Ranch) and 1,174-acre Lower Vine Ranch. Lower Vine Ranch is outside the analysis area for indirect visual effects for the proposed project.

Most of the buildings and structures at Scotty's Castle are outside the analysis area for direct effects for the proposed reconstruction of Bonnie Clare Road except those adjacent to Bonnie Clare Road including Upper Vine Ranch perimeter fence (MP 3.5 to MP 6.0), the entrance road and gate and stream (MP 4.6), and Cottonwood Corner (MP 5.9). Like Bonnie Clare Road, the 2015 flood resulted in considerable damage to some of the buildings, structures, and cultural landscape features in the DVSHD.

Upper Vine Ranch Perimeter Fence

There are 5.4 miles of historic fence around Scotty's Castle with 2.6 miles of fence paralleling Bonnie Clare Road. About 95 percent of the fence posts in that 2.6-mile stretch paralleling Bonnie Clare Road were either destroyed or damaged by the 2015 flood after being rehabilitated as part of the 2013 Bonnie Clare Road reconstruction project. Therefore, 54 percent of the 5.4-mile Upper Vine Ranch Perimeter Fence was severely damaged in the 2015 flood. The fence was initially constructed between 1928 and 1930 primarily by Timbisha Shoshone workers employed by Albert Johnson when he decided to move Bonnie Clare Road to the southern edge of his property. The perimeter fence forms the boundary of Scotty's Castle, and the draft National Register amendment revised the boundary of Scotty's Castle to correspond to the 2013 Bonnie Clare Road reconstruction project.

Entrance Gates, Entry Road, and Stream

The Entrance Gates and Road System, including the bridge spanning the stream near the entrance and the Dungeon Apartment, are contributing resources associated with the DVSHD. The entrance gates and dungeon apartment were designed and constructed beginning in 1928 but were never completed. The structure is characterized by two crenellated towers that rise two stories high. The towers are connected by an arch and a pair of massive redwood gates with hand-wrought iron fittings resembling the gates at the stable in scale and mass. Abutting the towers are 3-foot-high curving walls at both edges of the driveway. The apartment is located below grade between the two towers.

Cottonwood Corner

Cottonwood Corner is one of four designed planting areas located near a spring on the Scotty's Castle site. Designed by M. Roy Thompson and Dewey Kruckeberg in the late 1920s, it was planted with cottonwood, willow, figs, and mesquite to create an oasis in the desert landscape. The area serves as a corner of the Scotty's Castle boundary and is a contributing feature of the DVSHD cultural landscape.

Environmental Consequences

Impacts of Alternative A—No Action

Under the no action alternative, no additional repairs or improvements would be made to Bonnie Clare Road. Major portions of the road's alignment, grade, asphalt paving and width, and response to the natural systems and features would not be rebuilt, and the cultural landscape character of this early Mission 66 era road would be lost. In addition, the use of this corridor as a transportation route, which has been used for centuries, would be lost, as would views of Chimes Tower, Tin Mountain, Cottonwood Corner, and Cathedral Rock. Finally, access to the Death Valley Scotty Historic District would remain cut off. The no action alternative would contribute long-term adverse effects on the cultural landscape from permanent loss of and continued deterioration of those characteristics and features that were damaged or destroyed by the 2015 flood.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects with the potential to affect cultural landscape contributing characteristics and features include future landscape repairs at Scotty's Castle as described above under *Cumulative Impact Scenario*, including facilities needed for security, electrical and communication utilities, temperature control, and visitor interactions. Although these past, present, and reasonably foreseeable future actions would result in temporary adverse effects on the cultural landscape, they would repair and rehabilitate the overall cultural landscape character. Collectively, all of these actions have had, and would continue to have, beneficial cumulative effects over the long term because they minimize adverse impacts on the cultural landscape. As previously described, the no action alternative would contribute long-term adverse effects on the cultural landscape from continued deterioration of those characteristics and features that were damaged or destroyed by the 2015 flood. Thus, when the effects of the no action alternative are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on cultural landscapes would continue to be beneficial, with an adverse contribution from the no action alternative.

Impacts of Alternative B—Reconstruct Bonnie Clare Road (Proposed Action and Preferred Alternative)

Bonnie Clare Road

The road alignment and design would match as closely as possible the alignment and design from the 2012–2013 Bonnie Clare Road reconstruction project and therefore would retain many of the tenets of the Mission 66 era road design. Though the 2015 flood damaged 70 percent of

the road, Alternative B would closely match the 2012–2013 project and would restore the road’s integrity. As described earlier, the 2012–2013 project did not avoid all impacts, but all adverse effects were resolved through the execution and implementation of a memorandum of agreement between the NPS and SHPO (NPS 2012f).

For the 2012–2013 project, the maximum shift in road centerline alignment was 20 feet, ensuring the road followed the canyon slopes and retained most of the road’s straight sections. The current project follows the 2012–2013 alignment with exceptions in the curves from MP 0.5 to MP 1.1 and from MP 1.1 to MP 2.0. Though the location of the curves through this section has changed, the curves themselves remain and follow similar bends so the design, setting, feeling, and association remain. The proposed changes would not adversely affect the road’s alignment.

The vertical alignment of the road between Cottonwood Corner and Scotty’s Castle was raised by as much as 2.25 feet as part of the 2012–2013 project. Under Alternative B, the vertical profile would remain unchanged for the majority of the project length in order to maintain the historic character of Bonnie Clare Road. Therefore, the proposed changes would not adversely affect the road’s vertical alignment. In addition, the road’s grade of 7 percent or less would be retained under Alternative B, so there would be no effect on the grade.

The current project, like the 2012–2013 project, would create a uniform 22-foot-wide two-lane asphalt paved road with 10-foot driving lanes. Most of the original road shoulders and ditches were rebuilt during the 2012–2013 road reconstruction project and then obliterated by the 2015 flood and subsequent cleanup and repair activities. The cross-section of the road would change from the Mission 66 era road with 10-foot driving lanes and unpaved shoulders and ditches to become 10-foot travel lanes with a 1-foot paved shoulder, with the exception of portions that would have 3-foot-wide paved shoulders (approximately 6 percent of total road reconstruction) and select areas that would have 2-foot paved ditches with concrete curbs designed to avoid the need for slope cuts. The soft shoulders would be eliminated in these locations but retained elsewhere. Revetment mattresses, concrete Jersey barriers, and riprap embankment protection to minimize scour of the road from future flows would be used but would be buried to avoid impacts on the visual character of the cultural landscape. In addition, the ditches, curbs, and gutters would be constructed using colored concrete so they blend into the canyon’s natural landscape. Though the road’s edges would have a different character in places where the ditches are paved and curbs are used, the total length of these elements would be similar to the 2012–2013 reconstruction project. Though that project did not avoid all impacts, all adverse effects were resolved through the execution and implementation of a memorandum of agreement between the NPS and SHPO (NPS 2012f). Alternative B would not adversely affect the visual character of the cultural landscape.

No vertical rock cuts are required for the proposed design; therefore, there would be no adverse effects on the vertical rock cuts in the canyon.

This project would restore use of the transportation corridor, road, and access to Scotty’s Castle, so there would be no adverse effect on the cultural landscape’s land use. Though currently difficult, the corridor is still used for transportation and that use would be improved once the reconstruction project is completed.

Fill used on the approaches to Scotty’s Castle dates to the period of significance and was affected by the 2015 flood event. A 550-foot-long, two-foot-tall, and two-foot-wide berm and 6-

foot-high by 6-foot-wide and 10-foot-long rock feature being constructed for future flood protection between MP 6.1 and MP 7.6 would have a negative impact on the topography, but this impact would be minimized if the berm and rock feature are constructed to be less geometric in shape and blended into the surrounding natural topographic grades and landforms. The current project plans to restore fill in their historic locations to maintain the road height and grade would not result in adverse effects if the Mitigation Measures described above are implemented.

Identified views, outlined earlier, are significant factors in the feeling and association of the road with Scotty's Castle. The minor shifts in road alignment under Alternative B would have no perceptible impact on the views from the road toward or from Scotty's Castle, Tin Mountain, Cottonwood Corner, or Cathedral Rock. These views were not affected by the 2015 flood and would remain intact after the road reconstruction project. Therefore, the project would have no adverse effect on the views from the road and would not affect the road's association with Scotty's Castle.

Death Valley Scotty Historic District

Bonnie Clare Road borders the Death Valley Scotty Historic District, so some resources would be affected by the preferred alternative, as described below.

Upper Vine Ranch Perimeter Fence

As part of the 2013 reconstruction of Bonnie Clare Road, the 2.6-mile portion of 5.4-mile fenceline along the road was rehabilitated. Rehabilitating the fence involved moving the affected portion of the fenceline 7 feet from the edge of the new travel lane and using existing fence posts to create a mold for the production of replacement posts. Any posts deemed in good condition were retained and reused. Though this section lost its integrity of location, it retained its setting, feeling, association, material, and workmanship.

Following the 2015 flood, the NPS conducted a Flood Damage Assessment of the fenceline along Bonnie Clare Road. The team determined that 95 percent of the 2.6-mile portion of fenceline along Bonnie Clare Road was impacted by the 2015 flood. Large sections of fence posts were washed out and redeposited further down the valley. Some posts wound up nearly 0.5 mile from their original locations. Erosional channels were formed along several sections of the fenceline, leaving the posts leaning and unstable. The preferred alternative would reconstruct the damaged portion of the fence along Bonnie Clare Road on the 2013 alignment, which would retain integrity of setting, feeling, association, material, and workmanship if the measures completed as part of the 2013 rehabilitation were undertaken again. Reconstruction would be in compliance with the Secretary of the Interior's Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes. If the recommended Mitigation Measures are implemented, the reconstruction of Bonnie Clare Road would not result in adverse impacts on the Upper Vine Ranch perimeter fence associated with the DVSHD.

Entrance Gates, Road, and Stream

The project would not affect the location, design, setting, workmanship, feeling, or association of the gates or the entrance road. However, to prevent additional erosion from affecting the stability of the bridge, infrastructure would be added to the stream within an area about 75 feet

upstream of the bridge, 200 feet downstream from the bridge, and 50 feet on either side of the channel. Armoring consisting of buried ACBs would be used. The concern is the visual impact the number and concentration of the erosion protection infrastructure would have on the stream from views from the entry bridge and from the core of Scotty's Castle. If mitigation measures are taken to hide infrastructure from prominent views by blending it into natural topography or positioning it behind built features or natural vegetation, then the erosion protection infrastructure would have no adverse effect on the Entrance Gates or Road System or views of the stream from those features.

Cottonwood Corner

The clearing and construction limits for the project extend up to 20 feet into the vegetated area located at Cottonwood Corner along a 100-foot length of the vegetated area's eastern side with a slightly smaller section being within the cut-and-fill area (up to 15 feet for about a 75-foot length). The top of the cut does not extend into Cottonwood Corner's vegetated area. The area on the east side of Bonnie Clare Road would be used as a temporary turnaround area (MP 5.9). Cottonwood Corner would be affected by the cut and fill on the west side of the road but would not be affected by the turnaround area on the east side of the road. For the portion of the vegetated area of Cottonwood Corner that is within the clearing and construction limits, all trees and shrubs (particularly cottonwood, willow, fig, and mesquite) would be flagged and avoided. If removal of trees and shrubs cannot be avoided, they would be documented in terms of their location, species, and size. Protection measures would be put into place to protect these trees and shrubs to the greatest extent possible, as described in the *Mitigation Measures* section. If the mitigation measures described above are implemented, the reconstruction of Bonnie Clare Road would not adversely affect Cottonwood Corner.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects with the potential to affect cultural landscape contributing characteristics and features include future landscape repairs at Scotty's Castle as described above under *Cumulative Impact Scenario*, including facilities needed for security, electrical and communication utilities, temperature control, and visitor interactions. Although these past, present, and reasonably foreseeable future actions would result in temporary adverse effects on the cultural landscape, they would repair and rehabilitate the overall cultural landscape character. Collectively, all of these actions have had, and would continue to have, beneficial cumulative effects over the long term because they minimize adverse impacts on the cultural landscape. As previously described, the preferred alternative would contribute no adverse effects on the cultural landscape. When the effects of the preferred alternative are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on cultural landscapes would not adversely affect the cultural landscape given the beneficial effects on the cultural landscape from the rehabilitation and restoration efforts that are included in the preferred alternative, which would prevent further damage and deterioration of the cultural landscape.

Floodplains and Wetlands

Affected Environment

Floodplains

The analysis area for floodplains is the Grapevine Canyon watershed. The Grapevine Canyon watershed is fan shaped, trends northeast to southwest, and has a total drainage area of about 48 square miles. Elevations in the watershed range from 7,008 feet at Helmet Peak to 2,298 feet at the bottom of the canyon. Grapevine Canyon Wash varies from less than 50 feet wide in the upper canyon to more than 600 feet wide in the lower canyon. Grapevine Canyon is steep and winding, and in narrow parts of the canyon, Bonnie Clare Road covers the entire width of the canyon floor. All of Bonnie Clare Road is within a desert wash floodplain, and much of the road is within the 100-year floodplain. Flows through Grapevine Canyon result during precipitation events sufficiently intense to create runoff from higher elevation areas in the Grapevine Canyon watershed. Flows in Grapevine Canyon are tributary to Death Valley Wash, which is tributary to Salt Creek. Heavy rains and flash floods move great quantities of rock and soil down the canyon drainages and through the canyon bottom. Floodplain boundaries are shown in the Floodplain and Wetland Statement of Findings (FWSOF; Appendix B).

Bonnie Clare Road was constructed within Grapevine Canyon Wash when possible, which minimized the amount of cut and fill necessary to construct the road along the slope of the canyon hillside. The road location on the canyon floor makes it susceptible to sediment deposition and surface damage during flash floods that carry sand, gravel, and rocks downwash to Death Valley.

Aerial imagery suggests that, throughout its flow path, the October 2015 flood washed out the entire active floodplain, widening the channel and removing much of the channel braiding (FHWA 2017b). The flood removed nearly all indicators of the low-flow channels, and the wash is actively reestablishing these low-flow channels. Several areas of heavy scour, erosion, and headcutting are now present in the canyon after the flood event. These erosion problems are associated with the road disrupting natural flow patterns and differential erosion from the pavement being more resistant to erosion.

Wetlands

The analysis area for wetlands is the Bonnie Clare Road corridor within Grapevine Canyon from the California/Nevada state line to the intersection with Ubehebe Crater Road, an area about 350 acres in size. Wetlands existing in the analysis area prior to the October 2015 flood are described in detail in the 2012 EA (pp. 65–77), based on wetland delineations conducted in 2005 and 2011. Post-flood wetland boundaries were mapped in March 2017 (FHWA 2017b). The post-flood wetland survey identified total of 146.3 acres consisting of 29 ephemeral riverine wetlands and 5 vegetated wetlands (FHWA 2017b). Vegetated wetlands are a small component of the total wetland area, covering only about 2.75 acres, while the remaining 143.5 acres are unvegetated riverine wetlands.

Wetland resources in the analysis area include Grapevine Canyon Wash, an ephemeral riverine wetland; other ephemeral riverine wetlands that are tributaries to Grapevine Canyon Wash; spring-fed riverine wetlands within the Grapevine Canyon Wash channel; and vegetated

wetlands. Wetland boundaries are shown in the Floodplain and Wetland Statement of Findings (FWSOF; Appendix B) and in the *Waters of the U.S. Delineation Report* (FHWA 2017b).

Ephemeral riverine wetlands exist throughout the length of Grapevine Canyon in the analysis area. These wetlands are unvegetated and are composed of loose unconsolidated sand and gravel sediments, and contain water only for brief periods after rain events. Grapevine Canyon Wash is an ephemeral riverine wetland with a dry sandy channel that was substantially altered by the flood events in October 2015. The 2015 flood widened the channel and removed much of the channel braiding that existed before the flooding (FHWA 2017b). The 2015 flood removed nearly all indicators of the low-flow channels that existed before the flooding, and the wash is actively reestablishing these low-flow channels. Numerous side drainages enter Grapevine Canyon, and these ephemeral riverine wetlands were not damaged as extensively by flooding as the main channel of Grapevine Canyon Wash.

Additional riverine wetlands in the analysis area include five spring-fed riverine wetlands within Grapevine Canyon Wash. These wetlands are typically about 2 to 3 feet wide and have a total length of about 4,000 feet. These wetlands occur where groundwater emerges to the surface and provides surface flow from the highest elevation spring at Staininger Spring, through Scotty's Castle, to just down-drainage of Cottonwood Corner, where it likely seeps into the groundwater table. Since the flood event, the spring-fed riverine wetlands have been slowly reforming, assisted by the mineralization and algal growth on the channel bottom, which prohibits percolation into the alluvial soils. The spring-fed riverine wetlands are currently very dynamic and have shifted their flow path at several locations. Additionally, wetland vegetation, comprising mostly narrow-leaf cattail (*Typha angustifolia*), is present both within the spring-fed riverine wetlands and along their banks.

Five vegetated wetlands with a total area of 2.75 acres are present near the analysis area (FHWA 2017b). Each of these palustrine wetlands is composed of both emergent and scrub-shrub habitat types. These wetlands are associated with near-surface groundwater, and groundwater surface discharges within Grapevine Canyon. Wetland plants present include arroyo willow (*Salix lasiolepis*), narrow-leaf cattail, three-square bulrush (*Schoenoplectus pungens*), sedges (*Carex* spp.), black cottonwood (*Populus balsamifera*), common reed (*Phragmites australis*), and desert wild grape (*Vitis girdiana*). All five of the vegetated wetlands show evidence of flood damage from the October 2015 flood, ranging from scour to deposition of about 4 to 16 inches of sediment, which has resulted in alteration of the soil profile and damage to vegetation.

Wetland Functions and Values

The wetland communities in Grapevine Canyon provide numerous wetland functions and values, including hydrologic functions, biotic functions, and cultural values. The wetlands and intermittent spring flows provide multiple hydrologic functions within Grapevine Canyon. The wetlands and intermittent spring flows are entirely dependent on the shallow groundwater as their source of hydrology as opposed to precipitation. The wetland and riparian areas also serve to disperse larger flow events and dissipate energy as flows move through the dense vegetation.

The wetland communities provide habitat to a variety of wildlife species. While not uncommon within Grapevine Canyon, wetland and riparian areas are two of the rarest and most biologically diverse habitat types in the Mojave Desert region. The wetlands, spring flows, and riparian areas

in the analysis area provide habitat to multiple mammal, bird, reptile, and amphibian species and are reliable water sources for larger mammals. Many plant and animal species have physiological or life history traits that force them to reside in or directly adjacent to permanent sources of water.

The wetlands and riparian areas are located within the ancestral homeland of the Timbisha Shoshone. The presence of a stable water source in Grapevine Canyon attracted many large game animals, which depended on this reliable water source. Several historic camps, once occupied by the Timbisha Shoshone, also relied on the springs and wetlands in Grapevine Canyon as a source of freshwater and also an attractant for hunting large game animals.

Environmental Consequences

Impacts of Alternative A—No Action

Floodplains

Under the no action alternative, the damaged or destroyed sections of Bonnie Clare Road would not be reconstructed. The existing informal gravel road would remain but would not be open to the public. Grapevine Canyon was severely damaged and altered by the 2015 flood event, leaving the canyon especially susceptible to subsequent erosion and scour due to the severe loss of vegetation. Multiple headcuts exist in the post-flood canyon and would continue to migrate upstream and into side canyons, leading to further degradation of the canyon wash. The heavy flows during the flood event bypassed several meanders, thereby increasing the steepness of the wash, increasing flow velocities, and leading to channel incision (FHWA 2017a).

The heavily damaged existing sections of Bonnie Clare Road would not be removed, so road debris would remain in the Grapevine Canyon floodplain (Figure 8). Future flood flows would further erode the floodplain and move the road debris, possibly destabilizing the channel and blocking the flow of water at some locations. The gravel road would be at increased risk of washout and loss of access because it would have no protection from flooding. Park maintenance crews would need to remove the road debris, sand, gravel, and rock deposits left after flood events and possible landslides to clear the road and prevent the impedance of flood flows. Removal of these materials off the road onto the road shoulders may result in adverse effects on the floodplain by pushing sediment upslope or blocking tributary channels. In the long term, the gravel road would disappear as natural hydrologic processes changed Grapevine Canyon Wash into a natural roadless condition.



Figure 8. Bonnie Clare Road in Grapevine Canyon, February 2017.

Wetlands

Under the no action alternative, no direct impacts on wetlands would occur. The remaining vegetated and riverine wetlands within Grapevine Canyon Wash would continue to be vulnerable to vegetation loss, erosion, downcutting, and deposition of sediments resulting from future floods. Flood flows in 2015 left several vegetated wetlands with reduced connection to surface flows, resulting in drying and reduced wetland vegetation. Under the no action alternative, downcutting would likely continue to lower the channel elevation adjacent to vegetated wetlands, resulting in continued drying and loss of wetland vegetation, leading to adverse effects on wetlands. Impacts on vegetated wetlands from flood events are likely to be small, since there are only 2.75 acres of vegetated wetlands identified in the analysis area. However, any loss of these vegetated wetlands would result in the loss of important wildlife habitat.

Cumulative Impacts

Past, present, and reasonably foreseeable future projects with the potential to affect floodplains and wetlands include replacement of the waterline to Scotty's Castle, completed in 2011; reconstruction of Bonnie Clare Road in 2013; and rehabilitation and repairs to Scotty's Castle anticipated for 2018. The waterline replacement project was determined to not affect the

overall functions of floodplains and wetlands. These past, present, and reasonably foreseeable future actions have resulted or would result in temporary adverse effects on floodplains and wetlands. Improvements to Bonnie Clare Road in 2013 were intended to maintain natural floodplain values and benefit water resources by maintaining natural floodplain processes over time, and the 2018 project would be designed to do the same. Collectively, all of these actions have had, and would continue to have, beneficial cumulative effects over the long term because they minimize adverse impacts on natural floodplain values and wetlands. As previously described, the no action alternative would contribute adverse effects on floodplains and wetlands from continued erosion, scour, and potential loss of wetland vegetation. Thus, when the effects of the no action alternative are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on floodplains and wetlands would be adverse, with a small adverse incremental contribution from the no action alternative.

Impacts of Alternative B—Reconstruct Bonnie Clare Road (Proposed Action and Preferred Alternative)

Floodplains

Most of the project would be constructed within the floodplain of Grapevine Canyon. Measures would be implemented to minimize adverse effects on floodplains; these mitigation measures are discussed in the Resources Protection Measures section of this EA and in the Floodplain and Wetlands Statement of Findings in Appendix B.

The floodplain would be slightly negatively impacted during construction due to the presence of staging areas, construction equipment, and materials in the floodplain and possible erosion from bare soils prior to revegetation. Construction activities would be monitored, and erosion and sediment control BMPs would be implemented to minimize erosion and sediment movement. Disturbed areas would be revegetated following construction.

The reconstructed road would be designed to withstand moderate flood events without the need for maintenance and repairs, which would reduce impacts on the floodplain. The road would be at less risk of washout and loss of access because it would be designed to be better protected from erosion. Large future flood flows would damage the road and erode the floodplain, possibly destabilizing the channel and blocking the flow of water at some locations. After large flood events, park maintenance crews would need to clear the road and prevent the impedance of flood flows.

Floodplain connectivity would be improved at locations where the road would be moved out of or to the side of the floodplain. Drop structures would be installed that would dissipate runoff energy and reduce road and floodplain damage. Armoring of the channel, headcuts, and bridge abutments would prevent additional incision and headcutting that could lower the floodplain. For the most part, the reconstructed road would not alter flood flows; the exception to this is where stream-training structures would be installed near the canyon bottom to direct flowing water away from the road toward Grapevine Canyon Wash. These structures would help maintain natural downslope movement of water, sediment, and nutrients, resulting in beneficial effects on the floodplain. Floodplain complexity would be introduced by roughening

abandoned road segments. The project would be completed to leave Grapevine Canyon Wash in a stable condition.

The preferred alternative would not substantially affect floodplain functions or increase the risk of flooding in the Grapevine Canyon watershed, would minimize the impact of floods on human safety, and would increase resilience against flooding. Because the footprint of the reconstructed road would be similar to that of the existing road, and modifications to the floodplain would be small compared to existing conditions in the floodplain before the October 2015 flood, the overall effect on the Grapevine Canyon floodplain would be small.

Wetlands

Wetland impacts would occur from road reconstruction, road realignment, bank stabilization, placement of scour protection, and construction of stream-training structures and boulder grade control structures. About 33.82 acres of ephemeral riverine wetlands would be filled by reconstruction of the flood-damaged Bonnie Clare Road. The loss of 33.82 acres of wetlands from reconstructing the road would be unavoidable because the ephemeral riverine wetlands formed in the road footprint when a section of the road was destroyed by the 2015 flood. NPS policy allows previously serviceable structures (such as the road) to be reconstructed if they are destroyed by a flood. Construction of in-stream structures would result in the permanent loss of 0.04 acre of spring-fed riverine wetlands and 0.51 acre of ephemeral riverine wetlands. Temporary impacts on 18.93 acres of ephemeral riverine wetlands would result from construction access and installation of a buried waterline. Wetland impacts are summarized in Table 4. Locations of impacted wetlands are presented in the Floodplain and Wetland Statement of Findings (Appendix B).

Table 4. Impacts on wetlands.

Wetland Type	Cowardin Classification	Permanent Impacts— New In-Stream Structures (Acres)	Reconstruction of Flood Damaged Road* (Acres)	Temporary Impacts— Restored to Preconstruction Elevations (Acres)
Spring-fed riverine wetlands	Intermittent, R4SB4	0.04	0	0
Ephemeral riverine wetlands	Ephemeral, R6	0.51	33.82	18.93
Total		0.55	33.82	18.93

*Excepted from wetland mitigation requirements under NPS policies.

The analysis area for wetlands contains about 143.5 acres of riverine wetlands. About 33.82 acres of ephemeral riverine wetlands would be filled by reconstructing the road, representing about 24 percent of the wetlands that currently exist in the analysis area. These impacts would be permanent; however, certain types of activities are excepted from the requirements to compensate for wetland impacts under Director's Order #77-1. Reconstruction of the road is an excepted activity, because the road was a previously serviceable structure before being destroyed by the flood. About 4.97 miles of the road would be reconstructed with only minor changes in design as needed to improve the resilience of the road against future flood events. The wetlands that would be filled were created when Bonnie Clare Road was destroyed as a

result of the flooding in October 2015. Because these impacts on newly formed ephemeral riverine wetlands would result from reconstruction of the flood-damaged road, reconstruction of the road is excepted from wetland mitigation requirements under NPS policies.

The project would also result in a new permanent loss of 0.04 acre of spring-fed riverine wetlands and 0.51 acre of ephemeral riverine wetlands that are not excepted from mitigation requirements under NPS policy. This impact would be small at the local scale and regional scale, especially when compensatory mitigation to replace the lost wetlands is considered. Compensation for 0.55 acre of permanent impacts on wetlands would be accomplished by reestablishing 7.8 acre of wetlands at three locations on-site and adjacent to the proposed project (see Floodplain and Wetland Statement of Findings in Appendix B). This would result in a mitigation ratio of about 14 to 1 for new permanent wetland impacts. The wetland compensation measures have been designed to replace the functions and values of the aquatic resources lost as a result of this project. Additionally, the mitigation actions were designed to reestablish the high-value aquatic habitats that were destroyed during the 2015 flood event. The realignment of the spring-fed riverine wetlands would result in a direct adverse effect on these habitats during the restoration actions; however, the realignment would result in long-term beneficial effects by reestablishing these habitats in more sustainable locations. Additionally, the reestablishment of wetland, riparian, and floodplain vegetation would dissipate energy, capture sediments, moderate groundwater flow, and provide diverse wildlife habitats. Additional information on wetland compensation and location maps of the proposed compensation sites are provided in Floodplain and Wetland Statement of Findings (Appendix B) and in the *Compensatory Mitigation and Monitoring Plan* (FHWA 2017a).

Temporary wetland impacts would result primarily from construction access needed to reconstruct the road and would affect a total of 18.93 acres of ephemeral riverine wetlands, about 13 percent of the wetlands in the analysis area. Impacts would consist of driving across ephemeral riverine wetlands with equipment and other actions as necessary to access the road alignment and place bank stabilization, boulder grade control structures, scour protection, and stream-training structures. The 18.93 acres of temporary impacts also would include about 0.10 acre of temporary impacts from trenching to install the buried waterline and utility lines from Staininger Spring to Scotty's Castle within a 3-foot-wide by 6-foot-deep trench. Wetlands affected by temporary construction access consist of ephemeral riverine wetlands only; no vegetated wetlands or spring-fed riverine wetlands would be affected. These wetlands are composed of loose, unconsolidated sand and gravel sediment and would be restored to preconstruction contours following construction. Temporary impacts would be mitigated in place by restoring preconstruction contours after construction is complete. Restored wetland functions would include groundwater recharge and discharge, flood flow alteration, sediment and toxicant removal, nutrient removal, and visual quality and aesthetics.

Over the long term, the project would provide benefits to wetlands by reducing the potential for future flood-related erosion and restoring functions lost during the flooding in 2015. After completion of the project, including compensatory mitigation measures, the wetland area in the analysis area and the functions provided by wetlands would be similar to before the 2015 flood.

Cumulative Impacts

As described above for the no action alternative, past, present, and reasonably foreseeable future actions have had, and would continue to have, beneficial and long-term cumulative effects because they minimize adverse impacts on natural floodplain values and wetlands. As previously described in this EA, the adverse effects of Alternative B on floodplains and wetland functions and values would be small when mitigation measures are taken into account. When the effects of Alternative B are combined with past, present, and reasonably foreseeable future actions, the total cumulative impacts on floodplains and wetlands would be beneficial, with a small adverse incremental contribution from Alternative B.

Special Status Wildlife Species

Affected Environment

Special status wildlife species include animal species listed as threatened, endangered, or candidates for listing under the Endangered Species Act (federally listed species) and species listed by the State of California as endangered, threatened, or species of special concern (state listed species). The analysis area for special status wildlife species is the Bonnie Clare Road corridor within Grapevine Canyon from the California/Nevada state line to the intersection with Ubehebe Crater Road, extending about 200 feet from the road centerline. Most of the special status wildlife species use riparian areas, and the analysis area would likely include most of their habitat within the canyon. Special status wildlife species with the potential to occur in or near the analysis area based on surveys, staff knowledge, USFWS data, available habitat, and known range are presented in Table 5.

Table 5. Special status wildlife species with the potential to occur in the analysis area.

Species Common and Scientific Name	Status ¹	Potential to Occur	Habitat Description and Range
BIRDS			
Least Bell's vireo <i>Vireo bellii pusillus</i>	FE, SE	Yes	Riparian habitats. Bell's vireo has been documented nesting in Grapevine Canyon near Staininger Spring (NPS 2016c). Due to the geographic isolation of the four subspecies of Bell's vireo, it is presumed that all Bell's vireos documented in Death Valley are the least Bell's subspecies.
Southwestern willow flycatcher <i>Empidonax traillii extimus</i>	FE, SE	Yes	Riparian habitats. This subspecies is rarely observed in the park and has not been confirmed in the analysis area. Due to the difficulty of field identification of the subspecies, it is not possible to determine if past sightings of willow flycatcher near the analysis area are of the southwestern subspecies.
Willow flycatcher <i>Empidonax traillii</i>	SE	Yes	Riparian habitats. This species has been documented at several locations in the park, including at Scotty's Castle.
Loggerhead shrike <i>Lanius ludovicianus</i>	SC	Yes	Riparian and other habitats. This species has been documented at several locations in the park, including near Bonnie Clare Road (Halterman 2005).

Species Common and Scientific Name	Status ¹	Potential to Occur	Habitat Description and Range
Yellow-breasted chat <i>Icteria virens</i>	SC	Yes	Riparian areas. This species has been documented at several locations in the park, including near Bonnie Clare Road (Halterman 2005).
Yellow warbler <i>Setophaga petechia</i>	SC	Yes	Spends the breeding season in thickets and riparian areas. This species has been documented at several locations in the park, including near Bonnie Clare Road (Halterman 2005).
REPTILES			
Desert tortoise <i>Gopherus agassizii</i>	FT, ST	Yes	Mojave and Sonoran Deserts. A small population occurs in the southern half of the park. This species has not been documented in the analysis area.
Panamint alligator lizard <i>Elgaria panamintina</i>	SC	Yes	Dense vegetation near damp soil and rocky talus near riparian areas. This species has not been documented in the analysis area.

The USFWS species list was determined based on informal consultation with USFWS (2017), and species not having the potential to occur were excluded from further review with a no effect determination.

¹**Status Codes:** FE=federally listed endangered; FT=federally listed threatened; SE=state endangered; SC=state species of special concern.

No designated critical habitat for any federally listed species is present in the park. The affected environment for special status species in the analysis area is described in the 2012 EA (pp. 63–65). Changes since the 2012 EA have resulted primarily from habitat loss and damage resulting from flash floods that occurred in the analysis area in October 2015.

As described in the 2012 EA, surveys were conducted for amphibians, reptiles, birds, mammals, lepidopterans, microbenthic invertebrates, and plants between 2005 and 2010, and no state or federally listed endangered, threatened, or candidate species were detected.

Additional preconstruction surveys for southwestern willow flycatcher and least Bell's vireo detected a nesting pair of least Bell's vireos in a patch of riparian vegetation near the water collection system at Staininger Spring in 2013 (NPS 2016c). The riparian vegetation at this site was impacted by the flood in 2015. A post-flood habitat assessment determined that while the riparian vegetation at Staininger Spring was still present, the amount of habitat had been reduced from 6.90 acres pre-flood to 3.49 acres post-flood, a reduction of 51 percent (NPS 2016c). The habitat assessment also found that least Bell's vireo habitat at Scotty's Castle was reduced to widely scattered trees and vegetation following the flood, and is likely unsuitable habitat for least Bell's vireo. Before the flooding in 2015, the analysis area contained extremely limited breeding habitat for southwestern willow flycatcher, and only marginal habitat that could be used during migration (Sloan, pers. comm. 2017). Similar to the loss of habitat for the least Bell's vireo, impacts from the 2015 flood also reduced the amount of suitable habitat for the southwestern willow flycatcher.

Riparian areas within Grapevine Canyon provide habitat for loggerhead shrike, yellow-breasted chat, and yellow warbler. These species were documented in the Grapevine Canyon area in past surveys (Halterman 2005). Although habitat for these species has been affected by flood damage as described above, resulting in a reduction in the amount of available habitat, these species could occur near the analysis area.

Based on consultation with the USFWS in September 2012, the desert tortoise has not been observed in the analysis area, and the potential for this species to occur in the analysis area is extremely low (USFWS 2012). The Bonnie Clare Road corridor is generally composed of sparsely vegetated, steep, rocky terrain that is not optimal habitat for the desert tortoise (NPS 2012a). Potential habitat for the Panamint alligator lizard occurs in the analysis area in riparian areas dominated by cottonwood and wild grape, and on adjacent roads and talus slopes. Habitat for Panamint alligator lizard has likely been degraded by flooding in 2015, as described above for the least Bell's vireo and southwestern willow flycatcher. Desert tortoise and Panamint alligator lizard were not detected during reptile surveys conducted for the 2012 EA.

Environmental Consequences

Impacts of Alternative A—No Action

Under the no action alternative, there would be no new impacts on special status wildlife. No road reconstruction would occur, and Bonnie Clare Road would continue to be closed to the public. Riparian vegetation that provides habitat for least Bell's vireo, southwestern willow flycatcher, and Panamint alligator lizard in the Staininger Spring area and at Scotty's Castle would recover from flood damage over time but would continue to be vulnerable to damage from future floods; thus, there would be no to negligible impacts on special status wildlife species.

Cumulative Impacts

Past actions such as replacement of the waterline supplying water to Scotty's Castle, reconstruction of Bonnie Clare Road, reconstruction of Grapevine Ranger Station parking lot and sidewalks, and resurfacing of Mesquite Spring Campground Road resulted in impacts on special status wildlife species from temporary disturbance during construction and temporary impacts on riparian vegetation. Present and reasonably foreseeable future actions such as the rehabilitation of and repairs to Scotty's Castle would similarly result in short-term, temporary disturbances to special status wildlife and removal of small amounts of riparian habitat. Overall, adverse cumulative impacts from past, present, and reasonably foreseeable future actions are small and temporary. As previously described, the no action alternative would contribute no to negligible adverse effects on special status wildlife species from continued erosion and potential loss of small amounts of habitat. Thus, when the effects of the no action alternative are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impacts on special status wildlife would be adverse, with a negligible adverse incremental contribution from the no action alternative.

Impacts of Alternative B—Reconstruct Bonnie Clare Road (Proposed Action and Preferred Alternative)

Potential direct and indirect effects on least Bell's vireo and southwestern willow flycatcher could result from increased noise and activity during construction and disturbance from vibrations and dust generation. About 0.04 acre of spring-fed riverine wetlands that could provide foraging habitat for these two species would be removed as a result of the project. These

wetlands are recently formed following flooding in 2015 and do not contain trees or shrubs that could provide nesting habitat. Loss of this habitat would be mitigated by providing wetland compensation as required in the *Compensatory Mitigation and Monitoring Plan* (FHWA 2017a) and in the Floodplain and Wetland Statement of Findings (Appendix B). No potential breeding habitat would be removed. The riparian habitat near the analysis area has been degraded and reduced in area by catastrophic flooding, and likely is no longer suitable nesting habitat for least Bell's vireo. The riparian habitat near the analysis area is likely used by southwestern willow flycatchers only during migration. The proposed action would result in an increase in human activity and noise associated with construction for a period of a year or longer. Impacts on least Bell's vireo and southwestern willow flycatcher would be minimized by conducting preconstruction surveys for these species within 0.25 mile of suitable habitat between April 10 and August 15 as described under *Mitigation Measures*. No incidental take of these species is expected as a result of the proposed action. For these reasons, the proposed action may affect but is not likely to adversely affect the least Bell's vireo and southwestern willow flycatcher.

Potential adverse effects on willow flycatcher, loggerhead shrike, yellow-breasted chat, and yellow warbler would result from increased noise and activity during construction and disturbance from vibrations and dust generation and from the loss of 0.04 acre of spring-fed riverine wetlands. The loss of 0.04 acre of spring-fed riverine wetlands would be replaced by implementing the *Compensatory Mitigation and Monitoring Plan* (FHWA 2017a). The increase in human activity and noise associated with construction would persist for a year or longer and would potentially affect individuals or small numbers of individuals, potentially causing them to temporarily leave the area during construction. Impacts would cease after the completion of construction. No nesting habitat for these species would be removed. Impacts would likely be negligible because these species are unlikely to occur due to the limited amount of remaining riparian habitat for these species in Grapevine Canyon.

Desert tortoises are extremely unlikely to occur in the analysis area due to marginal or unsuitable habitat throughout most of the analysis area. No desert tortoises were observed during past reptile surveys. For this reason, the proposed action would have no effect on this species.

As with the other species described above, potential adverse impacts on Panamint alligator lizards, if present in the analysis area, would result from increased noise and activity during construction and disturbance from vibrations and dust generation. The potential also exists for individual lizards to be crushed or buried by construction equipment, although this species is likely to temporarily leave the area to avoid increased human disturbance. Impacts on this species would be slight and adverse and would end after completion of construction.

Cumulative Impacts

As described under the no action alternative, the impacts of past, present, and reasonably foreseeable future actions on special status wildlife species have been and would continue to be small and adverse. As previously described, impacts on least Bell's vireo and southwestern willow flycatcher would be avoided with implementation of mitigation measures, and no effects on desert tortoise are expected. Impacts on willow flycatcher, loggerhead shrike, yellow-breasted chat, yellow warbler, and Panamint alligator lizard would be slight and would end after

construction. When the effects of Alternative B are combined with past, present, and reasonably foreseeable future actions, the total cumulative impacts on special status wildlife species would be small and adverse, with a small adverse incremental contribution from Alternative B.

Visitor Use and Safety

Affected Environment

Visitor use of Bonnie Clare Road and the Grapevine Canyon area is described in the 2012 EA (p. 92). The analysis area for visitor use and safety is the Bonnie Clare Road corridor within Grapevine Canyon from the California/Nevada state line to the intersection with Ubehebe Crater Road, including Scotty's Castle. Before closing due to flood damage in 2015, the road was used by visitors traveling from Tonopah and Beatty, Nevada, primarily to access Scotty's Castle, Mesquite Spring Campground, and Ubehebe Crater. Visitor attractions nearby include Scotty's Castle, Mesquite Spring Campground, and Ubehebe Crater. Total park visitation was 1,141,967 in 2014. About 10 percent of visitors to the park visited Scotty's Castle and the Grapevine Canyon area. Parkwide visitation is highest from February through April and July and August; however, Bonnie Clare Road is busiest in spring and fewer visitors in summer.

Scotty's Castle is the main attraction in the northern part of the park and was toured by an estimated 50,000 to 60,000 visitors per year before the road was closed in 2015. Scotty's Castle Visitor Center (the Garage Visitor Center) is one of only two visitor centers in the park. It served 120,000 visitors annually before closure due to flood damage. Most visitors visit Scotty's Castle between mid-October and the end of April. During this season, up to 600 people per day tour the castle. Scotty's Castle has a staff of 22 park interpreters (9 permanent and 13 seasonal).

Safety issues with Bonnie Clare Road were improved by the road reconstruction project in 2013. Health and safety issues before road reconstruction are addressed in the 2012 EA (pp. 92–93). Accidents were uncommon along this road segment, and of the 16 recorded accidents, 3 occurred at the intersection of Ubehebe Crater Road and Bonnie Clare Road, and 5 occurred within the Death Valley Scotty Historic District (FHWA 2005). Issues addressed by road reconstruction in 2013 included narrow travel lanes, tight turns, inadequate turnouts, and a deteriorating road surface.

Environmental Consequences

Impacts of Alternative A—No Action

If the road were not reconstructed, visitors would not be able to visit Scotty's Castle by private vehicle. The road would remain closed to the public, and NPS and other authorized vehicles would continue to access Scotty's Castle from the south for maintenance and security purposes by driving along the damaged road that currently exists. However, the damaged road would continue to present hazardous travel conditions. Visitors would not be able to enter the park via the Beatty, Nevada entrance, resulting in increased travel times to access the park from the north. The permanent water line to Scotty's Castle would not be installed, and the current temporary water line would be vulnerable to damage from future floods, potentially resulting in future interruptions to the water supply at Scotty's Castle. Emergency response times between

the Grapevine area and areas north of the park in Nevada could also be increased if the road were not reconstructed, resulting in an adverse effect on visitor and staff safety. Because of these concerns, the NPS likely would not be able to reopen Scotty's Castle to visitors beyond occasional tours of about 13 people per week that currently occur. Providing opportunities for the public to experience important historic resources such as Scotty's Castle is an important purpose of the park, and loss of access to Scotty's Castle and other areas accessed by Bonnie Clare Road would permanently affect the visitor experience for thousands of visitors who would otherwise visit Scotty's Castle every year.

Cumulative Impacts

The impacts of past actions on visitor use and safety have resulted from replacement of the waterline supplying water to the historic district, past reconstruction of Bonnie Clare Road, reconstruction of Grapevine Ranger Station parking lot and sidewalks, and resurfacing of Mesquite Spring Campground Road. Impacts from present and reasonably foreseeable future actions would result from future rehabilitation of and repairs to Scotty's Castle. Collectively, these actions have had, and would continue to have, beneficial cumulative impacts on visitor use and safety. As previously described in this EA, the direct and indirect impacts of the no action alternative on visitor use and safety would be adverse from continued closure of the road. When the effects of the no action alternative are combined with the effects of other past, present, and reasonably foreseeable future actions, the total cumulative impact on visitor use and experience would be adverse, with a relatively large contribution from the no action alternative.

Impacts of Alternative B—Reconstruct Bonnie Clare Road (Proposed Action and Preferred Alternative)

During construction, visitors could experience some delays along Ubehebe Crater Road at the intersection with Bonnie Clare Road; however, delays would be limited to 30 minutes or less as described under *Mitigation Measures*. Construction traffic along Bonnie Clare Road and on roads leading to the analysis area would result in increased noise and dust, which could adversely affect the visitor experience. Because the road and Scotty's Castle are closed and would continue to be closed during construction, the number of visitors affected by construction traffic would be small, and these impacts would end after construction is complete.

Once reconstruction of Bonnie Clare Road is complete, visitor access would be restored to areas accessed from the road, including Scotty's Castle, resulting in a beneficial effect on visitor use. Visitors would again be able to enter the park via the Beatty, Nevada entrance. Visitor use of the road is expected to return to the levels documented before the road was destroyed by flooding in October 2015, about 16,000 visitors to Grapevine Canyon in 2014. The driving experience would be the same as before the road was destroyed by flooding in 2015. Providing the public opportunities to experience important historic sites such as Scotty's Castle is an important purpose of the park; thus, reopening the road would substantially improve the visitor experience compared to existing conditions.

Following reconstruction of the road, the current hazardous travel conditions on Bonnie Clare Road south of Scotty's Castle would be improved, resulting in improved safety for staff and

visitors. Emergency response times between the Grapevine area and areas north of the park in Nevada would be improved, resulting in a beneficial effect on visitor use and safety.

Cumulative Impacts

As described above for the no action alternative, past, present, and reasonably foreseeable future actions have had, and would continue to have, beneficial cumulative impacts on visitor use and safety. As previously described in this EA, the direct and indirect impacts of Alternative B on visitor use and safety would be beneficial over the long term by allowing access to areas of the park that are currently closed to visitors, including Scotty's Castle, and from improved travel conditions and emergency response times. The incremental impacts of Alternative B would contribute substantially to the beneficial impacts that are already occurring.

CONSULTATION AND COORDINATION

Scoping

The park initiated public scoping with a press release that was sent via email to several media sources in the Death Valley area and was published in the *Inyo Register* and *Pahrump Valley Times*. A scoping announcement was posted on Facebook on March 24, 2017, and to the NPS Planning, Environment, and Public Comment (PEPC) website and park website on March 31, 2017. In addition, a newsletter describing the project, alternatives under consideration, and opportunities for public comment was published to the PEPC website on March 31, 2017. The scoping period extended from March 31 through April 14, 2017.

The park received five correspondences during the 15-day comment period. All five correspondences were posted to the PEPC website. No other comments were received from the public by the end of the scoping period. Although no public scoping meetings were held for the Bonnie Clare Road reconstruction project, three public meetings were held for the Scotty's Castle Flood Rehabilitation EA on April 24, 2017, in Beatty; on May 1, 2017, in Pahrump; and on May 4, 2017, at the Furnace Creek visitor center in the park. Several comments related to Bonnie Clare Road were received during these meetings. All comments supported reopening the road, and most comments supported reconstructing the road on the same or similar alignment as existed before the 2015 flood.

Internal scoping was conducted by an interdisciplinary team of professionals from the park, Denver Service Center, Pacific West Regional Office, FHWA, and consultants. Internal scoping included value analysis workshops held on June 1–2, 2016, and April 15, 2017. Team members met multiple times from 2015 through 2017 to discuss the purpose and need for the project, various alternatives, potential environmental impacts, reasonably foreseeable actions that may have cumulative effects, and resource protection measures. Over the course of the project, team members have conducted numerous individual site visits to view and evaluate the project area.

Consultation

SHPO and Tribal Consultation

Consultation with the California SHPO under Section 106 of the National Historic Preservation Act is ongoing separately from the NEPA process. A cultural resources survey in the Area of Potential Effect was conducted in February and March 2017 (Boston Archeological Consulting et al. 2017). Consultation with the SHPO was initiated on March 29, 2017. The NPS also requested that in the event that the U.S. Army Corps of Engineers needs to issue a permit under Section 404 of the Clean Water Act, NPS will act as the lead federal agency for Section 106. In order to reduce duplication of effort, the FHWA also has agreed to designate NPS as lead agency for Section 106 compliance. A letter was received from the SHPO on May 11, 2017 to formally initiate consultation, which has been ongoing. Copies of this EA will be forwarded to the SHPO for review or comment. SHPO correspondence is attached in Appendix D.

NPS also initiated tribal consultation with the Timbisha Shoshone Tribe, Pahrump Paiute Tribe, Lone Pine Paiute Shoshone Reservation, Las Vegas Tribe of Paiute Indians of the Las Vegas Indian Colony, Kern River Paiute Council, Fort Independence Community of Paiute, Bishop Paiute Tribe, and Big Pine Band of Owens Valley via letter on March 29, 2017. A report was prepared to verify and update existing information collected for the 2012 EA and to document concerns and recommendations of the Timbisha Shoshone Tribe (Bengston 2017). During project design, the proposed road alignment was modified to avoid impacts on known ethnographic resources. Impacts on ethnographic resources would be minimized by implementing the mitigation measures described under *Mitigation Measures*, including avoiding cuts to the canyon walls and requiring the presence of tribal monitors during construction. Tribal consultation is ongoing and copies of this EA will be forwarded to the tribes for review or comment.

U.S. Fish and Wildlife Service

A scoping letter was sent to the USFWS on March 31, 2017 to inform them of the project and 7 solicit input on federally-listed species. An email response was received from the USFWS on April 3, 2017. The email included a copy of the USFWS's concurrence with the NPS's past findings for the 2012 Bonnie Clare Road project and indicated further consultation was not required as long as the project does not change in any manner that would affect the least Bell's vireo or southwestern willow flycatcher. As described in the *Special Status Wildlife* section of this EA, the NPS has determined that the proposed action may affect, but is not likely to adversely affect the least Bell's vireo, southwestern willow flycatcher, and desert tortoise. A copy of this EA will be provided to the USFWS for review and concurrence.

U.S. Army Corps of Engineers

The NPS and FHWA have agreed that FHWA would be the lead agency for compliance with Section 404 of the Clean Water Act. FHWA would obtain a permit from the U.S. Army Corps of Engineers for the project.

Lahontan Regional Water Quality Control Board

The NPS and FHWA have agreed that FHWA would be the lead agency for compliance with Section 401 of the Clean Water Act. FHWA would obtain a Section 401 Water Quality Certification permit from the Lahontan Regional Water Quality Control Board (RWQCB) for the project. The RWQB would also determine whether the project would have a significant impact on the environment under CEQA (Appendix A).

Agencies and Persons Consulted

The following agencies, organizations, and libraries received notice of the public scoping period and will receive a notice of the availability of this environmental assessment:

- Amargosa Conservancy

- Amargosa Valley Library
- Beatty Chamber of Commerce
- Beatty Town Advisory Board
- Bishop Branch Library
- Bureau of Land Management
- California Department of Fish and Wildlife
- California Highway Patrol
- California Native Plant Society
- California State Clearinghouse
- California State Historic Preservation Officer
- California Water Resources Control Board
- Death Valley 49ers, Inc.
- Death Valley Chamber of Commerce
- Death Valley Conservancy
- Death Valley Natural History Association
- Esmeralda County Commissioners
- Great Basin Unified Air Pollution Control District
- Historical Society of the Upper Mojave Desert
- Inyo County Board of Supervisors
- Inyo County Free Library
- Inyo County Planning Department
- Lahontan Regional Water Quality Control Board
- Lone Pine Branch Library
- Lone Pine Chamber of Commerce
- National Parks Conservation Association
- Nye County Commissioners
- Pahrump Community Library
- Panamint Springs Resort
- Ridgecrest Branch Library
- Sierra Club
- U.S. Fish and Wildlife Service
- Xanterra Parks and Resorts, Inc.

The following American Indian tribes were also contacted and were invited to participate in the planning process:

- Timbisha Shoshone Tribe
- Fort Independence Community of Paiute
- Big Pine Band of Owens Valley
- Lone Pine Paiute Shoshone Reservation
- Bishop Paiute Tribe
- Pahrump Paiute Tribe
- Kern River Paiute Council

- California Native American Heritage Commission

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APPENDIXES

Appendix A

California Environmental Quality Act Compliance

CALIFORNIA ENVIRONMENTAL QUALITY ACT INITIAL STUDY

This appendix contains an analysis of the impacts that may result from construction and implementation of the preferred alternative (described in the *Alternatives* section) pursuant to the California Environmental Quality Act (CEQA). The basic purposes of CEQA are to (Association of Environmental Professionals [AEP] 2015):

1. Inform governmental decision makers and the public about the potential significant environmental effects of proposed activities.
2. Identify the ways that environmental damage can be avoided or significantly reduced.
3. Prevent significant, avoidable damage to the environment by requiring changes in projects through the use of alternatives or mitigation measures when the governmental agency finds the changes to be feasible.
4. Disclose to the public the reasons why a governmental agency approved the project in the manner the agency chose if significant environmental effects are involved.

This Initial Study (IS) is included as an appendix to the EA because a Clean Water Act Section 401 water quality permit will be required from the Lahontan Regional Water Quality Control Board (Water Board). This IS has been prepared to assist the Water Board in determining whether the project may have a significant effect on the environment, which is defined under CEQA as a “substantial adverse change in the physical conditions that exist in the area affected by the proposed project.”

If this IS shows that there is no substantial evidence that the project may have a significant effect, the lead agency prepares a Negative Declaration. If the project would not result in a significant effect because revisions in the project have been made by or agreed to by the project proponent, the lead agency prepares a Mitigated Negative Declaration. The analysis that follows is based on the affected environment described in the *Affected Environment and Environmental Consequences* section, and adheres to the Environmental Checklist Form that comprises Appendix G of the 2015 CEQA Statutes and Guidelines. The checklist is used to meet the requirements for an IS (AEP 2015).

CEQA Checklist

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
I. AESTHETICS: Would the project:				
a) Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would improve the existing road conditions but would not include new structures or features that would have an adverse effect on scenic vistas.				
b) Substantially damage scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not substantially damage scenic resources including trees, rock outcrops, and historic buildings.				
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less than significant: The preferred alternative would reconstruct the original roadbed mostly within the existing road alignment, with a few minor changes in appearance such as riprap and berms that would not be highly visible. No residential areas exist within the proposed project area or surrounding vicinity.				
d) Create a new source of substantial light or glare that would adversely affect day or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: Construction activities would occur during the day and would not require the installation of new lighting in the project area.				
II. AGRICULTURE AND FOREST RESOURCES: Would the project:				
a) Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: Prime Farmland, Unique Farmland, or Farmland of Statewide Importance is not present within the project area limits.				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The project area does not support agricultural lands; the Williamson Act does not apply.				
c) Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code section 12220(g)), timberland (as defined by Public Resources Code section 4526), or timberland zoned Timberland Production (as defined by Government Code section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No lands within the project area are designated or zoned as forest lands, timberland, or Timberland Production lands.				
d) Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: There are no forest lands in the project area, nor would the proposed project result in the conversion of forest lands.				
e) Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project is limited in scope to the reconstructed road corridor. The proposed project would not result in the conversion or change in the existing environment.				
III. AIR QUALITY: Would the project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No additional travel lanes or increase in capacity are proposed with the preferred alternative.				
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<p>The project area is in the Great Basin Unified Air Pollution Control District, as established by the State of California. This district is classified as a California state nonattainment area for particulate matter (fine dust) less than 10 microns in diameter. The general trend in upper air movement carries pollutants to the park from metropolitan areas, industrial areas, and transportation corridors to the west. In the summer, surface winds flow from the southwest, where sources that contribute to air pollution in the park include major population centers, industrial areas, and a dry lakebed. In winter, surface winds flow from the northeast. Because northeast winds comprise an air mass that originates in less developed areas, the air quality of the park is generally better in the winter.</p> <p>Less Than Significant Impact with Mitigation: Should the preferred alternative be selected, local air quality would be temporarily affected by dust and construction vehicle emissions. Hauling construction and fill material and operating equipment during the construction period would result in increased vehicle exhaust and emissions (hydrocarbons, nitrogen oxide, and sulfur dioxide emissions), which would be expected to rapidly dissipate.</p> <p>Fugitive dust plumes from construction equipment would intermittently increase airborne particulates in the area near the project site, but loading rates are not expected to be considerable; water sprinkling to abate fugitive dust would occur during construction. Overall, there would be a slight and temporary degradation of local air quality due to dust generated from construction activities and emissions from construction equipment. These effects would last only as long as construction occurred; impacts would be negligible and short term.</p> <p>Measure 1: Fugitive dust plumes would be reduced by water sprinkling the soil during earth-disturbing activities. Possible sources of water for construction would Scotty's Castle or Beatty, Nevada.</p> <p>Measure 2: Unnecessary construction vehicle engine idling would be limited to reduce noxious emissions.</p>				
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not result in a net increase in any of the criteria pollutants.				
d) Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant Impact: During construction, the release of additional emissions associated with construction vehicles and equipment is anticipated. This effect would be temporary and limited in scope to the project area, which is not near residential or heavily used areas of the park.				
e) Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Less Than Significant Impact: During construction, the use of diesel-fueled equipment may result in the release of objectionable odors but would be limited to the period of construction and limited to the project area.				
IV. BIOLOGICAL RESOURCES: Would the project:				
a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
<p>Eight special status wildlife species including five bird species and two reptile species have potential to occur in the project area. No special status plant species have potential to occur in the project area. Please refer to the <i>Special Status Wildlife Species</i> section of the EA for detailed description of these species.</p> <p>Less Than Significant Impact with Mitigation: The preferred alternative could directly impact or indirectly impact special status species and their habitats due to project-related construction disturbances including noise disturbance, increased dust, and disturbances from vibrations. The increase in human activity and noise associated with construction would persist for one year and could result in individuals potentially leaving the area during construction. The proposed action is anticipated to permanently impact about 0.04 acre of spring-fed riverine wetlands that could provide foraging habitat for riparian-dependent special status bird species. Potential adverse effects on willow flycatcher, loggerhead shrike, yellow-breasted chat, and yellow warbler would result from increased noise and activity during construction and from the loss of 0.04 acre of wetlands. Adverse effects would be minimized with the implementation of mitigation measures listed below:</p> <p>Measure 1: Beginning April 10, all construction activities would cease in areas within a 0.25-mile buffer of suitable habitat, and a qualified biologist would conduct surveys for least Bell's vireo and southwestern willow flycatcher. Surveys would be based on the U.S. Fish and Wildlife Service's (USFWS) most recent survey guidelines and protocols for the least Bell's vireo (USFWS 2001) and southwestern willow flycatcher (Sogge et al. 2010). The NPS would not conduct surveys during the third survey period, as outlined in southwestern willow flycatcher survey protocol, unless birds were detected during the first two survey periods. If neither species is detected during surveys, construction activities would resume in areas adjacent to suitable habitat. However, if either species is detected, and surveys confirm that birds are nesting or nesting is a possible outcome, then the NPS would resume construction activities adjacent to suitable habitat after (1) the avian nesting and breeding season ends (i.e., August 16), or (2) a qualified biologist has determined that the birds are not attempting to nest again or any young have fledged.</p> <p>Measure 2: Compensatory mitigation would be constructed as described in detail in the Floodplain and Wetland Statement of Findings (Appendix A) and in the <i>Compensatory Mitigation and Monitoring Plan</i> (FHWA 2017a).</p>				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations or by the California Department of Fish and Game or US Fish and Wildlife Service?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
<p>Sensitive natural communities associated with wetland habitats occur within the project area. Riparian habitats occur adjacent to riverine wetlands associated with Grapevine Canyon Wash and its tributaries. Refer to the EA section on <i>Floodplains and Wetlands</i> for detailed descriptions of riparian habitats. Riparian areas also provide habitat for several special status wildlife species, as described in the <i>Special Status Wildlife</i> section of the EA.</p> <p>Less Than Significant with Mitigation: The preferred alternative would result in beneficial effects on riparian vegetation in the project area over the long term. The reestablishment of aquatic resources that were lost during the 2015 flood event would result in a net benefit for riparian areas. The mitigation measures for wetlands (described below) would also benefit riparian areas. Mitigation measures for special status wildlife, described above, also would reduce impacts on these areas.</p>				
c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<p>Sensitive natural communities associated with wetland habitats occur within the project area. Wetland resources include Grapevine Canyon Wash, an ephemeral riverine wetland; other ephemeral riverine wetlands within tributaries of Grapevine Canyon Wash; spring-fed riverine wetlands within Grapevine Canyon Wash; and vegetated wetlands. Refer to the section on <i>Floodplains and Wetlands</i> for detailed descriptions of wetland and riparian habitats.</p> <p>Less Than Significant with Mitigation: The preferred alternative would result in permanent impacts on wetlands from the construction of 0.74 mile of Bonnie Clare Road along a new alignment and from bank stabilization, construction of boulder grade control structures, placement of scour protection at the bridge at the entrance to Scotty's Castle, and construction of three stream-training structures. The preferred alternative would result in the permanent loss of 0.04 acre of spring-fed riverine wetlands and 7.82 acres of ephemeral riverine wetlands. Impacts on wetlands and waters of the U.S. would be less than significant with implementation of the mitigation measures below.</p> <p>Measure 1: Compensation for permanent impacts on wetlands would be accomplished by reestablishing 7.86 acres of wetlands at four locations on-site and adjacent to the proposed project (see Floodplain and Wetland Statement of Findings in Appendix A). This would result in a mitigation ratio of approximately 1 to 1 for permanent wetland impacts.</p> <p>Measure 2: Impacts on wetlands would be avoided in selected locations by realigning the road out of wetlands to the greatest extent possible during project design.</p> <p>Measure 3: Wetlands would be restored in selected locations by obliterating the previously existing road and reestablishing the stream channel.</p> <p>Measure 4: BMPs for wetlands would be implemented as required in Appendix 2 of the NPS Procedural Manual #77-1: Wetland Protection (NPS 2016a). These BMPs are listed in the Floodplain and Wetland Statement of Findings (Appendix A).</p>				
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
<p>Native resident or migratory wildlife are likely to move along drainages and riparian areas within the project area; however, no distinct resident or migratory wildlife corridors have been identified within the project area. There are no native wildlife nursery sites known within the project area.</p> <p>Less Than Significant with Mitigation: Short-term disruption of wildlife movement may occur during construction activities lasting up to one year; however, the preferred alternative would not substantially or permanently alter wildlife movement along potential wildlife corridors. The implementation of the mitigation measures listed below would reduce potential short-term adverse impacts.</p> <p>Measure 1: See a) – Measure 1 above.</p>				
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
No Impact: No ordinances or policies apply to the project area.				
f) Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No Habitat Conservation Plan, Natural Community Conservation Plan, or other conservation plan applies to the project area.				
V. CULTURAL RESOURCES: Would the project:				
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
<p>Less Than Significant with Mitigation: As described in the <i>Cultural Landscapes</i> and the <i>Impact Topics Dismissed from Detailed Analysis</i> sections of the EAls, the project would not adversely affect historical resources, with implementation of mitigation measures.</p> <p>Measure 1: All project activities would be restricted to the Area of Potential Effect for direct effects, as defined in the Section 106 initiation letter submitted to the SHPO on March 29, 2017.</p> <p>Measure 2: Temporary fencing would be placed between the construction limits and known archeological sites to prevent inadvertent damage to sites during construction.</p> <p>Measure 3: Trees and shrubs (particularly cottonwood, willow, fig, and mesquite) adjacent to the construction limits at Cottonwood Corner would be flagged and avoided. If removing trees or shrubs became necessary, trees and shrubs would be documented in terms of their location, species, and size. Documentation would also include digital photographs of each individual tree or shrub impacted by construction activities. Diameter at breast height would be recorded for trees. Protection measures would be put into place to protect these trees and shrubs to the greatest extent possible. If any trees or shrubs need to be removed or their roots are damaged severely during the construction process, then replacement trees and shrubs of the same species would be planted in the same or a similar location to restore the overall character of the Cottonwood Corner oasis. Ideally the replacement species would be sourced from plant material in an unaffected area of Cottonwood Corner. If replanting is necessary, a historical landscape architect would be consulted.</p>				
b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to §15064.5?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<p>A new survey of archeological resources conducted in February and March 2017 recorded 17 isolated occurrences and reexamined 20 archeological sites previously recorded along Bonnie Clare Road (Boston Archaeological Consulting et al. 2017). No new sites were encountered during the survey. Archeological resources in the project area are described in the EA under <i>Impact Topics Dismissed from Detailed Analysis</i>.</p> <p>Less Than Significant with Mitigation: No archeological sites would be directly affected by the project. Resource protection measures such as marking and avoiding known sites and monitoring by a qualified archeologist during construction would be implemented to avoid unintentional impacts.</p> <p>Measure 1: All project activities would be restricted to the Area of Potential Effect for direct effects, as defined in the Section 106 initiation letter submitted to the SHPO on March 29, 2017.</p> <p>Measure 2: Temporary fencing would be placed between the construction limits and known archeological sites to prevent inadvertent damage to sites during construction.</p> <p>Measure 3: In selected areas where existing archeological sites are threatened by erosion, the existing cutbank slopes would be covered with geotextile fabric and the fabric covered with clean fill material or rock gabion and clean fill material at an angle less than 2:1 to prevent continued erosion. Sites proposed for these treatments are identified in the Class III Cultural Resources Survey and Mitigation Plan (Boston Archeological Consulting et al. 2017).</p> <p>Measure 4: Ground-disturbing activities would be monitored by a qualified archeologist and a tribal monitor.</p> <p>Measure 5: In the unlikely event that previously undocumented archeological features are encountered during project implementation, all necessary steps would be taken to protect them, and work in that location would be immediately suspended until the park compliance archeologist or another archeologist meeting the Secretary of the Interior's Standards has evaluated the find.</p> <p>Measure 6: In the unlikely event that human remains are encountered during project implementation, all work would be suspended immediately until measures stipulated in the park's Native American Graves Protection and Repatriation Act (NAGPRA) Inadvertent Discovery Plan are completed and the NAGPRA is followed.</p>				
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No paleontological resources or sites or unique geologic features are known within the project area.				
d) Disturb any human remains, including those interred outside of dedicated cemeteries?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Less Than Significant with Mitigation: No known human remains occur in the project area. In the unlikely event that human remains are encountered during project implementation, all work would be suspended immediately until measures stipulated in the park's Native American Graves Protection and Repatriation Act (NAGPRA) Inadvertent Discovery Plan are completed and the NAGPRA is followed (see Measure 6 above for archeological resources).				
VI. GEOLOGY AND SOILS: Would the project:				
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the state geologist for the area or based on other substantial evidence of a known fault? (Refer to Division of Mines and Geology Special Publication 42.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not cross or rupture a known earthquake fault as delineated in the most recent Alquist-Priolo Earthquake Fault Zoning Map.				
ii) Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: Belowground structures are not proposed. There would be no impact on seismic ground shaking.				
iii) Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No improvements to vertical alignments, slopes, or culverts would occur, and no new structures, such as rockery walls, would be constructed. Because only minor changes to the roadway would occur, the proposed action would not expose people and structures to the adverse impacts of liquefaction compared to existing conditions.				
iv) Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant Impact: Hazards related to slope instability and landslides are generally associated with foothill areas and mountain terrain, as well as steep riverbanks. The project area is considered hilly with eroded drainages, sandstone outcrops, and small valleys. However, the majority of the project area is in an area with few, if any, past landslides.				
b) Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
<p>Less Than Significant with Mitigation: Impacts on soils would occur from surface grading, removal of road debris, and construction of paved ditches and curves. Impacts on soils would be minimal and further minimized through implementation of the following mitigation measures.</p> <p>Measure 1: BMPs for drainage and sediment control, as identified and used by the Federal Highway Administration and the National Park Service, would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation in drainage areas. Use of BMPs in the project area for drainage area protection would include all or some of the following actions, depending on site-specific requirements: (1) keeping disturbed areas small to minimize exposed soil and the potential for erosion; (2) locating waste and excess excavated materials outside of drainages to avoid sedimentation; (3) installing silt fences, temporary earthen berms, temporary water bars, sediment traps, stone check dams, or other equivalent measures (including installing erosion-control measures around the perimeter of stockpiled fill material) before construction; (4) conducting regular site inspections during construction to ensure that erosion-control measures were properly installed and functioning effectively; and (5) storing, using, and disposing of chemicals, fuels, and other toxic materials appropriately.</p>				
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
<p>Soil survey mapping has not been conducted for the Grapevine Canyon or Mesquite Spring Campground areas of the park; low soil development characteristics exist (sparse vegetation cover, steep slopes, large volumes of erosion). Canyon soils on the actively eroding slopes are thin and generally classed as entisols derived from breakdown of the geologic exposures (volcanic and sedimentary rocks and other materials) and vegetation establishment. Deposition of sediments washed from the up-drainage landscape and canyon slopes also represent entisols. Soils developed on slopes are thin and deposit on ledges and in depressions, while sediments deposited as alluvium on the canyon floor and in Death Valley Wash are relatively deep. Annual flooding adds new sediments and redistributes and mixes them with existing deposits, producing a sand and gravel texture with little organic material.</p> <p>Less Than Significant Impact: The project area does not contain known soils with a known risk of landslides or liquefaction. The project would reconstruct Bonnie Clare Road in its previous location and would not increase the risk of on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.</p>				
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The Uniform Building Code does not apply to this project.				
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
No Impact: The proposed project would not require the installation of a septic system or alternative wastewater disposal system.				
VII. GREENHOUSE GAS EMISSIONS: Would the project:				
a) Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant Impact: During construction, the preferred alternative would generate greenhouse gas emissions. Construction emissions would be temporary and would be generated due to the use of heavy equipment such as excavators, graders, dump trucks, cranes, and paving equipment. However, the preferred alternative would not increase the overall capacity of Bonnie Clare Road. Therefore, long-term effects are anticipated to remain unchanged from existing conditions.				
b) Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not conflict with the greenhouse gas reduction goals set forth in California Assembly Bill 32. No other plans or policies related to greenhouse gas emissions are applicable to the project.				
VIII. HAZARDS AND HAZARDOUS MATERIALS: Would the project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project would not result in the routine transport, use, or disposal of hazardous materials.				
b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant Impact: The potential for unintended release of hazardous materials from construction equipment would be reduced through BMPs and implementation of a Spill Prevention, Control, and Countermeasure (SPCC) Plan.				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within ¼ mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project is not located within ¼ mile of an existing or proposed school.				
d) Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project is not located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and thus would not create a significant hazard to the public or environment.				
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project is not located within an airport land use plan or within two miles of a public airport or public use airport.				
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project is not located within the vicinity of a private airstrip.				
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant: The construction of the proposed project would result in road closures, which could temporarily affect emergency vehicle response times. Once construction is complete, response times would be improved.				
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
No Impact: Wildland areas are not present within the proposed project area.				
IX. HYDROLOGY AND WATER QUALITY: Would the project:				
a) Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
<p>Less Than Significant with Mitigation: No site-specific water quality standards are applicable to the waterbodies in the project area, and the preferred alternative does not include waste discharge. With implementation of the mitigation measures below, the project would have a less than significant impact on water quality.</p> <p>Measure 1: BMPs for drainage and sediment control, as identified and used by the Federal Highway Administration and the National Park Service, would be implemented to prevent or reduce nonpoint source pollution and minimize soil loss and sedimentation in drainage areas. Use of BMPs in the project area for drainage area protection would include all or some of the following actions, depending on site-specific requirements: (1) keeping disturbed areas small to minimize exposed soil and the potential for erosion; (2) locating waste and excess excavated materials outside of drainages to avoid sedimentation; (3) installing silt fences, temporary earthen berms, temporary water bars, sediment traps, stone check dams, or other equivalent measures (including installing erosion-control measures around the perimeter of stockpiled fill material) before construction; (4) conducting regular site inspections during construction to ensure that erosion-control measures were properly installed and functioning effectively; and (5) storing, using, and disposing of chemicals, fuels, and other toxic materials appropriately.</p> <p>Measure 2: A Storm Water Pollution Prevention Plan (SWPPP) would be prepared as required by the State of California, and implemented throughout the construction period.</p> <p>Measure 3: A hazardous spill plan would be in place, stating what actions would be taken in the case of a spill, notification measures, and preventive measures to be implemented, including the placement of refueling facilities, storage, and handling of hazardous materials.</p> <p>Measure 4: All equipment on the project would be maintained in a clean and well-functioning state to avoid or minimize contamination from automotive fluids. All equipment would be inspected daily.</p>				
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of preexisting nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project would not deplete or interfere substantially with groundwater recharge resulting in a net deficit in aquifer volume or lowering of the groundwater table.				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
e) Create or contribute runoff water that would exceed the capacity of existing or planned storm-water drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant: The reconstructed road would be designed to withstand moderate flood events without the need for maintenance and repairs. Floodplain connectivity would be improved at locations where the road would be moved out of or to the side of the floodplain. Drop structures would be installed that would dissipate runoff energy and reduce road and floodplain damage. Over the long term, the project would reduce erosion and would not adversely affect water quality.				
f) Otherwise substantially degrade water quality?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
Less Than Significant with Mitigation: With implementation of the mitigation measures for Water Quality, described above, the project would have a less than significant impact on water quality.				
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: Housing is not proposed as part of the preferred alternative.				
h) Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would involve replacement of the existing roadbed and would not include placement of new structures.				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
i) Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant: The only structures in or downstream from the project area are the road, the water diversion facilities at Staininger Spring, and the buildings and other facilities at Scotty's Castle. The preferred alternative would reinforce an existing berm at Staininger Spring, reducing the risk of flood damage to the water diversion facilities. The project would reconstruct Bonnie Clare Road on its previous alignment, with minor changes to increase the road's resilience against future flood events. The project would not increase the risk of flooding at Scotty's Castle.				
j) Involve risk of inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The project is not in an area prone to seiche, tsunami, or mudflow.				
X. LAND USE AND PLANNING: Would the project:				
a) Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No established communities occur within the project area.				
b) Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No applicable land use plan, policy, or regulation of an agency with jurisdiction over the project applies to the project or project area.				
c) Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No applicable habitat conservation plan or natural community conservation plan applies to the project area.				
XI. MINERAL RESOURCES: Would the project:				
a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
No Impact: No known mineral resources occur within the project area.				
b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No known mineral resources occur within the project area.				
XII. NOISE: Would the project result in:				
a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant: Temporary noise disturbances associated with project construction are anticipated, but no long-term changes in noise levels would occur under the preferred alternative because it would not increase the overall capacity of the road.				
b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project is not located near a residential area or area with significant daily use.				
c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not result in a permanent increase in ambient noise levels in the project vicinity; no additional traffic lanes would be added.				
d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would result in temporary but not substantial increases in ambient noise due to construction.				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project would not be located within an airport land use plan or within two miles of a public airport or public use airport.				
f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project would not be located in the vicinity of a private airstrip.				
XIII. POPULATION AND HOUSING: Would the project:				
a) Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project is located within a national park where new development of residential homes or businesses is not permitted.				
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: There are no existing housing structures located within the proposed project area.				
c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: There are no existing housing structures located within the proposed project area.				
XIV. PUBLIC SERVICES:				
a) Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
No Impact or Less Than Significant: The preferred alternative would not result in substantial adverse physical impacts associated with the provision of new or physically altered government facilities. However, given the location of the proposed project within a national park, temporary but not substantial impacts on response times within the project area would occur during construction.				
XV. RECREATION:				
a) Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project would not increase the capacity of the roadway and thus would not increase capacity or use of the park or other recreational facilities.				
b) Does the project include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project does not include the construction or expansion of recreational facilities.				
XVI. TRANSPORTATION/TRAFFIC: Would the project:				
a) Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
No Impact: The preferred alternative would improve the conditions of the road and incorporate additional features to improve transportation in the park.				
b) Conflict with an applicable congestion management program, including but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: No congestion management program exists within the project area.				
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location, that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative includes no measures that would change air traffic patterns.				
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would reduce hazards through the redevelopment of a degraded road and improved drainage.				
e) Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: Emergency vehicles would be permitted to pass through the project area during construction without delay.				
f) Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not conflict with any adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities.				
XVII. TRIBAL CULTURAL RESOURCES:				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
Would the project cause a substantial adverse change in the significance of a tribal cultural resource, defined in Public Resources Code section 21074 as either a site, feature, place, or cultural landscape that is geographically defined in terms of the size and scope of the landscape, sacred place, or object with cultural value to a California Native American tribe, and that is:				
a) Listed or eligible for listing in the California Register of Historical Resources, or in a local register of historical resources as defined in Public Resources Code section 5020.1(k), or	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
b) A resource determined by the lead agency, in its discretion and supported by substantial evidence, to be significant pursuant to criteria set forth in subdivision (c) of Public Resources Code Section 5024.1? In applying the criteria set forth in subdivision (c) of Public Resource Code Section 5024.1, the lead agency shall consider the significance of the resource to a California Native American tribe.	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
Less Than Significant with Mitigation: Road reconstruction work would occur within the Grapevine Canyon Archeological District, which was designated by the park in 2012. Ethnographic resources of importance to the Timbisha Shoshone Tribe have been identified within the Grapevine Canyon Archeological District and are listed as contributing features to the archeological district, as described in the EA. Impacts on tribal cultural resources would be minimized by implementing the mitigation measures described above for <i>Cultural Resources</i> , including avoiding cuts to the canyon walls and requiring the presence of tribal monitors during construction.				
XVIII. UTILITIES AND SERVICE SYSTEMS:				
Would the project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not produce wastewater and therefore would not exceed any wastewater treatment requirements.				
b) Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would reconstruct a water line destroyed by flooding, but would not result in the construction of new water or wastewater treatment facilities or expansion of existing facilities.				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
c) Require or result in the construction of new storm-water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant Impact: The preferred alternative incorporates storm-water drainage improvements along the road including ditch construction. These impacts would be beneficial.				
d) Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant Impact: Water may be required for dust suppression during construction and would be acquired by the contractor.				
e) Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would not produce wastewater.				
f) Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The proposed project would be served by a landfill with sufficient permitted capacity, which would be identified by the contractor before construction.				
g) Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would comply with federal, state, and local statutes and regulations related to solid waste.				

	Potentially Significant Impact	Less Than Significant with Mitigation	Less Than Significant Impact	No Impact
XIX. MANDATORY FINDINGS OF SIGNIFICANCE				
a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	X	<input type="checkbox"/>	<input type="checkbox"/>
Less Than Significant with Mitigation: As described above in this chapter, the preferred alternative has the potential to substantially impact air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, and tribal cultural resources. However, all potential impacts from the preferred alternative would be mitigated to less than significant levels through implementation of the mitigation measures described throughout this chapter.				
b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?	<input type="checkbox"/>	<input type="checkbox"/>	X	<input type="checkbox"/>
Less Than Significant Impact: As discussed in this IS, the proposed project has the potential for impacts on, air quality, biological resources, cultural resources, geology and soils, hydrology and water quality, and tribal cultural resources. However, these would be site-specific impacts and so would not be considered cumulatively considerable. In addition, mitigation measures have been proposed that would reduce all impacts to less than significant levels. All other impacts are considered less than significant and would not be cumulatively considerable. Therefore, this impact would be less than significant.				
c) Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	X
No Impact: The preferred alternative would result in beneficial impacts on visitors and park employees by allowing access and improving safety.				

Determination

On the basis of this initial evaluation:	
<input type="checkbox"/>	I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
X	I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made by or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
<input type="checkbox"/>	I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.
<input type="checkbox"/>	I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and (2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.
<input type="checkbox"/>	I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Signature:	Date:
Printed Name:	For:

Appendix B

Floodplain and Wetland Statement of Findings

APPENDIX B: STATEMENT OF FINDINGS

**STATEMENT OF FINDINGS FOR
EXECUTIVE ORDER 11988 FLOODPLAIN MANAGEMENT
AND
EXECUTIVE ORDER 11990 PROTECTION OF WETLANDS**

**DEATH VALLEY NATIONAL PARK
BONNIE CLARE ROAD RECONSTRUCTION
ENVIRONMENTAL ASSESSMENT**

Recommended: _____
Superintendent, Death Valley National Park Date

Certification of Technical Adequacy and Servicewide Consistency:

Chief, Water Resources Division Date

Concurred: _____
Pacific West Regional Safety Officer Date

Approved: _____
Director, Pacific West Region Date

BONNIE CLARE ROAD RECONSTRUCTION DEATH VALLEY NATIONAL PARK

FLOODPLAIN AND WETLAND STATEMENT OF FINDINGS

INTRODUCTION

Executive Order (EO) 11988, “Floodplain Management” requires the National Park Service (NPS) and other agencies to evaluate the likely impacts of actions in floodplains. It is NPS policy to preserve floodplain values and minimize potentially hazardous conditions associated with flooding. If a proposed action is in an applicable regulatory floodplain, then flood conditions and associated hazards must be quantified and a formal Statement of Findings (SOF) must be prepared. The NPS *Procedural Manual* #77-2, *Floodplain Management* provides direction for the preparation of a floodplain SOF. EO 11990, “Protection of Wetlands” directs the NPS to minimize the loss or degradation of wetlands, preserve and enhance the beneficial values of wetlands, and avoid direct or indirect construction in wetlands unless there are no practicable alternatives to such construction and the preferred alternative includes all practicable measures to minimize harm to wetlands. This combined SOF for floodplains and wetlands has been prepared to comply with EO 11988, EO 11990, NPS *Procedural Manual* #77-2, and NPS Wetland Protection Guidelines, Director’s Order (DO) #77-1 (NPS 2016).

The NPS, in cooperation with the Federal Highway Administration (FHWA), is proposing to reconstruct 7.6 miles of Bonnie Clare Road in Death Valley National Park (park) through Grapevine Canyon from the park boundary at the Nevada-California boundary to the intersection with Ubehebe Crater Road just north of the Grapevine Ranger Station. The proposed project is needed because the majority of this section of the road was damaged or destroyed by flooding caused by heavy rain in October 2015. Bonnie Clare Road is currently closed from the park boundary at the state line to just north of the Grapevine Range Station.

The purpose of the proposed project is to reestablish a safe, sustainable, resilient, and efficient driving route that accesses the northeastern portion of the park and is the most direct route for park visitors coming from Nevada. The project components are described in more detail below.

LOCATION

The project area is located in Grapevine Canyon in the northeast portion of the park (Figure 1). Bonnie Clare Road provides access to the Grapevine and Last Chance mountain ranges in the park, Scotty’s Castle Visitor Center and Museum, Ubehebe Crater, Mesquite Springs, and several backcountry sites.



Figure 1. Preferred alternative project area.

Bonnie Clare Road is within the Grapevine Canyon floodplain. Road construction, drainage improvements, construction access, and other project activities could result in impacts on the floodplain and wetlands.

PROJECT DESCRIPTION

The preferred alternative would reconstruct about 7.6 miles of the Bonnie Clare Road from milepost 0.0 at the California/Nevada state line southwest to milepost 7.6 at approximately the intersection with Ubehebe Crater Road. Most of the project would be constructed within the floodplain of Grapevine Canyon or its tributaries. A new paved road would be constructed with a 22-foot width at most locations. The reconstructed road would generally follow the previous road alignment, but would be modified at some of the curves. The road vertical profile would remain unchanged for the majority of the project length to maintain the historic character of Bonnie Clare Road. New rock and wall cuts would be avoided. Paved ditches with curbs would be constructed or maintained to avoid the need for slope cuts. Paved ditches would be 2 feet wide with a concrete curb. Features installed to minimize erosion would include revetment mattresses, buried concrete Jersey barriers, grade control structures, and riprap embankment protection installed in select locations to minimize scouring of the road from future runoff flows (Figure 2). An underdrain would be installed where a spring emerges under the existing road surface. Because the channel bed has dropped, the road would be lowered to prevent the road from impounding water.

MILEPOST 0.0 TO MILEPOST 3.7

The parking area at the California/Nevada state line entrance was undermined by erosion resulting from the 2015 flood. Flowable grout would be applied underneath the existing concrete pad to fill the void beneath the pad created by flood flows. The road alignment would be fully reconstructed within this section, and the first 2 miles would be moved out of the area that was flooded in 2015. Revetment mattresses and buried concrete Jersey barriers would be installed on both sides of the road to protect against future damage to the road from erosion during flood events. Paved ditches with concrete curbs would be added at select locations to eliminate cuts to the canyon's rock walls. The reconstructed road would follow the previous alignment, with the exception of curves from milepost 0.5 to 2.0, where the road would be relocated to an alluvial terrace farther from the wash. A staging area would be established at about milepost 1.5, near the California/Nevada state line, in an area where the canyon is relatively wide. The road alignment would be shifted about 50 feet to the west, and areas east of the new alignment, consisting mostly of the previous road alignment, would be used for staging materials. Three buried boulder grade control structures would be constructed within the floodplain just downstream of the road from about milepost 3.1 to 3.2 to protect the road from future downcutting.

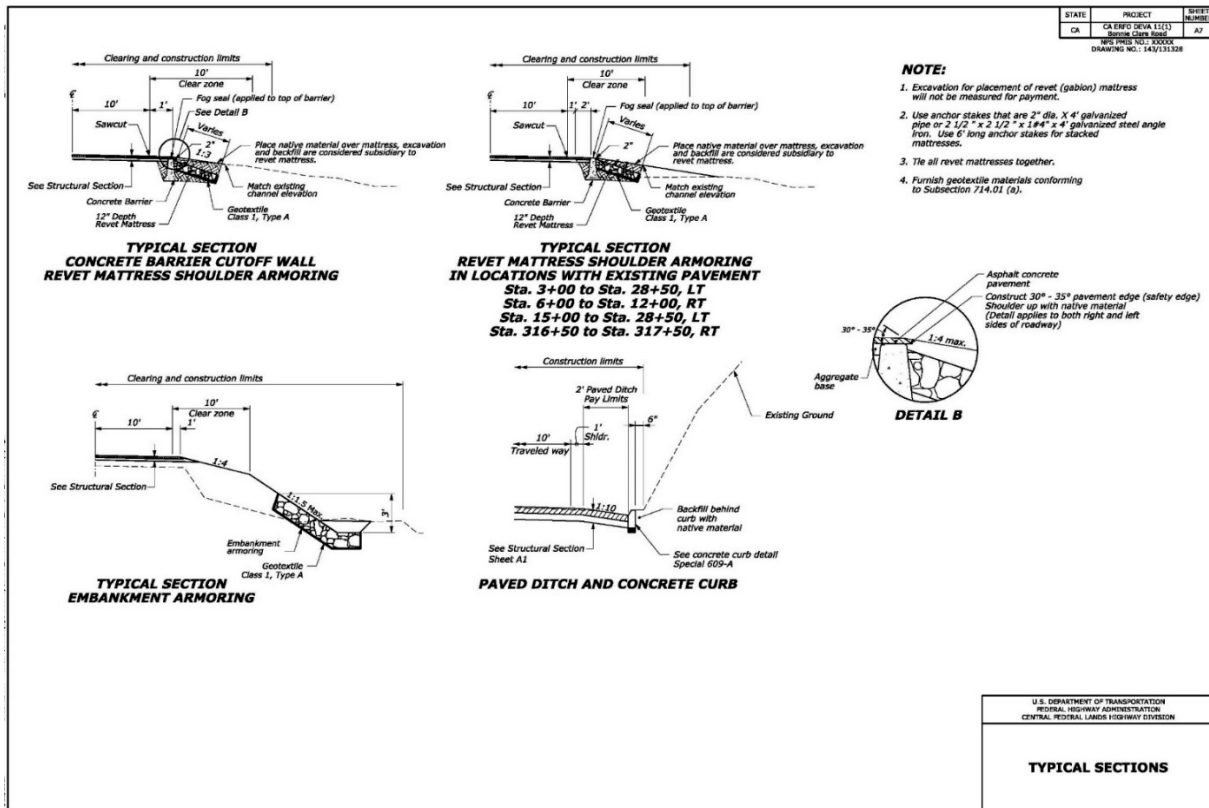


Figure 2. Proposed Bonnie Clare Road erosion control structures.

MILEPOST 3.7 TO MILEPOST 6.1

Work would consist of partial reconstruction of this section of the road, with ditch reconditioning, embankment repair, and placement of riprap as needed. From milepost 3.7 to 4.0, and from milepost 4.3 to 4.8, roadside ditches would be reconditioned and the road embankment would be repaired. The road sections from milepost 4.0 to 4.3, milepost 4.8 to 5.0, and milepost 5.3 to 5.9 would be reconstructed, and the riprap embankment protection would be placed along the right embankment (southbound). The right lane would be reconstructed from milepost 6.0 to 6.1. The reconstructed road would follow the same alignment and would be at the same grade that existed prior to the 2015 flooding. An underdrain would be constructed at about milepost 4.0 where a spring emerges from under the road surface. The underdrain would be constructed with perforated pipe buried about 5 feet deep, with an outlet pipe to direct the flow to the toe of the road fill on the downstream side of the road.

A water line and utility lines would be placed beneath the southbound travel lane of the road from about MP 3.8 (the existing water intake facility and spring) to about MP 4.5 (near Scotty's Castle). The water line and utility lines would originate at the water intake facility and would tie into the existing water system at Scotty's Castle. The water and utility lines from the water intake facility to the road (about 350 feet) and from the road to Scotty's Castle (about 1,100 feet) would be placed underground using trenching. After crossing the wash at about MP 4.5, the waterline and utility line would continue via trenching to connect to the

existing water vault at Scotty's Castle. The existing temporary aboveground waterline would be removed. The trenched areas would be restored to preconstruction conditions after work is complete. The water line and utility lines would be placed in a 3-foot-wide by 6-foot-deep trench.

At about milepost 4.7, the historic bridge at the entrance to Scotty's Castle is severely threatened by ongoing erosion and downcutting of the Grapevine Canyon Wash channel. Proposed work to protect the bridge from future erosion would include:

- Armoring would be placed in the channel from 100 to 200 feet downstream of the bridge and would be buried. The banks of the channel also would be armored to prevent flanking. The armoring would consist of buried articulating concrete blocks (ACBs).
- The channel would be armored with buried ACBs a minimum of 25 feet upstream of the bridge.
- The channel banks at the bridge abutments would be armored with buried ACBs for a minimum of 25 feet upstream and downstream from the bridge.
- A headcut (sudden change in elevation at the leading edge of a gully) about 75 feet upstream of the bridge would be armored with buried ACBs to prevent further erosion.

The total area of disturbance at the bridge would extend about 75 feet upstream of the bridge, 200 feet downstream of the bridge, and 50 feet on either side of the channel.

A temporary vehicle turnaround area would be established at Cottonwood Corner at about milepost 5.9 that would be within a side wash to Grapevine Canyon. The turnaround would be used only for construction purposes and would be restored after construction is complete. No storage of materials would occur at this site because it is within a side wash to the canyon.

MILEPOST 6.1 TO MILEPOST 7.6

Work in this road section would mostly consist of ditch reconditioning and embankment repair as needed, and placement of riprap embankment protection. One short section of the road at a low water crossing from about milepost 7.3 to 7.4 would be reconstructed and protected with revetment mattresses and buried concrete Jersey barriers.

Several stream training structures would be installed along the road and stream channel edge just upstream of the intersection with Ubehebe Road to reduce erosion and direct stream flows away from the road and toward the Grapevine Canyon Wash channel. These structures would include construction of an earthen berm, placement of a rock feature to prevent further erosion in an eroded area, filling in an existing ditch, removing an existing berm, grading a channel to drain water from a low-water crossing, and constructing four spurs with one end along the eroded channel bank and one end projecting into the channel.

SPRINGHOUSE BERM AND TEST WELL

A dirt berm that protects the water intake facility by diverting flood flows away from the Spring House and other features at the existing water intake facility would be repaired and fortified. The existing berm is about 2 to 3 feet high and would be repaired to be about 6 feet high. The reconstructed berm would be about 367 feet long, 5 feet wide at the top, and 36 feet wide at the base. The berm would tie in with the hillside north of the Spring House and would curve around to the south and west to protect the Spring House, Chlorination Building, and water tanks from flooding. The upstream (east) face of the berm would be protected with a rock-filled gabion basket about 1 foot thick. Access to construct the berm would be along the existing access road to the Spring House at about milepost 3.75.

Stainer Spring rises from carbonate rocks underlying the creek channel in Grapevine Canyon. Groundwater at Stainer Spring is collected for use at the Scotty's Castle Visitor Center. A test well would be installed near Stainer Spring and used to test the feasibility of converting the Scotty's Castle water supply from a spring to a well. This would potentially allow for the restoration of spring flow to support aquatic ecosystems and riparian habitats. A drill rig would access the well site on the existing maintenance road to the Chlorination Building and Spring House. Staging would be limited to the existing road and parking area at the water system infrastructure. The well would be on a 2-foot-diameter and 4-inch-thick concrete pad. The well would rise 3 feet aboveground and would be 10 inches in diameter. Drill cuttings would be removed by park maintenance staff and added to the clean fill material stockpiles at Scotty's Castle or at the Grapevine Ranger Station.

FLOODPLAINS

Grapevine Canyon Wash is a braided alluvial wash that comprises the active floodplain of the canyon and varies from less than 50 feet wide in the upper canyon to more than 600 feet wide in the lower canyon. Grapevine Canyon is steep and winding, and in narrow parts of the canyon, Bonnie Clare Road covers the entire width of the canyon floor. The Grapevine Canyon 5-year, 10-year, and 100-year floodplains were mapped by the Federal Highway Administration and U.S. Geological Survey (USGS) in 2017 (FHWA and USGS 2017). All of Bonnie Clare Road is within a desert wash floodplain, and much of the road is within the 100-year floodplain. Flows through Grapevine Canyon result during precipitation events sufficiently intense to create runoff from Slate Ridge, Bonnie Clare Flat, and Sarcobatus Flat, and from the Grapevine Mountain slopes adjacent to Bonnie Clare Road. Flows in Grapevine Canyon are tributary to Death Valley Wash, which is tributary to Salt Creek.

Bonnie Clare Road was constructed within Grapevine Canyon Wash wherever possible, which minimized the amount of cut-and-fill necessary to construct the road along the slope of the canyon hillside (Historic American Landscape Survey (HALS) 2013). The road location on the canyon floor makes it susceptible to sediment deposition and surface damage during flash floods that carry sand, gravel, and rocks downwash to Death Valley. Grapevine Canyon Wash is narrow at the east end and noticeably widens below the springs emerging near Scotty's Castle, where a smaller wash (Tie Canyon) to the north flows into Grapevine Canyon. The west end of Grapevine Canyon Wash is a wide alluvial fan and valley

characterized by a deep layer of loose rock and soil deposited by flows from the higher eastern elevation of the wash. Because the canyon narrows above the springs and seeps east from Scotty's Castle, rock cuts were used to open the canyon floor wide enough to accommodate the roadbed and surface features. Bonnie Clare Road follows, as much as possible, the natural topography, except along the entrance to Scotty's Castle where the road is elevated on a bench cut into the hillside. The cut-and-fill is south of and parallel to the Scotty's Castle historic property line. Within Grapevine Canyon, selective cut-and-fill sites were incorporated into the road design to accommodate safe vehicle passage.

HYDROLOGY AND FLOOD HISTORY OF GRAPEVINE CANYON

Grapevine Canyon drains the steep western slope of the Grapevine Mountains, which form part of the eastern boundary of Death Valley. The Grapevine Canyon watershed is fan shaped, trends northeast to southwest, and has a total drainage area of about 48 square miles. Elevations in the watershed range from 7,008 feet at Helmet Peak to 2,298 feet at the bottom of the canyon (USGS 1990) (Figure 3). There is an abundance of poorly consolidated, erodible material in the canyon and a likelihood of landslides and debris falling from the canyon walls.

Most precipitation occurs during November to March, with winter storms typically bringing relatively light precipitation and little or no runoff. Less frequently, intense convective storms occur during the summer and early fall and may result in damaging flash flood flows (USGS 1990). Thunderstorms result in slopewash, sediment deposition, and rockfall on the road and have caused several washouts and landslides across the road over many years. At Furnace Creek, where precipitation has been measured since 1911, average annual precipitation is about 2 inches. Mean annual precipitation increases by about two-thirds of an inch for each 1,000-foot increase in elevation (USGS 1990). Precipitation in the mountains can be significantly greater than on the valley floor.

Prior to 2015, the most significant flood peak in recent years occurred in July 1976 because of an intense convective storm in the Grapevine Mountains; NPS personnel estimated a discharge of 2,900 cubic feet per second (cfs) in Grapevine Canyon near Scotty's Castle. No precipitation was measured during this event at Scotty's Castle.

During a two-week period in October 2015, a series of storms produced a total of 1.3 inches of precipitation at Furnace Creek. On the evening of October 18, 2015, after the ground was already saturated from recent days of rain, a storm event produced 3 inches of rain in five hours in Grapevine Canyon in the vicinity of Scotty's Castle. This resulted in a flash flood, with the maximum flow estimated at 3,200 cfs. The flood deposited mud, rock, and debris more than 10 feet high. Trenches up to 6 feet deep were cut into Bonnie Clare Road, and the road was severely damaged (Figures 4 and 5). The flood significantly altered Grapevine Canyon Wash. Aerial imagery suggests that, throughout its flowpath, the 2015 flood washed out the entire active floodplain, overwidening the channel and removing much of the channel braiding (FHWA 2017a). The flood removed nearly all indicators of the low-flow channels, and the wash is actively reestablishing these low-flow channels. Several areas of heavy scour, erosion, and headcutting are now present in the canyon after the flood event.

Historical flood peaks have not been measured in the Grapevine Canyon basin. Floods for Grapevine Canyon were estimated by the FHWA using equations developed by the California Department of Transportation (Caltrans 2007). Calculated flood discharges at several locations in Grapevine Canyon are provided in Table 1 (FHWA 2017b). Based on the FHWA estimated flood volumes, the July 1976 and October 2015 floods were approximately 25-year events. Even 5-year flow events would cover the road at many locations, particularly upstream of Scotty's Castle. High velocity flows of water and debris could scour and damage the road. Other hazards from flood flows include the flow of water and debris from the steep canyon walls and flood flow, channel scour, and debris deposited at the mouths of tributary channels near the road.

Table 1. Estimated Grapevine Canyon flood flows.

Recurrence Interval	Flow (cfs)			
	NV/CA boundary	Upstream of Scotty's Castle	Near Scotty's Castle below Confluence with Tie Canyon	Canyon Bottom at Ubehebe Low-Water Crossing
10-year	573	1,689	2,459	2,832
25-year	1,273	3,580	5,335	6,095
50-year	1,852	5,073	7,660	8,715
100-year	2,887	7,570	11,697	13,214

Source: FHWA 2017b.

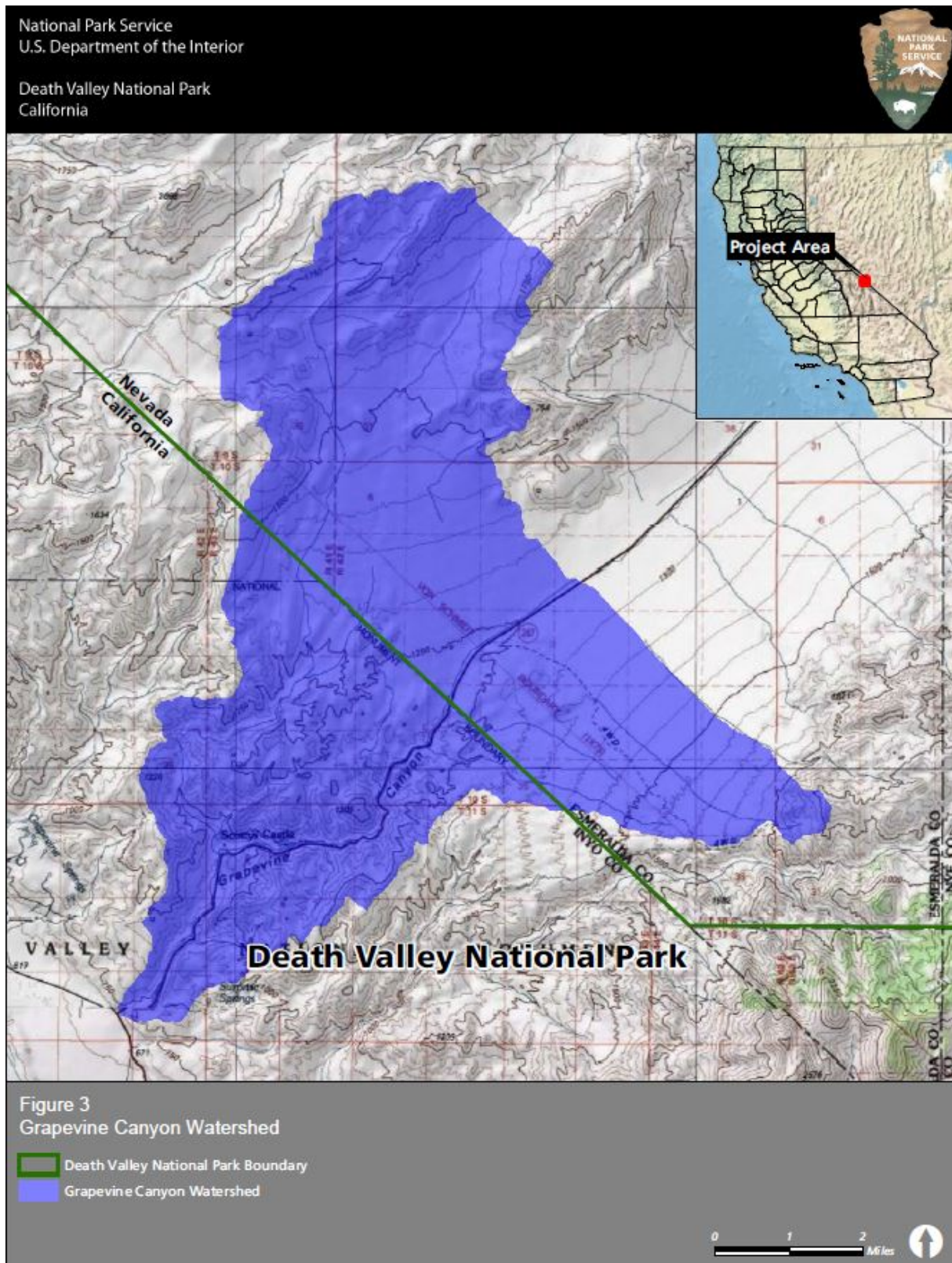


Figure 3. Grapevine Canyon Watershed.



Figure 4. Bonnie Clare Road in Grapevine Canyon, February 2017.



Figure 5. Bonnie Clare Road near Scotty's Castle, February 2017.

WETLAND RESOURCES

Wetlands in the project area were delineated on March 7, 2017 and March 21, 2017 by Mr. Greg Bergquist (FHWA 2017a). Wetlands were delineated using the methods outlined in the *1987 Corps of Engineers Wetlands Delineation Manual* (Environmental Laboratories 1987), the *Regional Supplement to the Corps Wetland Delineation Manual: Arid West Region Version 2.0* (U.S. Army Corps of Engineers (Corps) 2008), and the *Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Corps 2008).

Wetland resources in the project area include Grapevine Canyon Wash, an ephemeral riverine wetland; other ephemeral riverine wetlands that are tributaries to Grapevine Canyon Wash; spring-fed riverine wetlands within the Grapevine Canyon Wash channel; and vegetated wetlands. Wetland mapping for the project area is included in the wetland delineation report (FHWA 2017a). A total of 146.3 acres of potential wetlands were identified in the wetland survey area, consisting of 29 ephemeral riverine wetlands and 5 vegetated wetlands. Wetlands mapped in the project area are presented in Attachment A.

EPHEMERAL RIVERINE WETLANDS

Ephemeral riverine wetlands exist throughout the length of Grapevine Canyon in the project area. Grapevine Canyon Wash is an ephemeral stream with a dry sandy channel that was substantially altered by the flood events in October 2015. The 2015 flood widened the channel and removed much of the channel braiding that existed prior to the flooding (FHWA 2017a). The 2015 flood removed nearly all indicators of the low-flow channels that existed prior to the flooding, and the wash is actively reestablishing these low-flow channels. Numerous ephemeral side drainages enter Grapevine Canyon, and these side drainages were not damaged as extensively by flooding as the main channel of Grapevine Canyon Wash.

SPRING-FED RIVERINE WETLANDS

Additional riverine wetlands in the project area include five spring-fed channels within Grapevine Canyon Wash. These channels are present where groundwater emerges to the surface and provides surface flow from the highest elevation spring at Staininger Spring, through Scotty's Castle, to just down-drainage of Cottonwood Corner, where it likely seeps into the groundwater table. Since the flood event, the spring-fed riverine wetlands have been slowly reforming, assisted by the mineralization and algal growth on the channel bottom, which prohibits percolation into the alluvial soils. The spring-fed riverine wetlands are currently very dynamic and have shifted their flow path at several locations. Additionally, wetland vegetation is present both within the spring-fed riverine wetlands and along their banks.

VEGETATED WETLANDS

Five palustrine emergent/scrub-shrub wetlands with a total area of 2.75 acres are present near the project area (FHWA 2017a). Each of the vegetated wetlands consists of both emergent and scrub-shrub habitat types. These wetlands are associated with near-surface groundwater and groundwater surface discharges within Grapevine Canyon. Wetland plants present include arroyo willow (*Salix lasiolepis*), narrow-leaf cattail (*Typha angustifolia*), three-square bulrush (*Schoenoplectus pungens*), sedges (*Carex* sp.), black cottonwood (*Populus balsamifera*), common reed (*Phragmites australis*), and desert wild grape (*Vitis girdiana*). All five of the vegetated wetlands show evidence of flood damage from the October 2015 flood, ranging from scour to deposition of about 4 to 16 inches of sediment, which has resulted in alteration of the soil profile and damage to vegetation.

ALTERNATIVES

An Environmental Assessment (EA) was prepared to evaluate two alternatives: a no action alternative and a preferred alternative. Under the no action alternative, the road would not be reconstructed. Under the preferred alternative, the reconstructed road would have two 10-foot-wide paved travel lanes, each with a 1-foot shoulder. From the existing water intake facility to Scotty's Castle (approximately 1.5 miles), a waterline and utility lines would be

placed beneath one travel lane of the road. The waterline and utility lines would be placed in a 3-foot-wide by 6-foot-deep trench likely beneath the southbound travel lane. A dirt berm that protects the water intake facility also would be repaired and fortified. The reconstructed road would generally follow the alignment of the pre-flood road, with some modifications as needed to elevate the road above the new flow line of Grapevine Canyon. Some minor stream diversion and restoration also would occur, including construction of a berm to divert future flood flows from the Spring House and other features at the existing water intake facility. A complete description of the alternatives is found in the EA.

ALTERNATIVES DISMISSED FROM DETAILED ANALYSIS

Replace Bonnie Clare Road on Original Alignment with Gravel Surface

Under this alternative, Bonnie Clare Road would be replaced on its original alignment with a gravel surface road that would be regularly maintained by park staff. A gravel road would require a significant amount of maintenance on the part of park staff. A gravel road would not provide easy access for tour buses and recreational vehicles and would be at risk of road failure from low-intensity rainfall because it would have no protection against flooding. This alternative was dismissed from analysis in the EA because it does not meet the project purpose and need to reestablish a safe, sustainable, resilient, and efficient driving route.

Relocate Bonnie Clare Road Out of the Flood Zone

Under this alternative, the road would be relocated out of the floodplain, and structures such as bridges or box culverts would be constructed as necessary to convey flows under the road. Extensive road cuts and other impacts in previously undisturbed areas would be required, resulting in unacceptable impacts on cultural resources. While this alternative would meet the purpose and need for the project, it was dismissed because it would result in unacceptable resource impacts.

CHARACTERIZATION OF AND EFFECT ON FLOODPLAIN VALUES

Grapevine Canyon natural floodplain values have been altered by human activities, particularly Bonnie Clare Road. The effect of human structures in the floodplain on flooding in the canyon has not been quantified. The footprint of the reconstructed road would be similar to the existing road, and modifications to the floodplain would be small compared with existing conditions in the floodplain prior to the October 2015 flood with the road and associated structures, so the overall effect on floodplain values would be small.

Within the park, the Grapevine Canyon floodplain, although altered, still has many natural values. The floodplain has higher soil moisture than the surrounding landscape and higher levels of soil nutrients. The high water table supports wetland and riparian areas that increase the biodiversity of the park. Plant species richness is greater in the floodplain than in

surrounding areas, and the native vegetation provides habitat for a variety of aquatic and terrestrial wildlife species. The floodplain provides water storage and groundwater recharge and also provides aesthetic pleasure and recreational and educational opportunities.

The preferred alternative would have minimal adverse effects and some beneficial effects on the existing natural and beneficial values of the floodplain over the long term. The reconstructed road would generally follow the previous road alignment except where it would be moved out of or to one side of the floodplain. The road vertical profile would remain unchanged for the majority of the project length. The floodplain would be slightly negatively impacted during construction due to the presence of construction equipment and materials in the floodplain and possible erosion from bare soils prior to revegetation. Construction would be halted during storms. Construction activities would be monitored and erosion and sediment control Best Management Practices (BMPs) would be implemented to prevent erosion and sediment movement from disturbed areas into undisturbed areas. After construction is completed, disturbed areas would be revegetated. The project would use design and construction methods to minimize long-term impacts on the floodplain. The reconstructed road would not alter flood flows except where several stream training structures would be installed near the bottom of the canyon to direct stream flows away from the road and toward the Grapevine Canyon Wash channel. Overall, the preferred alternative would not substantially affect floodplain functions or increase the risk of flooding in the Grapevine Canyon watershed; would minimize the impact of floods on human safety, health, and welfare; and would increase resilience against flooding in accordance with EO 11988.

WETLAND IMPACTS

Wetland impacts would occur from road reconstruction, road realignment, bank stabilization, placement of scour protection, and construction of stream training structures and boulder grade control structures. Temporary impacts would result from construction access and construction of a buried waterline. Permanent impacts would occur on 0.04 acre of spring-fed riverine wetlands and 0.51 acre of ephemeral riverine wetlands. Temporary impacts would occur on 18.93 acres of ephemeral riverine wetlands. All construction activities near wetlands would be confined to the smallest area necessary to complete the work, and all temporarily disturbed wetland areas would be restored to preconstruction elevations following construction. About 33.82 acres of ephemeral riverine wetlands would be filled by reconstruction of the flood-damaged Bonnie Clare Road. Wetland impacts are summarized in Table 2. Maps of impacted wetlands are presented in Attachment B.

Table 2. Impacts on wetlands.

Wetland Type	Cowardin Classification	Permanent Impacts – New In-Stream Structures (acres)	Reconstruction of Flood-Damaged Road* (acres)	Temporary Impacts – Restored to Preconstruction Elevations (acres)
Spring-fed riverine wetlands	Intermittent, R4SB4	0.04	0	0
Ephemeral riverine wetlands	Ephemeral, R6	0.51	33.82	18.93
TOTAL		0.55	33.82	18.93

*Excepted from wetland mitigation requirements under NPS policies.

PERMANENT WETLAND IMPACTS

Permanent impacts on wetlands would occur from bank stabilization, construction of boulder grade control structures, placement of scour protection at the bridge at the entrance to Scotty's Castle, and from construction of three stream training structures. The impacts would result in the permanent loss of 0.04 acre of spring-fed riverine wetlands and 0.51 acre of ephemeral riverine wetlands.

TEMPORARY WETLAND IMPACTS FROM CONSTRUCTION ACCESS

Temporary wetland impacts would result primarily from construction access needed to reconstruct the road and would affect a total of 18.93 acres of ephemeral riverine wetlands. Impacts would consist of driving across ephemeral riverine wetlands with equipment and other actions as necessary to access the road alignment and place bank stabilization, boulder grade control structures, scour protection, and stream training structures. The 18.93 acres of temporary impacts also would include about 0.10 acre of temporary impacts from trenching to install the buried waterline and utility lines from Staininger Spring to Scotty's Castle. The waterline and utility lines would be placed in a 3-foot-wide by 6-foot-deep trench. Wetlands affected by temporary construction access consist of ephemeral riverine wetlands only; no vegetated wetlands or spring-fed riverine wetlands would be affected. These wetlands consist of loose unconsolidated sand and gravel sediment, and would be restored to preconstruction contours following construction.

EXCEPTED ACTIVITIES – RECONSTRUCTION OF FLOOD-DAMAGED ROAD

Certain types of activities are excepted from the requirements to compensate for wetland impacts under DO #77-1. Reconstruction of the road is an excepted activity because the road was a previously serviceable structure prior to being destroyed by the flood and about 4.97 miles of the road would be reconstructed mostly along its previous alignment, with only minor changes in design as needed to improve the resilience of the road against future flood events. About 33.82 acres of ephemeral riverine wetlands would be filled by reconstructing the road. The wetlands that would be filled formed when Bonnie Clare Road was destroyed as a result of the flooding in October 2015. In summary, 33.82 acres of impacts on newly

formed ephemeral riverine wetlands would result from reconstruction of the flood-damaged road and the impacts are excepted from wetland mitigation requirements under NPS policies.

WETLAND FUNCTIONS AND VALUES

Wetland functions and values were evaluated subjectively using a descriptive approach. The following functions and values were evaluated: groundwater recharge/discharge, flood flow alteration, fish and shellfish habitat, sediment/toxicant retention, nutrient removal, production export, sediment/shoreline stabilization, wildlife habitat, recreation, educational/scientific value, uniqueness/heritage, visual quality/aesthetics, and endangered species habitat.

Wetlands in the project area have been disturbed by the past construction of Bonnie Clare Road. The unvegetated riverine wetlands in the project area generally comprise one large connected wetland along Grapevine Canyon Wash. Vegetated wetlands would not be affected by the project and, thus, are not included in the discussion of wetland functions and values. Wetland functions and values and impacts on functions and values are presented in Table 3.

Table 3. Impacts on wetland functions and values.

Wetland Function or Value	Description	Summary of Impacts
Groundwater Recharge/ Discharge	Groundwater recharge is the movement of surface water (usually downward), whereas groundwater discharge is defined as the movement of groundwater into surface water (usually laterally or upward). Evaluation of this function includes observations of springs and seeps, and the presence of inlets and outlets. Ephemeral riverine wetlands in the project area are subject to occasional flooding during infrequent storm events and, therefore, are likely to contribute to groundwater recharge. Groundwater discharge occurs at Staininger Spring and provides surface flow for several spring-fed channels, one of which would be affected by the project. The wetlands and intermittent spring flows are entirely dependent on the shallow groundwater as their source of hydrology as opposed to precipitation.	The permanent loss of 0.51 acre of ephemeral riverine wetland and 0.04 acre of spring-fed stream channel would have an adverse effect on groundwater recharge and discharge, but this impact would be mitigated by restoring about 7.8 acres of riverine wetlands and implementing the additional mitigation measures as described below under <i>Wetland Compensation</i> .

Wetland Function or Value	Description	Summary of Impacts
Flood Flow Alteration	Flood flow alteration is the ability of an area to provide temporary water storage capacity during flood events, reducing peak flows. The wetlands in the project area are subject to periodic flash floods following rainfall events and serve to disperse larger precipitation flow events and dissipate energy as flows move through.	As described above under <i>Characterization of and Effect on Floodplain Values</i> , the reconstructed road would not alter flood flows except where several stream training structures would be installed near the bottom of the canyon to direct stream flows away from the road and toward the Grapevine Canyon Wash channel. Overall, the preferred alternative would not substantially affect floodplain functions or increase the risk of flooding in the Grapevine Canyon watershed.
Fish and Shellfish Habitat	This function is assessed based on the effectiveness of seasonal and permanent water bodies associated with the wetland for fish and shellfish habitat. The wetlands in the project area are primarily ephemeral and do not support fish habitat. No shellfish occur in wetlands in the project area.	No impacts are expected.
Sediment/ Toxicant Retention	Sediment/toxicant retention is the ability of an area to retain sediments, and retain and remove toxicants. Assessment of this function is based on the site's proximity to sediment/toxicant sources, transport potential of these constituents to the area via surface water, potential for the site to detain the constituents to the area via surface water, and the potential of the site to filter and/or process (uptake) the constituents. Wetlands in the project area have the potential to retain sediment and toxicants in runoff from nearby Bonnie Clare Road.	The permanent loss of 0.51 acre of ephemeral riverine wetland and 0.04 acre of spring-fed stream channel would have an adverse effect on this function, but this impact would be mitigated by restoring about 7.8 acres of riverine wetlands and implementing the additional mitigation measures as described below under <i>Wetland Compensation</i> .
Nutrient Removal	Nutrient removal is the ability of an area to retain and remove nutrients. This assessment is based on the site's proximity to nutrient sources, transport potential of nutrients to the area via surface water, potential for the site to detain nutrients to the area via surface water, and potential of the site to filter and/or process (uptake) nutrients. No site-specific data are available for nutrient removal. Wetlands in the project area are generally unvegetated and likely provide only minimal nutrient removal functions.	Impacts on this function are expected to be minimal and would be mitigated by restoring about 0.51 acre of riverine wetlands and implementing the additional mitigation measures as described below under <i>Wetland Compensation</i> .
Production Export	Production export is the potential of an area to produce and export food/nutrients for living organisms. Production export typically refers to the flushing of organic material from the wetland to downstream habitats or adjacent deeper waters (Adamus et al. 1991). No site-specific data are available for production export in the project area. The wetlands impacted by the project are mostly unvegetated and likely provide only minimal production export.	The permanent loss of 0.04 acre of spring-fed stream channel would have an adverse effect on this function, but this impact would be mitigated by implementing the mitigation measures as described below under <i>Wetland Compensation</i> .

Wetland Function or Value	Description	Summary of Impacts
Sediment/Shoreline Stabilization	Sediment/shoreline stabilization is the ability of an area to dissipate flow or wave energy to reduce shoreline erosion. This function only applies if the area occurs on or within the banks of a river, stream, or other natural or man-made drainage; or on the shoreline of a standing water body subject to wave action. The wetlands in the project area are mostly unvegetated and consist of loose unconsolidated sediments, likely providing minimal sediment/shoreline stabilization.	Construction of stream training structures and other erosion control devices as part of the proposed project is likely to have a beneficial effect on this function by reducing the potential for future streambank erosion.
Wildlife Habitat	Wildlife habitat is assessed based on the effectiveness of the wetlands to provide habitat for both resident and migrating wildlife species typically associated with wetlands. While not uncommon within Grapevine Canyon, wetland and riparian areas are two of the rarest and most biologically diverse habitat types in the Mojave Desert region. The wetlands, spring flows, and riparian areas in the project area provide habitat to multiple mammal, bird, reptile, and amphibian species and is a locally reliable water source for larger mammals. Many plant and animal species have physiological or life history traits that force them to reside in or directly adjacent to permanent water sources.	Because the construction activities would occur mostly within a previously disturbed road corridor, adverse impacts on wildlife are expected to be minor. Impacts are expected to consist of temporary disturbance from construction noise and vehicles accessing the site and are discussed in greater detail in the EA under "Impact Topics Dismissed from Detailed Analysis–Wildlife." Permanent loss of 0.04 acre of spring-fed stream channel would result in an adverse effect on this function, but this impact would be mitigated by implementing the mitigation measures as described below under <i>Wetland Compensation</i> .
Recreation	Recreation potential is assessed based on the potential of an area to support recreational activities. The wetlands in the project area are not likely to be directly used for recreation; however, wetlands in the project area contribute to the recreational experience of visitors driving along the road.	Reconstruction of the road would allow reopening of the project area to visitors, which would benefit recreation. Impacts on recreation are described in greater detail in the EA in the "Visitor Use and Safety" section.
Educational/Scientific Value	Educational/scientific value is the potential of an area to support educational activities or scientific research. The project area is within an area that could potentially be used for scientific research and is easily accessible.	Educational and scientific value of wetlands in the project area would be temporarily affected during construction, but no long-term impacts would occur.
Uniqueness/Heritage	Uniqueness is assessed based on the general uniqueness of an area relative to the abundance of similar sites occurring in the same major watershed basin, the replacement potential and habitat diversity of an area, and the degree of human disturbance in the area. Heritage includes cultural and archeological resources. The wetlands are located within the ancestral homeland of the Timbisha Shoshone. Several historic camps, once occupied by the Timbisha Shoshone, relied on the springs and wetlands in Grapevine Canyon as a water source and also an attractant for large game animals.	Measures to avoid impacts on archeological and ethnographic resources are described in the EA under "Impact Topics Dismissed from Detailed Analysis." This value would not be affected.

Wetland Function or Value	Description	Summary of Impacts
Visual Quality/Aesthetics	The wetlands in the project area are visible from the road. Wetlands in the project area contribute to the quality of the visitor experience from visitors using the park and driving along the road. The wetlands also contribute to the scenic quality of the project area.	Temporary visual impacts would occur during construction from the presence of construction equipment, materials, and ground disturbances; however, the project area would not be open to the public during construction. Temporarily impacted areas would be restored to preconstruction elevations following construction. No permanent impacts are expected.
Endangered Species Habitat	<p>Endangered species habitat relates to the effectiveness of the wetland and associated water bodies to support threatened and endangered species. Federal- and state-listed species potentially occurring in the project area are southwestern willow flycatcher, least Bell's vireo, loggerhead shrike, yellow-breasted chat, yellow warbler, desert tortoise, and Panamint alligator lizard. No designated critical habitat for any federally listed species is present in the park.</p> <p>Additional information about endangered species habitat is presented in the EA under "Special Status Wildlife Species."</p>	<p>Special status species in the project area use the vegetated wetlands in Grapevine Canyon, but are unlikely to use the unvegetated ephemeral riverine wetlands where most of the impacts would occur. The permanent loss of 0.04 acre of spring-fed riverine wetlands would be mitigated by implementing the mitigation measures as described below under <i>Wetland Compensation</i>.</p> <p>Potential direct and indirect effects on federal- and state-listed species could result from increased noise and activity during construction and disturbance from vibrations and dust generation. Impacts are described in greater detail in the EA under "Special Status Wildlife Species." Impacts on the federally listed southwestern willow flycatcher and least Bell's vireo would be mitigated by conducting preconstruction surveys for these species as described in the EA.</p>

MITIGATION MEASURES

FLOODPLAINS

Under the preferred alternative, the new road would not increase the likelihood of flooding in the Grapevine Canyon watershed. Mitigation measures would incorporate methods for protecting life, minimizing damage through appropriate design, and providing beneficial effects on floodplain values. Mitigative actions would include the following:

- The northern 2 miles of the road would be realigned out of the area that was flooded in October 2015, the old road would be obliterated, and the floodplain would be restored.
- At some locations, the road would be moved to one side of the floodplain, which would improve floodplain connectivity and minimize impacts on the floodplain. The old road would be obliterated and the floodplain would be restored.
- Where roads would be obliterated, floodplain complexity would be introduced by roughening, including partially burying boulders, vertical mulching (partially burying salvage brush bundles to capture fine sediments and seeds), and reestablishing floodplain benches.
- The road would be designed to avoid scouring, deposition, and other damage to the floodplain, such as by installing drop structures for energy dissipation of runoff, and channel and bank armoring.
- Features would be installed to minimize erosion within the floodplain, including revetment mattresses, concrete Jersey barriers, riprap embankment protection, and buried boulder grade control structures.
- Prevent additional incision and headcutting that threatens to lower the local floodplain water table near the Scotty's Castle bridge by using drop structures, and armoring of the channel, abutment, and headcut upstream of the bridge.
- New rock and slope cuts would be avoided.
- Underdrains would be installed where springs emerge from under the road.
- Where the channel bed has dropped, the road would be lowered to prevent the road from impounding water.
- Disturbed areas would be vegetated and wetland and riparian areas would be restored.
- The temporary waterline would be removed from the floodplain, reducing human impacts on the floodplain.
- Staging and stockpiling areas would be situated outside of the floodplain to the extent possible. Construction equipment may be parked within the floodplain when the potential for flooding is low.
- BMPs would be used during and after construction for drainage and sediment control to prevent degradation of the stream channel and water quality.
- No fill would be placed in the floodplain other than a dirt berm installed to protect the water intake facility.
- Construction debris would be immediately removed from the site.
- Natural drainage and natural contours would be preserved to the extent practicable.
- Reestablish wetland and riparian vegetation that would dissipate energy, capture sediments, and affect groundwater flow within the floodplain.
- The project would be completed in such a way as to leave Grapevine Canyon Wash in a stable condition.

A Storm Water Pollution Prevention Plan would be prepared, as required by the state of California, and implemented throughout the construction period. BMPs for drainage area protection may include all or some of the following actions, depending on site-specific requirements:

- Keeping disturbed areas small to minimize the potential for erosion.
- Locating waste and excess excavated materials outside of the floodplain.
- Installing erosion control measures during construction, such as silt fences, temporary earthen berms, temporary water bars, sediment traps, or check dams.
- Regularly inspecting erosion control measures.
- Completing construction as weather permits; should a rain or snow event be predicted, construction would cease and equipment moved from the floodplain. Construction would not restart after a storm event until after all storm runoff has ceased and the ground surface dried.

The protection of people and property is of high priority to the NPS. Permanent signs would be installed warning park visitors of the potential for flash flooding to occur during precipitation events. Bonnie Clare Road would be closed if a major precipitation event is forecasted. A flood warning and evacuation plan would be developed for visitors and park staff. The plan would include maps and descriptions of areas vulnerable to flooding and nearby areas of safe refuge, a description of the flood risk, a warning system, and an evacuation plan for quickly moving visitors and/or staff to safe refuge areas.

The project would be designed to minimize adverse environmental impacts on natural floodplain values, minimize potential risk to lives and property, maintain the natural and beneficial floodplain values in the park, and keep the floodplain environment as close to its natural state as possible using all practicable means. The footprint of the reconstructed road would be similar to the existing road, and modifications to the floodplain would be small compared with existing conditions in the floodplain prior to the October 2015 flood, so the overall effect on floodplain values would be small. These mitigation measures would be in accordance with the NPS floodplain guidelines (NPS *Procedural Manual* #77-2) and EO 11988.

AVOIDANCE AND MINIMIZATION OF WETLAND IMPACTS

Avoidance of all wetlands would not be possible because wetlands are present within and adjacent to the road alignment throughout the project area. Impacts on wetlands would be avoided in selected locations by realigning the road out of wetlands to the greatest extent possible during project design.

Construction activities would be confined to the smallest area necessary to complete the work to minimize impacts. Impacts on existing wetlands outside of the construction area would be avoided by restricting ground disturbance outside of construction limits. No construction materials would be stockpiled in wetland areas.

WETLAND COMPENSATION

Approximately 18.93 acres of ephemeral riverine wetlands would be temporarily disturbed by construction. This temporary impact would be mitigated in place by restoring preconstruction contours after construction is complete. Restored wetland functions would include groundwater recharge/discharge, flood flow alteration, sediment/toxicant removal, nutrient removal, and visual quality/aesthetics.

Approximately 0.04 acre of spring-fed riverine wetlands and 0.51 acre of ephemeral riverine wetlands would be permanently filled by road reconstruction, road realignment, and drainage improvements. Compensation for permanent impacts on wetlands would be accomplished by reestablishing 7.8 acres wetlands at three locations on-site and adjacent to the proposed project area (Table 4). This would result in a mitigation ratio of greater than 1 to 1 for permanent wetland impacts. Additional information on wetland compensation is provided in the *Compensatory Mitigation and Monitoring Plan* (FHWA 2017c). Location maps of the proposed compensation sites are provided in Attachment C.

Table 4. Wetland compensation site descriptions.

Site	Habitat Type	Mitigation Type	Activity	Potential Credit
Area 1: Spring Flow Channel	Spring-fed riverine wetland, riparian, vegetated wetland (PEM/PSS)	Reestablishment	Reestablish meandering spring flow channel to create spring flow, wetland, and riparian corridor.	483 LF (0.022 acre) riverine, 0.124 acre PEM, 0.233 acre PSS
Area 2: Spring Flow Channel	Spring-fed riverine wetland, riparian, vegetated wetland (PEM/PSS)	Reestablishment	Reestablish meandering spring flow channel to create spring flow, wetland, and riparian corridor. Redirect spring flows into relic wetland and riparian area.	355 LF (0.016 acre) riverine, 0.131 acre PEM, 0.196 acre PSS
Area 4: Road Obliteration – Floodplain Restoration	Ephemeral riverine wetland	Reestablishment	Obliterate and removed old road from active floodplain. Add floodplain complexity by partially burying boulders and installing vertical mulching to promote revegetation.	7.083 acres riverine
Subtotals				7.121 acres riverine, 0.255 acre PEM, 0.429 acre PSS
Total				7.805 acres

LF – Linear feet, PEM – palustrine emergent, PSS – palustrine scrub-shrub.

Area 1

A spring-fed riverine wetland would be realigned to its historic alignment through the center of the floodplain (Attachment A). A meandering channel would be established approximately 2 feet wide and 6 inches deep. Willow stakes harvested from surrounding relic wetlands

could be planted within 10 feet of the new channel. Herbaceous vegetation is expected to reestablish from the seed bank. Due to the alluvial soil characteristics and the dynamic nature of the spring flow channels, it is expected that the channel would migrate within the floodplain. The migrating channel is expected to widen the wetland/riparian corridor and further reestablish floodplain vegetation.

Area 2

A spring-fed riverine wetland would be realigned into an existing vegetated wetland. A meandering channel would be established approximately 2 feet wide and 6 inches deep. Willow stakes would be planted within 10 feet of the realigned spring flow channel. Due to the alluvial soil characteristics and the dynamic nature of the spring flow channels, it is expected that the channel will migrate within the floodplain. The migrating channel is expected to widen the riparian corridor and further reestablish floodplain vegetation. Additionally, reestablishing hydrology to the relic wetland is expected to reestablish vegetation and hydrology to this area.

Area 4

A portion of Bonnie Clare Road would be realigned out of the active floodplain of Grapevine Canyon Wash and the channel and floodplain would be restored. Floodplain complexity would be introduced to the road obliteration areas by partially burying boulders, vertical mulching, and reestablishing floodplain benches. Due to the extremely arid climate in the park, seeding and shrub plantings are often not successful. Vertical mulching has been used successfully in Death Valley to accelerate revegetation. Vertical mulching involves partially burying salvaged brush bundles, which act to capture fine sediments and windblown seeds.

Performance Standards and Monitoring

Ecological performance standards based on the California Rapid Assessment Method (California Wetlands Monitoring Workgroup 2017) would be used to track the success of wetland compensation, including structural patch richness, channel stability, sediment transport, number of plant layers, and number of co-dominant species. Performance standards and monitoring are described in detail in the *Compensatory Mitigation Plan* (FHWA 2017c).

Annual monitoring of the mitigation areas would be completed by park staff and would extend for a period of five years or until all sites are considered successful. Baseline monitoring would occur immediately after mitigation site construction is completed. Baseline data would be collected, including photographic documentation, as-built specifications, and planting totals. Annual monitoring would occur during the growing season, but would not take place in the peak summer due to safety concerns.

Vegetative monitoring plots would be used to identify invasive species and evaluate their presence and extent. If it is determined through the monitoring plots the vegetative cover contains more than 5% noxious invasive species, then corrective actions would be required. Additionally, the entire site would be evaluated for invasive species by ocular assessment. If distinct populations of noxious-invasive species are identified, then corrective actions would be required. Individual invasive species identified in the project area would be hand pulled, placed in a plastic trash bag, and disposed of properly. If distinct populations of invasive species have been identified, the individuals would be hand pulled and disposed of properly and the location of the population noted and monitored in subsequent years. Personnel would brush themselves thoroughly prior to leaving the site to prevent further dispersal of invasive species.

The wetland compensation measures have been designed to replace the functions and values of the aquatic resources lost as a result of this project. Additionally, the mitigation actions were designed to reestablish the high-value aquatics habitats that were destroyed during the 2015 flood event. The realignment of the spring-fed riverine wetlands would result in a direct adverse effect on these habitats during the restoration actions; however, the realignment would result in long-term beneficial effects by reestablishing these habitats in more sustainable locations. Additionally, the reestablishment of wetland, riparian, and floodplain vegetation would dissipate energy, capture sediments, moderate groundwater flow, and provide diverse wildlife habitats.

ADDITIONAL WETLAND BEST MANAGEMENT PRACTICES

The following BMPs for wetlands would be implemented as required in Appendix 2 of the *NPS Procedural Manual #77-1: Wetland Protection* (NPS 2016):

1. **Effects on hydrology and fluvial processes:** Action must have only negligible to minor new adverse effects on site hydrology and fluvial processes (e.g., flow, circulation, velocities, hydroperiods, water level fluctuations, sediment transport, and channel morphology). Care must be taken to avoid any rutting caused by vehicles or equipment.
2. **Effects on fauna:** Action must have only negligible to minor new adverse effects on normal movement, migration, reproduction, or health of aquatic or terrestrial fauna, including at low-flow conditions.
3. **Water quality protection and certification:** Action is conducted so as to avoid degrading water quality to the maximum extent practicable. Measures must be employed to prevent or control spills of fuels, lubricants, or other contaminants from entering the waterway or wetland. Action is consistent with state water quality standards and Clean Water Act Section 401 certification requirements (check with appropriate state agency).
4. **Erosion and siltation controls:** Appropriate erosion and siltation controls must be maintained during construction, and all exposed soil or fill material must be permanently stabilized at the earliest practicable date.

5. **Proper maintenance:** Structure or fill must be properly maintained so as to avoid adverse impacts on aquatic environments or public safety.
6. **Heavy equipment use:** Heavy equipment use in wetlands must be avoided if at all possible. Heavy equipment used in wetlands must be placed on mats, or other measures must be taken to minimize soil and plant root disturbance and to preserve preconstruction elevations.
7. **Stockpiling material:** Whenever possible, excavated material must be placed on an upland site. However, when this is not feasible, temporary stockpiling of excavated material in wetlands must be placed on filter cloth, mats, or some other semipermeable surface, or comparable measures must be taken to ensure that underlying wetland habitat is protected. The material must be stabilized with straw bales, filter cloth, or other appropriate means to prevent reentry into the waterway or wetland.
8. **Removal of stockpiles and other temporary disturbances during construction:** Temporary stockpiles in wetlands must be removed in their entirety as soon as practicable. Wetland areas temporarily disturbed by stockpiling or other activities during construction must be returned to their preexisting elevations; soil, hydrology, and native vegetation communities must be restored as soon as practicable.
9. **Topsoil storage and reuse:** Revegetation of disturbed soil areas should be facilitated by salvaging and storing existing topsoil and reusing it in restoration efforts in accordance with NPS policies and guidance. Topsoil storage must be for as short a time as possible to prevent loss of seed and root viability, loss of organic matter, and degradation of the soil microbial community.
10. **Native plants:** Where plantings or seeding are required, native plant material must be obtained and used in accordance with NPS policies and guidance. Management techniques must be implemented to foster rapid development of target native plant communities and to eliminate invasion by exotic or other undesirable species.
11. **Boardwalk elevations:** Minimizing shade impacts, to the extent practicable, should be a consideration in designing boardwalks and similar structures. (Placing a boardwalk at an elevation above the vegetation surface at least equal to the width of the boardwalk is one way to minimize shading.)
12. **Wild and Scenic Rivers:** If the action qualifies as a water resources project pursuant to Section 7(a) of the Wild and Scenic Rivers Act, then appropriate project review and documentation requirements under Section 7(a) are required.
13. **Coastal zone management:** Action must be consistent, to the maximum extent practicable, with state coastal zone management programs.
14. **Endangered species:** Action must not jeopardize the continued existence of a threatened or endangered species or a species proposed for such designation, including degradation of critical habitat (see *NPS Management Policies 2006* and guidance on threatened and endangered species).

15. **Historic properties:** Action must not have adverse effects on historic properties listed or eligible for listing on the National Register of Historic Places.

JUSTIFICATION FOR USE OF THE FLOODPLAIN

Most of the project would be constructed within the 100-year floodplain of Grapevine Canyon. The reconstructed road could be located outside of the floodplain, but this would require extensive cut and fill to undisturbed canyon slopes, resulting in unacceptable impacts to cultural resources, as well as soils, geology, and other resources. The floodplain cannot be avoided for access to the construction area. The project seeks to accommodate a more natural hydrologic and sedimentologic regime by creating drainage features that would result in a road that can withstand moderate flooding events. In addition, the project would use BMPs to minimize alteration of the floodplain and minimize erosion and sedimentation during construction activities. Except for construction equipment parking, staging and stockpile areas would be located outside of the floodplain if possible.

The preferred alternative would be constructed at Grapevine Canyon in Death Valley National Park. The NPS concludes that there is no other practicable alternative for the preferred alternative. With the project designed to prevent or reduce flood damage, the risk to life and property would be minimized. There would be no significant negative effect on natural or beneficial floodplain values.

Mitigation would include good design through sustainable design principles, appropriate siting, and BMPs during and after construction. The NPS finds the proposal to be consistent with NPS *Procedural Manual* #77-2 and EO 11988.

JUSTIFICATION FOR USE OF WETLANDS

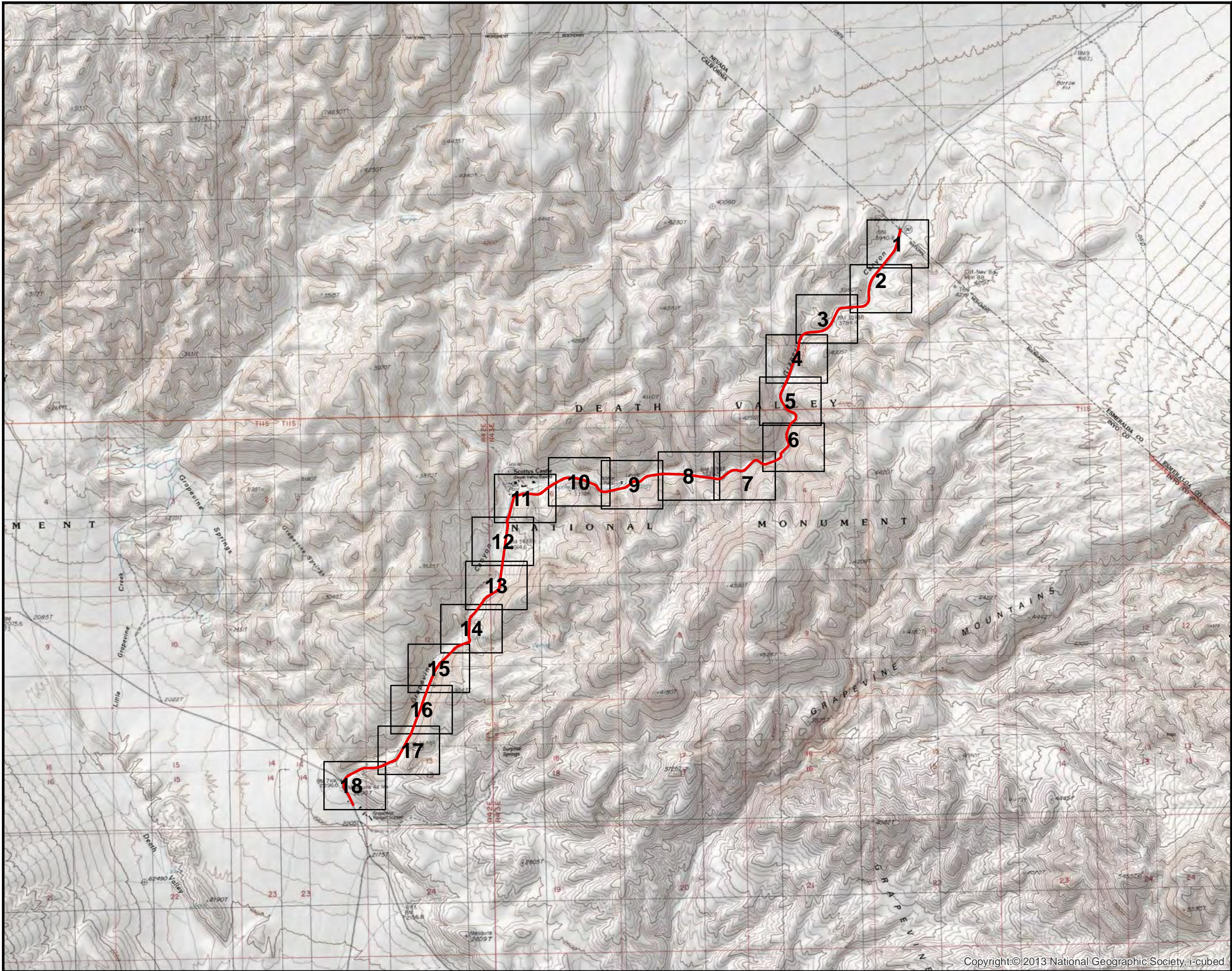
The NPS, in cooperation with the FHWA, proposes to reconstruct approximately 7.6 miles of Bonnie Clare Road within the park. The NPS finds that there are no practicable alternatives to permanently filling approximately 0.04 acre of spring-fed riverine wetlands and 0.51 acre of ephemeral riverine wetlands within the Grapevine Canyon Wash drainage and temporarily impacting a total of 18.93 acres of ephemeral riverine wetlands. An additional 33.82 acres would be disturbed but are excepted from the requirements to provide wetland mitigation because these impacts would result from reconstruction of a previously serviceable road destroyed by flooding. Wetlands have been avoided to the maximum practicable extent, and the preferred alternative includes measures to minimize wetland impacts. With planned wetland restoration, unavoidable impacts on wetlands would be replaced at a ratio of greater than 1 to 1, which is consistent with the NPS no-net-loss of wetlands policy.

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ATTACHMENT A
Wetland Maps



Wetlands and Waters of the U.S. Delineation
Map Index
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet

Federal Highway Administration-
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Appendix A
Figure 2:
Wetlands and
Waters of the U.S.

Date:
January 2017

Legend

Project Centerline

02,0004,0008,000 Feet

1 in = 4,000 feet

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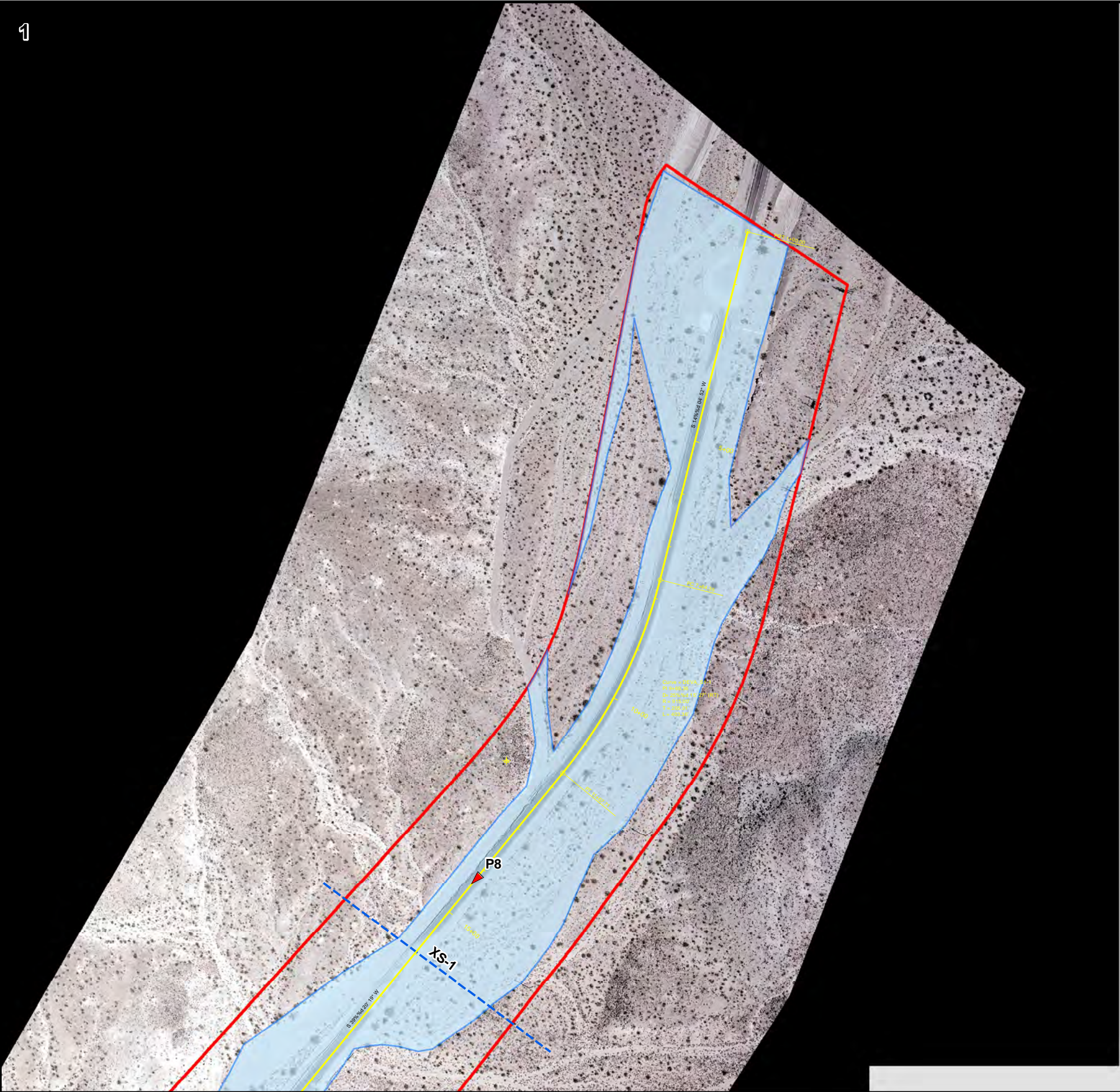
**** PRELIMINARY (RGL 08-02) ****
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Boundary of Survey Area

Approximate OHWM

Potential Wetlands

Scale: 1 in. = 4,000 ft.
Site Visit by Corps: No
Determination Issued:
Corps Project Manager:
Delineation: G. Bergquist



Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
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- Project Centerline
- Survey Area
- Approximate OHWM
- Potential Water of US
- Potential Wetlands
- Spring Flow
- Delin. Data Point
 - Upland
 - Wetland
 - Photo Location
 - OHWM X-Section

0 100 200 400 Feet

1 in = 200 feet



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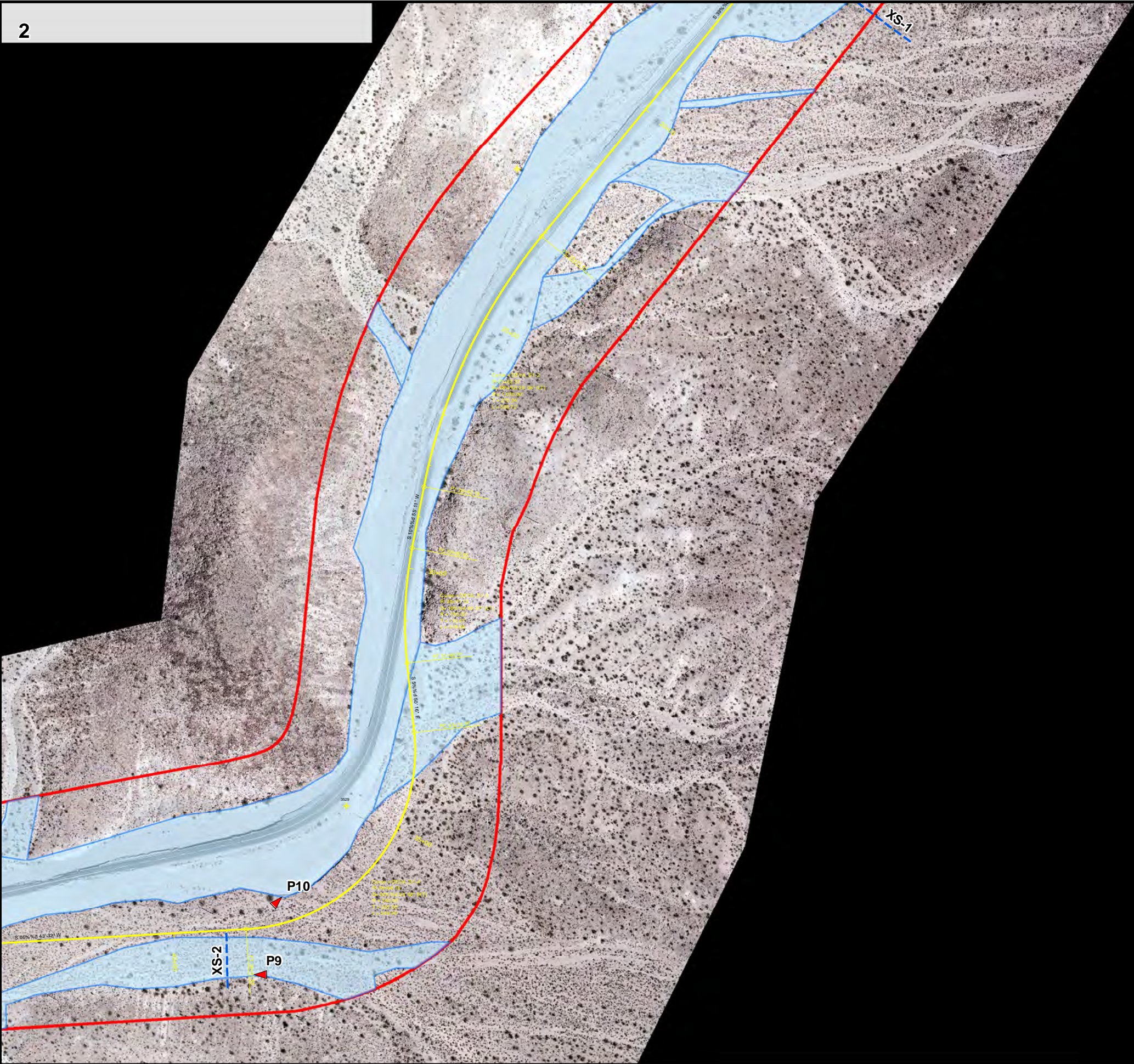
*** PRELIMINARY (RGL 08-02) ***

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U.S. Army Corps of Engineers, Los Angeles District
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Legend

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Site Visit by Corps: No
Determination Issued: _____
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Delineation: G. Bergquist



Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



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| Project Centerline | Spring Flow |
| Survey Area | Delin. Data Point |
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| Potential Water of US | Wetland |
| Potential Wetlands | Photo Location |
| | OHWM X-Section |

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1 in = 200 feet



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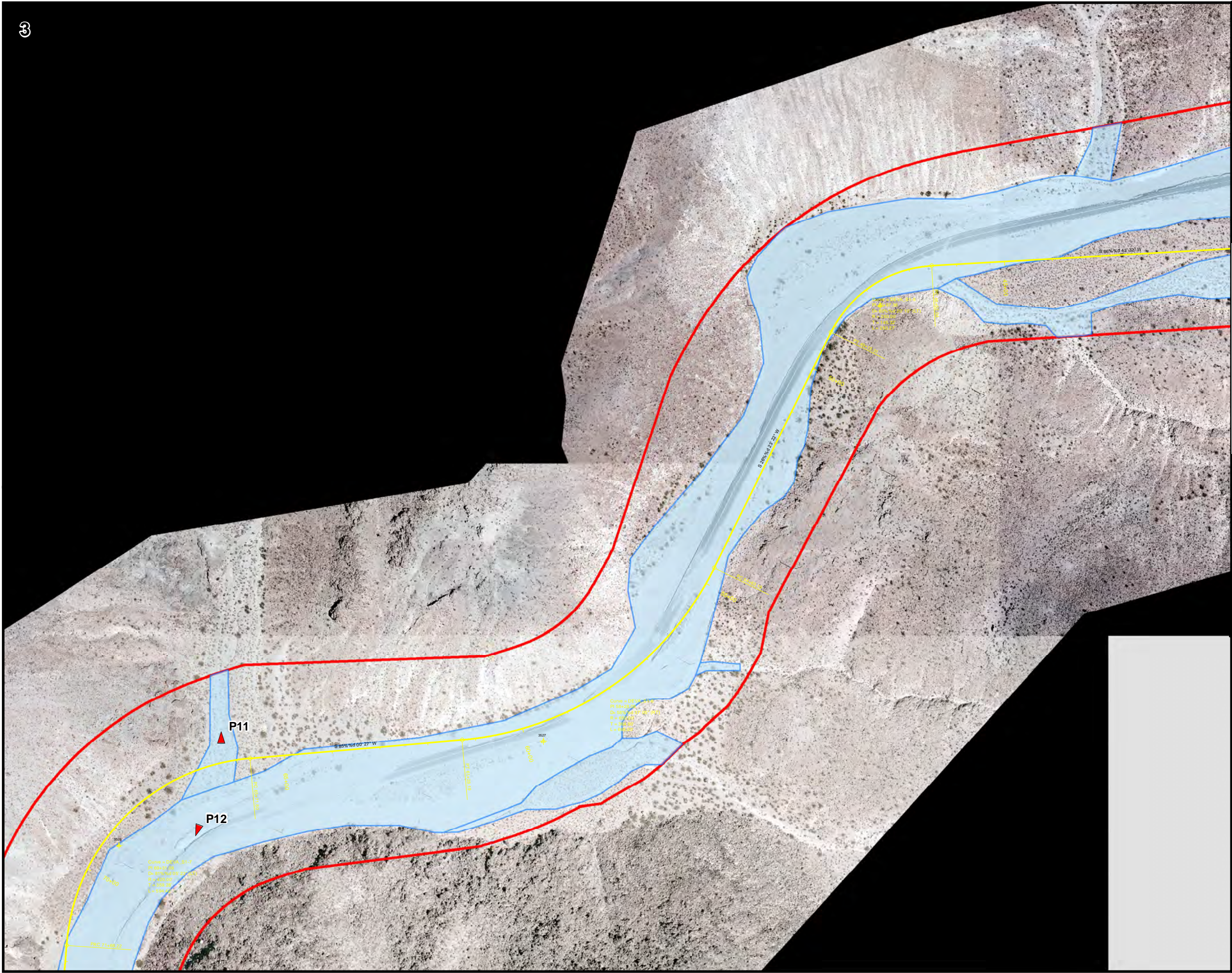
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Delineation: G. Bergquist



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Wetlands and Waters of the U.S. Delineation
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NAD 1983 State Plane
CA IV 0404 US Feet



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Wetlands and
Waters of the U.S.

April 2017

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| Project Centerline | Spring Flow |
| Survey Area | Delin. Data Point |
| Approximate OHWM | Upland |
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| Potential Wetlands | Photo Location |
| | OHWM X-Section |

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Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



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April 2017

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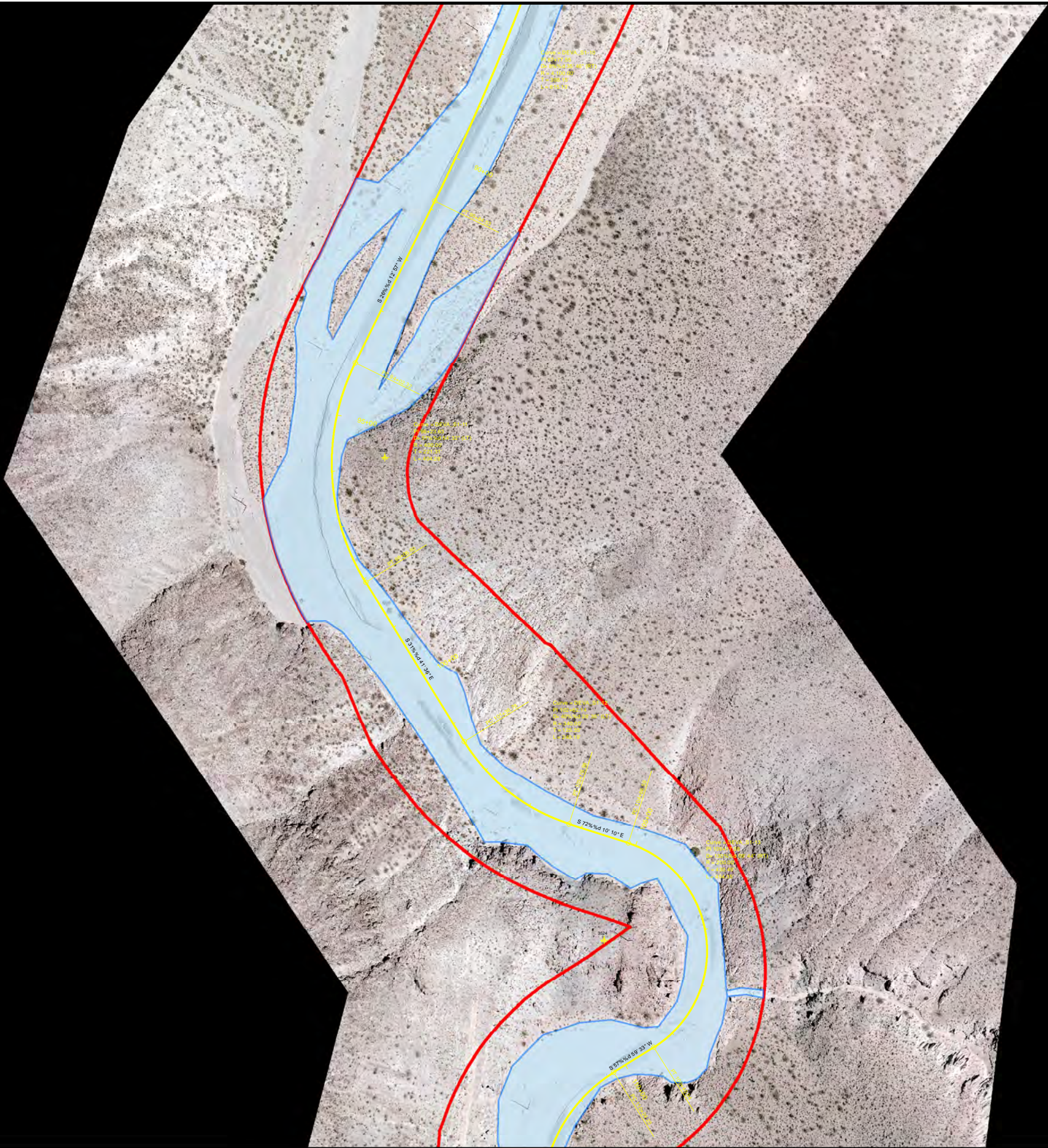
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Wetlands and Waters of the U.S. Delineation
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NAD 1983 State Plane
CA IV 0404 US Feet



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April 2017

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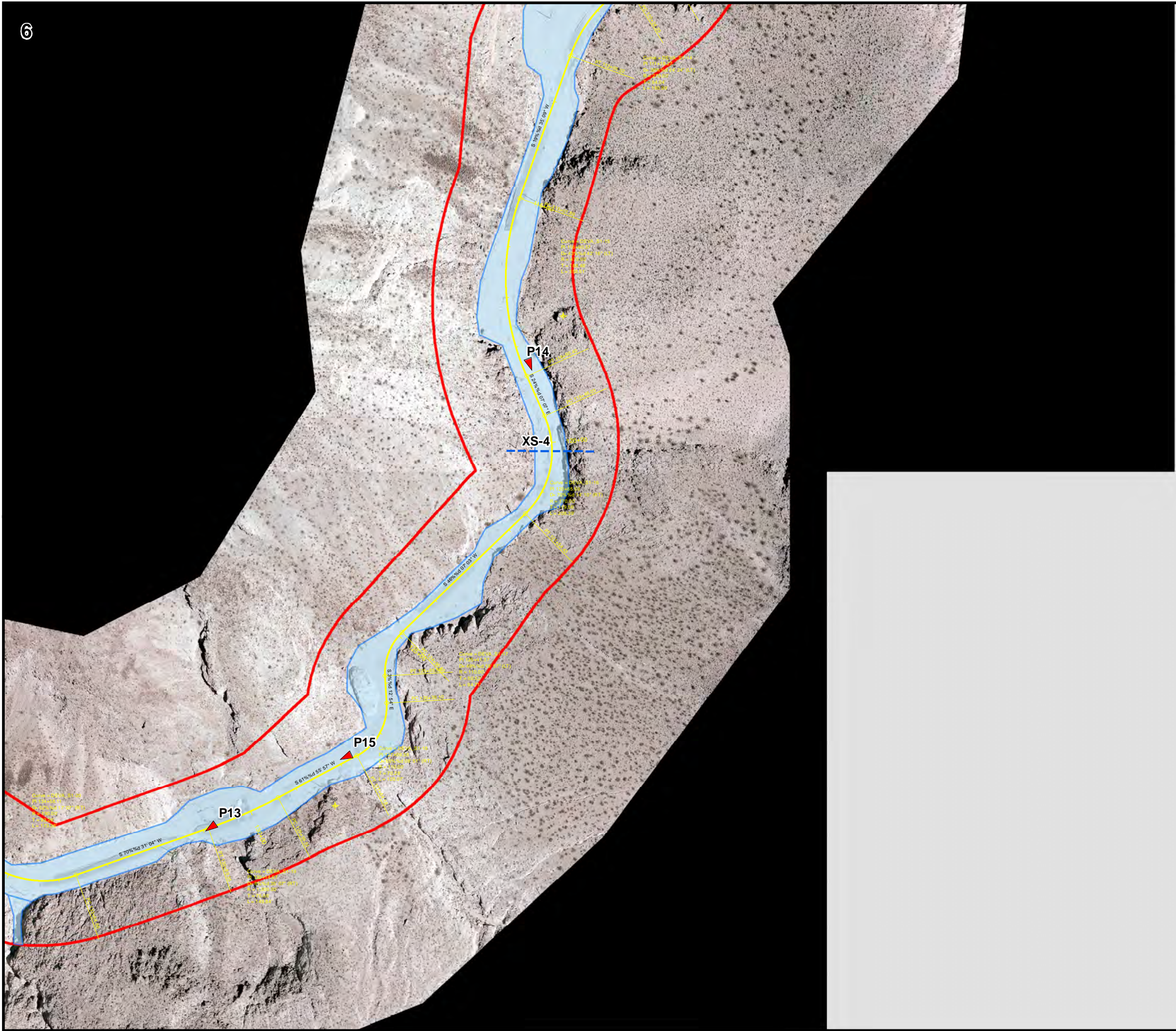


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Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Appendix A
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Waters of the U.S.

April 2017

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| Project Centerline | Spring Flow |
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| Potential Wetlands | Photo Location |
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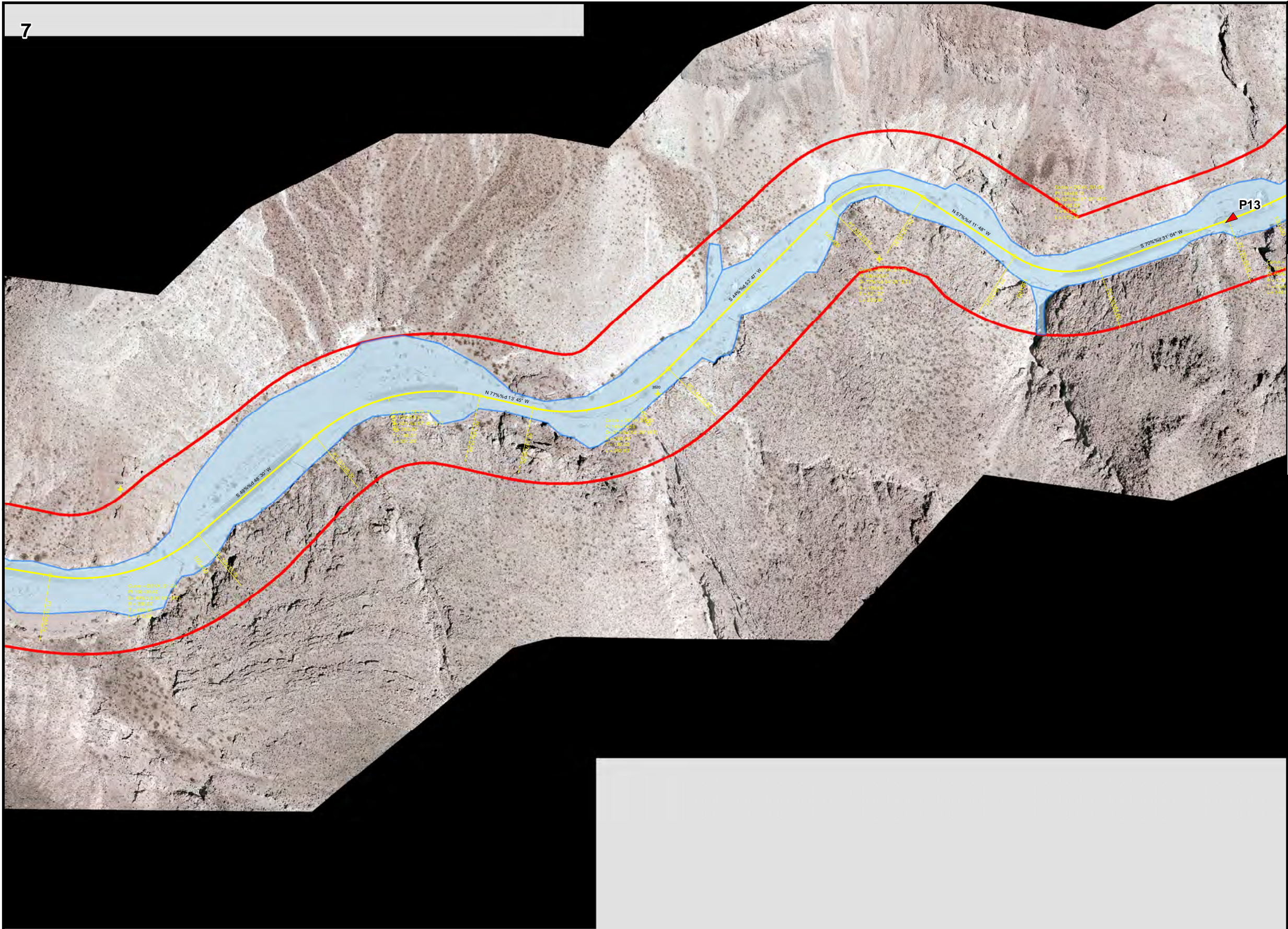
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Wetlands and Waters of the U.S. Delineation
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CA IV 0404 US Feet



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Waters of the U.S.

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| Project Centerline | Spring Flow |
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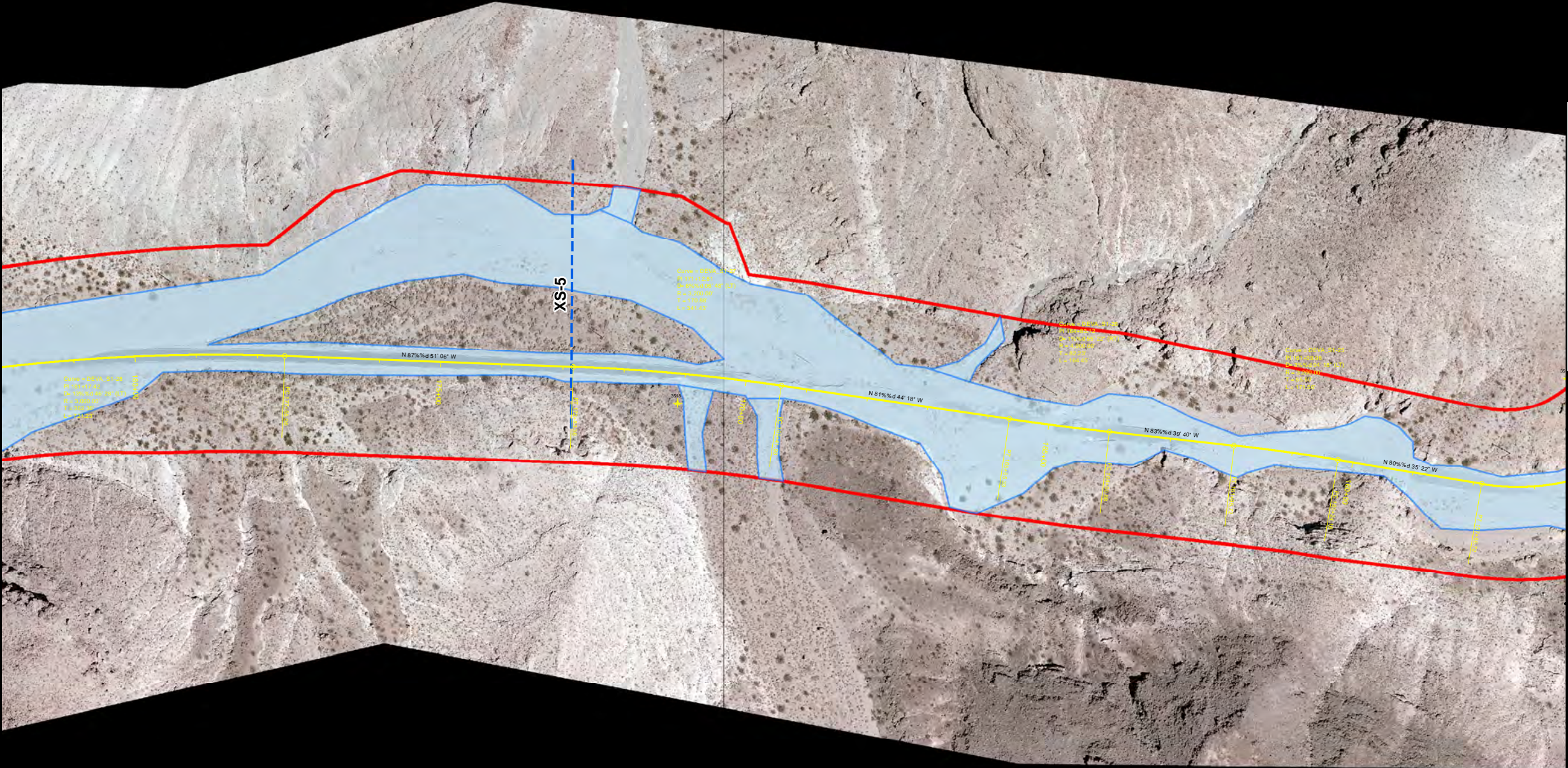


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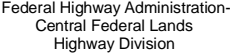


Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Appendix A
Figure 2:
Wetlands and
Waters of the U.S.



April 2017

Legend

Project Centerline

Survey Area

Approximate OWM

Potential Water of US

Potential Wetlands

Spring Flow

Delin. Data Point

Upland

Wetland

Photo Location

OWM X-Section

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1 in = 200 feet

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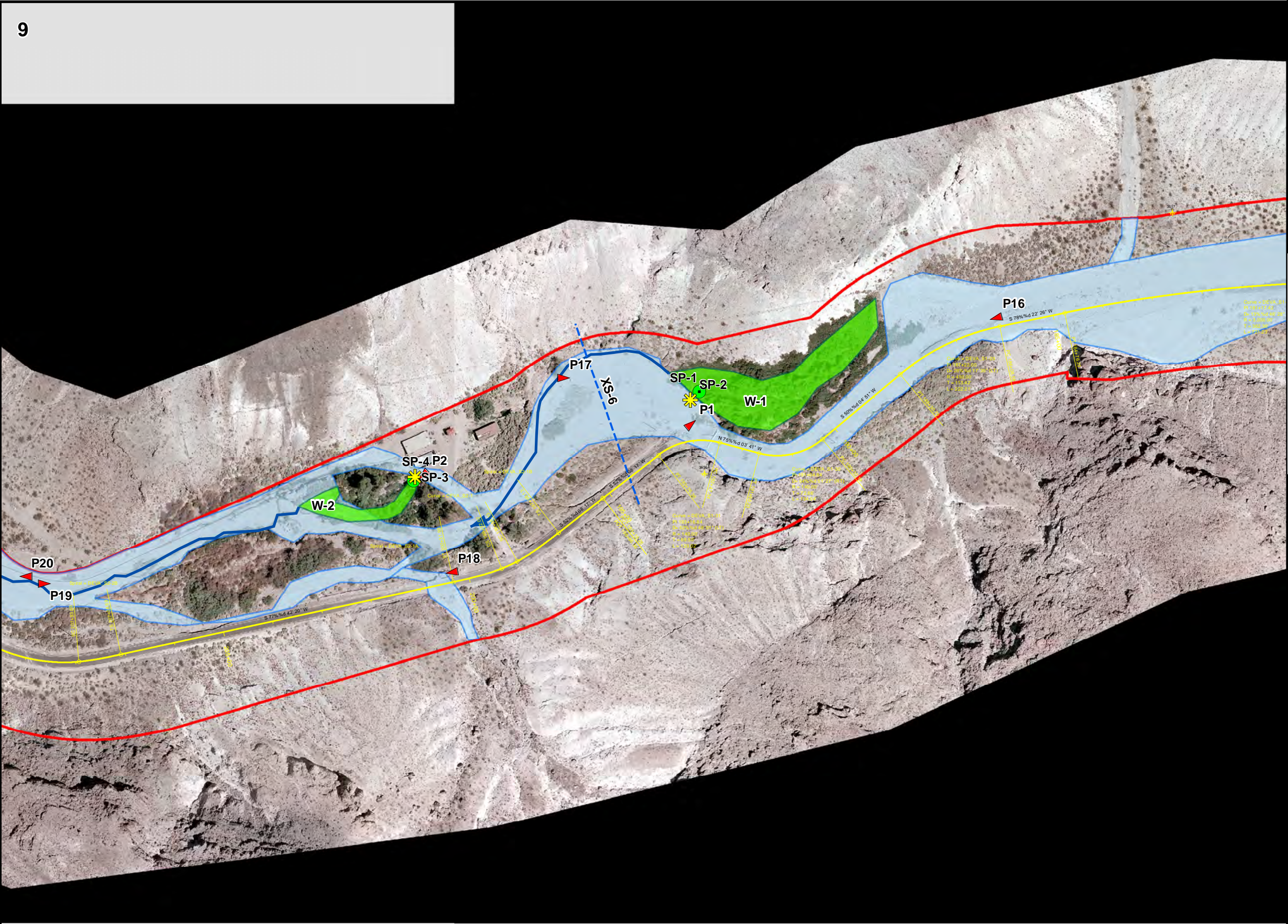
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Site Visit by Corps: No

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**Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet**

DEPARTMENT OF TRANSPORTATION
UNITED STATES OF AMERICA

Federal Highway Administration-
Central Federal Lands
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Appendix A
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April 2017

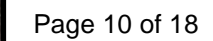


April 2017

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 — Potential Water of US
 — Potential Wetlands

— Spring Flow
Delin. Data Point
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1 in = 200 feet



Legend

Wetlands and Waters of the U.S. Delineation
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Corps Project Manager: _____
Delineation: G. Bergquist



Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

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CA IV 0404 US Feet



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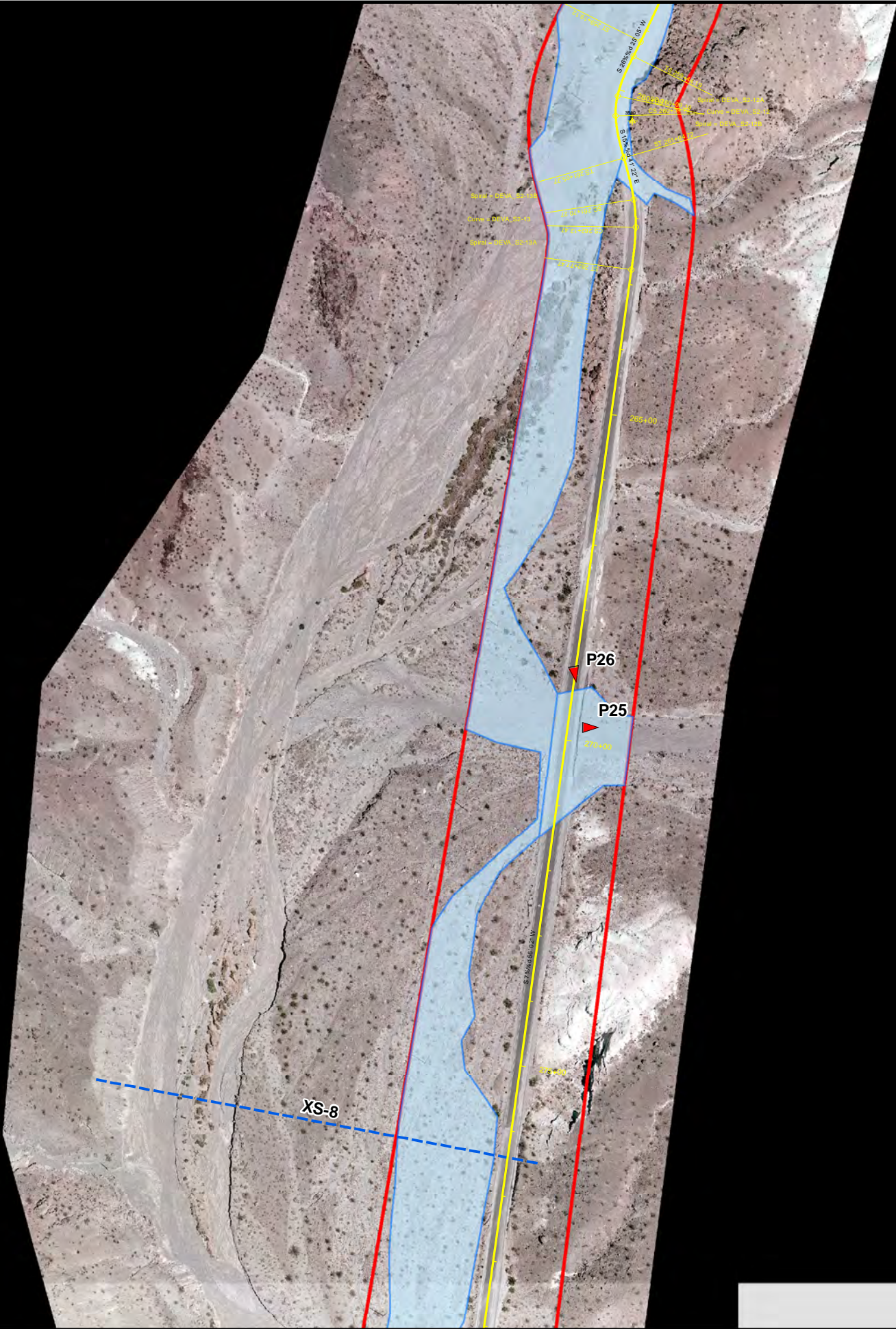
*** PRELIMINARY (RGL 08-02) ***

SECTION 404 JURISDICTIONAL DELINEATION

U.S. Army Corps of Engineers, Los Angeles District
Application No. _____

Legend

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Site Visit by Corps: No
Determination Issued: _____
Corps Project Manager: _____
Delineation: G. Bergquist



Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
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Wetlands and
Waters of the U.S.

April 2017

Legend

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| Project Centerline | Spring Flow |
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| Approximate OHWM | Upland |
| Potential Water of US | Wetland |
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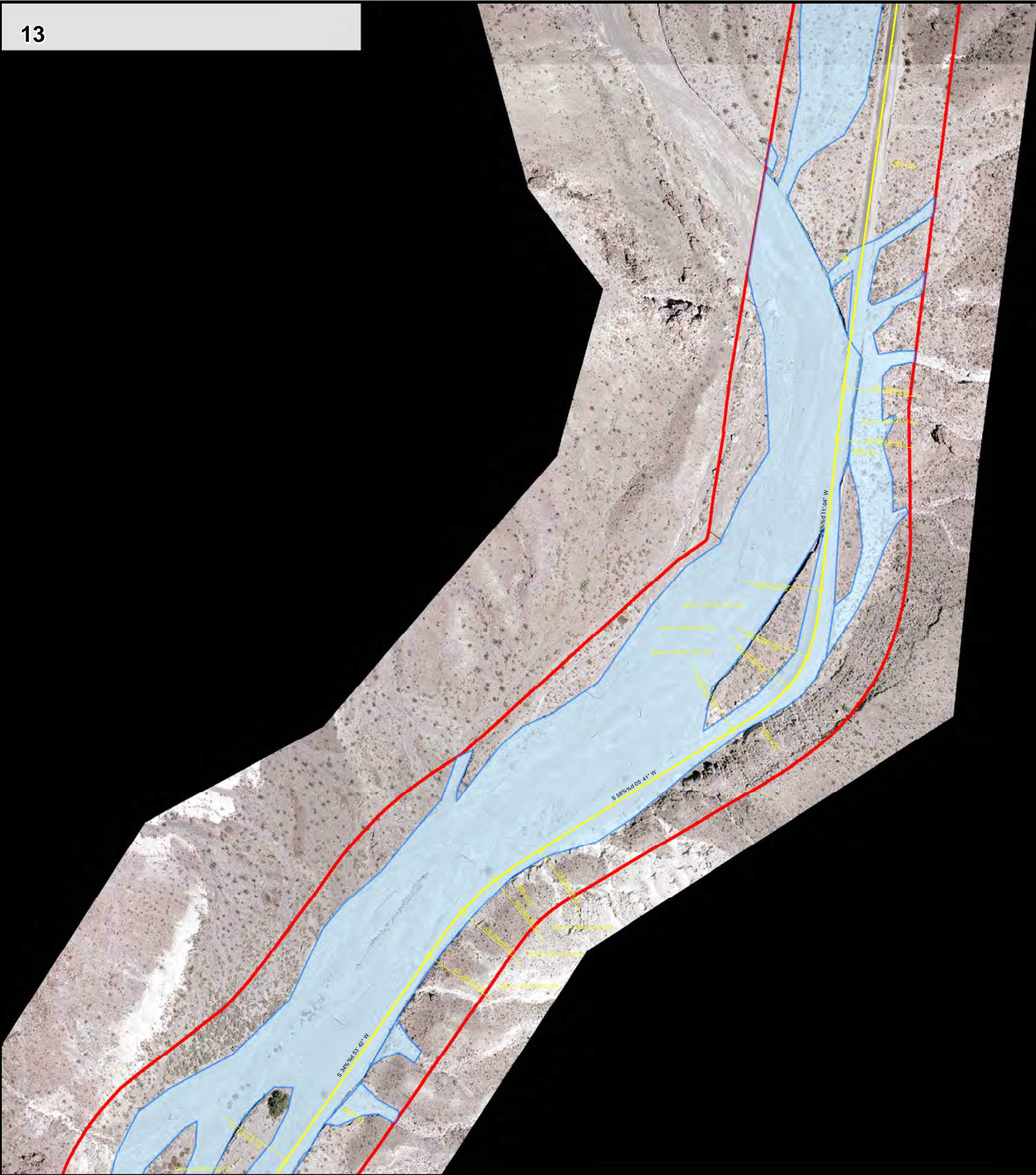


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Scale: 1 in. = 200 ft. Photograph Date: 9/15/2017
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Corps Project Manager: _____
Delineation: G. Bergquist



Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road











NAD 1983 State Plane
CA IV 0404 US Feet


Federal Highway Administration-
Central Federal Lands
Highway Division

Appendix A
Figure 2:
Wetlands and
Waters of the U.S.

April 2017


Legend

 Project Centerline	 Spring Flow
 Survey Area	Delin. Data Point
 Approximate OHWM	 Upland
 Potential Water of US	 Wetland
 Potential Wetlands	 Photo Location
	 OHWM X-Section

0 100 200 400 Feet

1 in = 200 feet

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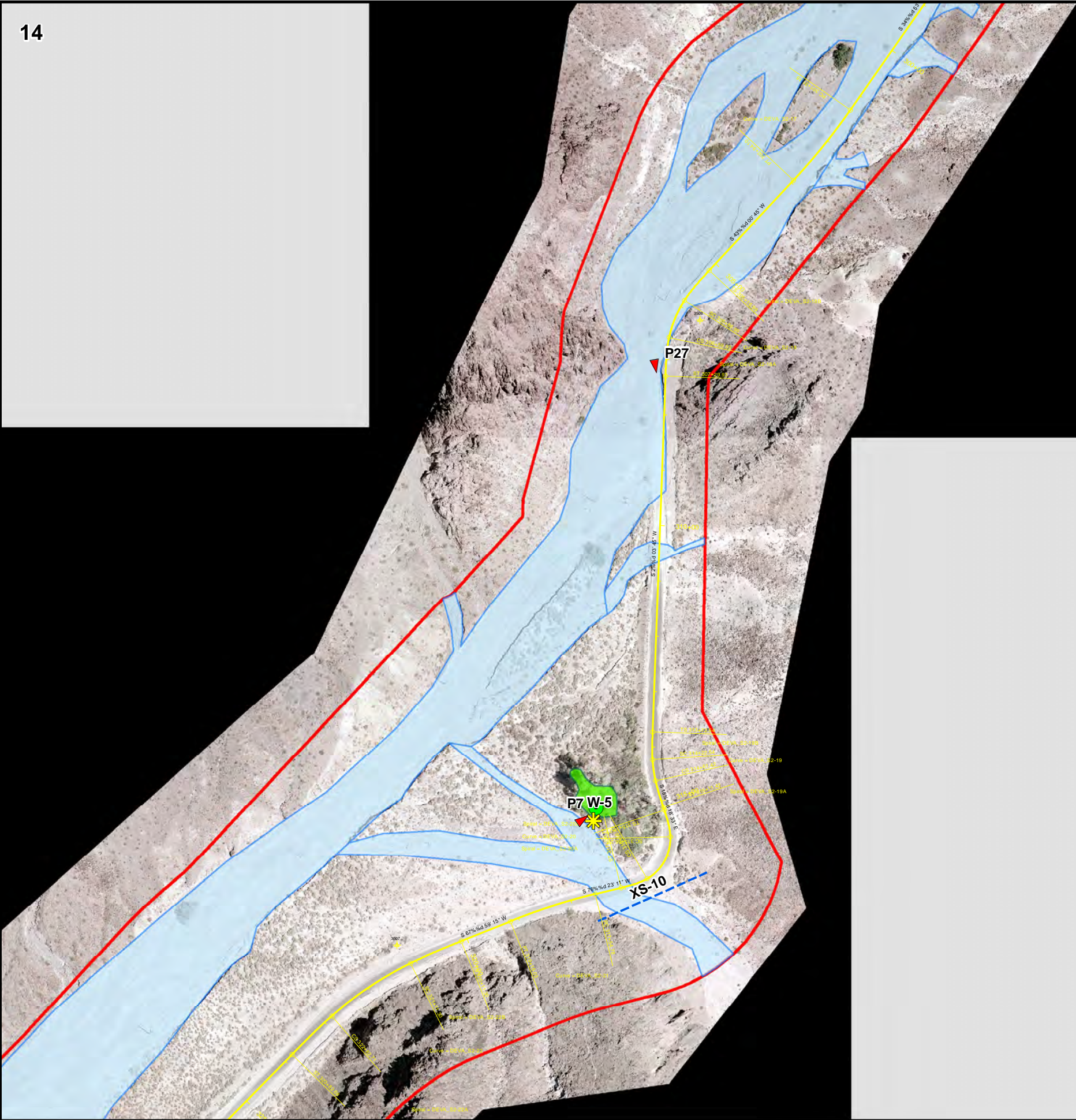


*** **PRELIMINARY (RGL 08-02)** ***

SECTION 404 JURISDICTIONAL DELINEATION
U.S. Army Corps of Engineers, Los Angeles District
Application No. _____

Legend

Scale: 1 in. = 200 ft. Photograph Date: 9/15/2017
Site Visit by Corps: No
Determination Issued: _____
Corps Project Manager: _____
Delineation: G. Bergquist



Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Appendix A
Figure 2:
Wetlands and
Waters of the U.S.

April 2017

Legend

- | | |
|-----------------------|--------------------------|
| Project Centerline | Spring Flow |
| Survey Area | Delin. Data Point |
| Approximate OHWM | Upland |
| Potential Water of US | Wetland |
| Potential Wetlands | Photo Location |
| | OHWM X-Section |

0 100 200 400 Feet

1 in = 200 feet

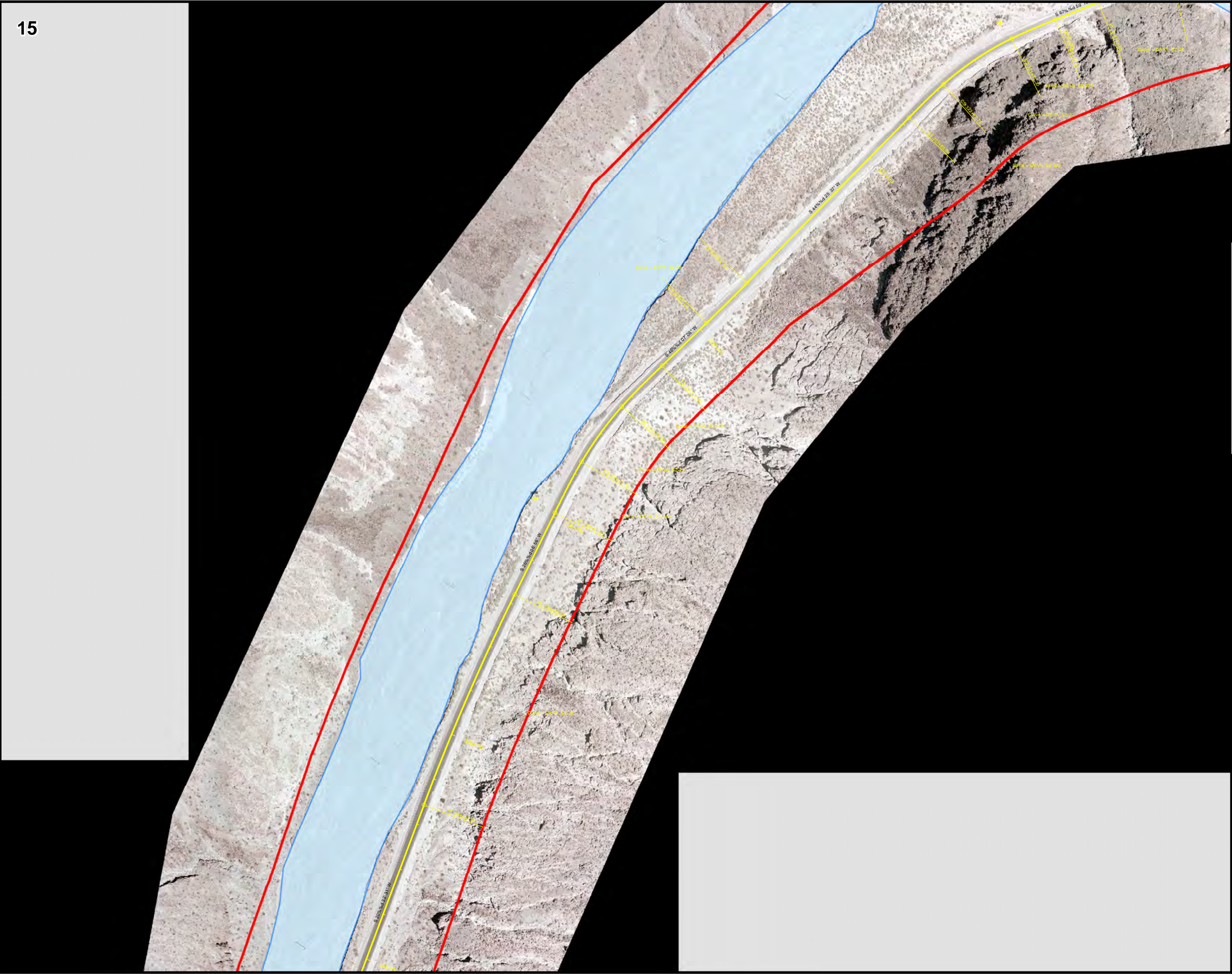


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*** **PRELIMINARY (RGL 08-02)** ***
SECTION 404 JURISDICTIONAL DELINEATION
U.S. Army Corps of Engineers, Los Angeles District
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Legend


Scale: 1 in. = 200 ft. Photograph Date: 9/15/2017
Site Visit by Corps: No
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Corps Project Manager: _____
Delineation: G. Bergquist



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Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Appendix A
Figure 2:
Wetlands and
Waters of the U.S.

April 2017

Legend

Project Centerline

Survey Area

Approximate OHWM

Potential Water of US

Potential Wetlands

Spring Flow

Delin. Data Point

Upland

Wetland

Photo Location

OHWM X-Section

0100200400 Feet

1 in = 200 feet

N

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**** PRELIMINARY (RGL 08-02) ****

SECTION 404 JURISDICTIONAL DELINEATION

U.S. Army Corps of Engineers, Los Angeles District

Application No. _____

Legend

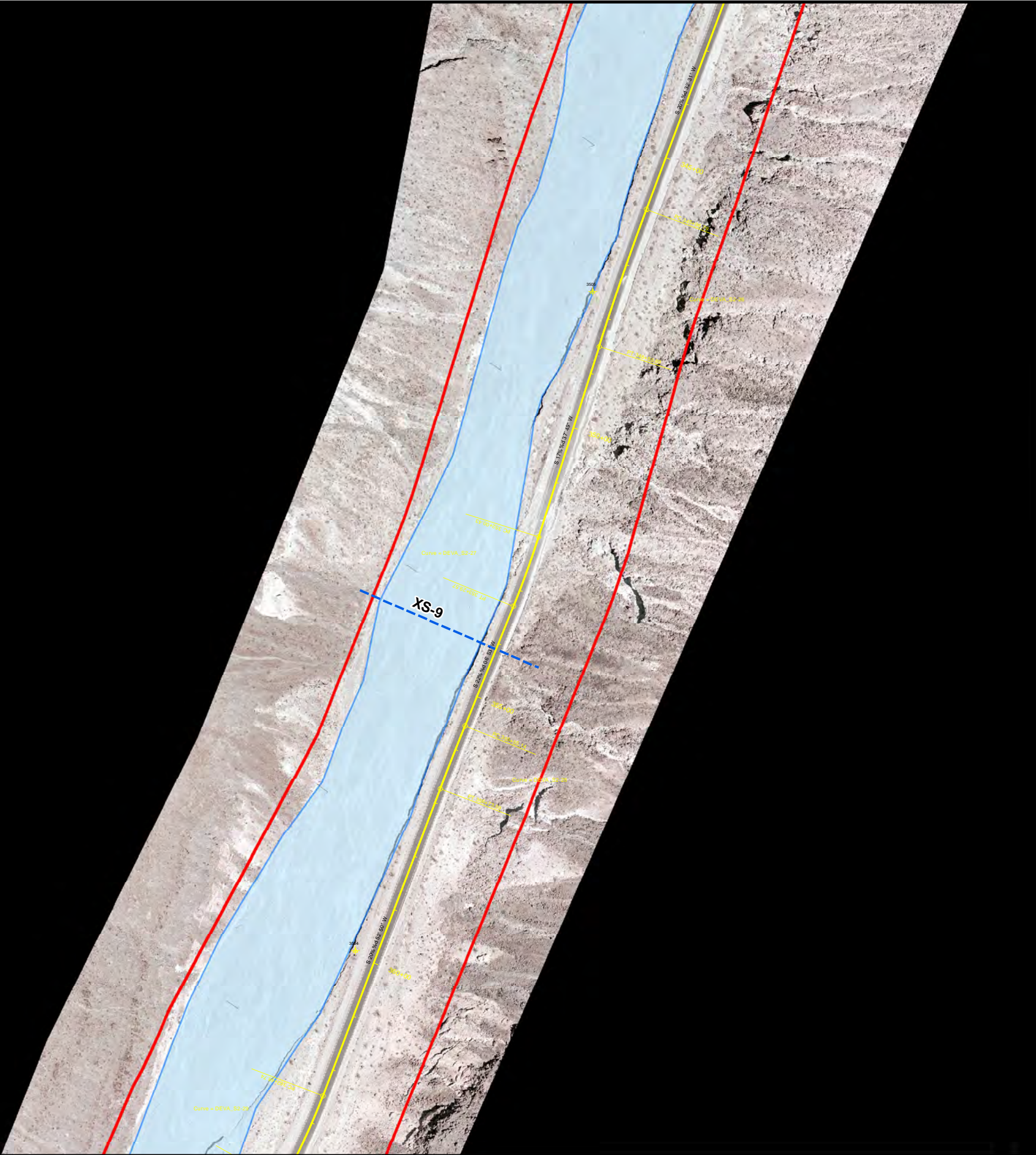
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Site Visit by Corps: No

Determination Issued: _____

Corps Project Manager: _____

Delineation: G. Bergquist



Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Appendix A
Figure 2:
Wetlands and
Waters of the U.S.

April 2017

Legend

- | | |
|-----------------------|--------------------------|
| Project Centerline | Spring Flow |
| Survey Area | Delin. Data Point |
| Approximate OHWM | Upland |
| Potential Water of US | Wetland |
| Potential Wetlands | Photo Location |
| | OHWM X-Section |

0 100 200 400 Feet

1 in = 200 feet

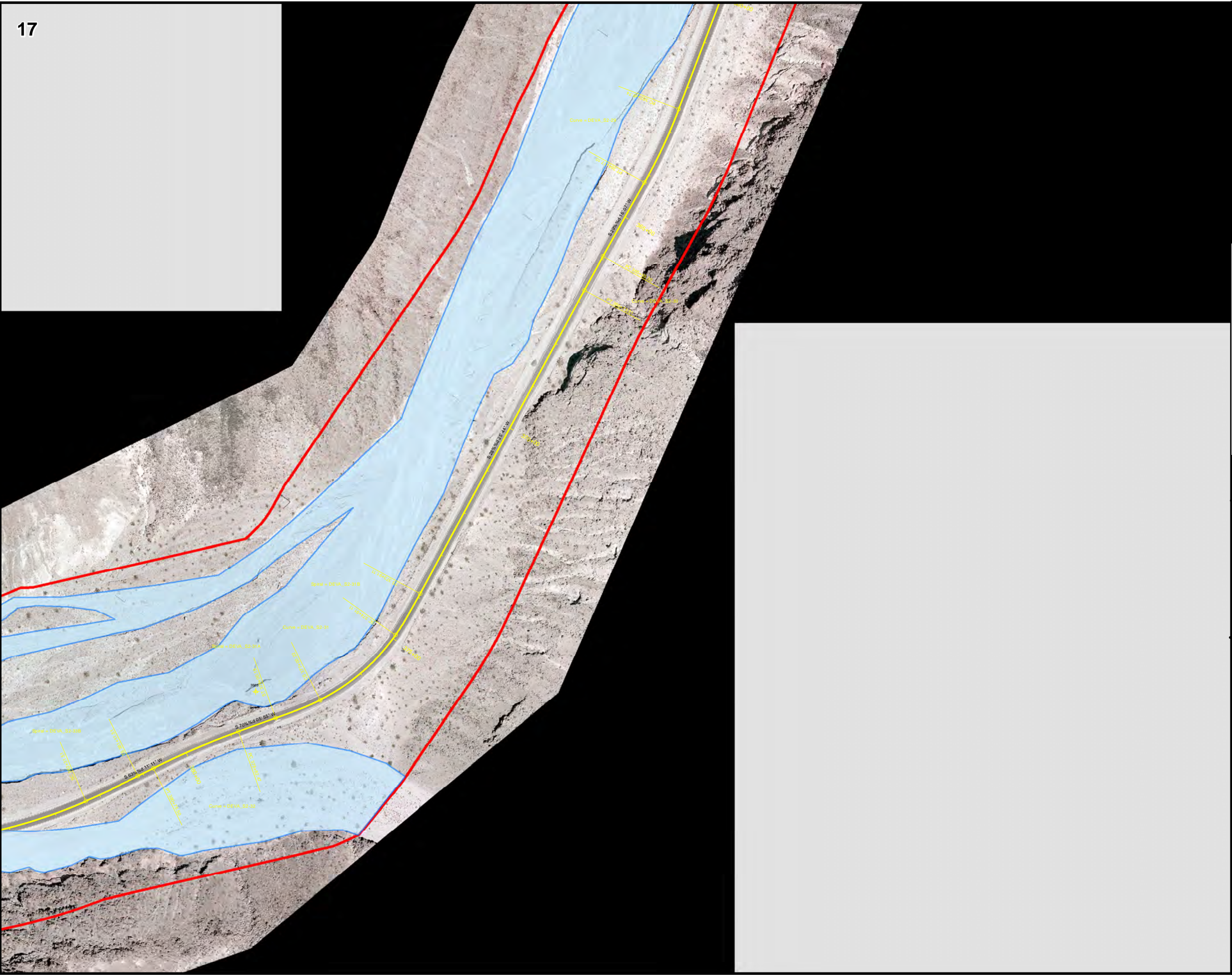


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*** **PRELIMINARY (RGL 08-02)** ***
SECTION 404 JURISDICTIONAL DELINEATION
U.S. Army Corps of Engineers, Los Angeles District
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Legend

Scale: 1 in. = 200 ft. Photograph Date: 9/15/2017
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Corps Project Manager: _____
Delineation: G. Bergquist



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Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Appendix A
Figure 2:
Wetlands and
Waters of the U.S.

April 2017

Legend

- | | |
|-----------------------|--------------------------|
| Project Centerline | Spring Flow |
| Survey Area | Delin. Data Point |
| Approximate OHWM | Upland |
| Potential Water of US | Wetland |
| Potential Wetlands | Photo Location |
| | OHWM X-Section |

0 100 200 400 Feet

1 in = 200 feet

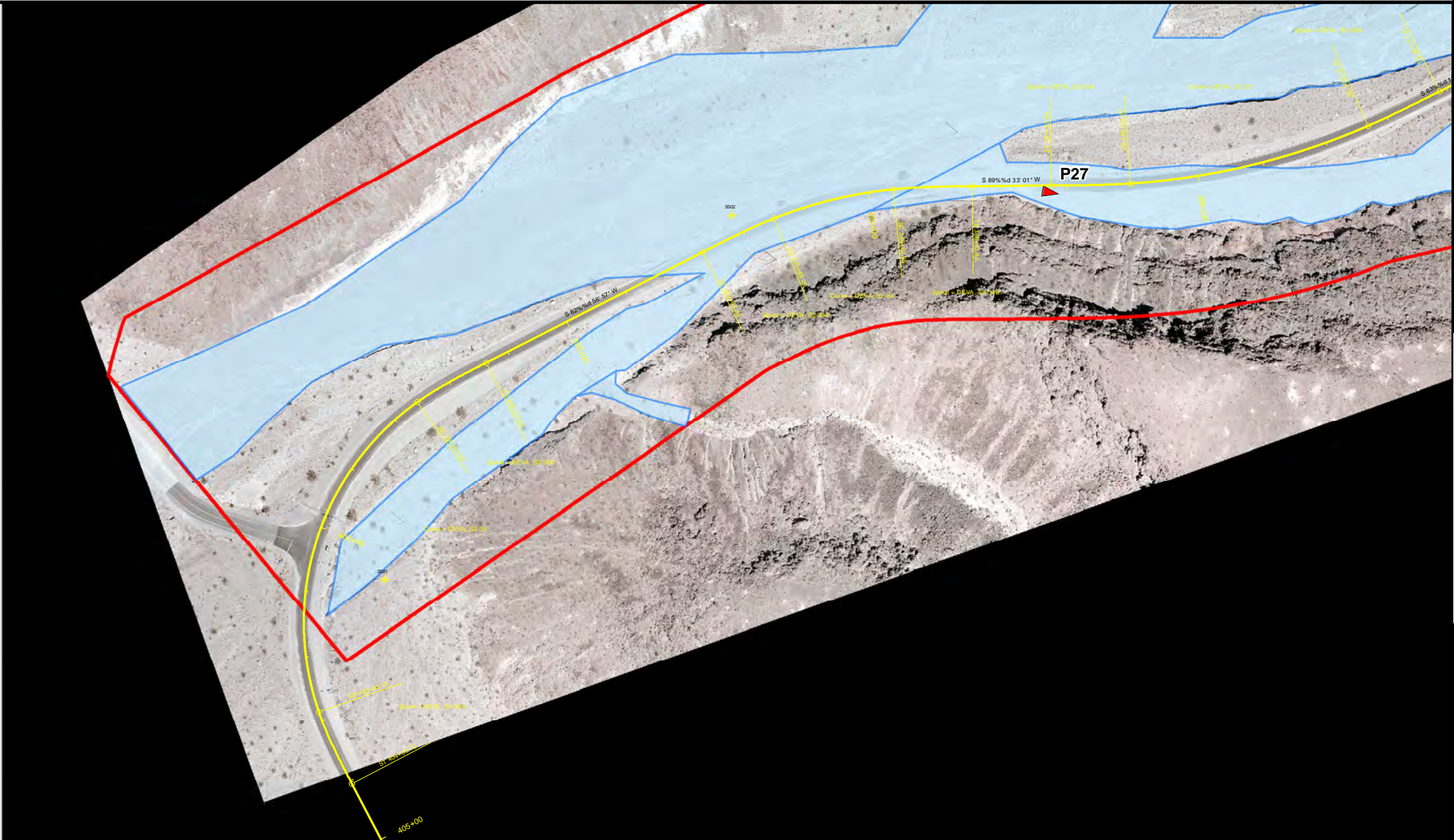


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*** **PRELIMINARY (RGL 08-02)** ***
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Legend

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Delineation: G. Bergquist



Wetlands and Waters of the U.S. Delineation
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Appendix A
Figure 2:
Wetlands and
Waters of the U.S.

April 2017

Legend

- | | |
|-----------------------|--------------------------|
| Project Centerline | Spring Flow |
| Survey Area | Delin. Data Point |
| Approximate OHWM | Upland |
| Potential Water of US | Wetland |
| Potential Wetlands | Photo Location |
| | OHWM X-Section |

0 100 200 400 Feet

1 in = 200 feet



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*** **PRELIMINARY (RGL 08-02)** ***

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Scale: 1 in. = 200 ft. Photograph Date: 9/15/2017
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Delineation: G. Bergquist

ATTACHMENT B
Wetland Impacts



CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Attachment 1:
404 Impact Map
June 2017

Legend

- Approximate OHWM
- Spring Flow
- Potential Wetlands
- Perm Impacts - New Const.
- Temp Impacts - Reconst.
- Temp - Const. Access
- Spring Flow Impacts
- Buried Waterline

0 100 200 400 Feet

1 in = 200 feet



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U.S. Army Corps of Engineers, Los Angeles District
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CA ERFO 11(1) Bonnie Clair Road
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CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
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Attachment 1:
404 Impact Map
June 2017

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0 100 200 400 Feet

1 in = 200 feet



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CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map

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Federal Highway Administration-
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Highway Division

Attachment 1:
404 Impact Map
June 2017

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- Spring Flow
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0 100 200 400 Feet

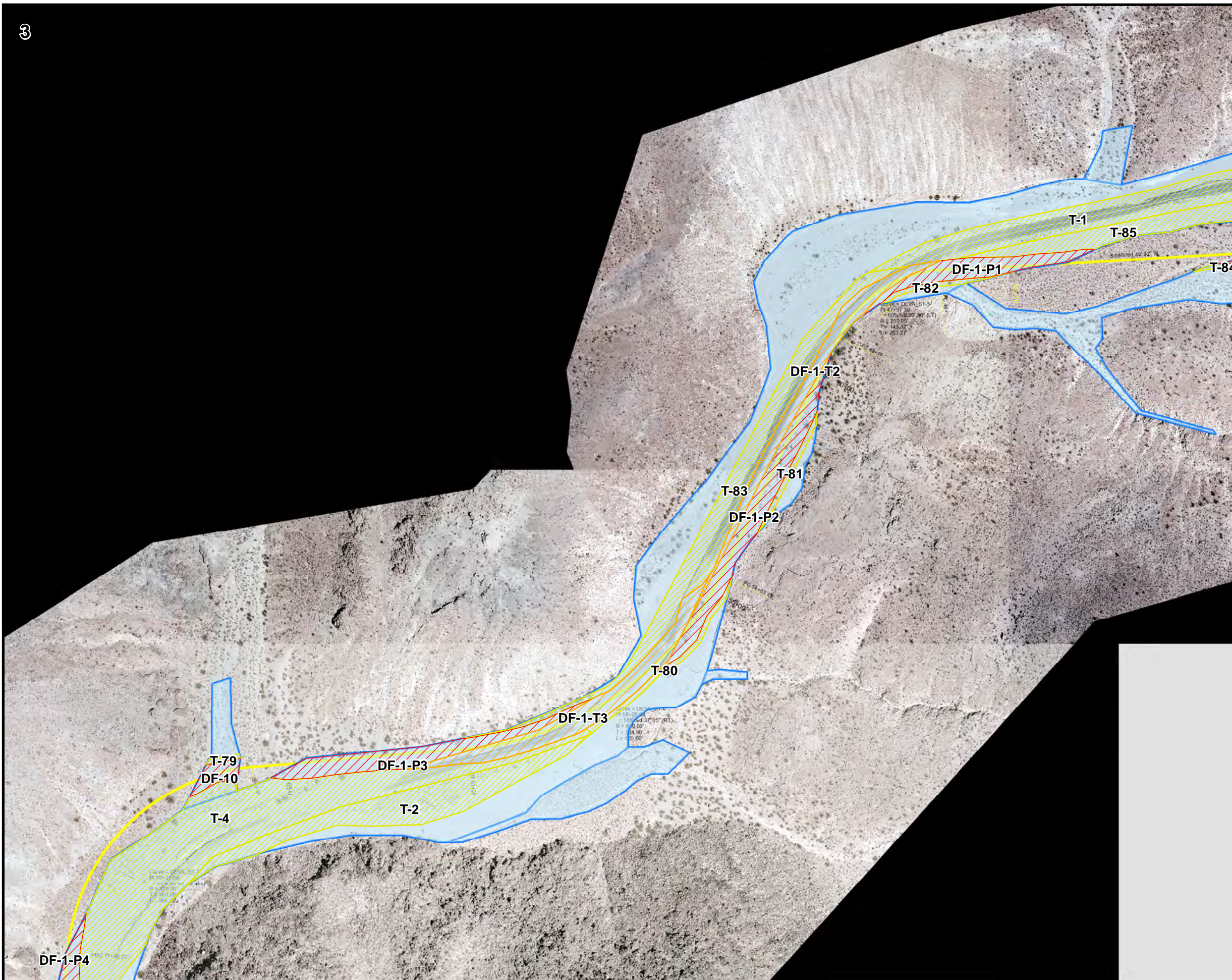
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**CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map**

**NAD 1983 State Plane
CA IV 0404 US Feet**



Federal Highway Administration-
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Highway Division

**Attachment 1:
404 Impact Map
June 2017**

Legend

- Approximate OHWM
- Spring Flow
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0 100 200 400 Feet

1 in = 200 feet



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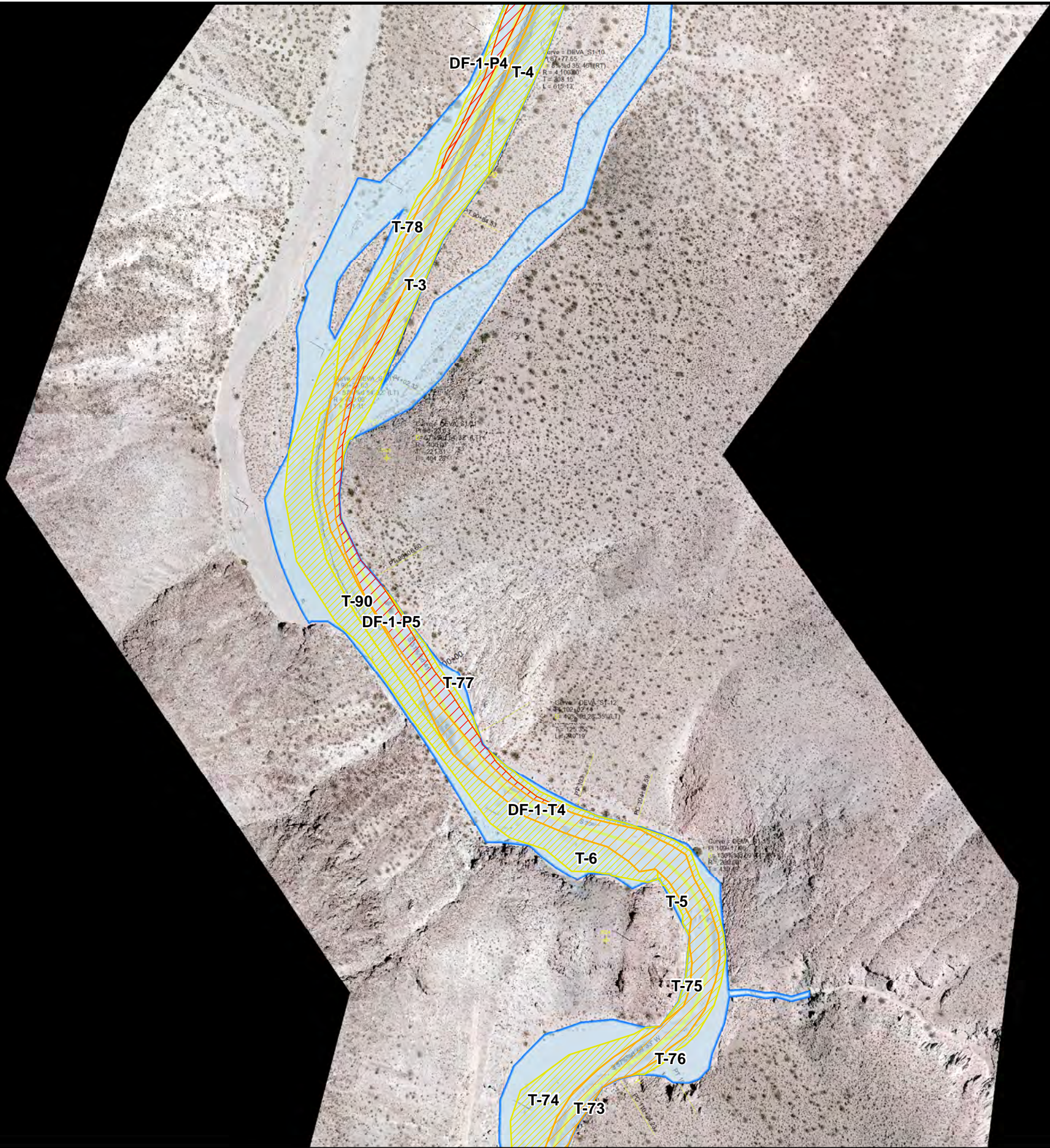
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Corps Project Manager: _____

Delineation: G. Bergquist



**CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map**

**NAD 1983 State Plane
CA IV 0404 US Feet**



Federal Highway Administration-
Central Federal Lands
Highway Division

**Attachment 1:
404 Impact Map
June 2017**

Legend

- Approximate OHWM
- Spring Flow
- Potential Wetlands
- Perm Impacts - New Const.
- Temp Impacts - Reconst.
- Temp - Const. Access
- Spring Flow Impacts
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0 100 200 400 Feet

1 in = 200 feet



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CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Attachment 1:
404 Impact Map
June 2017

Legend

- Approximate OHWM
- Spring Flow
- Potential Wetlands
- Perm Impacts - New Const.
- Temp Impacts - Reconst.
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0 100 200 400 Feet

1 in = 200 feet



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**CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map**









**NAD 1983 State Plane
CA IV 0404 US Feet**



Federal Highway Administration-
Central Federal Lands
Highway Division

**Attachment 1:
404 Impact Map
June 2017**

Legend

-  Approximate OHWM
-  Spring Flow
-  Potential Wetlands
-  Perm Impacts - New Const.
-  Temp Impacts - Reconst.
-  Temp - Const. Access
-  Spring Flow Impacts
-  Buried Waterline

0 100 200 400 Feet

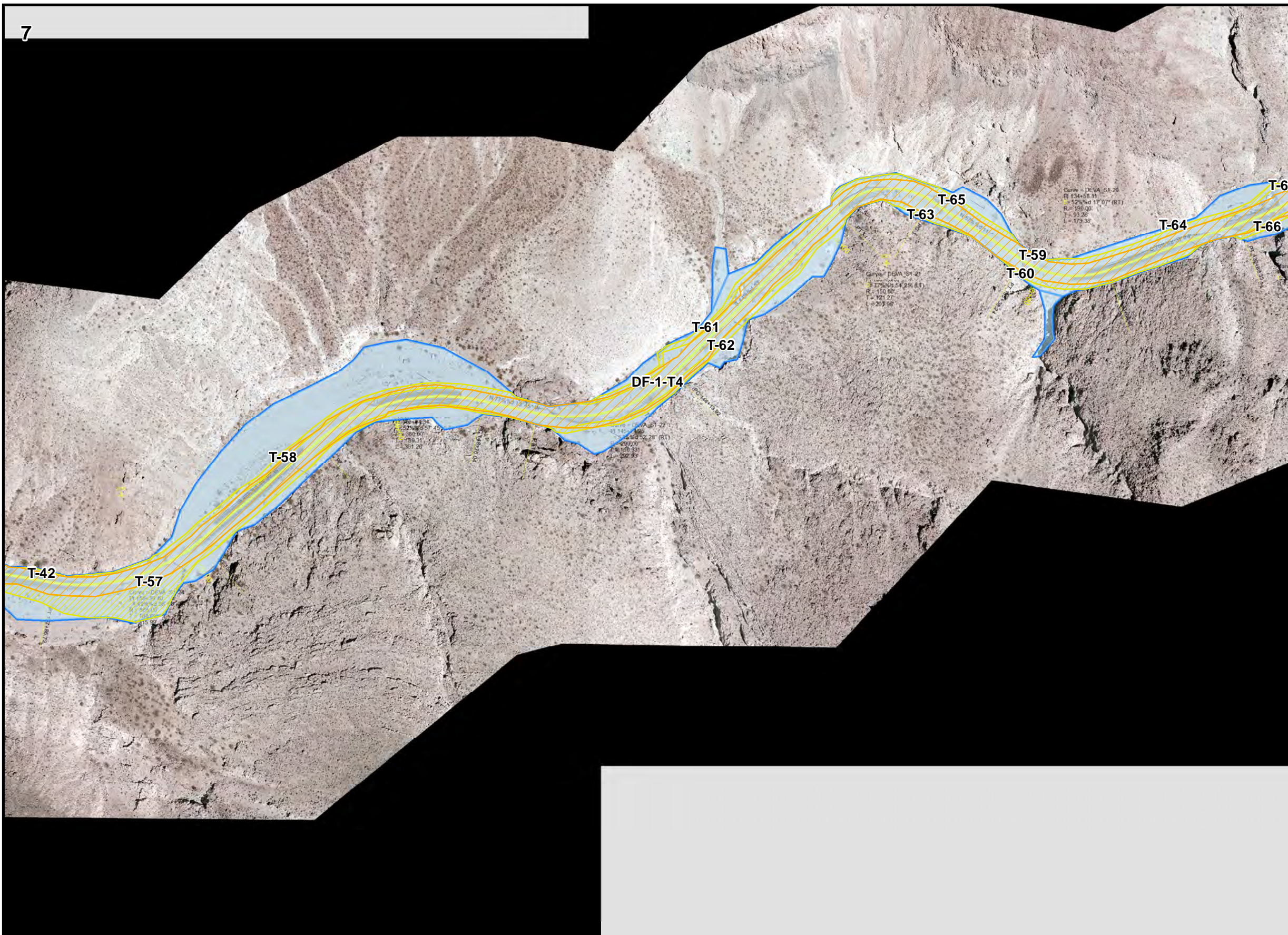
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CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Attachment 1:
404 Impact Map
June 2017

Legend

- Approximate OHWM
- ➔ Spring Flow
- Potential Wetlands
- Perm Impacts - New Const.
- Temp Impacts - Reconst.
- Temp - Const. Access
- Spring Flow Impacts
- Buried Waterline

0 100 200 400 Feet

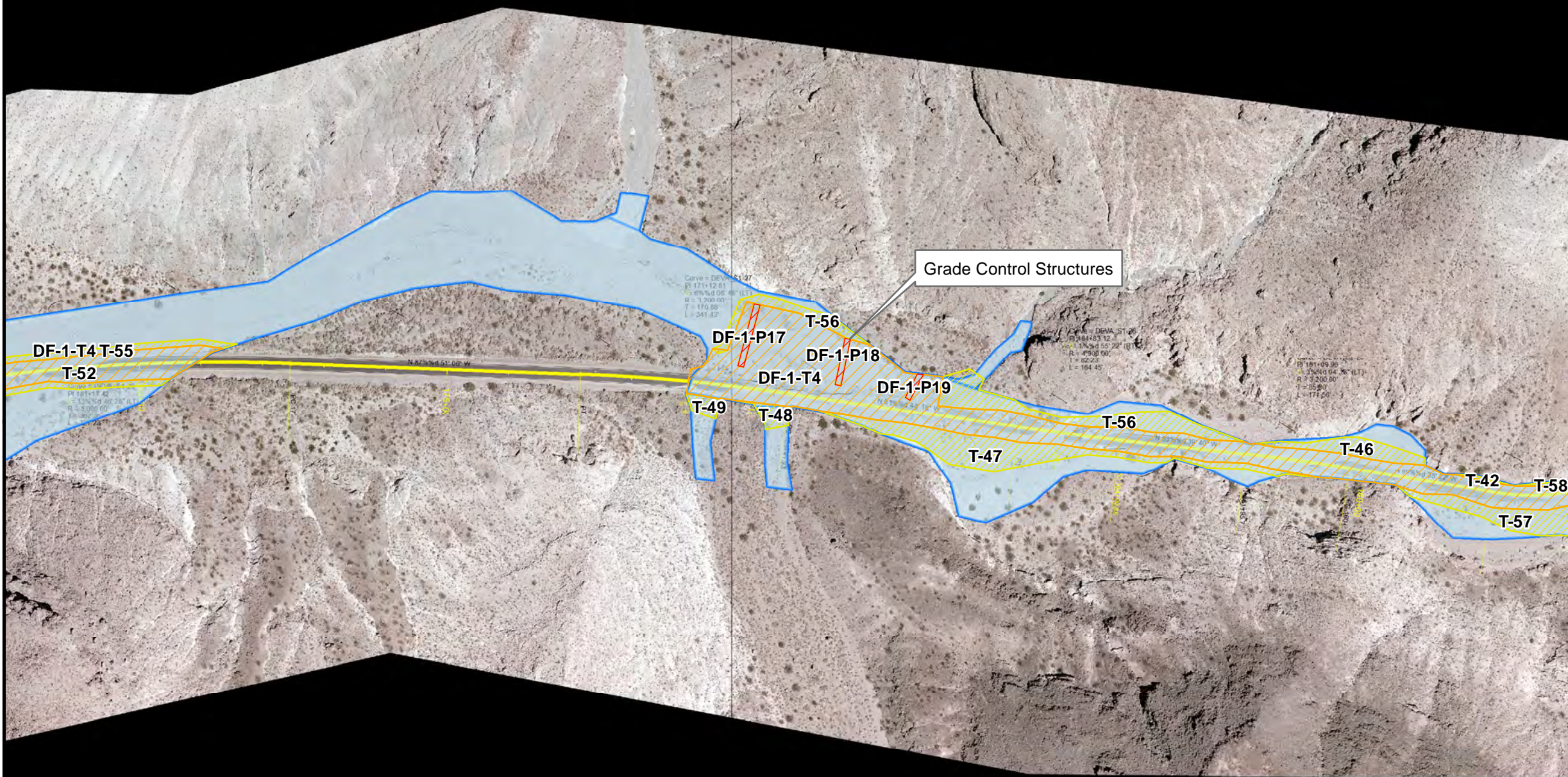
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Delineation: G. Bergquist



CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Attachment 1:
404 Impact Map
June 2017

Legend

- Approximate OHWM
- Spring Flow
- Potential Wetlands
- Perm Impacts - New Const.
- Temp Impacts - Reconst.
- Temp - Const. Access
- Spring Flow Impacts
- Buried Waterline

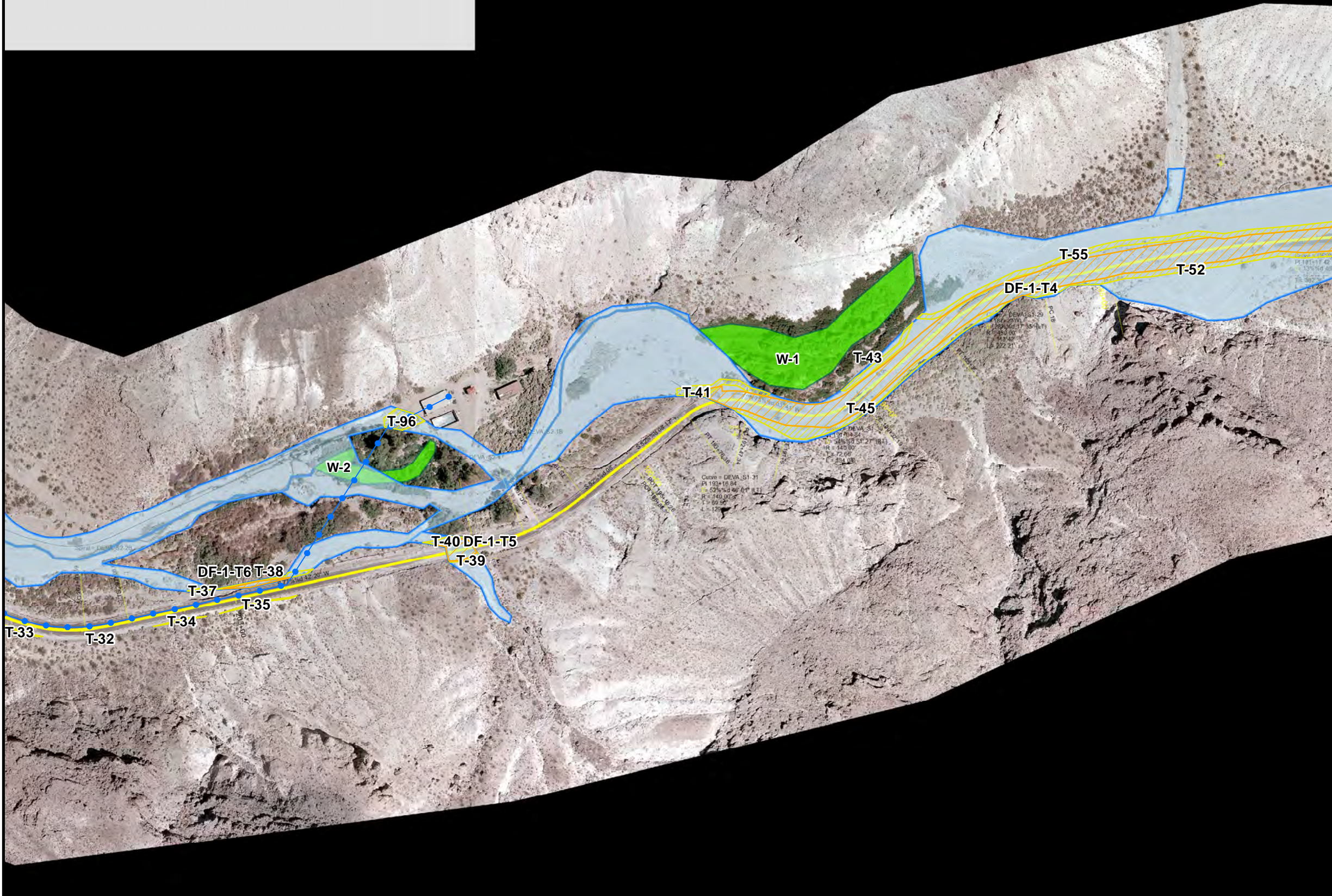
0 100 200 400 Feet

1 in = 200 feet



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U.S. Army Corps of Engineers, Los Angeles District
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Note: Impacts from excavation and trenching to expose the pipes and valves at the outlet of the water tanks (shown as T-96) are part of the Scotty's Castle Flood Rehabilitation Project, which is addressed under a separate statement of findings for floodplains and wetlands.

Scale: 1 in. = 200 ft. Photograph Date: 9/15/2016
Site Visit by Corps: No
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Delineation: G. Bergquist



Federal Highway Administration-
Central Federal Lands
Highway Division

Attachment 1:
404 Impact Map
June 2017

Legend

- Approximate OHWM
- Spring Flow
- Potential Wetlands
- Perm Impacts - New Const.
- Temp Impacts - Reconst.
- Temp - Const. Access
- Spring Flow Impacts
- Buried Waterline

0 100 200 400 Feet

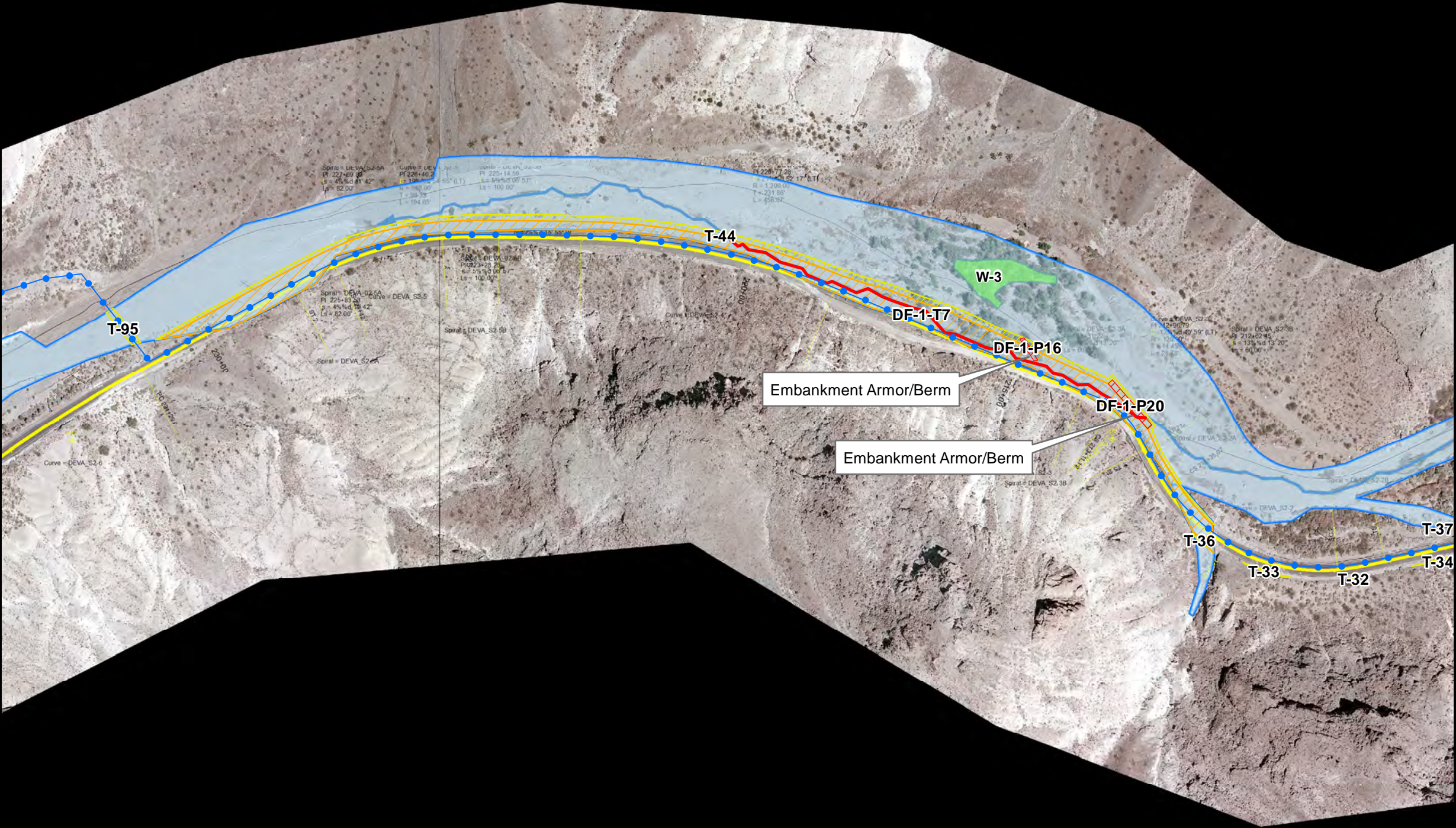
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Scale: 1 in. = 200 ft. Photograph Date: 9/15/2016
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CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Attachment 1:
404 Impact Map
June 2017

Legend

- Approximate OHWM
- Spring Flow
- Potential Wetlands
- Perm Impacts - New Const.
- Temp Impacts - Reconst.
- Temp - Const. Access
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0 100 200 400 Feet

1 in = 200 feet



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Scale: 1 in. = 200 ft. Photograph Date: 9/15/2016
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Delineation: G. Bergquist

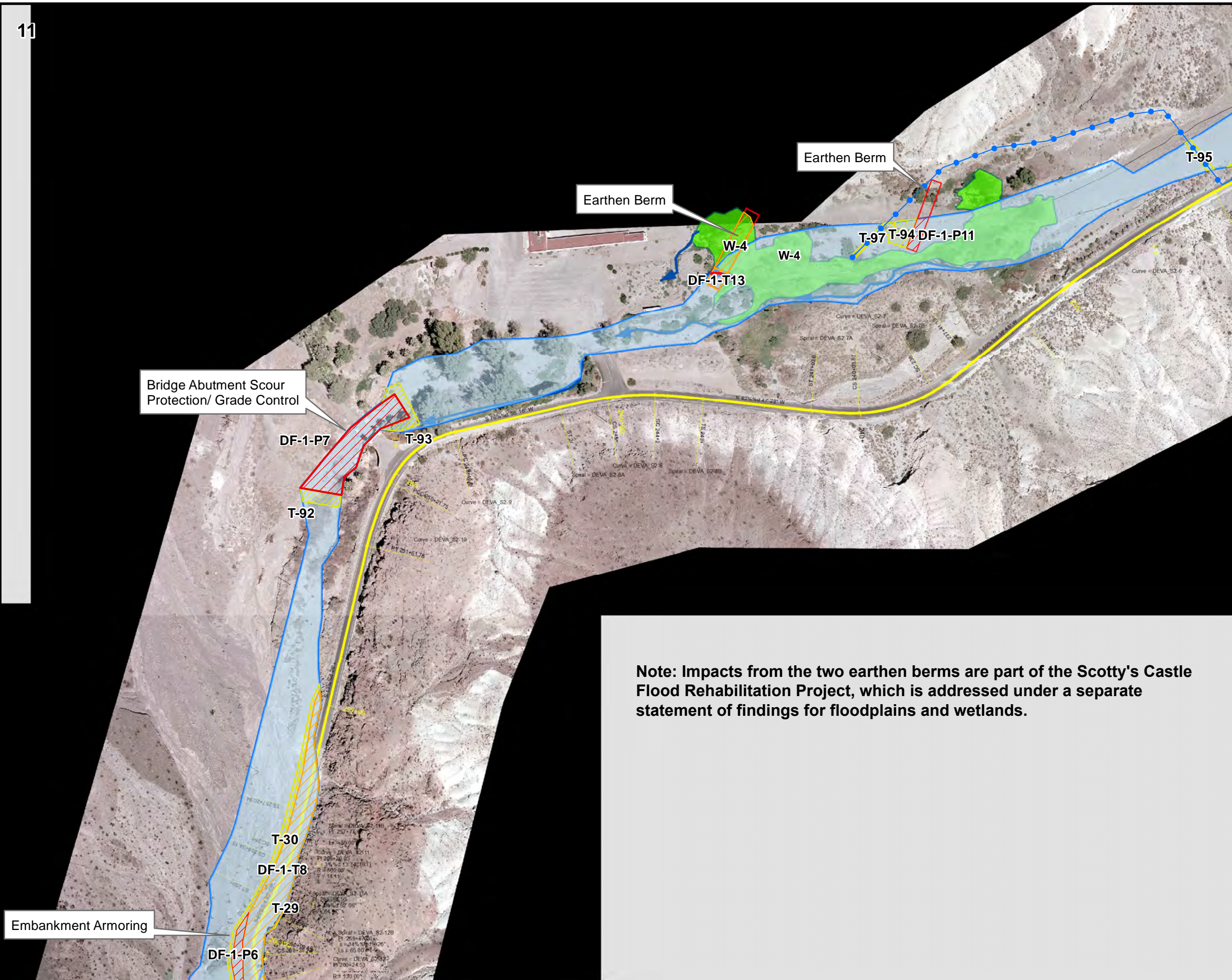
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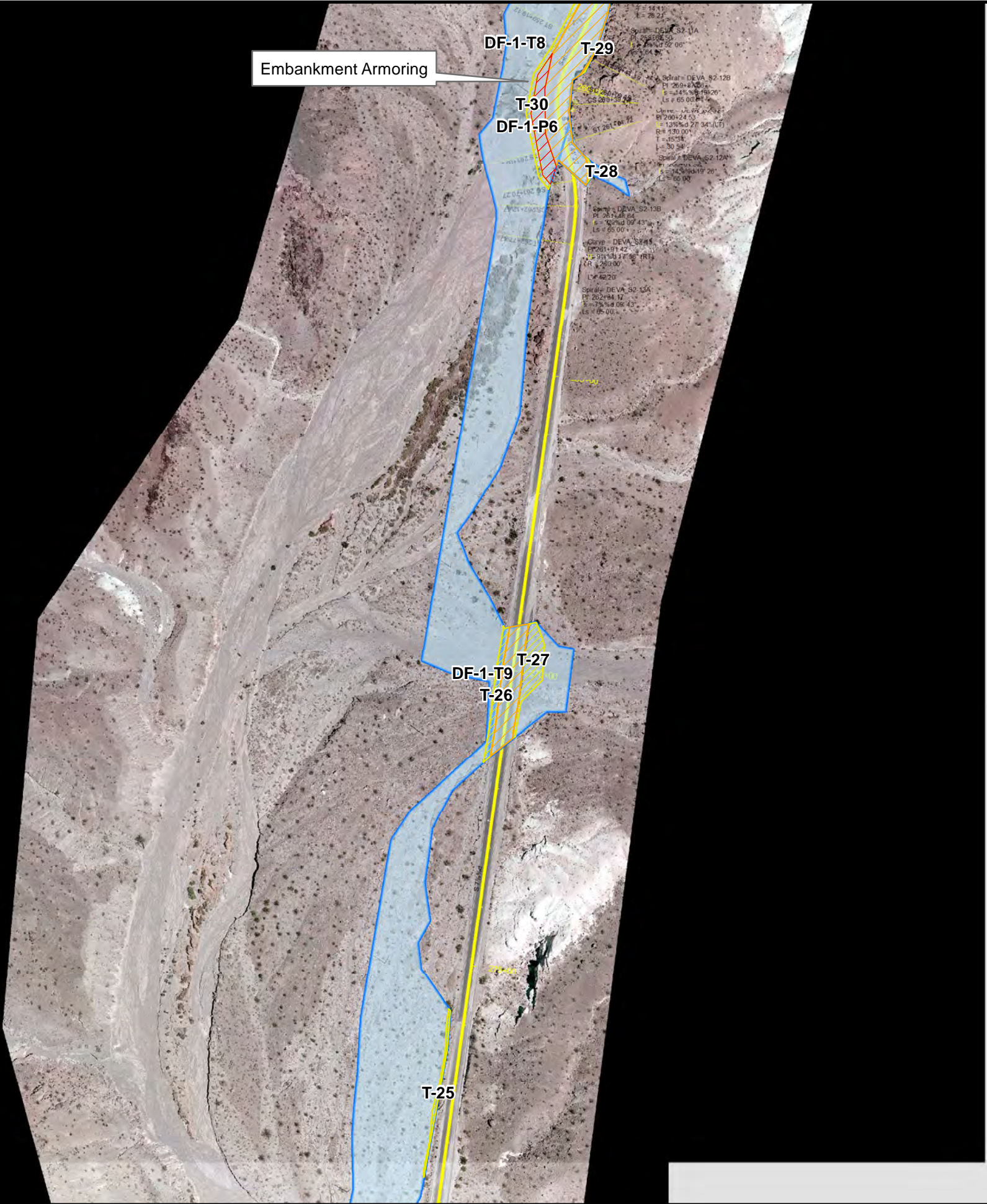
Bridge Abutment Scour
Protection/ Grade Control

Earthen Berm

Earthen Berm

Embankment Armoring





CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
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Attachment 1:
404 Impact Map
June 2017

Legend

- Approximate OHWM
- Spring Flow
- Potential Wetlands
- Perm Impacts - New Const.
- Temp Impacts - Reconst.
- Temp - Const. Access
- Spring Flow Impacts
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0 100 200 400 Feet

1 in = 200 feet



U.S. Army Corps of Engineers, Los Angeles District
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**CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map**

**NAD 1983 State Plane
CA IV 0404 US Feet**









Attachment 1:
404 Impact Map
June 2017











Federal Highway Administration-
Central Federal Lands
Highway Division

**Attachment 1:
404 Impact Map
June 2017**

Legend


-  Approximate OHWM
-  Spring Flow
-  Potential Wetlands
-  Perm Impacts - New Const.
-  Temp Impacts - Reconst.
-  Temp - Const. Access
-  Spring Flow Impacts
-  Buried Waterline

- # Legend
-  Approximate OHWM
 -  Spring Flow
 -  Potential Wetlands
 -  Perm Impacts - New Const.
 -  Temp Impacts - Reconst.
 -  Temp - Const. Access
 -  Spring Flow Impacts
 -  Buried Waterline

0 100 200 400 Feet

1 in = 200 feet

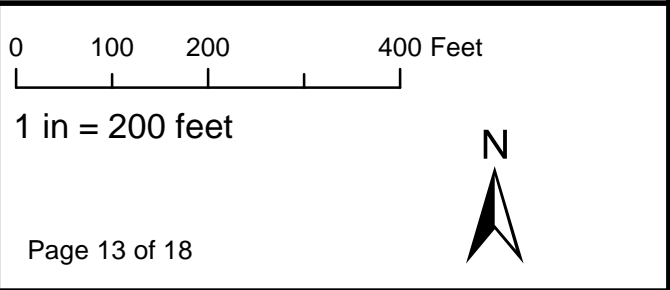

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0 100 200 400 Feet

1 in = 200 feet


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0 100 200 400 Feet

1 in = 200 feet

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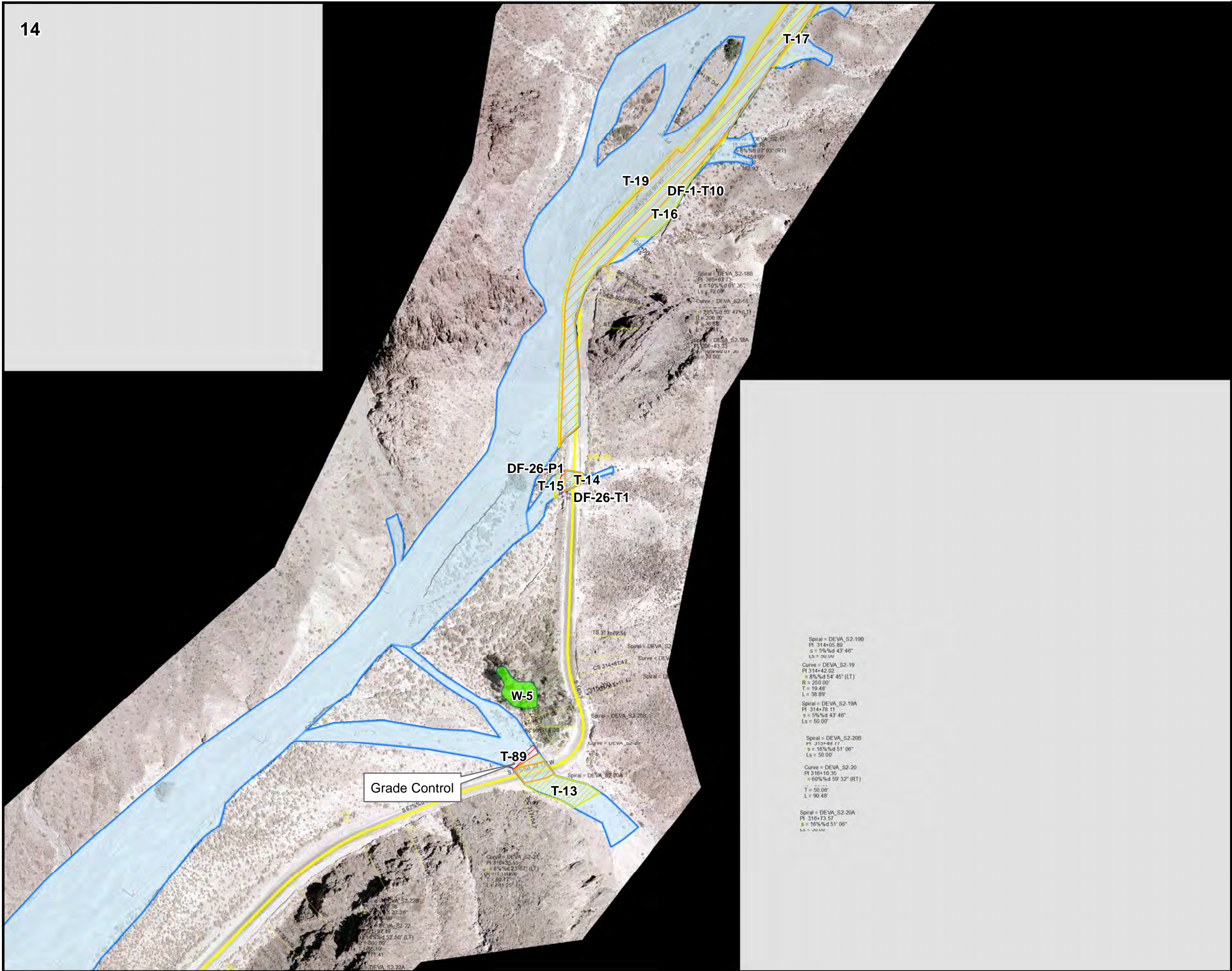


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U.S. Army Corps of Engineers, Los Angeles District
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CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
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Highway Division

Attachment 1:
404 Impact Map
June 2017

Legend

- Approximate OHWM
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0 100 200 400 Feet

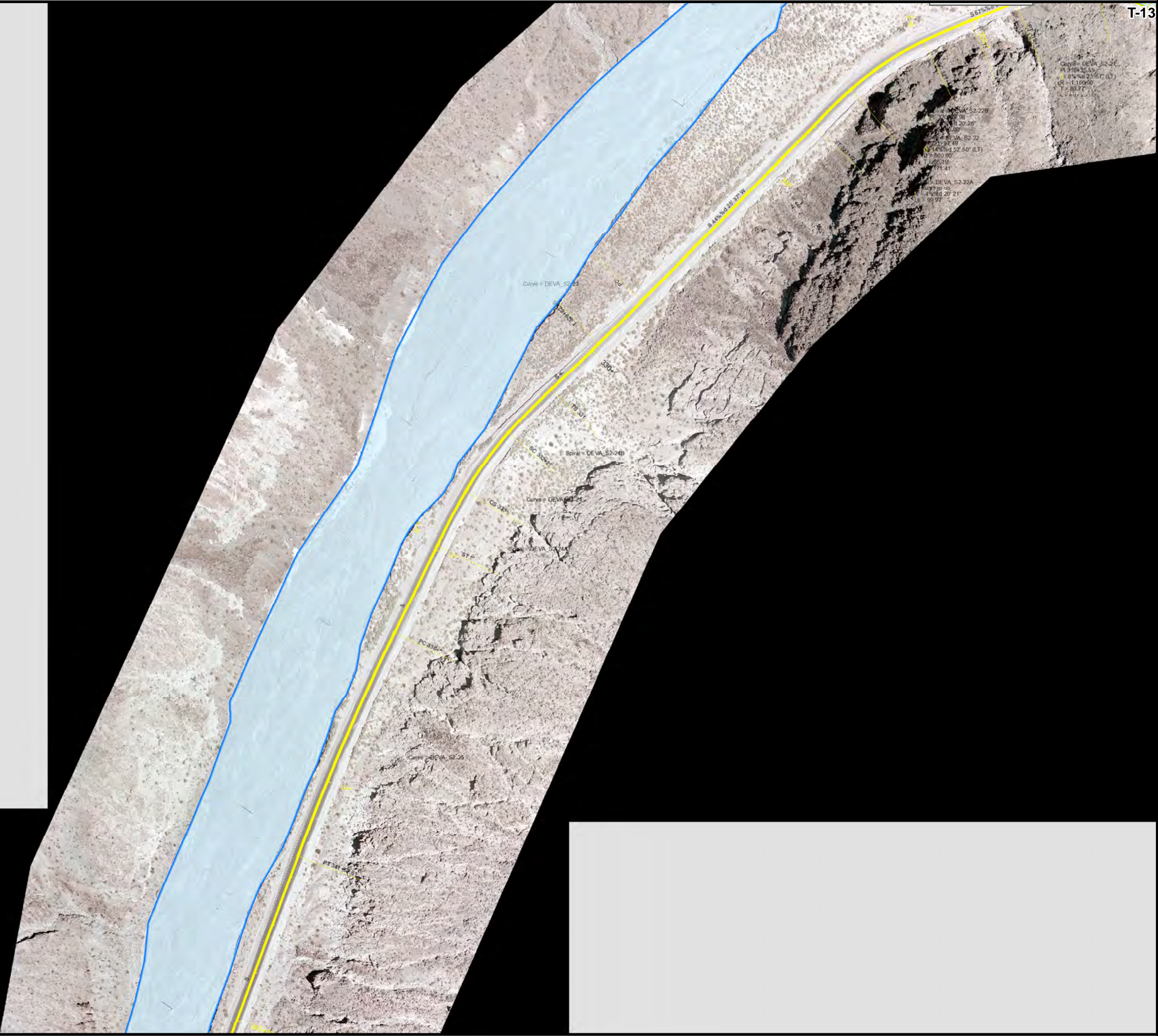
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CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Attachment 1:
404 Impact Map
June 2017

Legend

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0 100 200 400 Feet

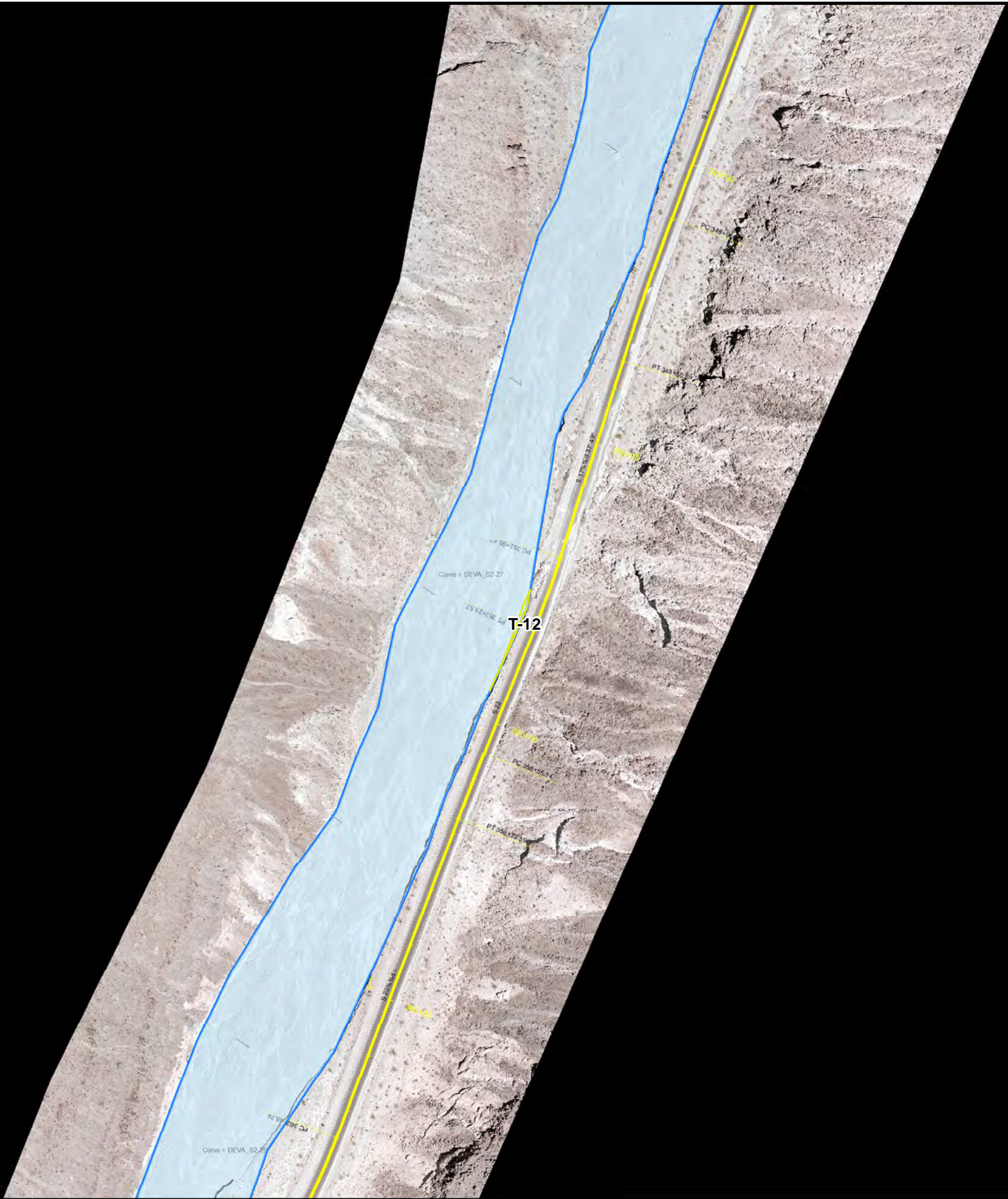
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CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
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Highway Division

Attachment 1:
404 Impact Map
June 2017

Legend

- Approximate OHWM
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- Temp Impacts - Reconst.
- Temp - Const. Access
- Spring Flow Impacts
- Buried Waterline

0 100 200 400 Feet

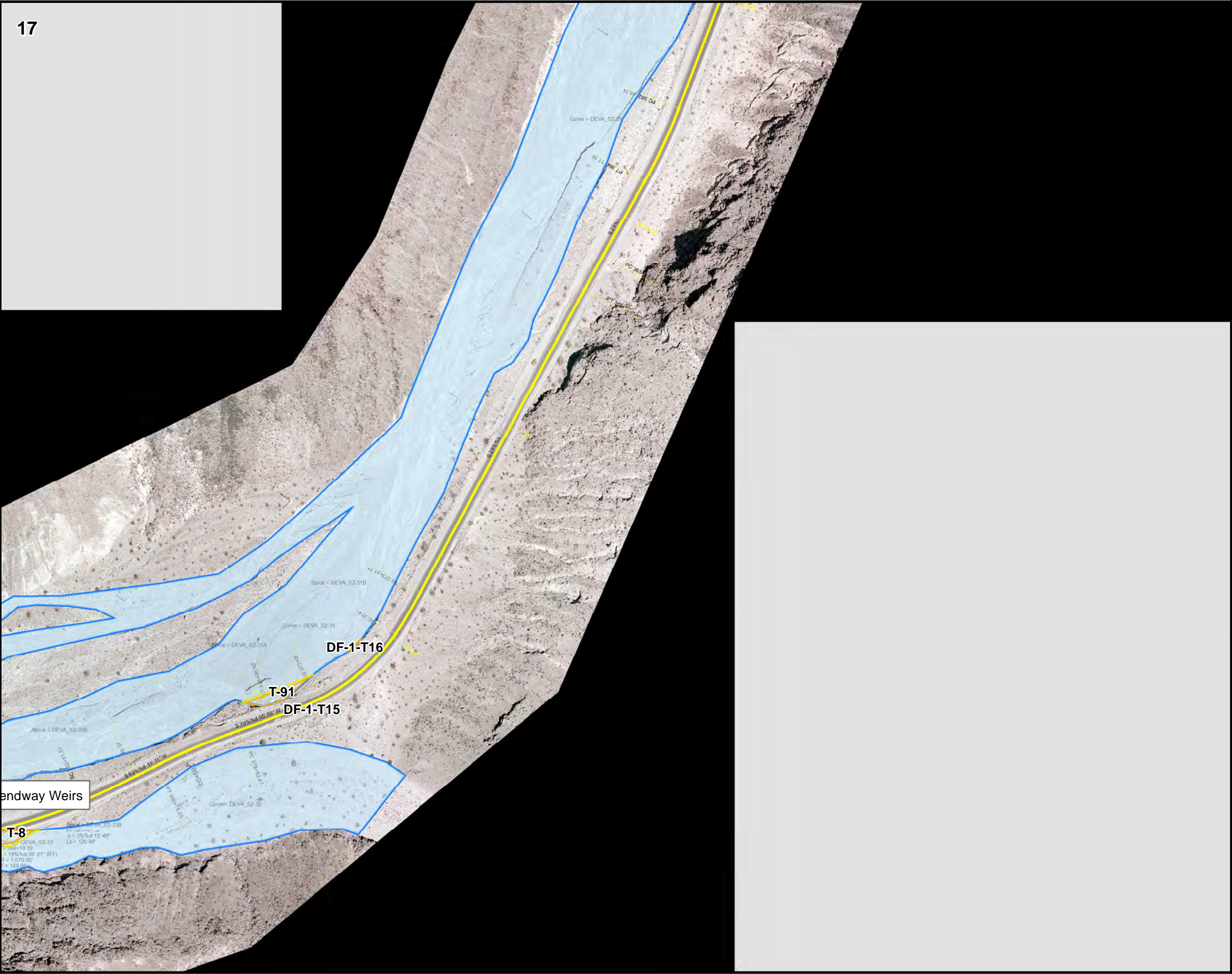
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CA ERFO 11(1) Bonnie Clair Road
Section 404(b)(1) - 404 Impact Map

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
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Attachment 1:
404 Impact Map
June 2017

Legend

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0 100 200 400 Feet

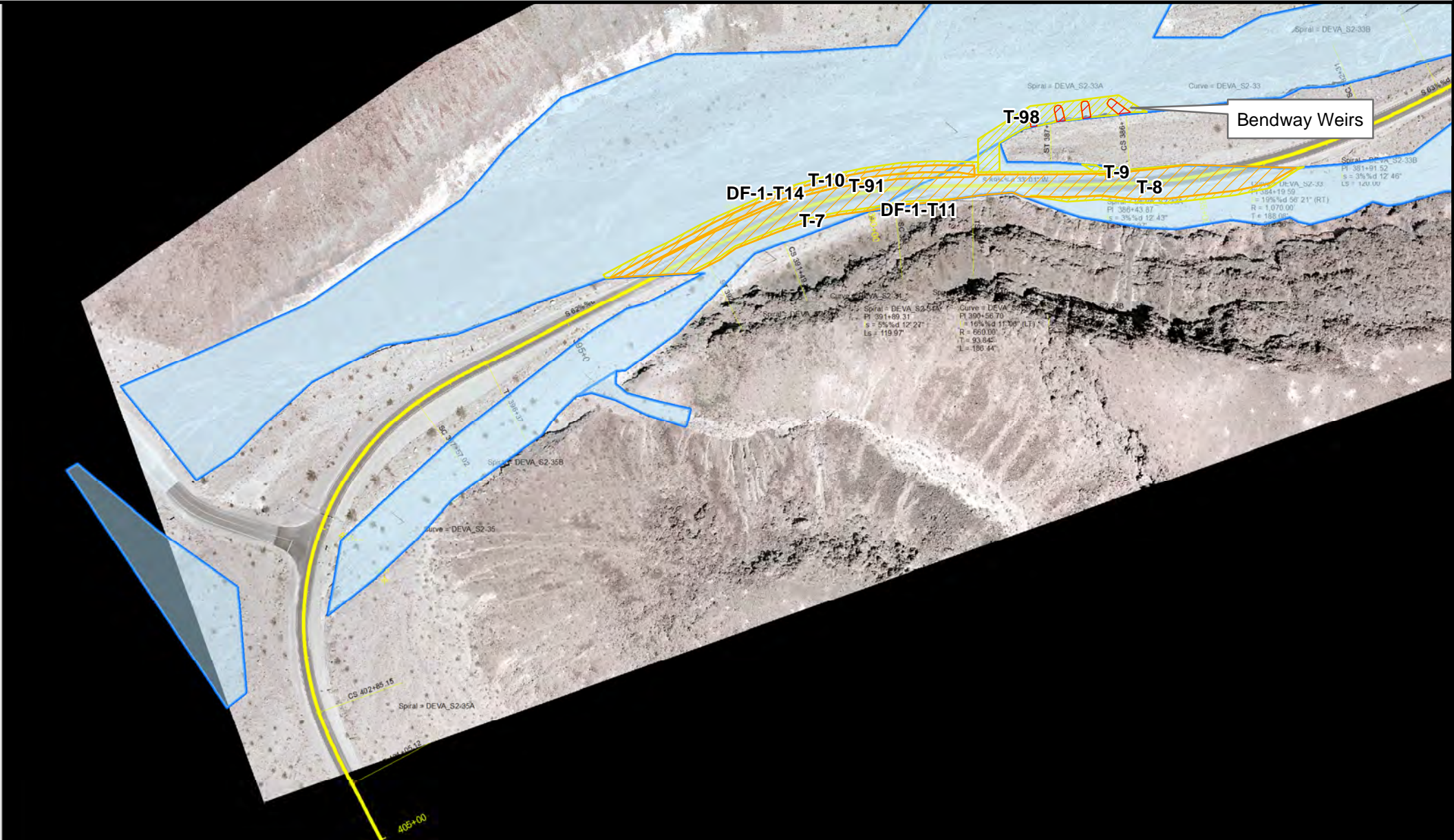
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0 100 200 400 Feet

1 in = 200 feet

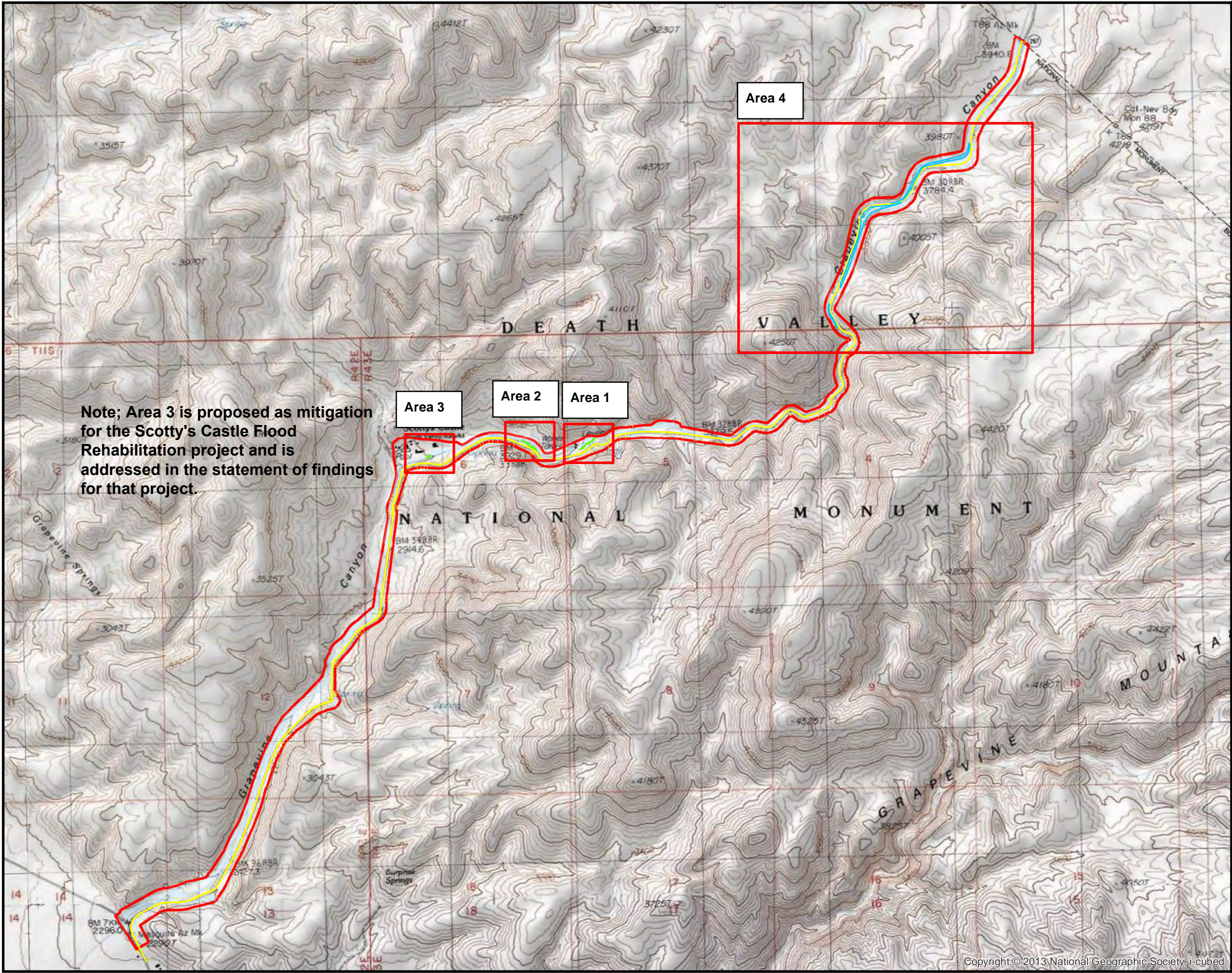


Page 18 of 18

U.S. Army Corps of Engineers, Los Angeles District
Application No. SPL-2017-0051-GLH

Scale: 1 in. = 200 ft. Photograph Date: 9/15/2016
Site Visit by Corps: No
Determination Issued: _____
Corps Project Manager: _____
Delineation: G. Bergquist

ATTACHMENT C
Wetland Compensation Figures



Note; Area 3 is proposed as mitigation for the Scotty's Castle Flood Rehabilitation project and is addressed in the statement of findings for that project.

Compensatory Mitigation Areas
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Attachment 1:
Mitigation Site Maps

June 2017

Legend

- | | |
|-----------------------|------------------------|
| Project Centerline | Spring Flow |
| Survey Area | Chan Mitig Realign |
| Approximate OHWM | Wetland Creation |
| Potential Water of US | Riparian Creation |
| Potential Wetlands | Floodplain Restoration |

0 1,200 Feet
1 in = 2,500 feet

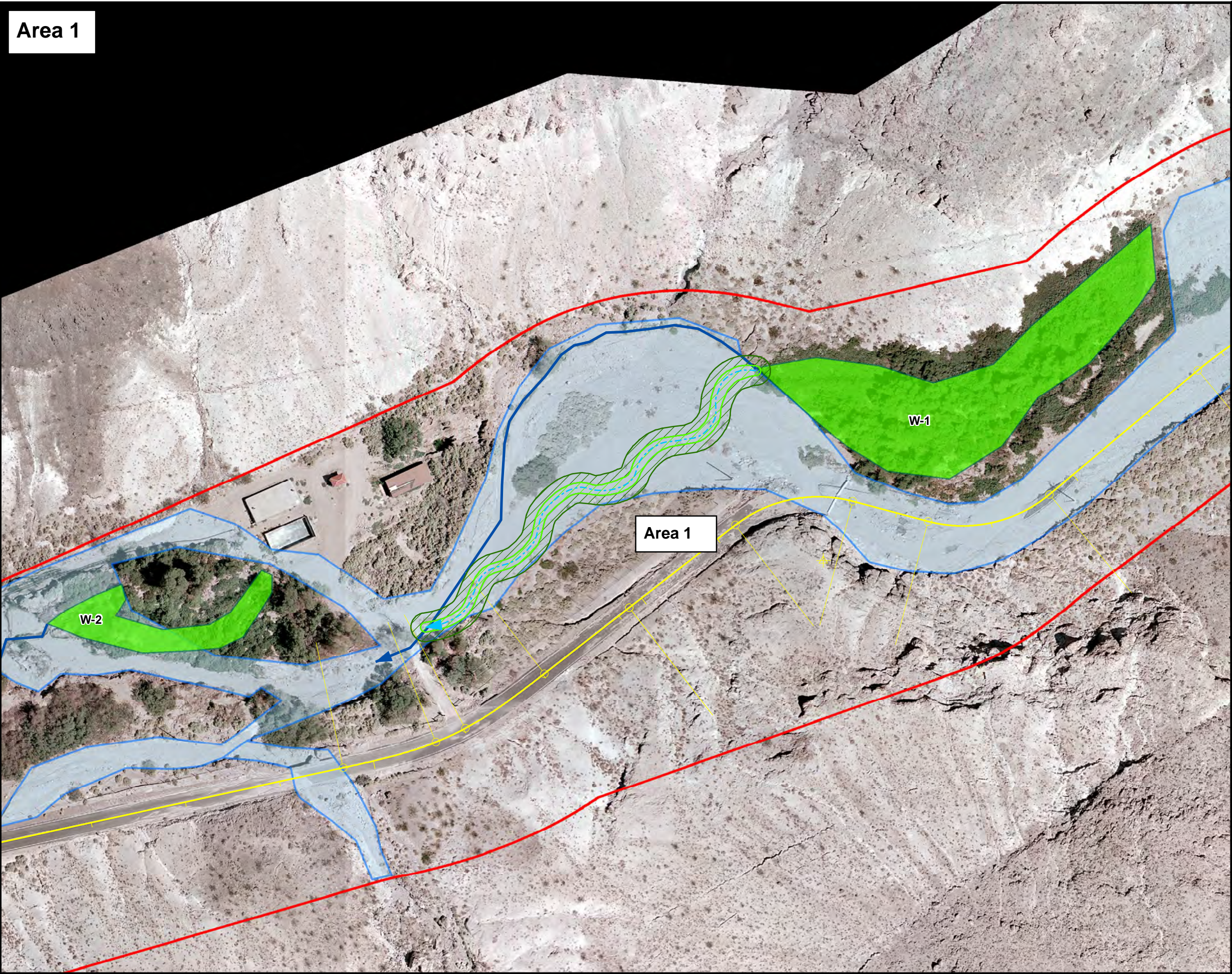


**** **PRELIMINARY (RGL 08-02)** ****
SECTION 404 JURISDICTIONAL DELINEATION
U.S. Army Corps of Engineers, Los Angeles District
Application No. _____

Legend

Photograph Date: 9/15/2016
Site Visit by Corps: No
Determination Issued: _____
Corps Project Manager: _____
Delineation: G. Bergquist

Area 1



Compensatory Mitigation Areas
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Attachment 1:
Mitigation Site Maps
June 2017

Legend

- | | |
|-----------------------|--------------------|
| Project Centerline | Spring Flow |
| Survey Area | Chan Mitig Realign |
| Approximate OHWM | Wetland Creation |
| Potential Water of US | Riparian Creation |
| Potential Wetlands | |

0 50 100 200 Feet

1 in = 100 feet



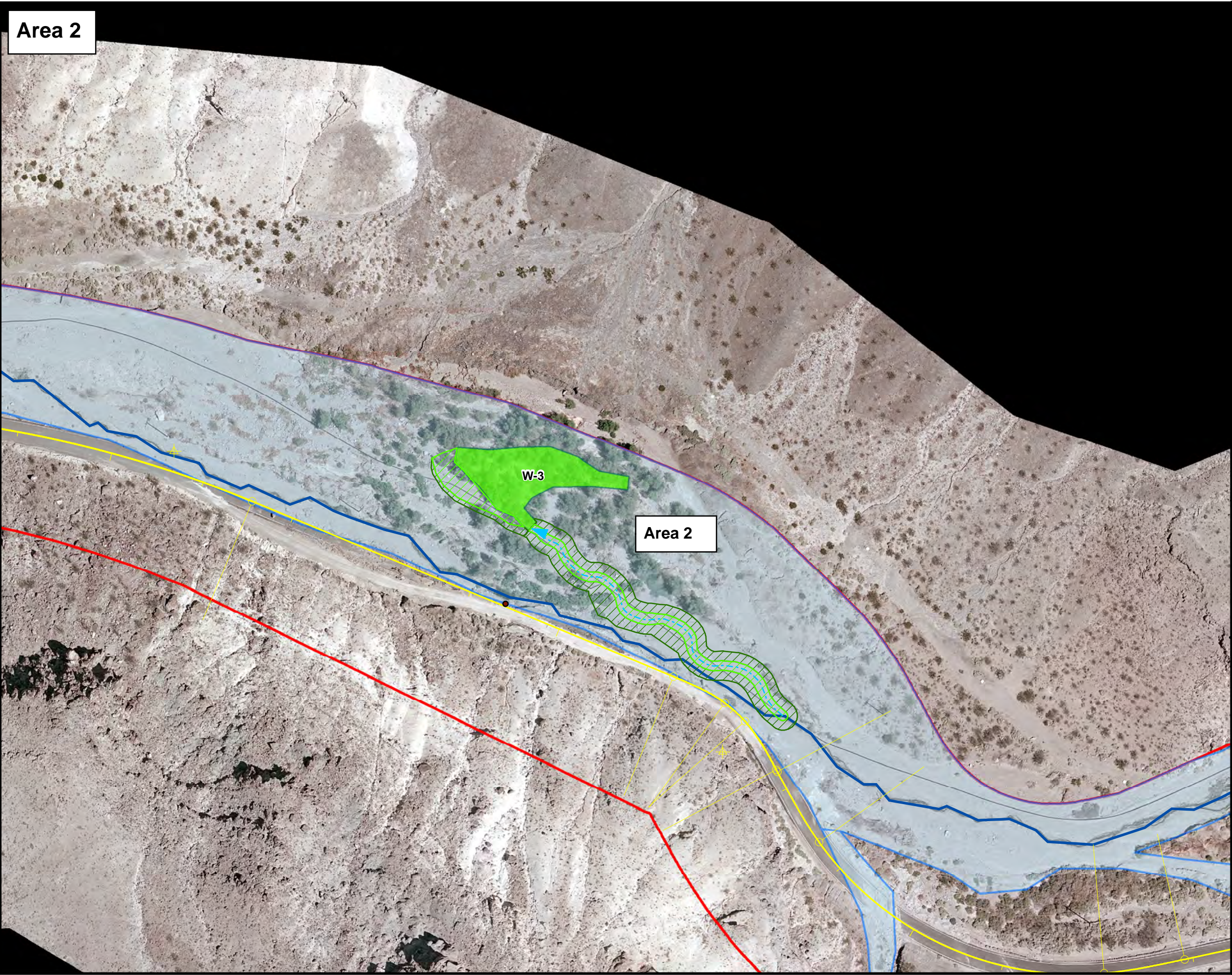
*** PRELIMINARY (RGL 08-02) ***

SECTION 404 JURISDICTIONAL DELINEATION
U.S. Army Corps of Engineers, Los Angeles District
Application No. _____

Legend

Photograph Date: 9/15/2016
Site Visit by Corps: No
Determination Issued: _____
Corps Project Manager: _____
Delineation: G. Bergquist

Area 2



Compensatory Mitigation Areas
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Federal Highway Administration-
Central Federal Lands
Highway Division

Attachment 1:
Mitigation Site Maps
June 2017

Legend

- | | |
|-----------------------|--------------------|
| Project Centerline | Spring Flow |
| Survey Area | Chan Mitig Realign |
| Approximate OHWM | Wetland Creation |
| Potential Water of US | Riparian Creation |
| Potential Wetlands | |

0 50 100 200 Feet

1 in = 100 feet



*** **PRELIMINARY (RGL 08-02)** ***
SECTION 404 JURISDICTIONAL DELINEATION
U.S. Army Corps of Engineers, Los Angeles District
Application No. _____

Legend

Photograph Date: 9/15/2016
Site Visit by Corps: No
Determination Issued: _____
Corps Project Manager: _____
Delineation: G. Bergquist

Area 4



Compensatory Mitigation Areas
CA ERFO 11(1) Bonnie Clair Road

NAD 1983 State Plane
CA IV 0404 US Feet



Attachment 1:
Mitigation Site Maps
June 2017

Legend

- | | |
|-----------------------|------------------------|
| Project Centerline | Spring Flow |
| Survey Area | Chan Mitig Realign |
| Approximate OHWM | Wetland Creation |
| Potential Water of US | Riparian Creation |
| Potential Wetlands | Floodplain Restoration |

0 300 600 1,200 Feet

1 in = 600 feet



*** **PRELIMINARY (RGL 08-02)** ***
SECTION 404 JURISDICTIONAL DELINEATION
U.S. Army Corps of Engineers, Los Angeles District
Application No. _____-_____-_____

Legend

Photograph Date: 9/15/2016
Site Visit by Corps: No
Determination Issued: _____
Corps Project Manager: _____
Delineation: G. Bergquist

Appendix C

Best Management Practices

Appendix C

Best Management Practices

- The NPS project manager would ensure that the project remains confined within the parameters established in the compliance documents and that mitigation measures would be properly implemented.
- Construction zones would be identified and flagged before beginning construction, and all disturbances would be confined to the construction area. All project personnel would be instructed that their activities must be confined to locations within flagged areas and all equipment and materials must remain within these areas. Disturbances beyond the construction zone would be prohibited.
- All protection measures would be clearly stated in the construction specifications, and workers would be instructed to avoid conducting activities beyond work area boundaries. This mitigation does not exclude necessary temporary structures including erosion-control fencing.
- Material stockpiling, machinery storage, and vehicle parking would only be permitted in designated areas.
- All tools, equipment, barricades, signs, surplus materials, and rubbish would be removed from the project area upon project completion. Any asphalt or concrete surfaces damaged due to work on the project would be repaired to original condition. All demolition debris would be removed from the project site, including all visible metal and concrete.
- Staging for construction vehicles and equipment would be sited in previously disturbed areas approved by the NPS, outside of high visitor use areas, and would be clearly identified in advance.
- Construction debris would be immediately hauled from the park and disposed of in a legal manner outside the park.
- Staging and stockpiling areas would be situated outside the floodplain to the extent possible. Construction equipment may be parked within the floodplain when the potential for flooding is low.
- Construction debris would be immediately removed from the site.
- Use of BMPs in the project area for drainage area protection would include all or some of the following actions, depending on site-specific requirements: (1) keeping disturbed areas small to minimize exposed soil and the potential for erosion; (2) placing excess excavated materials outside of drainages to avoid sedimentation; (3) installing silt fences, temporary earthen berms, temporary water bars, sediment traps, stone check dams, or other equivalent measures (including installing erosion-control measures around the perimeter of stockpiled fill material) before construction; (4) conducting regular site inspections during construction to ensure that erosion-control measures were properly installed and functioning effectively; and (5) storing, using, and disposing of chemicals, fuels, and other toxic materials appropriately.

- A Storm Water Pollution Prevention Plan (SWPPP) would be prepared as required by the State of California, and implemented throughout the construction period.
- A hazardous spill plan would be in place, stating what actions would be taken in the case of a spill, notification measures, and preventive measures to be implemented, including the placement of refueling facilities, storage, and handling of hazardous materials.
- All equipment on the project would be maintained in a clean and well-functioning state to avoid or minimize contamination from automotive fluids. All equipment would be inspected daily.
- All fuel, transmission, or brake fluid leaks, or other hazardous waste leaks, spills, or releases would be reported immediately to the designated safety officer. The contractor would be responsible for spill material removal and disposal to an approved off-site landfill and, if necessary, would notify the appropriate federal agency.
- Fueling project-related vehicles and equipment would take place away from water sources, and a contingency plan to control petroleum product spills during the project would be developed. Absorbent pads and containment booms would be stored on-site to facilitate cleanup of any accidental petroleum spills.
- Any soil exposed near water as a result of the project would be protected from erosion (with plastic sheeting, filter fabric, etc.) after exposure, and stabilized as soon as practicable (with vegetation matting, etc.). If erosion-control materials are used, only tightly woven fiber netting or nonbinding materials (e.g., rice straw) would be used for erosion control or other purposes at the project site to ensure that small mammals and reptiles do not become trapped. No plastic-tied wattles would be used.
- Topsoil would be saved, stockpiled, and replaced in place after construction is completed.
- Ground surface treatment would include grading to natural contours, and roughing/scarification and vertical mulching to promote natural seeding.
- Dust abatement measures would be used to reduce deposition on vegetation adjacent to and downwind of project sites.
- All potential contaminants (rubbish or debris, introduction of nonnative species, etc.) would be excluded or removed from the environment.
- Contractors would be required to properly maintain construction equipment (i.e., mufflers) to minimize noise of equipment use.

Appendix D

State Historic Preservation Office Correspondence



United States Department of the Interior

NATIONAL PARK SERVICE

Death Valley National Park
P.O. Box 579
Death Valley, CA 92328



In Reply Refer to:

CRP No. 16-036

PEPC No. 66547

March 27, 2017

MAILED USPS CERTIFIED MAIL-RETURN RECEIPT

Rebecca L. Palmer
State Historic Preservation Officer
901 S. Stewart Street, Suite 5004
Carson City, NV 89701

Subject: Notification of NEPA and NHPA Consultation with the CA SHPO per 36 CFR 800.3 for the Reconstruction of Bonnie Clare Road through Grapevine Canyon from MP 7.61 to MP 0.0, Death Valley National Park, Inyo County, CA (PEPC 66547)

Dear Ms. Palmer:

The purpose of this letter is to keep you informed as the National Park Service (NPS), Death Valley National Park (Park) proceeds with the environmental assessment (EA) and Section 106 process for the reconstruction of Bonnie Clare Road through Grapevine Canyon. The project is located entirely within the State of California, but is close to the border with Nevada.

The Park is initiating consultation with the California State Historic Preservation Officer (SHPO) in accordance with the National Environmental Policy Act (NEPA) and the Council of Environmental Regulations 1501.2 and 1501.7, and with Section 106 of the National Historic Preservation Act of 1966 (NHPA), as amended (54 USC 300101, *et seq.*) and its implementing regulation 36 CFR 800.3(c)(3), for the following project. The NPS is beginning an EA to evaluate the potential impacts from the proposed reconstruction of Bonnie Clare Road.

NPS is the lead federal agency for the purposes of compliance with NEPA and Section 106 of the NHPA. The Federal Highway Administration (FHWA) is a cooperating agency, providing engineers to design and construct this federal undertaking. Compliance with Section 106 will be carried out separately from the NEPA process by the NPS. On February 7 and 8, 2016 NPS initiated the NEPA process with an internal scoping meeting with NPS Denver Service Center (DSC) compliance staff, Park staff, and FHWA engineers/designers.

It was determined that an EA will be prepared in compliance with NEPA to provide the decision-making framework that analyzes a reasonable range of alternatives to meet project objectives; evaluates issues and impacts on park resources and values; and identifies mitigation measures to lessen the degree or extent of these impacts. The EA will include applicable cultural resource information, including potential impacts associated with the proposed alternatives, but will not be used to comply with Section 106 in lieu of the procedures set forth in 36 CFR 800.3 through 36 CFR 800.6. The NEPA/NHPA compliance schedule is enclosed.

DESCRIPTION OF THE PROPOSED UNDERTAKING

Significant rainfall and subsequent flooding occurred in Grapevine Canyon on the evening of October 18, 2015. During a 5-hour period, approximately 3.5 inches of rain was recorded near Scotty's Castle. The weather radar from this period showed a nearly stationary cell over Grapevine Canyon and adjacent canyons that drain into Grapevine Canyon (National Weather Service 2015). As a result, Bonnie Clare Road was damaged beyond repair, necessitating closure.

Scotty's Castle, adjacent to Bonnie Clare Road, has approximately 125,000 visitors per year. Since October 2015, visitors have not been able to independently access Scotty's Castle or use the Bonnie Clare Road. The NPS, in partnership with the FHWA, proposes to reestablish a safe, sustainable, resilient, and efficient driving route from the Nevada/Beatty entrance to CA 191 (North Highway).

On June 1 and 2, 2016, the NPS, FHWA, and Barbara Durham with the Timbisha Shoshone Tribe conducted a site visit and Value Analysis/Choosing-by-Advantages (VA/CBA) workshop. During this process, five alternatives were evaluated:

- Alternative A - Replace Bonnie Clare on its original alignment with a graveled surface. A gravel road would require significant ongoing maintenance and would not provide easy access for tour buses and recreational vehicles. This alternative was dismissed because it does not achieve the purpose and need for this project.
- Alternative B - Replace Bonnie Clare on its original alignment with an asphalt pavement surface with a fully armored road prism following the original road alignment. This alternative would respond well to the undertaking's purpose and need. This alternative does not possess high sustainability or resiliency characteristics.
- Alternative C - Locate Bonnie Clare adjacent to the new edge of the wash and elevate the alignment 5 feet above the anticipated flow line. Use low water crossings to handle side wash flows. Alternative C also would respond well to the undertaking's purpose and need. This alternative is currently the proposed action and the FHWA engineers have produced a 30% design. Preliminary 30% design drawings are enclosed for reference.
- Alternative D - Relocate road section out of the flood zone. Introduce structures as necessary such as bridges, box culverts, and other structures. This alternative would result in extensive environmental and cultural resource impacts due to the new alignment and construction of major structures. This alternative was dismissed from further consideration.

- Alternative E (No Action) - Close the road east of Scotty's Castle. This alternative would not address the purpose and need for the project and would not address the need for Emergency Services Response, but it would provide increased protection for natural and cultural resources and, as such, it will be carried forward and analyzed in the EA.

Alternative C (Proposed Action) would avoid any cuts to canyon walls and provide a section of sacrificial road within the wash in the steep-walled canyon; be designed to accommodate 5- to 10-year flood channel movement; lower traffic speeds in the canyon; and be designed to avoid archeological/ethnographic sites, where possible.

DEFINITION OF THE APE (36 CFR 800.4(a)(1))

Section 106 and 36 CFR 800.4(a)(1) requires that a federal agency, once it has determined a project has the potential to affect historic properties, must establish the Area of Potential Effect (APE) for a proposed project and identify if any historic properties within the APE are listed on or are eligible for listing on the National Register of Historic Places (NRHP).

The APE for the project includes any area where there may be ground disturbance, demolition, or construction activities. This would include all areas within the project construction limits and temporary and permanent right-of-way required for the project and all areas within the "construction/clearing limits" as indicated in the FHWA road construction plans (see enclosure). The APE is shown in Figures 1 through 8.

There may be a temporary construction turnaround near Milepost (MP) 5.9 (across from Cottonwood Corner) and staging areas in the Scotty's Castle paved parking lot near the Nevada/California border and within the previously disturbed road alignment.

The proposed undertaking would reconstruct approximately 7.61 miles of Bonnie Clare Road from the Nevada/California border to the junction with North Highway and Ubehebe Crater Road. Two paved travel lanes would each be ten feet wide, each with a 1-foot shoulder. Ground disturbance would extend approximately 50 feet on either side of the centerline of the road. The typical cross sections depicted on design sheets A6 – A9 describe the vertical disturbance needed for the various repairs based on topography and centerline placement. All design limits are depicted in the enclosed Preliminary 30% Design.

From the existing water treatment facility to Scotty's Castle (approximately 1.5 miles), a water line and would be placed beneath one travel lane of the road. The water line and utility lines would be placed in a 3-foot-wide by 6-foot-deep trench, likely beneath the south bound travel lane. NPS/FHWA is also preparing the design for the repair and fortification of a dirt berm that protects the water intake/spring house under this EA (Berm #1). As this design is developed, the Park will re-consult with you if any changes to the APE are necessary based on the proposed design.

Construction staging areas are proposed in the existing paved parking lot at Scotty's Castle, near the Nevada/California state line, and within the existing disturbed areas along the existing road alignment. Additionally, a turnaround area (no storage of materials) would be in a side wash across from Cottonwood Corner. The final locations of the construction staging areas along Bonnie Clare

Road may change prior to initiation of construction activities based on the results of the archeological inventory to avoid previously undocumented cultural resources.

DESCRIPTION OF EFFORTS TO IDENTIFY HISTORIC PROPERTIES (36 CFR 800.4(b)(1))

Historic properties are defined in 36 CFR 800.16(I)(1) as properties included in or eligible for inclusion on the NRHP. An ethnographic study will be conducted with the Tribal Historic Preservation Officer and Tribal Elders of the Timbisha Shoshone Tribe. Archival research will be conducted prior to the commencement of archeological inventory at the California Historical Resources Information System's (CHRIS) Eastern Information Center at the University of California Riverside in Riverside, California. The records at the Park's Archeology Office will also be examined to identify all previously recorded historic properties within and adjacent to the APE. A Class III archeological inventory will be conducted in all areas within the proposed road corridor, subject to ground-disturbing activities, that have not been previously inventoried (Figure 9).

A determination of eligibility for Bonnie Clare Road and the historic roadside fence will be completed. An inadvertent discovery and monitoring plan will also be completed and implemented. The results of the ethnographic study, the Class III archeological inventory, and evidence of having conducted a records search of CHRIS records and of the park's Archeological Sites Management Information System (ASMIS) database will be provided to your office in subsequent consultation.

DESCRIPTION OF KNOWN CULTURAL RESOURCES WITHIN THE APE (36 CFR 800.4(B)(2))

Bonnie Clare Road, the subject of the proposed project, was previously determined a NRHP-eligible historic property associated with the early Mission 66 NPS capital development program (NPS 2011). The historic property boundary for the road was an area extending 50 feet on either side of the centerline from MP 0.0 to MP 7.5. The road and its character-defining features are within the APE for this project. A new determination of eligibility will be prepared for Bonnie Clare Road due to the extensive damage sustained by the 2015 flooding. Approximately 70% of the road needs full reconstruction.

The Death Valley Scotty Historic District / Scotty's Castle is between MPs 3.5 and 6.0 on the north and west sides of Bonnie Clare Road. The historic district was listed on the NRHP in 1978. The entire district includes approximately 1,500 acres, most of which is in the Lower Vine Ranch portion of the historic district northwest of Grapevine Canyon. The portion of the historic district along Bonnie Clare Road contains four contributing features within or adjacent to the APE: (1) the historic fenceline along the 2.6-mile section of road as it passes through the district, (2) the Indian Camp archeological site, (3) the historic entrance to the district, and (4) Cottonwood Corner. The APE includes the entire Death Valley Scotty Historic District.

The Grapevine Canyon Archeological District has been determined to be eligible for listing on the NRHP (NPS 2012). It contains 47 contributing archeological sites and 17 contributing archeological isolates. The district boundary encompasses the entire length of Grapevine Canyon, including all sites, isolates, and ethnographically significant natural features, including the springs and canyon walls.

ASSESSMENT OF ADVERSE EFFECTS (36 CFR 800.5)

The NPS will apply the criteria of adverse effects for historic properties within the APE for the proposed undertaking once the archeological inventory and ethnographic research has been completed.

The Park is initiating consultation with the California State Historic Preservation Officer, the Native American Heritage Commission (NAHC), and seven other traditionally associated Native American tribes (see enclosure) concurrently with the Big Pine Band of Owens Valley.

The Park recognizes that the Timbisha have significant interest in the management of the Park: the Timbisha Shoshone Homeland Act of 2000 (P.L. 106-423) designated over 1.5 million acres of the Park as a special use area for the Tribe, called the "Timbisha Shoshone Natural and Cultural Preservation Area," as well as a few smaller special use areas and cooperative agreement areas. Tribal interests will be an important factor in the planning process.

CONTACT INFORMATION

The NPS, Death Valley National Park is considered the lead federal agency and the primary contact for this undertaking. The Park looks forward to working with you, other consulting parties, and the public as we proceed with the environmental assessment. We would be happy to arrange a meeting with you at your convenience to discuss this project.

- Mike Reynolds – Superintendent Death Valley National Park, P.O. Box 579, Death Valley, CA 92328; (760) 786-3240; fax (760) 786-2844; mike_reynolds@nps.gov.

For project-specific requests, please contact:

- Amanda Landon – Park Section 106 Coordinator; (760) 786-3217; fax (760) 786-2844; amanda_landon@nps.gov

Sincerely,


Mike Reynolds,
FOR Superintendent

Enclosures: Native American Contact List
NEPA/NHPA Compliance Schedule
CA ERFO DEVA (11)1 Bonnie Clare Road 30% Design (Preliminary 1-26-2017)
Maps of the Area of Potential Effect (Figures 1-3)
Map of Death Valley Historic Districts (Figure 4-8)
Map of Survey Area (Figure 9)

March 27, 2017
Ms. Rebecca L. Palmer

cc (w\enclosures): NPS-DSC Cultural Resource Specialist and Contracting Officers
Representative, Joshua Kleinman
NPS-DSC-PM, Mark Pritchett

bcc: central files

REFERENCES

National Weather Service

- 2015 Storm Data and Unusual Weather Phenomena. Storm Data for October 2015. Compiled by the National Centers for Environmental Information and the National Weather Service's Storm Prediction Center. Electronic document, <https://www.ncdc.noaa.gov/IPS/sd/sd.html>.

NPS

- 2011 *100% Draft Cultural Landscapes Inventory: Bonnie Clare Road*. Death Valley National Park, California and Nevada.
- 2012 *Consensus Determination of Eligibility for the National Register of Historic Places in Compliance with Section 106 of the National Historic Preservation Act of 1966 for Grapevine Canyon Archaeological District*. Death Valley National Park, California and Nevada.

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

1725 23rd Street, Suite 100
SACRAMENTO, CA 95816-7100
(916) 445-7000 Fax: (916) 445-7053
calshpo@parks.ca.gov
www.ohp.parks.ca.gov



May 11, 2017

In reply, refer to: NPS_2017_0403_002

Mike Reynolds, Superintendent
National Park Service
Death Valley National Park
P.O. Box 579
Death Valley, CA 92328

Subject: Reconstruct Bonnie Claire Road Following 2015 Storms, Death Valley National Park, Inyo County, California

Dear Mr. Reynolds:

Thank you for your March 27, 2017, letter initiating consultation regarding an undertaking at Death Valley National Park. The National Park Service (NPS) is consulting with the State Historic Preservation Officer (SHPO) in order to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 306108), as amended, and its implementing regulations at 36 CFR Part 800. In addition to the letter, NPS submitted maps showing the Area of Potential Effect (APE) and the 30% Preliminary Plans for the project dated January 26, 2017. The Federal Highway Administration (FHWA) will provide engineers and construct the project. NPS also initiated consultation with the Timbisha Shoshone Tribe, Big Pine Band of Owens Valley, and the Native American Heritage Commission.

The proposed undertaking, as described, involves reconstructing Bonnie Claire Road to reestablish a driving route from the Nevada / Beatty entrance to CA 191 within Death Valley National Park. The road sustained extensive damage during significant rainfall and flooding from an October 18, 2015, storm. NPS is considering multiple alternatives in its NEPA Environmental Assessment, but has identified Alternative C as the proposed action for this Section 106 consultation. This alternative would locate Bonnie Claire road adjacent to the new edge of the wash, elevate the alignment five feet above the anticipated flow line, and use low water crossings to handle side wash flows. The new road will have two ten-foot wide paved travel lanes, each with a one-foot shoulder. Ground disturbance would extend approximately 50 feet on either side of the centerline of the road. At this early stage of design, NPS intends this alternative to avoid any cuts to canyon walls and provide a section of sacrificial roadway within the wash in the steep-walled canyon. The design will accommodate five to ten year flood channel

movement, reduce traffic speeds in the canyon, and, where possible, avoid archaeological / ethnographic sites.

NPS will install a water line from the existing water treatment facility to Scotty's Castle (approximately 1.5 miles) beneath one lane of the road in a three-foot wide by six-foot deep trench.

NPS identified an Area of Potential Effect (APE) encompassing the approximately 7.61 miles of Bonnie Claire Road from the Nevada / California Border to the junction with North Highway and Ubehebe Crater Road. The APE includes all areas within the project construction limits and temporary and permanent right-of-way and all areas within the construction / clearing limits indicated on the FHWA road construction plans.

Several known historic properties are located within the APE, including:

- Bonnie Claire Road. NPS evaluated Bonnie Claire Road and found it eligible for listing in the National Register in 2011, and the SHPO concurred. NPS estimates that 70% of the road requires full reconstruction because of the 2015 flooding.
- Death Valley Scotty Historic District (including Scotty's Castle). The entire district is included in the APE, but four contributing features of the district are within or adjacent to Bonnie Claire Road:
 - Historic fence line along the 2.6-mile section of the road through the district;
 - Indian Camp archaeological site;
 - Historic entrance to the district; and
 - Cottonwood Corner.
- Grapevine Canyon Archeological District. NPS evaluated the Grapevine Canyon Archeological District and found it eligible for listing in the National Register in 2012, and the SHPO concurred. The district contains 47 contributing archeological sites and 17 contributing archeological isolates.

NPS intends to conduct further archeological inventory and ethnographic research prior to applying the criteria for adverse effect to the undertaking, and will continue consultation with the SHPO and tribes. After reviewing the information submitted, the SHPO offers the following comments.

Step 1: Initiation and Description of the Undertaking

- The proposed action qualifies as a federal undertaking with the potential to affect historic properties as defined in 36 CFR 800.
- Given that two federal agencies are involved, the SHPO recommends a lead agency for Section 106 be designated per 36 CFR 800.2(a)(2). Please clarify if a lead federal agency for Section 106 has been so designated.

- In addition, please clarify if any other federal agencies will be involved with the undertaking, such as the US Army Corps of Engineers (for issuing a 404 permit).
- Please provide a map that shows the historic / existing alignment of Bonnie Claire Road with the alignment that would result from the proposed undertaking.

Step 2: Identification and Evaluation of Historic Properties

- It is difficult to agree that the APE appears to be sufficient to take direct and indirect effects on historic properties into account based upon the information presented. Please clarify the APE based upon the following comments.
 - The APE maps indicate the location of the proposed new alignment for Bonnie Claire Road, but not the historic / existing alignment, which should also be fully included in the APE.
 - The APE should include the entire Grapevine Archeological District, Indian Camp, and Cottonwood Corner.
 - Although the March 27 letter states that the entire Death Valley Scotty Historic District is included in the APE, the maps do not illustrate this inclusion. The entire historic district should be included in the APE.
- The SHPO looks forward to receiving the results of NPS efforts to identify and evaluate historic properties and assess effects of the undertaking.

Thank you for seeking the SHPO's comments and considering historic properties as part of your planning. If you have any questions or concerns, please contact Mark Beason, State Historian, at (916) 445-7047 or mark.beason@parks.ca.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read 'Julianne', followed by a horizontal line extending to the right.

Julianne Polanco
State Historic Preservation Officer



United States Department of the Interior

NATIONAL PARK SERVICE

Death Valley National Park
P.O. Box 579
Death Valley, California 92328



In Reply Refer to:

CRP No. 16-036

PEPC No. 66547

May 16, 2017

MAILED USPS CERTIFIED MAIL-RETURN RECEIPT

Julianne Polanco
State Historic Preservation Officer
California State Parks
Office of Historic Preservation
1725 23rd Street, Suite 100
Sacramento, CA 95811

Attn: Mark Beason, State Historian II

Subject: NPS_2017_0403_002 – Response to May 11, 2017 Letter and Request for Additional Information

Dear Ms. Polanco:

The National Park Service (NPS) is in receipt of your letter dated May 11, 2017. Your letter requested additional information and adjustment to the area of potential effect (APE). Specifically, NPS was asked to clarify the following for the Initiation and Description of the Undertaking:

- Given that two federal agencies are involved, the SHPO recommends a lead agency for Section 106 be designated per 36 CFR 800.2(a)(2). Please clarify if a lead federal agency for Section 106 has been so designated.
- In addition, please clarify if any other federal agencies will be involved with the undertaking, such as the US Army Corps of Engineers (for issuing a 404 permit).
- Please provide a map that shows the historic / existing alignment of Bonnie Claire [sic] Road with the alignment that would result from the proposed undertaking.

For the purposes of Identification and Evaluation of Historic Properties, NPS was additionally requested to:

- The APE maps indicate the location of the proposed new alignment for Bonnie Claire [sic] Road, but not the historic / existing alignment, which should also be fully included in the APE.

May 16, 2017
Ms. Julianne Polanco

- The APE should include the entire Grapevine Archeological District, Indian Camp, and Cottonwood Corner.
- Although the March 27 letter states that the entire Death Valley Scotty Historic District is included in the APE, the maps do not illustrate this inclusion. The entire historic district should be included in the APE.

The NPS appreciates your thoroughness and attention to this undertaking. We have taken the time to offer the following responses:

Given that two federal agencies are involved, the SHPO recommends a lead agency for Section 106 be designated per 36 CFR 800.2(a)(2). Please clarify if a lead federal agency for Section 106 has been so designated.

In our letter dated March 27, we stated on Page 1 and 5 that, “NPS is the lead federal agency for the purposes of compliance with NEPA and Section 106 of the NHPA. The Federal Highway Administration (FHWA) is a cooperating agency, providing engineers to design and construct this federal undertaking.” NPS believes this satisfies your request for designation of a lead federal agency per 36 CFR 800.2(a)(2).

In addition, please clarify if any other federal agencies will be involved with the undertaking, such as the US Army Corps of Engineers (for issuing a 404 permit).

FHWA will be obtaining the required individual Section 404 permit for the undertaking from the Army Corp of Engineers prior to the commencement of construction.

Please provide a map that shows the historic / existing alignment of Bonnie Claire [sic] Road with the alignment that would result from the proposed undertaking.

Due to the scale and size of the project, a new plan set was created for your review. Within the enclosed Attachment A – Plans, the previous road alignment is marked in red with the proposed alignment in black.

The APE maps indicate the location of the proposed new alignment for Bonnie Claire [sic] Road, but not the historic / existing alignment, which should also be fully included in the APE.

A map depicting the proposed alignment within the APE maps would not provide the resolution needed to make any meaningful comparison due to the scale and size of the project. Therefore, within the enclosed Attachment A – Plans, the previous road alignment is marked in red with the proposed alignment in black.

The APE should include the entire Grapevine Archeological District, Indian Camp, and Cottonwood Corner.

The APE map has been adjusted to reflect the entirety of the Grapevine Archeological District. Indian Camp and Cottonwood Corner were reflected within the APE map submitted with the letter dated March 27. Please refer to Attachment B.

May 16, 2017
Ms. Julianne Polanco

Although the March 27 letter states that the entire Death Valley Scotty Historic District is included in the APE, the maps do not illustrate this inclusion. The entire historic district should be included in the APE.

The APE map has been adjusted to reflect the entirety of Death Valley Scotty Historic District. Please refer to Attachment C.

We appreciate continual involvement in the protection of cultural resources at Death Valley National Park. We plan to submit the results of the Park's cultural resource inventory along with our assessment of effect for the undertaking in June. If you have any questions regarding this undertaking, please contact Amanda Landon, Park Section 106 Coordinator; (760) 786-3217; amanda_landon@nps.gov.

Sincerely,

Mike Reynolds,
Superintendent

Enclosures: Attachment A – Plans
 Attachment B – Grapevine Archeological District APE Map
 Attachment C – Death Valley Scotty Historic District APE Map

cc (w\enclosures): DSC Cultural Resource Specialist, Joshua Kleinman
 DSC-Project Manager, Mark Pritchett



Mike Reynolds
Superintendent

**OFFICE OF HISTORIC PRESERVATION
DEPARTMENT OF PARKS AND RECREATION**

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July 13, 2017

In reply, refer to: NPS_2017_0403_002

Mike Reynolds, Superintendent
National Park Service
Death Valley National Park
P.O. Box 579
Death Valley, CA 92328

Subject: Reconstruct Bonnie Clare Road Following 2015 Storms, Death Valley National Park, Inyo County, California

Dear Mr. Reynolds:

Thank you for your May 16, 2017, letter continuing consultation regarding an undertaking at Death Valley National Park. The National Park Service (NPS) is consulting with the State Historic Preservation Officer (SHPO) in order to comply with Section 106 of the National Historic Preservation Act of 1966 (54 U.S.C. § 306108), as amended, and its implementing regulations at 36 CFR Part 800. The letter contains responses to comments and questions from the SHPO contained in a May 11, 2017. In the most recent submittal, NPS also sent maps showing the Area of Potential Effect (APE) and updated plans for the project. NPS also initiated consultation with the Timbisha Shoshone Tribe, Big Pine Band of Owens Valley, and the Native American Heritage Commission. NPS provided no new information about Tribal comments with the most recent letter.

The proposed undertaking, as described, involves reconstructing Bonnie Clare Road to reestablish a driving route from the Nevada / Beatty entrance to CA 191 within Death Valley National Park. The design will accommodate five to ten year flood channel movement, reduce traffic speeds in the canyon, and, where possible, avoid archaeological and ethnographic sites. In response to a request from the SHPO, NPS provided updated plans for the undertaking that show both the proposed new alignment and the existing alignment of the road which will be useful in assessing effects of the undertaking.

Two other federal agencies are involved with the undertaking. As noted previously, the Federal Highway Administration (FHWA) will provide engineers and construct the project. In response to a question from the SHPO, NPS stated that a Corps of

Mr. Mike Reynolds
July 13, 2017
Page 2

NPS_2017_0403_002

Engineers (COE) 404 permit will also be required and that FHWA will obtain it prior to commencing construction.

- In both letters received by the SHPO, NPS stated that it will serve as the lead federal agency for Section 106.
- Please note that NPS, FHWA, and the COE have Section 106 obligations for this undertaking. If FHWA and COE do not designate NPS as the lead agency, they will be responsible for their own compliance, which could result in delayed implementation.
- The SHPO recommends that NPS verify with both FHWA and COE that they designate NPS as the lead federal agency for Section 106 and share the results of this correspondence with all consulting parties.

NPS also provided updated information regarding the Area of Potential Effect, clarifying that it corresponds with the entire Grapevine Archeological District and the entire Death Valley Scotty Historic District.

NPS is still considering multiple alternatives in its NEPA Environmental Assessment and will continue consultation following cultural resource inventory and assessment of effects efforts. Thank you for seeking the SHPO's comments and considering historic properties as part of your planning. If you have any questions or concerns, please contact Mark Beason, State Historian, at (916) 445-7047 or mark.beason@parks.ca.gov.

Sincerely,

A handwritten signature in dark ink, appearing to be 'J. Polanco', with a long horizontal line extending to the right.

Julianne Polanco
State Historic Preservation Officer



U.S. Department
of Transportation
**Federal Highway
Administration**

Central Federal Lands Highway Division

12300 West Dakota Avenue
Suite 380
Lakewood, CO 80228
720-963-3411
Brent.Nagen@dot.gov

July 14, 2017

In Reply Refer To:
HFPM-16

Mike Reynolds, Superintendent
National Park Service
Death Valley National Park
P.O. Box 579
Death Valley, CA 92328

Dear Mr. Reynolds

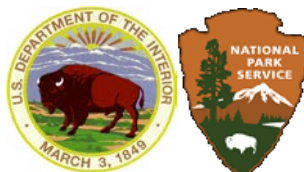
This letter is in regards to the Bonnie Clare Road Project CA ERFO DEVA 11(1) and the Scotty's Castle Historic District Flood Rehabilitation.

The Federal Highway Administration, Central Federal Lands Highway Division (CFLHD) acknowledges that the National Park Service (NPS), has been designated as the lead Federal agency for fulfilling collective responsibilities for compliance with Section 106 of the of the National Historic Preservation Act. Although deferring its Section 106 responsibilities to the NPS, CFLHD will remain a consulting agency for this undertaking and maintain its involvement in the Section 106 process, including review of determinations of effect to, and any treatment of, historic properties.

If have any question or concerns please contact me at (Brent.Nagen@dot.gov), 720-963-3411 or write to the above address, Attention HFPM-16.

Sincerely,

Brent Nagen
Project Manager



As the nation's principal conservation agency, the Department of the Interior has the responsibility for most of our nationally owned public lands and natural resources. This includes fostering sound use of our land and water resources; protecting our fish, wildlife, and biological diversity; preserving the environmental and cultural values of our national parks and historical places; and providing for the enjoyment of life through outdoor recreation. The department assesses our energy and mineral resources and works to ensure that their development is in the best interests of all our people by encouraging stewardship and citizen participation in their care. The department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.

NPS DEVA 143/140342 November 2017

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National Park Service
U.S. Department of the Interior

Death Valley National Park
California



Death Valley National Park
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Death Valley, CA 92328