APPENDICES

A. COMMENTS AND RESPONSES REGARDING THE DRAFT IS/MND

B. STOKES CREEK BRIDGE PRELIMINARY PLAN SET

C. GEOTECHNICAL INVESTIGATION

D. HYDROLOGY AND HYDRAULIC STUDY

E. JURISDICTIONAL DELINEATION REPORT

F. BIOLOGICAL ASSESSMENT REPORT

APPENDIX A
Comments and Responses Regarding the Draft IS/MND

CALTRANS DISTRICT 7 (LOS ANGELES)
Ms. Miya Edmonson
IGR/CEQA Branch Chief
California Department of Transportation
District 7 – Office of Regional Planning
100 S. Main Street, Suite 100
Los Angeles, CA 90012

Subject: California State Parks response to comments provided regarding the Draft Initial Study/Mitigated Negative Declaration (IS/MND) for the proposed Malibu Creek State Park Stokes Creek Bridge Project

Dear Ms. Edmonson,

Thank you for providing comment on the proposed project during our CEQA preliminary planning stage.

The comments that you provided follow with responses.

1. Please apply for a bridge name and number from Caltrans. A request form is attached along with instructions for the request.

   We shall comply with this request before the bridge is opened to traffic.

2. A Committee consisting of owners, Caltrans, trustees and engineers, as well as all other specialists involved in this restoration, should review and come to a decision on the most appropriate bridge type. It appears the proposed bridge type on steel supports may not work for this area which is prone to wildfire hazards, including a wildfire last year.

   CDPR has included a team of consultant engineers as well as staff engineers in the preliminary design of this bridge. Carl and/or Emily, can you provide any further content to address how the decision was made to utilize this type of bridge. A bridge with a nominal footprint was critical to ensure the preservation of riparian habitat, particularly old growth oak trees. Extensive effort was made to find a balance between a bridge that meets the needs to the Park, while protecting natural resources within the project footprint and up and downstream of it. Please review the attached plan set (Appendix B) to see further detail regarding the bridge structure that has been proposed.

3. Caltrans is mandated to inspect and rate all bridges in California, including bridges in public parks. It is recommended this bridge be designed using Caltrans' latest adopted and modified ASSHTO codes to prevent load capacity restriction when it is inspected and rated by Caltrans.

   Bridge design shall be compliant with Caltrans' latest adopted and modified ASSHTO codes to ensure it can support intended loads, which include emergency fire rescue engines.

4. It is also recommended to follow, at minimum, the safety requirements of Caltrans policies, procedures, standards and practices, especially in designing bridge railings and approach railings, as well as other safety requirements that may be unique to this project.

   CDPR will make effort to ensure that Caltrans safety requirements are implemented in the design of the bridge. As mentioned above, please review the attached plans (Appendix B) for preliminary plans for the Stokes Creek Bridge.

5. A hydraulic engineering report and geotechnical engineering report are needed for the design. A Bridge Hydraulic Engineer should also assess up or downstream structures after this project is completed.

Both of these reports have been prepared and are included as appendices for your review.

6. Proper slope protection based on peak flow should be calculated to prevent future erosion, as it is reported in IS/MND to be happening now.

   Slope protection shall be incorporated and the product sheet for erosion control blankets is included as an attachment (Appendix as a means to reduce the potential for erosion along with other standard permanent and construction best management practices.

7. At a minimum, Caltrans Bridge Standard specification should be specified for quality control during construction.

   Caltrans Bridge Standard specification shall be specified wherever possible to maintain quality control of the proposed bridge structure.

8. Please indicate and print the procedure on the plans: Submit As-Built plans to Caltrans Structure Maintenance at the address above for correct filing.

   CDPR shall provide As-Built plans as requested once they become available.

9. When the design reaches 35 percent, we will do another complementary review. The review will be for quality in design, complying with Standard Caltrans practice and scope of services. Please submit the following to Caltrans:
   - a Alignment and geometrics
   - b Surveying
   - c Maps, including Base Map and a Structural section
   - d. Special studies: hydraulics, geotechnical, etc.

   CDPR has included preliminary plans for your review.

DEPARTMENT OF FISH AND WILDLIFE
Erinn Wilson, Environmental Program Manager I
South Coast Region
3883 Ruffin Road
San Diego, CA 82123

Subject: Mitigated Negative Declaration for the Malibu Creek State Park Stokes Creek Bridge Project, City of Calabasas, Los Angeles County

Thank you for providing comment on the proposed project during our CEQA preliminary planning stage.

The comments that you provided follow with responses.

Issue: Mitigation Measure BI0-6 indicates that CDPR will "[r]estore temporary impacts to 0.20 acre of jurisdictional waters and valley oak woodland understory and mitigate for impacts to native tree protection zones." While the tree mitigation is discussed adequately, the need for notification for a Lake and Streambed Alteration Agreement is omitted.

Specific impacts: The Project may result in the loss of streams and associated watershed function and biological diversity. Grading and construction activities will likely alter the topography, and thus the hydrology, of the Project site.

Why impacts would occur: Ground-disturbing activities from grading and filling, water diversions, and dewatering would physically remove or otherwise alter existing streams or their function and associated riparian habitat on the Project site. Downstream streams and associated biological resources beyond the Project development footprint may also be impacted by Project-related releases of sediment and altered watershed effects resulting from Project activities.

Evidence impacts would be significant: The Project may substantially adversely affect the existing stream pattern of the Project site through the alteration or diversion of a stream, which absent specific mitigation, could result in substantial erosion or siltation on site or off site of the Project.

Recommended Potentially Feasible Mitigation Measure(s):

Mitigation Measure #1: For any such activities, the Project applicant (or "entity") must provide written notification to CDFW pursuant to section 1600 et seq. of the Fish and Game Code. Based on this notification and other information, CDFW shall determine whether a Lake and Streambed Alteration (LSA) Agreement is required prior to conducting the proposed activities. A notification package for a LSA may be obtained by accessing CDFW's web site at https://www.wildlife.ca.gov/conservation/lsa.

CDFW's issuance of an LSA Agreement for a Project that is subject to CEQA will require CEQA compliance actions by CDFW as a Responsible Agency. As a Responsible Agency, CDFW may consider the CEQA document of the Lead Agency for the Project. To minimize additional requirements by CDFW pursuant to section 1600 et seq. and/or under CEQA, the CEQA document should fully identify the potential impacts to the stream or riparian resources and provide adequate avoidance, mitigation, monitoring, and reporting commitments for issuance of the LSA Agreement.

CDPR has made extensive effort to ensure that riparian habitat shall be preserved in place while meeting the needs of visitors, operations and public safety. Please refer to the avoidance, minimization, and mitigation measures included within the IS/MND. In addition, a standalone restoration plan shall be implemented to restore any impacted resources identified within the project footprint. Inclusion of the need for a LSA Agreement pursuant to section 1600 of the Fish and Game Code was an oversight, however, based on the Jurisdictional Determination that is now included, a LSA agreement will be acquired based on the changes anticipated to the hydrogeology of Stokes Creek.

Mitigation measure #2: Any LSA Agreement issued for the Project by CDFW may include additional measures protective of stream beds on and downstream of the Project such as additional erosion and pollution control measures. To compensate for any on-site and off-site impacts to riparian resources, additional mitigation conditioned in any LSA Agreement may include the following: avoidance of resources, on-site or off-site creation, enhancement or restoration, and/or protection and management of mitigation lands in perpetuity.

CDPR shall incorporate measures as conditioned within the LSA Agreement to ensure the minimization of water quality impacts.

Filing Fees

The project, as proposed, could have an impact on fish and/or wildlife, and assessment of filing fees is necessary. Fees are payable upon filing of the Notice of Determination by the Lead Agency and serve to help defray the cost of environmental review by CDFW. Payment of the fee is required for the underlying project approval to be operative, vested, and final (Cal. Code Regs, tit. 14, § 753.5; Fish & Game Code, § 711.4; Pub. Resources Code, § 21089).

Due to the extent of potential impacts as a result of the resources present within the project footprint, fees shall be provided to defray the cost of environmental review by CDFW in order to file the Notice of Determination.

CALIFORNIA COASTAL COMMISSION
South Central Coast Area
89 South California St., Suite 200
Ventura, Ca 93001

RE: Draft Initial Study and Mitigated Negative Declaration (IS/MND)

Commission staff has reviewed the Draft Initial Study (IS) and Mitigated Negative Declaration (MND) for the Malibu Creek State Park Stokes Creek Bridge Project and we appreciate the opportunity to provide comments for your consideration. The project proposes to remove an existing arch culvert along with associated rock gabions within Stokes Creek to be replaced with a pre-fabricated bridge in the same location.

All of the proposed development is located completely within the boundaries of the County of Los Angeles (County) and is subject to the policies and provisions of the County's certified Local Coastal Program (LCP). Section 3.10 of the Draft MND includes an analysis of the project's consistency with relevant policies of the Land Use Plan (LUP) component of the LCP; however, the Draft MND does not include an analysis of the project's consistency with the relevant provisions of the Local Implementation Program (LIP) component. Any project subject to the County's LCP must be consistent with the LIP and we recommend the MND analyze the project's consistency with those provisions, specifically Section 22.44.1890.B.4 and Sections 22.44.1920.C and 22.44.1340.A.

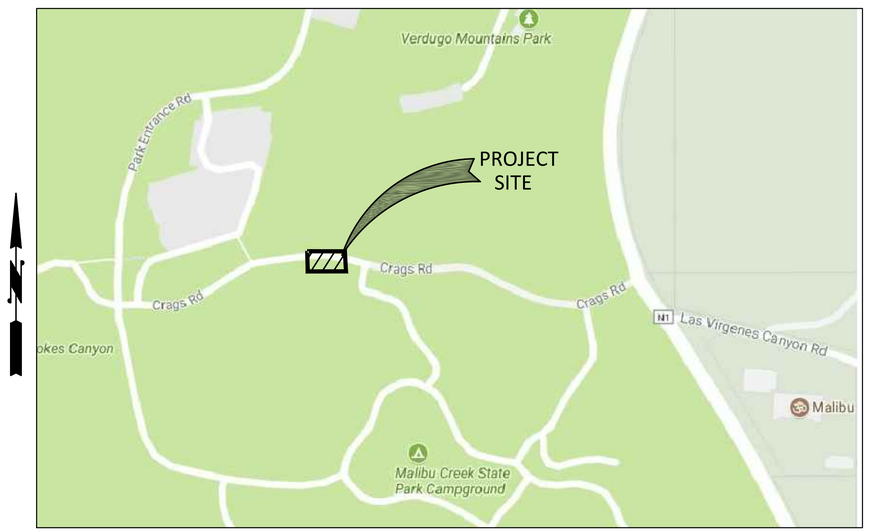
Please refer to Section 3.10.1 Environmental Setting for Land Use and Planning for specific provisions of the LIP and how the Project will address them.

APPENDIX B
Stokes Creek Bridge Preliminary Plan Set

MALIBU CREEK STATE PARK
NEW STOKES CREEK BRIDGE

PROJECT NO. 010876
FOR
ANGELES DISTRICT
1925 LAS VIRGENES RD
CALABASAS, CA 91302
(818) 880-0363

VICNITY MAP
SCALE: NOT TO SCALE



SITE MAP
SCALE: NOT TO SCALE

DRAWING INDEX

PREPARED BY:

CALIFORNIA DEPARTMENT OF PARKS AND RECREATION
SOUTH SERVICE CENTER
NTC AT LIBERTY STATION, BARRACKS 26
2797 TRUXTUN ROAD
SAN DIEGO, CA 92106
PHONE: (619)221-7060
FAX: (619) 221-7082

CIVIL/STRUCTURAL ENGINEER:
BERGERABAM
10525 VISTA SORRENTO PKWY, STE 350
SAN DIEGO, CA 92132

CONTACT : MIKE MAGEE
PH: (858) 500-4500
FAX: (858) 500-4501

PROJECT DESCRIPTION

THIS PROJECT IS TO REPLACE AN EXISTING UNDERSIZED CULVERT WITH A BRIDGE TO RESTORE A SECONDARY ESCAPE ROUTE IN CASE OF FIRE, REDUCE DISRUPTION TO CAMPERS, AND RESTORE THE CREEK TO ITS NATURAL CONFIGURATION.

DESIGN PACKAGES

☒ 30% CONSTRUCTION DOCUMENT DATE: 05-07-2018

30% CONSTRUCTION DOCUMENT

BergerABAM
10525 Vista Sorrento Parkway Suite 350
San Diego, CA 92121 (858) 500-4500

ACQUISITION & DEVELOPMENT DIVISION
One Capitol Mall
Sacramento, CA
95814-3229

CALIFORNIA STATE FIRE MARSHAL- APPROVED

Approval of this plan does not authorize or approve any omission of deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.

Reviewed by Date

DPR ACCESS COMPLIANCE REVIEW
ACCESSIBILITY SECTION
CERTIFICATION #

Reviewed by Date

ACCESSIBILITY COMPLIANCE AND STATE FIRE MARSHAL SIGNED ORIGINALS ARE ON FILE AT THE DEPARTMENT OF PARKS AND RECREATION, NORTHERN SERVICE CENTER

DESIGNED:
DRAWN:
CHECKED:
DATE: 05/07/2018

REVISIONS

	DATE

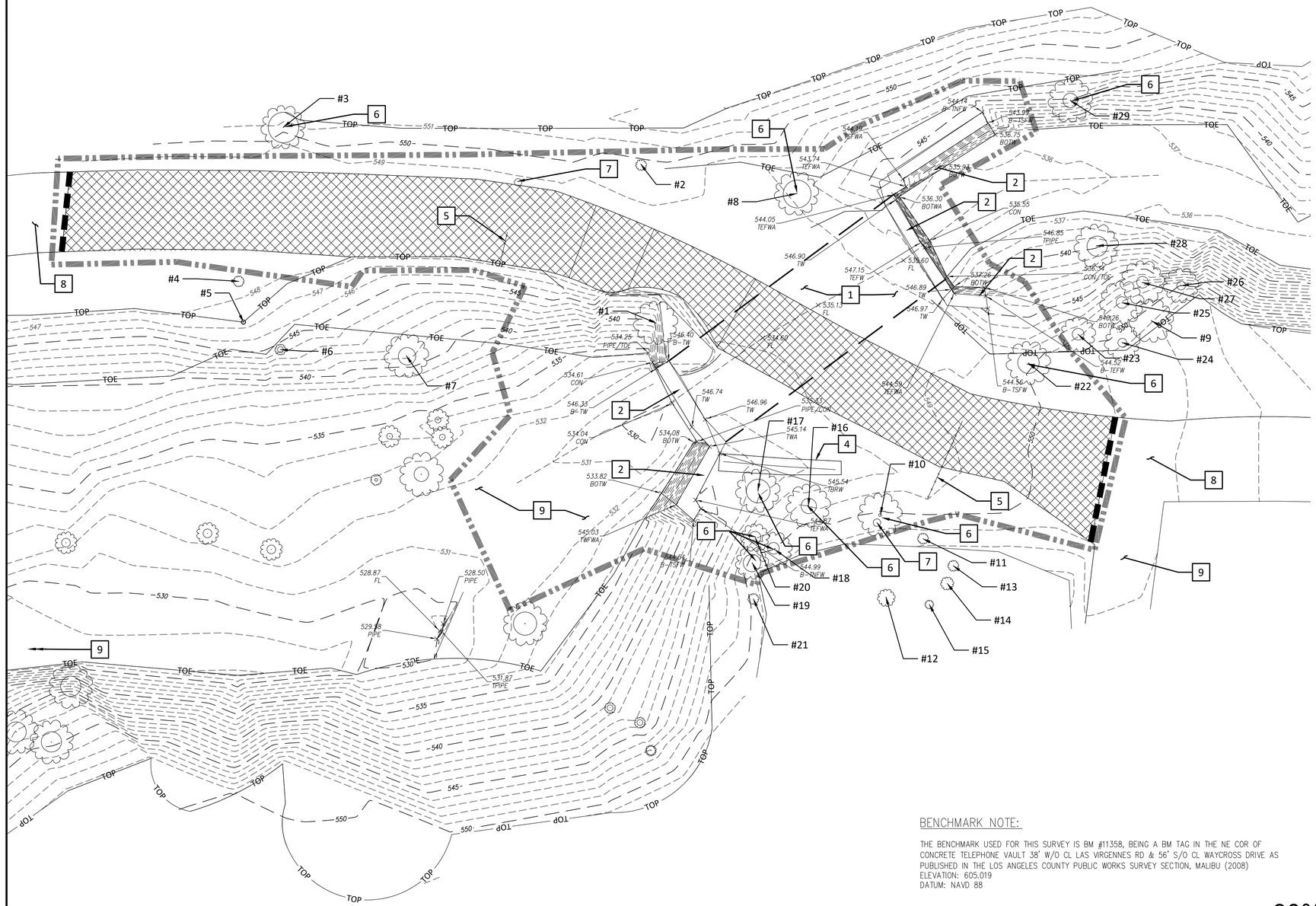
MALIBU CREEK STATE PARK
NEW STOKES CREEK BRIDGE

COVER SHEET

DESIGN DEVELOPMENT

DRAWING NO.

SHEET NO.
C-0.0
1 OF 9



BENCHMARK NOTE:

THE BENCHMARK USED FOR THIS SURVEY IS BM #11358, BEING A BM TAG IN THE NE COR OF CONCRETE TELEPHONE VAULT 38' W/O CL LAS VIRGENNES RD & 56' S/O CL WAYCROSS DRIVE AS PUBLISHED IN THE LOS ANGELES COUNTY PUBLIC WORKS SURVEY SECTION, MALIBU (2008)
ELEVATION: 605.019
DATUM: NAVD 88

30% CONSTRUCTION DOCUMENT

DEMOLITION KEY NOTES

1	DEMOLISH AND REMOVE 17.5X11.5 CORRUGATED METAL PIPE (CMP) AND ASSOCIATED BOTTOM
2	DEMOLISH AND REMOVE GABION WALL
3	NOT USED
4	DEMOLISH AND REMOVE CONCRETE BROW DITCH
5	DEMOLISH AND REMOVE CHAIN LINK FENCE
6	PROTECT IN PLACE EXISTING TREE
7	PROTECT IN PLACE EXISTING UTILITY POLE
8	PROTECT IN PLACE EXISTING PAVEMENT
9	REMOVE THE FOLLOWING FROM STREAMBED: CMP APPROXIMATELY 5' DIA. BY 10' LONG, CONCRETE BLOCKS AND RELATED DEBRIS (ASSUME EQUIVALENT TO 100 CONCRETE BLOCKS), GEOTEXTILE FABRIC INTERSPERSED IN CREEK BED (ASSUME EQUIVALENT TO 500 SF) LOCATED APPROXIMATELY 30' DOWNSTREAM FROM CULVERT. CMP APPROXIMATELY 10' DIA BY 30' LONG LOCATED APPROXIMATELY 500' DOWNSTREAM FROM CULVERT.

TREE TABLE

TREE ID	DIA. BREAST HIGHT (DBH) (INCHES)	SPECIES
1	25-30	COAST LIVE OAK
2	1	COAST LIVE OAK
3	42.1	VALLEY OAK
4	4.7, 3.1	COAST LIVE OAK
5	2.1	COAST LIVE OAK
6	7.9	COAST LIVE OAK
7	19.5	COTTONWOOD
8	44.3	COAST LIVE OAK
9	27.8	COAST LIVE OAK
10	27.4	VALLEY OAK
11	3.4	COAST LIVE OAK
12	5.3	COAST LIVE OAK
13	1.5	VALLEY OAK
14	3.2	VALLEY OAK
15	1.2	COAST LIVE OAK
16	28	VALLEY OAK
17	28	COAST LIVE OAK
18	18.1	COAST LIVE OAK
19	15.5	COAST LIVE OAK
20	17.9, 14.6	VALLEY OAK
21	1, 0.7	COAST LIVE OAK
22	32.5	COAST LIVE OAK
23	15.9	COAST LIVE OAK
24	22.1	COAST LIVE OAK
25	21.7	COAST LIVE OAK
26	16.8	COAST LIVE OAK
27	26.8	COAST LIVE OAK
28	20.2	COAST LIVE OAK
29	22-25	COAST LIVE OAK

LEGEND

- APPROX. LIMITS OF WORK
- SAWCUT LINE
- DEMOLISH AND REMOVE EXISTING PAVEMENT INCLUDING SUBBASE
- 400 — ELEVATION CONTOUR LINE (1' INTERVAL)
- TOP TOP — TOP OF BANK
- TOE — BOTTOM OF BANK
- CHAIN LINK FENCING
- EXISTING TREE
- #15 — TREE IDENTIFICATION NUMBER

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10525 Vista Sorrento Parkway Suite 350
San Diego, CA 92121 (858) 500-4500

CALIFORNIA STATE PARKS SINCE 1864

ACQUISITION & DEVELOPMENT DIVISION
One Capitol Mall
Sacramento, CA
95814-3229

CALIFORNIA STATE FIRE MARSHAL- APPROVED

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Reviewed by Date

DPR ACCESS COMPLIANCE REVIEW ACCESSIBILITY SECTION
CERTIFICATION #

Reviewed by Date

ACCESSIBILITY COMPLIANCE AND STATE FIRE MARSHAL SIGNED ORIGINALS ARE ON FILE AT THE DEPARTMENT OF PARKS AND RECREATION, NORTHERN SERVICE CENTER

DESIGNED:
DRAWN:
CHECKED:
DATE: 05/07/2018

REVISIONS
DATE

MALIBU CREEK STATE PARK
NEW STOKES CREEK BRIDGE

EXISTING AND DEMOLITION PLAN

DESIGN DEVELOPMENT

DRAWING NO.

SHEET NO.
C-1.1
2 OF 9

GRADING KEY NOTES

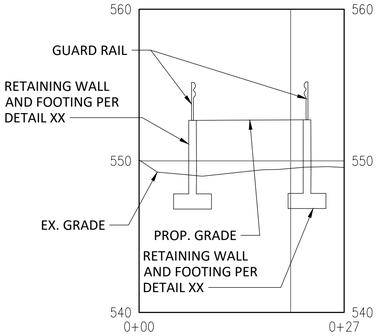
1	16' X 70' BRIDGE
2	RETAINING WALL
3	4" AC PAVEMENT OVER 6" GRAVEL BASE OVER 90% COMPACTED SUBGRADE
4	GUARD RAIL

LEGEND

- APPROX. LIMITS OF WORK
- 4" AC PAVEMENT OVER 6" GRAVEL BASE OVER 90% COMPACTED SUBGRADE
- CURLEX BLANKET (HIGH VELOCITY) FOR SLOPE PROTECTION OR APPROVED EQUAL
- 400 — PROP. ELEVATION CONTOUR LINE (1' INTERVAL)
- 400 — EX. ELEVATION CONTOUR LINE (1' INTERVAL)
- GUARD RAIL
- RETAINING WALL
- 100 YEAR FLOOD WATER ELEVATION 1% ANNUAL CHANGE FLOOD

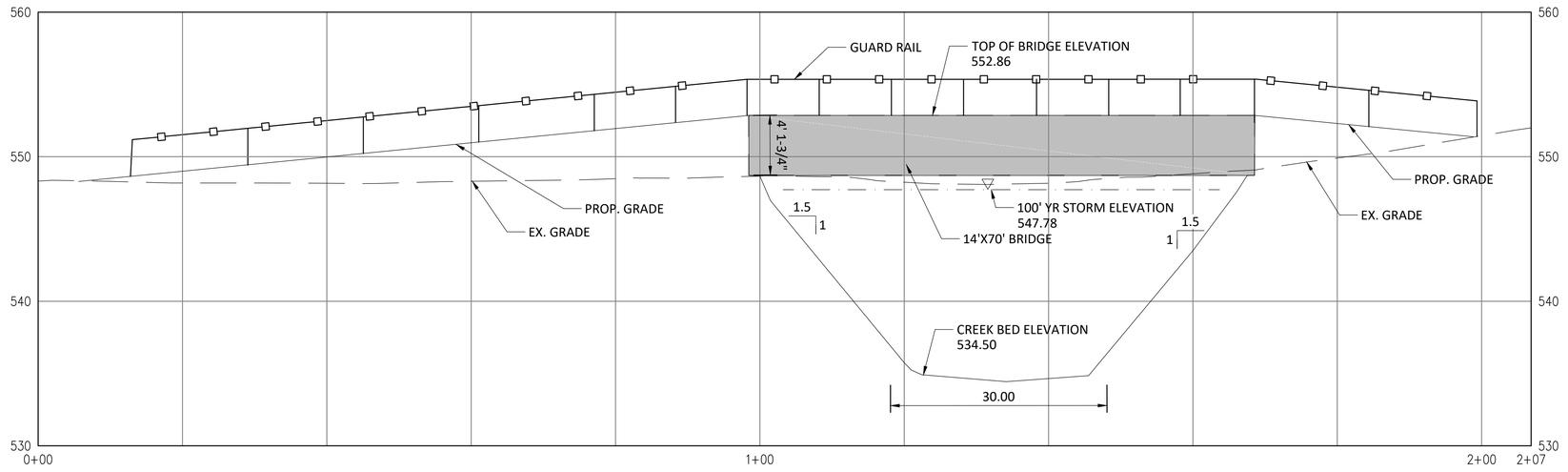
MATCH EX. (548.24)
MATCH EX. SEE DETAIL XX
MATCH EX. (548.33)
552.08 TW (552.08) BW
550.15 TW (550.15) BW
551.75 TW (548.31) BW
552.86 TW (548.95) BW
552.86 TW (546.88) GW
552.86 TW (548.89) BW
552.86 TW (548.74) BW
551.65 TW (551.10) BW
MATCH EX. (551.40)
MATCH EX. SEE DETAIL XX
551.32 TW (551.23) BW
5.0%
4.3%
2.74%
5.17%
4.9%
4.9%
2.73%

1" = 10' scale 10 0 10 20 feet



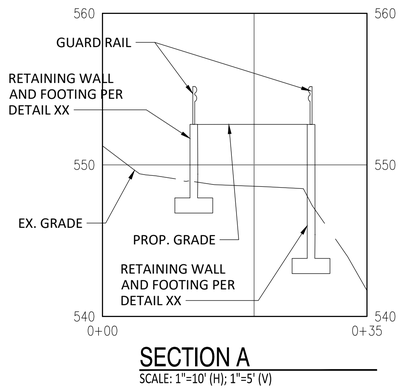
SECTION B

SCALE: 1"=10' (H); 1"=5' (V)



BRIDGE SECTION AT CENTER OF ROAD

SCALE: 1"=10' (H); 1"=5' (V)



SECTION A

SCALE: 1"=10' (H); 1"=5' (V)

30% CONSTRUCTION DOCUMENT

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ACQUISITION & DEVELOPMENT DIVISION
One Capitol Mall
Sacramento, CA
95814-3229

CALIFORNIA STATE FIRE MARSHAL- APPROVED

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Reviewed by Date

DPR ACCESS COMPLIANCE REVIEW ACCESSIBILITY SECTION

CERTIFICATION #

Reviewed by Date

ACCESSIBILITY COMPLIANCE AND STATE FIRE MARSHAL SIGNED ORIGINALS ARE ON FILE AT THE DEPARTMENT OF PARKS AND RECREATION, NORTHERN SERVICE CENTER

DESIGNED:
DRAWN:
CHECKED:
DATE: 05/07/2018

REVISIONS

	DATE

MALIBU CREEK STATE PARK
NEW STOKES CREEK BRIDGE

GRADING PLAN

DESIGN DEVELOPMENT

DRAWING NO.

SHEET NO.
C-2.0
3 OF 9

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GENERAL NOTES

THE FOLLOWING SPECIFICATIONS SHALL BE FOR A FULLY PRE-ENGINEERED AND PRE-MANUFACTURED BRIDGE OF STEEL CONSTRUCTION AND SHALL BE REGARDED AS MINIMUM STANDARDS FOR DESIGN AND CONSTRUCTION. THE BRIDGE SUPPLIER SHALL BE PER SPECIFICATIONS.

1. DESIGN SPECIFICATIONS: "LRFD BRIDGE DESIGN SPECIFICATIONS 7th EDITION. 2014" AND AASHTO GUIDE SPECIFICATIONS FOR DESIGN OF PEDESTRIAN BRIDGES, 2009 AND APPLICABLE INTERIMS.

2. CONSTRUCTION SPECIFICATIONS: STATE OF CALIFORNIA, DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION" 2014 EXCEPT AS NOTED BELOW AND IN THE SPECIAL PROVISIONS FOR THIS CONTRACT.

3. LIVE LOAD: HL-93 LOADING (FIRE TRUCK) AND PEDESTRIAN LOADS.

4. CONCRETE SHALL HAVE AN ULTIMATE COMPRESSIVE STRENGTH OF 4,500 PSI AT 28 DAYS. ALL REINFORCEMENT SHALL BE ASTM 706, GRADE 60. ALL CONCRETE SURFACES, INCLUDING SLOPE PAVING SHALL BE SMOOTH. ALL CONCRETE SURFACES, INCLUDING SLOP PAVING, EXPOSED TO VIEW (EXCEPT TOP SURFACE OF DECK SLAB) SHALL BE PAINTED (FINE SURFACE FINISH) WITH SHERWIN WILLIAMS "PEWTER WORKS" TO AT LEAST 1'-0" BELOW FINISHED GRADE. SEE NDOT SPECIFICATION SECTION 502.03.19.

5. ALL STRUCTURAL STEEL SHALL CONFORM TO ASTM A709, GRADE 50, ASTM A1085 OR ASTM A500 (ASTM A500 SHALL MEET CHARPY TOUGHNESS REQUIRED FOR ZONE:2) SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS. STRUCTURAL STEEL SHALL BE PAINTED. SEE NDOT SPECIFICATION 614 FOR PAINTING REQUIREMENTS.

6. RAILING HEIGHT ABOVE THE DECK SHALL BE A MINIMUM OF 54 INCHES. RAILING SHALL ACCOMMODATE PEDESTRIAN, BICYCLE, AND VEHICLE LOADING.

7. THE BRIDGE SHALL BE CAMBERED TO COMPENSATE FOR DEAD LOAD DEFLECTIONS.

8. DELIVERY OF THE BRIDGE SHALL BE MADE BY THE MANUFACTURER TO THE LOCATION OF THE BRIDGE SITE.

9. CONTRACTOR SHALL SPLICE AND INSTALL THE BRIDGE SUPERSTRUCTURE AS PER MANUFACTURER'S REQUIREMENTS.

10. CONSTRUCTION OF THE CONCRETE DECK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. THE GALVANIZED DECK FORM SHALL BE THE RESPONSIBILITY OF THE BRIDGE MANUFACTURER. CONTRACTOR SHALL INSTALL GALVANIZED DECK FORM PER BRIDGE MANUFACTURER'S REQUIREMENTS.

    MINIMUM CONCRETE STRENGTH: f'c = 4,500 PSI
    REINFORCING STEEL: ASTM 706, GRADE 60

11. THE BRIDGE MANUFACTURER SHALL BE RESPONSIBLE FOR THE DESIGN AND DETAIL OF BEARING PLATES AND ANCHOR BOLTS. THE WET STAMPED DRAWINGS AND CALCULATIONS SHALL BE PROVIDED TO THE COUNTY FOR REVIEW & APPROVAL PRIOR TO CONSTRUCTION OF THE ABUTMENTS AND PIERS FOR COORDINATION. BEARING LOCATIONS SHALL BE AS SHOWN ON PLANS.

12. THE BRIDGE MANUFACTURER SHALL SUBMIT FOR THE ENGINEER'S REVIEW DESIGN CALCULATIONS AND COMPLETE PLANS OF THE SUPERSTRUCTURE. CALCULATIONS AND PLANS SHALL BE SIGNED AND SEALED BY AN ENGINEER LICENSED TO PRACTICE CIVIL ENGINEERING IN THE STATE OF CALIFORNIA.

13. SUBSTRUCTURE:

    CONCRETE: f'c = 4,500 PSI TYPE V CEMENT
    REINFORCING STEEL: ASTM 706, GRADE 60

14. GEOTECHNICAL INVESTIGATION REPORT BY CONSTRUCTION TESTING & ENGINEERING, INC. (GTE INC.), PROJECT NO. 10-132526, DATED SEPTEMBER 29, 2017.

15. THE SUPERSTRUCTURE REACTIONS AT ABUTMENTS AND PIER SHALL BE SEPARATED INTO DEAD LOAD, LIVE LOAD, WIND LOAD, AND EARTHQUAKE LOAD. THE SUBSTRUCTURE IS DESIGNED TO SUPPORT NO MORE THAN ONE PINNED END OF THE BRIDGE SUPERSTRUCTURE. THE BRIDGE SUBSTRUCTURE IS DESIGNED FOR THE FOLLOWING LOAD:

BRIDGE ABUTMENT REACTIONS - UPWARD LOAD PROVIDED BY CONTECH ENGINEERED SOLUTIONS INC.			
	P (KIPS)	H (LBS)	L (LBS)
DEAD LOAD	103		
UNIFORM LIVE LOAD	85		
VEHICLE LOAD	FIRE TRUCK, HL-93		
WIND UPLIFT 20 PSF	-14		
WIND	+14	11	
SEISMIC LOAD		106/(R=2) = 53	212/(R=2) = 106

"P" - VERTICAL LOAD AT EACH BASE PLATE (4 PER BRIDGE)
"H" - HORIZONTAL LOAD AT EACH ABUTMENT (2 PER BRIDGE)
"L" - LONGITUDINAL LOAD AT EACH FIXED END ABUTMENT (1 PER BRIDGE)

16. SEISMIC LOADS:

    PEAK GROUND ACCELERATION (PGA) = 0.69g
    SHORT PERIOD SPECIAL ACCELERATION COEFFICIENT Ss = 1.585g
    SITE CLASS = D
    DESIGN COEFFICIENT: As = 0.69g
    S_{DS} = 1.585
    SEISMIC ZONE= 4
    S_{D1} = 0.898

17. BRIDGE SUPERSTRUCTURE IS EXPECTED TO RECEIVE FUTURE ARTWORK ELEMENTS. BOTH WEST TRUSS SPANS SHALL BE DESIGN FOR AN ADDITIONAL VERTICAL DEAD LOAD OF 3,000 LBS PLACED ANYWHERE ON THE TRUSS SPAN. BOTH WEST TRUSS SPANS SHALL ALSO BE DESIGNED FOR DEMANDS DUE TO PRESCRIBED WIND LOADS ON LARGE FLAT SURFACE AREA OF 400 SQ FT EACH.

18. CONTRACTOR SHALL REPORT ANY DISCREPANCIES TO THE OWNER BEFORE CONTINUING WITH THE CONSTRUCTION OF STRUCTURAL MEMBERS/UTILITIES AND DETAILS VARY FROM THAT INDICATED ON DRAWINGS.

19. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR MEANS, METHODS AND SEQUENCING OF REMOVALS AND CONSTRUCTION OF STRUCTURE. CONTRACTOR SHALL DESIGN AND PROVIDE SHORING SUPPORT AND/OR BRACING FOR EXISTING STRUCTURES AS REQUIRED DURING CONSTRUCTION.

20. FOR GRANULAR BACKFILL AND OTHER DETAILS NOT SHOWN, SEE NDOT STANDARD PLAN R-1.1.3. SEE NDOT STANDARD PLAN R-1.1.4 FOR LIMITS OF SELECTED BORROW AT BRIDGE ABUTMENTS.

BergerABAM
10525 Vista Sorrento Parkway Suite 350
San Diego, CA 92121 (858) 500-4500

CALIFORNIA STATE PARKS SINCE 1864
ACQUISITION & DEVELOPMENT DIVISION
One Capitol Mall
Sacramento, CA
95814-3229

CALIFORNIA STATE FIRE MARSHAL- APPROVED

Approval of this plan does not authorize or approve any omission of deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.

Reviewed by Date

DPR ACCESS COMPLIANCE REVIEW
ACCESSIBILITY SECTION
CERTIFICATION #

Reviewed by Date

ACCESSIBILITY COMPLIANCE AND STATE FIRE MARSHAL SIGNED ORIGINALS ARE ON FILE AT THE DEPARTMENT OF PARKS AND RECREATION, NORTHERN SERVICE CENTER

DESIGNED:	HL
DRAWN:	KBM
CHECKED:	HL
DATE:	11-08-2016

REVISIONS

	DATE
1	

CALIFORNIA DEPARTMENT OF PARKS AND RECREATION
STOKES CREEK BRIDGE

GENERAL NOTES

DESIGN DEVELOPMENT

DRAWING NO.

SHEET NO.
S-001
4 OF 9

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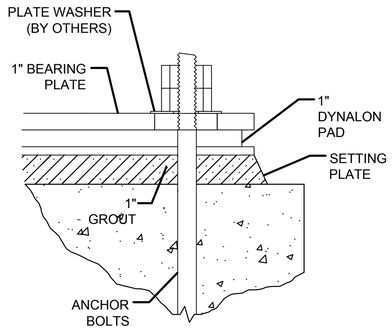

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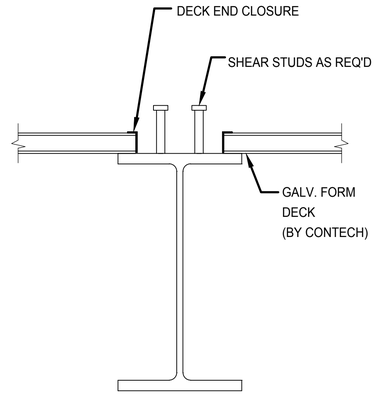

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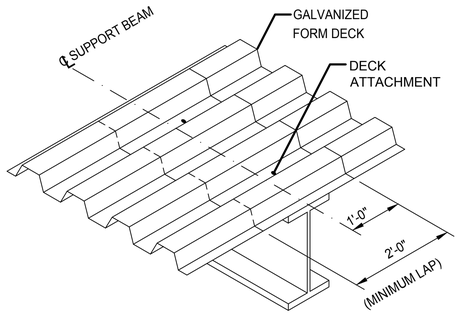

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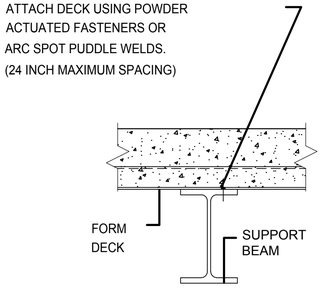

SECTION VIEW

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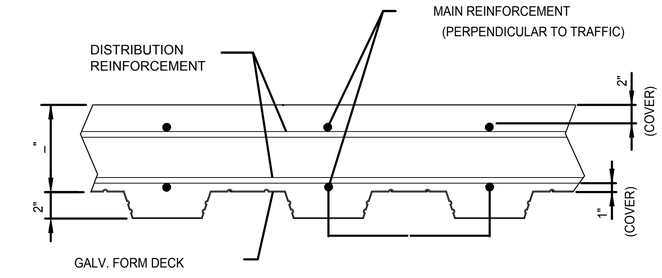

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SCALE: NTS

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STRUCTURAL TYPICAL DETAILS

DESIGN DEVELOPMENT

DRAWING NO.

SHEET NO.
S-010
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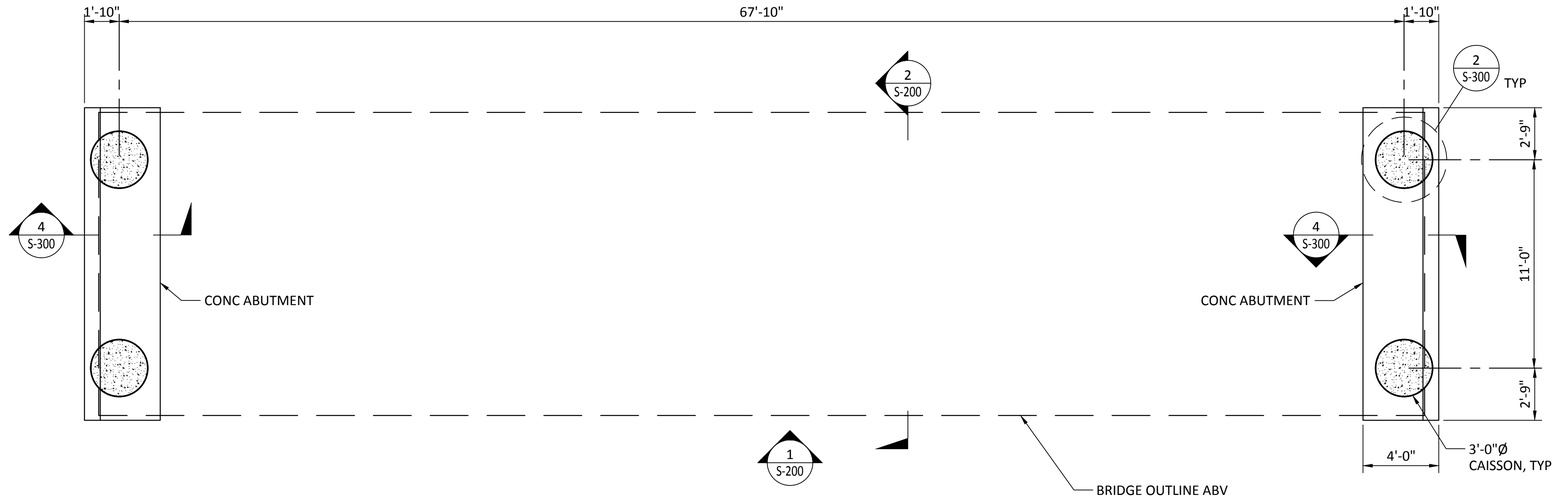

1 FOUNDATION PLAN
SCALE: 1/4"=1'-0"

1/4" = 1'-0"
4 0 4 8
scale feet

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STOKES CREEK BRIDGE

BRIDGE FOUNDATION PLAN

DESIGN DEVELOPMENT

DRAWING NO.

SHEET NO.
S-100
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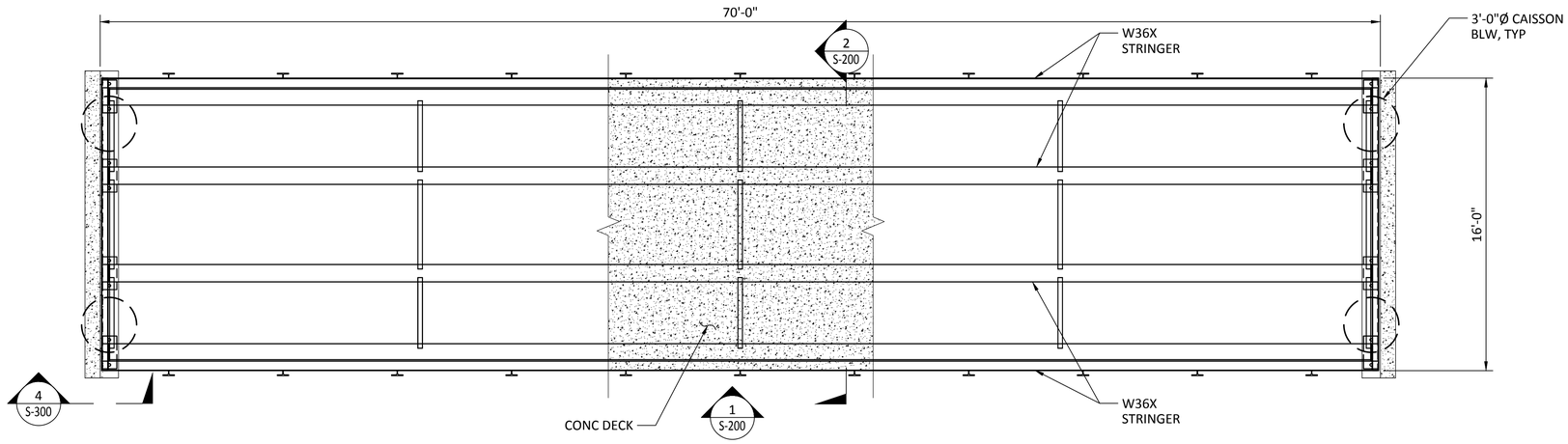

1 FRAMING PLAN
SCALE: 1/4"=1'-0"

1/4" = 1'-0" scale 4 0 4 8 feet

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STOKES CREEK BRIDGE

BRIDGE FRAMING PLAN

DESIGN DEVELOPMENT

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SHEET NO.
S-101
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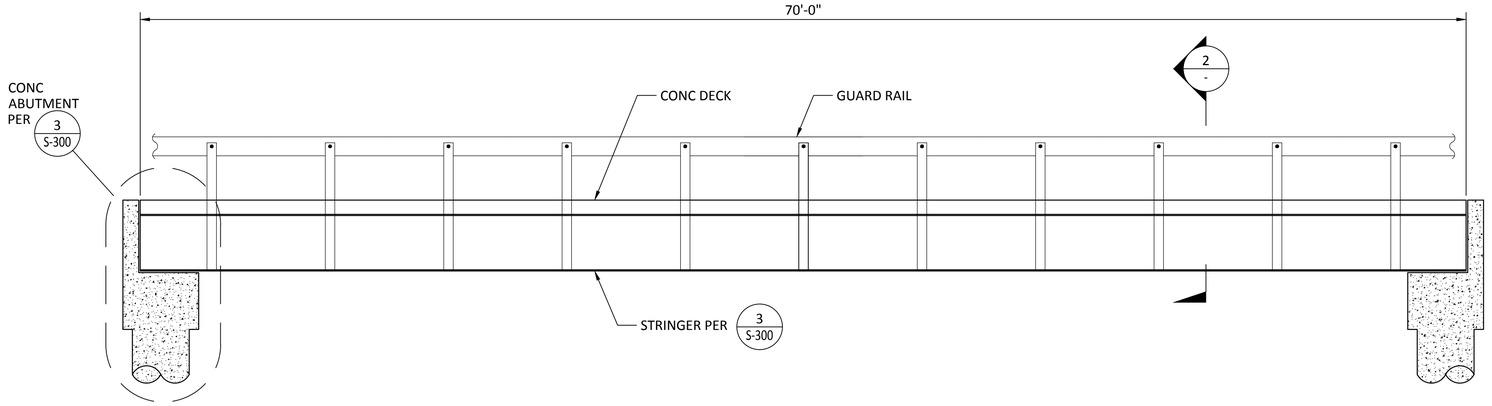

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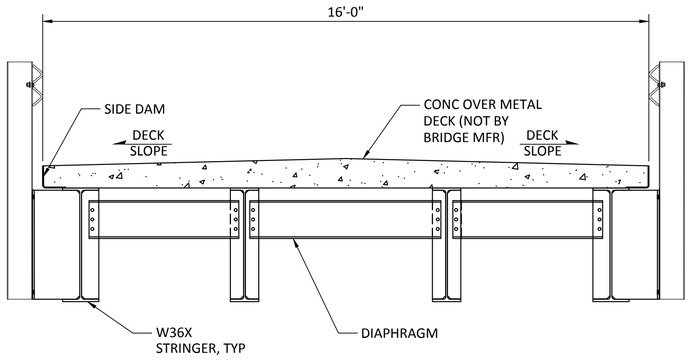

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STRUCTURAL ELEVATION AND SECTION

DESIGN DEVELOPMENT

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S-200
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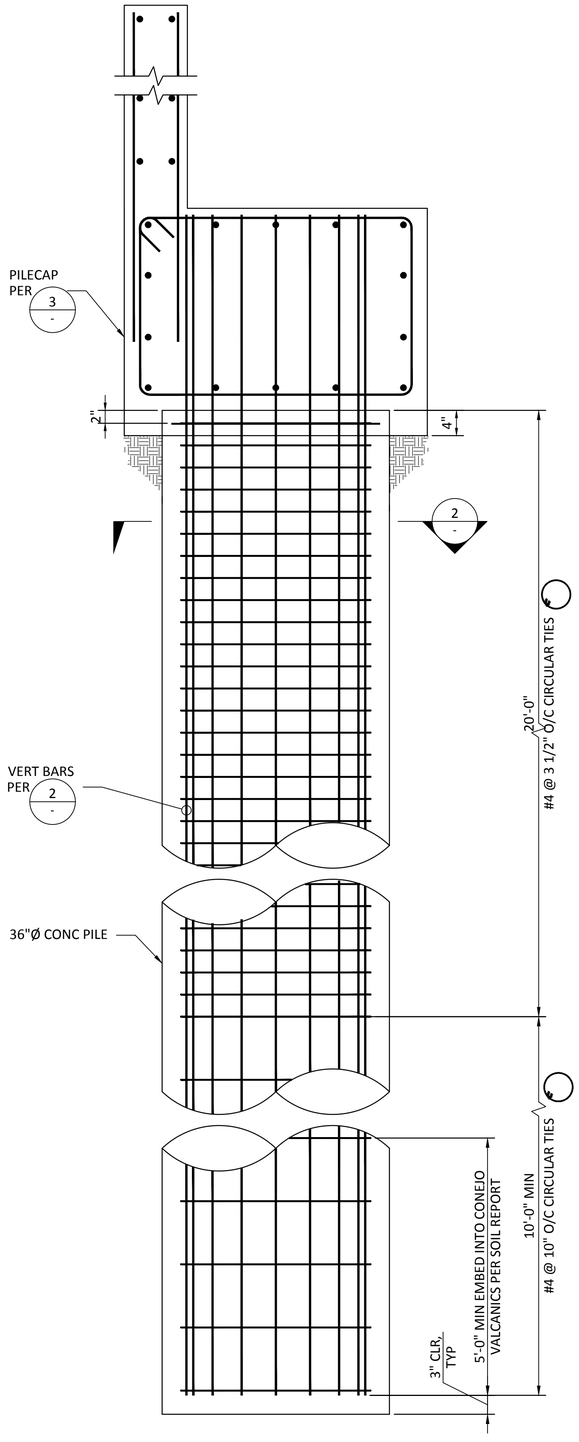

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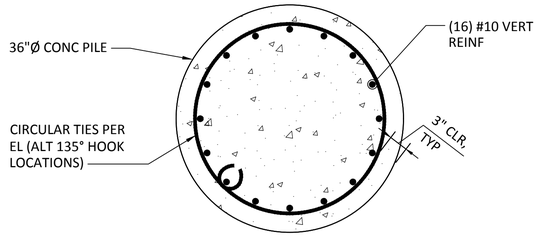

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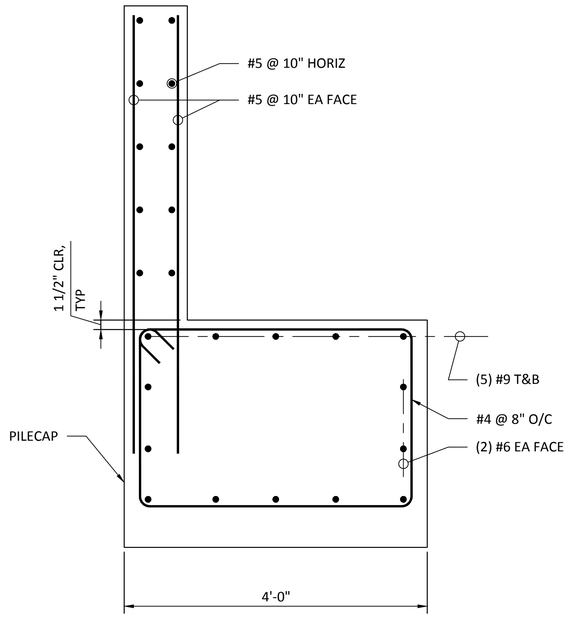

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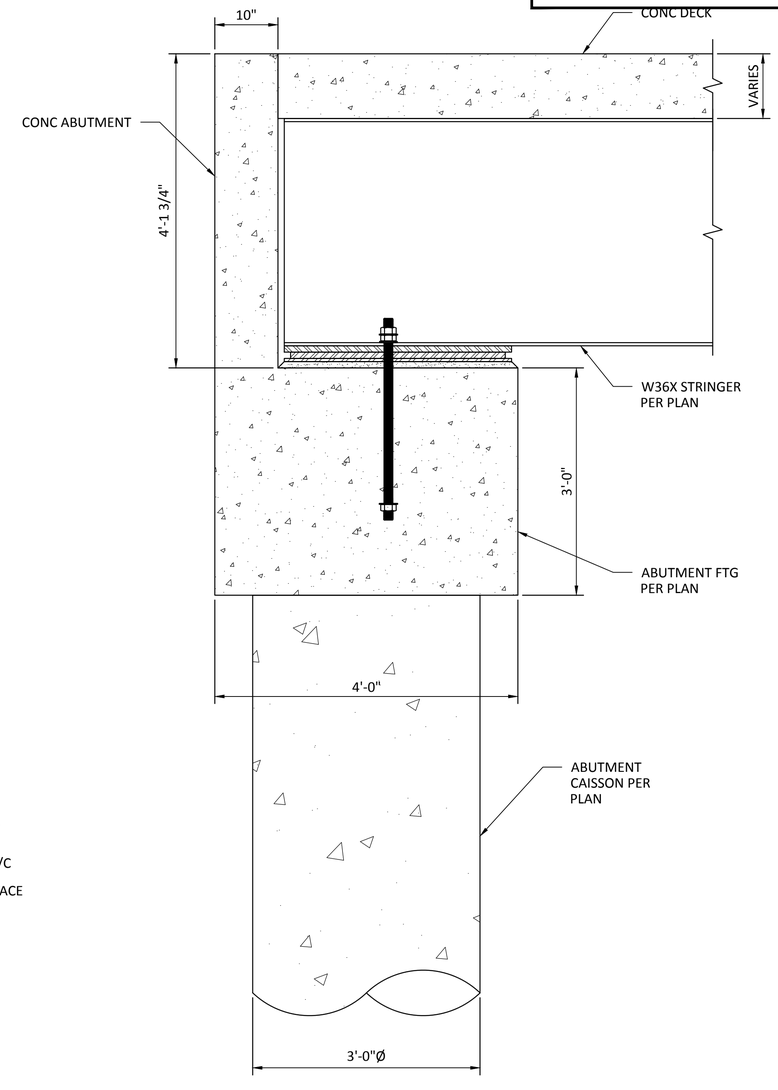

4 TYPICAL BRIDGE ABUTMENT DETAIL
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STOKES CREEK BRIDGE

STRUCTURAL DETAILS

DESIGN DEVELOPMENT

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S-300
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APPENDIX C
Geotechnical Investigation

GEOTECHNICAL INVESTIGATION
NEW BRIDGE AT STOKES CREEK CROSSING
MALIBU CREEK STATE PARK
LOS ANGELES COUNTY, CALIFORNIA 91941

PREPARED FOR:

STATE OF CALIFORNIA
DEPARTMENT OF PARKS AND RECREATION
SOUTHERN SERVICE CENTER
ATTENTION: MR. CARL SHAFFER
2797 TRUXTON ROAD, BARRACKS 26
SAN DIEGO, CALIFORNIA 92106
PROJECT NUMBER 010876-77

PREPARED BY:

CONSTRUCTION TESTING & ENGINEERING, INC.
1441 MONTIEL ROAD, SUITE 115
ESCONDIDO, CALIFORNIA 92026

CTE JOB NO. 10-13252G

SEPTEMBER 29, 2017

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1.0 INTRODUCTION AND SCOPE OF SERVICES

1.1 Introduction

This report presents the results of CTE's geotechnical investigation providing conclusions and recommendations for design and construction of the proposed new bridge crossing Stokes Creek at the Malibu Creek State Park in Los Angeles County, California. Actual conditions must be confirmed in the field during construction.

This work is authorized through Agreement Number C15E0015 with a Work Order date of August 4, 2016. The start of our work was delayed several times due to site access availability, other natural causes, and/or site sensitivity.

Geotechnical recommendations for excavations, fill placement, and foundation design for the proposed structures and improvements are presented in this report. The investigation included a review of selected documents, field exploration, laboratory testing, geologic hazard evaluation, geotechnical engineering analysis, and preparation of this report. Selected reviewed references are presented in Appendix A. Exploration logs are provided in Appendix B. Laboratory test methods and results are presented in Appendix C. Standard Specifications for Grading are presented in Appendix D. Figure 1 is an index map showing the approximate site location; Figure 2 provides the regional geologic setting; Figure 2A shows the site with respect to known seismic hazards; Figure 2B depicts a site specific geotechnical map; and, Figure 2C provides a geotechnical cross section.

Figure 3 provides a regional fault and seismicity map. Figure 4 illustrates conceptual retaining wall drainage provisions that may be appropriate for the proposed site improvements.

1.2 Scope of Services

The implemented scope of services includes:

- Review of readily available geologic information.
- Field exploration with a truck mounted hollow stem auger drill rig to evaluate site subsurface conditions.
- Laboratory testing of selected soil samples to provide data for evaluation of geotechnical characteristics of site soils.
- Assessment of geologic conditions pertinent to the site.
- Preparation of this report providing a summary of the geotechnical investigation performed, and conclusions and recommendations for site development.

2.0 SITE BACKGROUND

2.1 Site Location and Background

The new bridge crossing of Stokes Creek is within the Malibu Creek State Park (MCSP), which is located in Los Angeles County, approximately 25 miles from downtown Los Angeles. The MCSP is a 7,000 acre park set in mountainous terrain supporting chapparal, coastal sage, oak trees, and natural grasslands. It has historically been utilized by Native Americans and for ranching or similar activities.

Stokes Creek is a tributary to the larger Malibu Creek to the west. In approximately 1999 an arch culvert was placed across Stokes Creek to allow direct access between the district office and the park entrance. The arch culvert was overtopped on multiple occasions with concomitant damage to the culvert and embankments. Several attempts were made to repair the damages, but damage continued

to occur during storm events. The road is currently closed at Stokes Creek due to damage. Consequently, traffic to the district office is through the campground. Placement of the new bridge crossing would alleviate campground congestion, and allow an additional fire escape route that is important as the park is in a high fire hazard zone.

2.2 Proposed Development

The proposed development is to construct a bridge across Stokes Creek. In so doing Stokes Creek would resume its natural course. The bridge would allow traffic direct access to the district office, and also serve as a fire escape route. It is anticipated the bridge will allow two way traffic and be supported by foundations at abutments.

3.0 FIELD AND LABORATORY INVESTIGATION

3.1 Field Investigation

Field exploration, performed on August 25, 2017, included site reconnaissance and advancement of two exploratory borings for geotechnical purposes. Soils were logged in the field by a CTE certified engineering geologist, and visually classified according to the Unified Soil Classification System. Bulk and relatively undisturbed soil samples were transported to the CTE geotechnical laboratory in Escondido, California for select testing.

Exploration logs including descriptions of the soils encountered are provided in Appendix B. The field descriptions shown on the exploration logs have been modified, where appropriate, to reflect laboratory test results. Approximate exploration locations are shown on Figure 2B.

3.2 Laboratory Investigation

Laboratory tests were conducted on representative soil samples for classification purposes, and to evaluate physical properties and engineering characteristics of site soils. Laboratory tests conducted for this geotechnical investigation include: in-place moisture and density, grain-size determination, maximum dry density and optimum moisture content (Modified Proctor), chemical analyses, and consolidation potential. Test method descriptions and laboratory results are presented in Appendix C.

4.0 GEOLOGY

4.1 General Physiographic Setting

The Malibu Creek State Park is located in the Santa Monica Mountains which is within the Transverse Ranges of the California geomorphic provinces. The Transverse Ranges possess an east-west structural grain comparative to the generally north to northwest trending structural orientation of California. The Transverse Ranges structural topography is generally considered to be the product of convergence of the Pacific and North American plates. This convergence has produced elevated mountainous and intervening valleys. Rocks exposed in the Santa Monica Mountains are primarily Miocene sedimentary rocks that interspersed by Miocene volcanic rocks. Alluvial soils overly these rocks in drainages and remnant erosional surfaces.

4.2 Geologic Conditions

Based on regional geologic mapping by Dibblee (1993) and subsurface explorations, the site is underlain by Quaternary Undocumented Fill, Recent Stream Deposit gravels, Quaternary Alluvium. and Tertiary Conejo Volcanics (undifferentiated). Regional geology is shown on attached Figure 2 and local geology is depicted on Figure 2B. A cross section showing interpreted local geology along the proposed new bridge alignment is shown on Figure 2C.

4.2.1 Quaternary Undocumented Fill (Qudf)

Quaternary Undocumented Fill was encountered in both borings advanced. The undocumented fill consisted of stiff clay and silt mixtures in Boring B-1 and medium dense gravely sand in Boring B-2. Fill extended to depths of approximately eight feet and three feet in Boring B-1 and Boring B-2, respectively.

4.2.2 Quaternary Recent Gravely Stream Deposits (Qg)

Quaternary Recent Gravely Stream Deposits are shown on Figure 2B based upon mapping by Dibblee (1993) and observations of site surface expression. These deposits are anticipated to consist of loose gravel and sand associated with erosional products of adjacent formational materials.

4.2.3 Quaternary Alluvium (Qa)

Quaternary Alluvium was encountered to depths of 22 feet 25 feet in Boring B-1 and Boring B-2, respectively. The Quaternary Alluvium consists of medium dense sand mixtures and interlayered stiff to hard clay mixtures.

4.2.4 Tertiary Conejo Volcanics (undifferentiated (Tcvb)

The Tertiary Conejo Volcanics underlie the Quaternary Alluvium and extended to the maximum depth of 55.5 feet and 61.5 feet in Borings B-1 and B-2 , respectively. The Conejo Volcanics basalt member is mapped by Dibblee (1993) to underlie the site. However, the site Conejo Volcanics are considered as undifferentiated as they are weathered sufficiently to obscure variations from other units of the Conejo Volcanics. The upper portion of the site Conejo Volcanics as encountered by the soil borings were weathered to a soil like silty sand matrix without remnant volcanic texture. Clayey sand variations were encountered in these volcanic rocks. The encountered Conejo Volcanics were medium dense in weathered areas but graded to very dense with depth.

4.3 Groundwater Conditions

Groundwater was encountered in both soil borings. The groundwater appeared to be perched upon the Conejo Volcanics at the base of the Quaternary Alluvium in both borings. Depth of the encountered groundwater was 22 feet and 18.5 feet in Borings B-1 and B-2, respectively. Additionally, it is possible for depths to groundwater to vary, particularly with rainfall as the existing stream channel would tend to collect surface water allowing infiltration into the subsurface. Groundwater levels will likely vary with seasonal fluctuations. Saturated soils could impact grading or construction activities, especially during or after periods of sustained precipitation. However, groundwater is not anticipated to adversely impact the proposed development, provide site drainage is properly designed, constructed, and maintained as per the project civil engineer of record. Caving of caisson shafts may occur near and below groundwater. In addition, localized typical subdrains could be required during rough grading.

4.4 Geologic Hazards and Assessment

Following is a consideration of geologic hazards pertinent to the site. An assessment of potential impacts to the site is also provided.

4.4.1 Local and Regional Faulting

The California Geological Survey broadly groups faults as "Class A" or "Class B" (CDMG, 1996). Class A faults are identified based upon relatively well-defined paleoseismic activity, and a fault-slip rate of more than 5 millimeters per year (mm/yr). In contrast, Class B faults have comparatively less defined paleoseismic activity and are considered to have a fault-slip rate less than 5 mm/yr. The nearest Class B fault is the Annacapa-Dume approximately 5.7 miles to the west. The nearest known Class A fault is Malibu Coast fault located approximately 3.7 miles west of the site (Blake, T.F., 2000). The following Table 4.4.1 presents the six faults nearest to the site, including their maximum earthquake magnitude and fault classification.

TABLE 4.4.1 NEAR SITE FAULT PARAMETERS			
FAULT NAME	DISTANCE FROM SITE (miles)	MAXIMUM EARTHQUAKE MAGNITUDE	CLASSIFICATION
Malibu Coast	3.7	6.7	A
Annacapa-Dume	5.7	7.5	B
Santa Monica	7.3	6.6	B
Palos Verdes	12.4	7.3	B
Simi-Santa Rosa	14.2	7.0	B
Northridge (E. Oak Ridge)	15.2	7.0	B

The site could be subjected to significant shaking in the event of a major earthquake on any of the faults listed above or other regional faults in the southern and central California.

4.4.2 Liquefaction and Seismic Settlement Evaluation

Liquefaction occurs when saturated fine-grained sands or silts lose their physical strengths during earthquake induced shaking and behave as a liquid. This is due to loss of point-to-point grain contact and transfer of normal stress to the pore water. Liquefaction potential varies with water level, soil type, material gradation, relative density, and probable intensity and duration of ground shaking. Seismic settlement can occur with or without liquefaction; it results from densification of loose soils. Lateral spread occurs when there is widespread liquefaction and a modest slope, or a free face toward which lateral spreading may occur.

The Seismic Hazards Evaluation, Malibu Beach Quadrangle (2001) indicates recent stream deposits in Stokes Creek are subject to liquefaction. Therefore, it is recommended foundation elements of the proposed bridge not be supported by recent stream deposit that are likely susceptible to liquefaction. Foundation support for the bridge structure should be through piles embedded in to very dense Conejo Volcanics, which are not considered susceptible to liquefaction due to its high density. Relatively shallow retaining wall structures should be placed in medium-dense to dense alluvium, which the soil borings indicate exist within approximately one foot of the Conejo Volcanics to be above the groundwater surface. Reference is directed to Section 5 for foundation recommendations. Although it cannot be precluded, due to the preceding factors, liquefaction and associated phenomena is not considered to represent a significant concern to the subject site.

4.4.3 Tsunamis and Seiche Evaluation

Reference to State of California Malibu Beach Quadrangle "Tsunami Inundation Map" (2009) indicates the site is not within a tsunami inundation zone.

4.4.4 Landsliding

Based on mapping by Dibblee (1993) the site is not underlain by landslides. Similarly, landslides were not encountered during this investigation. However, observations of the site indicate embankments of Stokes Creek are susceptible to erosion and associated landsliding due to undercutting. As such, embankments of Stokes Creek should be adequately protected to prevent erosion and undercutting that could result in slope instability, or periodic failures can be anticipated.

4.4.5 Compressible and Expansive Soils

Near surface soils including the recent stream deposits are dry, loose and susceptible to compression in their current condition. Vegetation and animal burrows have loosed near surface undocumented fill and alluvium where exposed. It is recommended in Section 5 that loose and disturbed near surface soils should be overexcavated and processed for placement as compacted areas of structures and fill support. Deeper undocumented fill, alluvium, and Conejo Volcanic rocks are not anticipated to be significantly compressible with respect to the intended site development.

Based on geologic observations and laboratory test results (provided in Appendix C) the near-surface materials at the site are anticipated to have a very low to low expansion potential (Expansion Index generally less than 50)..

4.4.6 Corrosive Soils

Chemical testing was performed to evaluate the potential effects that site soils may have on concrete foundations and various types of buried metallic utilities. Soil environments detrimental to concrete generally have elevated levels of soluble sulfates and/or pH levels less than 5.5. According to American Concrete Institute (ACI) Table 318 4.3.1, specific guidelines have been provided for concrete where concentrations of soluble sulfate (SO_4) in soil exceed 0.10 percent by weight (1,000 ppm). These guidelines include low water to cement ratios, increased compressive strength, and specific cement type requirements. A minimum resistivity value less than approximately 5,000 ohm-cm and/or soluble chloride

levels in excess of 200 ppm generally indicate a corrosive environment to buried metallic utilities and untreated conduits.

Chemical test results (reference Appendix C) for representative site soils indicate a soluble sulfate content of less than 0.1 percent and a pH value of 6.98 and 10.31 for Quaternary Alluvium and Conejo Volcanics, respectively, indicating a negligible corrosion potential for Portland cement concrete improvements. The obtained minimum resistivity value of 1,840 ohm-cm and soluble chloride value of 214.5 ppm for Quaternary Alluvium and resistivity value of 1940 ohm-cm and soluble chloride value of 180.5 ppm for Conejo Volcanics indicate the tested soils generally have a low to mild corrosion potential for buried uncoated metallic conduits. The results of the chemical tests performed are presented in attached Appendix C. CTE does not practice corrosion engineering. Therefore, a corrosion engineer should be contacted if site specific issues are of concern.

5.0 CONCLUSIONS AND RECOMMENDATIONS

5.1 General

From a geotechnical perspective, the Stokes Creek bridge site is considered suitable for development provided recommendations of this report are followed. Unweathered surficial deposits are considered suitable for support of retaining walls and similar ancillary features. Deep foundation support for the bridge should be through placement in dense to very dense underlying Conejo Volcanics.

Groundwater should be anticipated for excavations that extending into Conejo Volcanics and deeper alluvium. Additionally, excavation of the Conejo Volanics may be locally difficult for standard equipment due to local dissimilar weathering. Caving of boreholes should be anticipated, particularly below groundwater near the interface with Quaternary Alluvium and Conejo Volcanics, and the contractor should have and utilize appropriate means of mitigation, as required.

Recommendations for the proposed earthwork and improvements are included in the following sections and Appendix D. Where applicable, recommendations in the text of this report supersede those presented in Appendix D.

5.2 Grading and Earthwork

Upon commencement of work, a qualified geotechnical consultant should continuously observe grading and earthwork operations for this project. The geotechnical consultant should perform observation and testing of caisson shaft excavation for bridge foundations, soil overexcavation, processing, and placement during grading as they pertain to CTE's professional opinions and recommendations contained within this report. The geotechnical consultant during site construction is responsible for successful implementation of CTE's recommendations for this project. The geotechnical consultant may provide additional recommendations for site development based upon the actual conditions encountered.

5.3 Site Preparation

5.3.1 General

Before grading, the site should be cleared of any existing debris and other deleterious materials. Near surface vegetation should be "grubbed" from the site and disposed of properly; these materials are not suitable for incorporation in compacted fill soils. In areas to receive structures, distress-sensitive improvements and fills, expansive, surficial eroded, desiccated, burrowed, or otherwise loose or disturbed soils should be overexcavated to the depth of moist, competent dense native materials at a minimum overexcavation depth of three feet below existing grades, and a minimum two feet below bottom of shallow foundations, whichever is deepest. Deeper overexcavation may be necessary based on encountered site conditions.

Organic and other deleterious materials not suitable for structural fill should be properly disposed of offsite. Existing loose and disturbed near surface fill soil should be overexcavated and compacted (as necessary) under the observation and testing of a qualified geotechnical representative. Overexcavation should extend at least five feet beyond shallow improvement limits, where feasible.

5.3.2 Excavations

Excavation into undocumented fill and alluvium should not present extraordinary difficulty to standard excavation and grading equipment, provided such equipment is operated by knowledgeable and experienced personnel. Excavation into Conejo Volcanics may be difficult due to dissimilar weathering characteristics resulting in local areas of difficult

excavation. Caving of alluvium and Conejo Volcanics should be anticipated, particularly below the groundwater surface. Groundwater should be anticipated in the lower portions of alluvium and underlying Conejo Volcanics.

Irreducible materials generally greater than three to six inches in diameter should not be used in shallow fills on the site. However, such materials (and larger materials) could be placed at depth as per the recommendations in Appendix D, and as recommended by the geotechnical consultant during construction. A qualified geotechnical consultant should observe excavation as it progresses, as well as the exposed surface prior to fill placement.

5.3.3 Fill Placement and Compaction

The geotechnical consultant should observe that proper site preparation is performed prior to fill placement. Areas to receive fills should be scarified and moisture conditioned as recommended herein. Fill and backfill for load-bearing and vehicular improvements should generally be compacted to a minimum relative compaction of 95 percent as evaluated by ASTM D1557 at a moisture content at least two percent above optimum (see Section 5.11 for recommendations for compaction for lightly-loaded improvements, such as exterior flatwork and sidewalks, if proposed). In proposed pavement areas, the upper foot of fill soil (and all aggregate base) should be compacted to a minimum relative compaction of 95 percent of maximum dry density at a moisture content of at least two percent above optimum.

The optimum lift thickness for backfill soil depends on the type of compaction equipment used. Generally, backfill should be placed in uniform lifts not exceeding eight inches in

loose thickness. Backfill placement and compaction should be performed in conformance with geotechnical recommendations and local ordinances.

5.3.4 Fill Materials

Soils derived from the onsite materials are generally considered suitable for reuse on the site as shallow engineered compacted fill. If used, these materials should be screened of significant construction debris, vegetation matter, and oversize materials generally greater than six inches in maximum dimension within five feet of finish grade. Although not anticipated, adverse effects of moderately to highly expansive clay soils should be mitigated by blending these soils with less expansive materials and compacting at moisture contents well above optimum.

Imported fill beneath structures, pavements and walks should have an Expansion Index of 20 or less with less than 35 percent passing the no. 200 sieve. Imported fill soils for use in structural or slope areas should be evaluated by the geotechnical consultant before placement on the site.

5.4 Temporary Construction Slopes

Recommendations for unshored temporary excavations without seepage are provided herein. The recommended slopes should be relatively stable against deep-seated failure, but may experience localized sloughing. It is assumed the proposed slopes are homogenous and free of joints, fractures and bedding surfaces. Care should be taken to prevent destabilization of boulders if present within and above temporary excavations. Recommended slope ratios are set forth in Table 5.4 below.

TABLE 5.4 RECOMMENDED TEMPORARY SLOPE RATIOS		
SOILS TYPE	SLOPE RATIO (Horizontal: Vertical)	MAXIMUM HEIGHT (without seepage)
B (Conejo Volcanics)	1:1 (MAXIMUM)	10 FEET
C (Alluvium)	1 ½:1 (MAXIMUM)	10 FEET

Actual field conditions and soil type designations must be verified by a "competent person" while excavations exist according to Cal-OSHA regulations. In addition, the above recommendations do not allow for potential water seepage, surcharge loading at the top of slopes by vehicular traffic, equipment or materials and or defects and weaknesses in the excavated mass. Appropriate surcharge setbacks must be maintained from the top of all unshored slopes.

5.5 Temporary Shoring

Temporary shoring is not anticipated to be necessary based on the currently proposed development. However, if such improvements become necessary, the geotechnical consultant should provide proper design and construction recommendations, upon request.

5.6 Foundations and Slab Recommendations

Geotechnical recommendations for foundations and slabs are provided herein. These recommendations should be considered subject to revision as project design plans are developed.

5.6.1 General

Standard spread foundations are considered suitable for support of the proposed ancillary structures and minor approach retaining walls, if proposed, provided all footings are embedded entirely on competent soil materials, as approved by the geotechnical consultant. Based on the site conditions, it is anticipated that such minor ancillary structures will be founded entirely on compacted fill materials. However, these recommendations should be reviewed as project layout and foundation depths are developed.

5.6.2 Shallow Spread Foundations for Minor Detached Improvements (if proposed)

Standard spread foundations founded entirely in compacted fill as approved by the geotechnical consultant should be embedded at least 18 inches below the lowest adjacent subgrade, and underlain by at least 24 inches of compacted engineered fill measured from the foundation bottom. Spread footings may require deeper embedment due to scouring potential, which is to be addressed by others. Spread foundations should be at least 18 inches in width. Foundations as recommended herein may be designed to impose an allowable bearing pressure of 2,500 pounds per square foot (psf). Proposed footings should be designed such that the horizontal distance from the face of adjacent descending fill slopes to the outer edge of the footing is at least 10 feet.

The bearing value above may be increased by 250 psf for each additional six inches of depth or width beyond the minimum, up to a maximum bearing pressure of 3,500 psf. However, if footings are planned to be deepened, the geotechnical consultant should review the proposed conditions to further evaluate the shallow-to deep-fill transitional bearing conditions. For

bearing values herein, a one-third increase may also be used when evaluating short duration wind or seismic loads. The weight of any soil backfill may be neglected when determining the downward load on the footings.

If elastic design methods are used, an uncorrected modulus of subgrade reaction on the order of 150 pci is considered appropriate for the anticipated site conditions and foundations bearing on competent compacted fills.

Minimum reinforcement for continuous footings should consist of four No. 5 reinforcing bars; two placed near the top and two placed near the bottom or as per more stringent requirements provided by the project structural engineer. The structural engineer should provide recommendations for reinforcement of isolated footings and footings with pipe penetrations. Pipe penetrations should be adequately sealed to prevent moisture intrusion into slab subsoils. Footing excavations should be maintained at above optimum moisture content until concrete placement. Foundations and/or any other structural elements should not be below a 3:1 plane extending upward from the excavation bottom (bottom below filter media) of an unlined infiltration basin to the bottom of the closest structural element edge, if proposed.

Based on observations of the underlying site materials and the bearing pressures recommended above, it is anticipated total settlement of minor structural footings for detached improvements designed as recommended herein and founded on properly prepared

and compacted engineered fill materials will be on the order of one inch. Differential settlements for aforementioned structural footings are anticipated to be on the order of 0.5 inch. The allowable bearing and anticipated settlement values should be re-evaluated after foundation plan and design loads have been finalized.

5.6.3 Lateral Resistance

Lateral loads for structures supported on spread or mat foundations may be resisted by soil friction and by the passive resistance of the adjacent soils. A coefficient of friction of 0.30 may be used between foundations and the supporting soils. The passive resistance of the fill soils may be assumed to be equal to the pressure developed by a fluid with a density of 250 pcf, up to a maximum pressure of 2,000 psf. A one-third increase in the passive value may be used for wind or seismic loads. The frictional resistance and the passive resistance may be combined without reduction in determining the total lateral resistance provided the passive resistance does not exceed two-thirds of the total allowable resistance.

5.6.4 Concrete Slabs-On-Grade

Concrete slabs-on-grade should be designed for the anticipated loading; however, based on the underlying fill thickness conditions, should measure a minimum of 4.5 inches in thickness for proposed structures. Slab areas subject to heavy loading or vehicle traffic should be designed by the structural engineer based on specific requirements, but measure a minimum five inches in thickness.

If elastic design is used, a modulus of subgrade reaction of 125 pci is considered appropriate for slabs on dense fill materials compacted to a minimum 95% relative dry density as

specified herein. The anticipated light to moderately loaded concrete slabs-on-grade should be reinforced with minimum #3 reinforcing bars placed on maximum 18-inch centers, each way, at or above mid-slab height and with proper concrete cover. Reinforcement of concrete slabs subjected to heavier loads should be detailed by the project structural engineer.

In moisture-sensitive floor areas, a suitable vapor retarder of at least 15-mil thickness (with all laps or penetrations sealed or taped) overlying a four-inch layer of consolidated crushed aggregate or gravel, as per the 2016 CBC/Green Building Code, is recommended. An optional maximum two-inch layer of similar material may be placed above the vapor retarder to help protect the membrane during steel and concrete placement, if necessary. This recommended protection is generally considered typical in the industry. If proposed floor areas or coverings are considered especially sensitive to moisture emissions, additional recommendations from a specialty consultant could be obtained. CTE is not an expert at preventing moisture penetration through slabs. A qualified architect or other experienced professional should be contacted if moisture penetration is a more significant concern.

It is recommended that all concrete slabs be moist-cured for at least five days in accordance with methods recommended by the American Concrete Institute. Onsite concrete quality control should be utilized during the concrete cure period.

5.7 Caisson or Drilled Pier Foundations

It is recommended that bridge foundations and bridge abutments be supported by caissons or drilled piers that extend into dense to very dense Conejo Volcanics at depth. The geotechnical consultant should review the proposed bridge foundation and abutment plans to confirm the recommendations herein are appropriate, and also observe the excavations to verify the depth of embedment during foundation drilling.

5.7.1 Caisson and Grade Beam Foundation System

We have provided design recommendations for a drilled pier (caisson) and grade beam foundation system that should be used to support heavily loaded bridge improvements and/or other proposed improvements that are not feasible to support with shallow foundations. Total and differential settlements for caissons are anticipated to be negligible or less than 1/4 inch.

As stated, a drilled pier and grade beam foundation may be suitable for support of local improvements at the site. A caisson and grade beam foundation system would include the installation of reinforced concrete caissons at various locations beneath the proposed structure. However, where loads will be entirely supported by the caissons, the necessity for grade beams should be determined by the structural engineer.

5.7.2 Caisson Size, Embedment Depth, and Spacing

Minimum 24-inch diameter caissons should be embedded a minimum of 20 feet below grade and a minimum five feet into dense to very dense Conejo Volcanics. Caissons shall be spaced a minimum of three diameters, center to center.

5.7.3 Caisson Vertical Bearing

Minimum 24-inch diameter caissons embedded five feet into dense to very Conejo Volcanics are considered suitable for support of proposed improvements. Design of caissons, grade beams, and the concrete slab reinforcement should be provided by the project structural engineer.

For planning purposes, caissons should be designed for an allowable end bearing pressure of 15,000 psf plus 500-psf skin friction for the portion of the caisson in dense to very dense competent materials (i.e., the minimum five feet embedded in Conejo Volcanics). Skin friction should be disregarded for portions of the caissons embedded in alluvial and fill materials. A one-third increase for short duration load evaluation may also be used. Uplift capacity should be equal to the weight of the caisson itself and skin friction. The weight of the concrete may be ignored when determining downward capacity.

All caisson excavations should be inspected by the geotechnical representative to verify material competency and proper embedment depth. The bottom of each caisson should be devoid of any loose debris, slough or water prior to steel cage placement and should remain clean until placement of the concrete, or placed with proper techniques for placing concrete with groundwater present. Excessive caving of caisson drill holes during drilling could occur; therefore, the use of a slip liner or alternative drilling techniques could also be required.

5.7.4 Grade Beams

Grade beams may be installed to distribute structure loads or resist lateral loads as necessary. Grade beam reinforcement should be designed as per the structural engineer. Unless grade beams are placed in competent compacted fill, they may not be depended upon for bearing and lateral support of imposed loads. Grade beams shall be designed or evaluated using the design parameters provided for typical shallow spread foundations, but only if overexcavation and recompaction is performed as recommended in our previous correspondence.

5.7.5 Lateral Resistance For Caissons

To provide resistance for design lateral loads, we recommend using an equivalent passive fluid weight of 250 pounds per cubic foot, up to a maximum pressure of 2,500 psf, for caissons placed against competent compacted fill materials. An equivalent passive fluid weight of 400 pounds per cubic foot, up to a maximum pressure of 6,000 psf, may be used for caissons placed against dense to very dense Conejo Volcanics. These values also assume a horizontal surface for the soil mass extending at least 10 feet.

5.7.5.1 L-Pile Design Parameters

The following design parameters may be used for L-Pile analysis, or as recommended by the structural engineer. Soils for L-Pile analyses should be based on sand materials.

- Soil modulus for fill or alluvium of k = 60 pci
- Soil modulus for dense Vocanics k = 175 pci

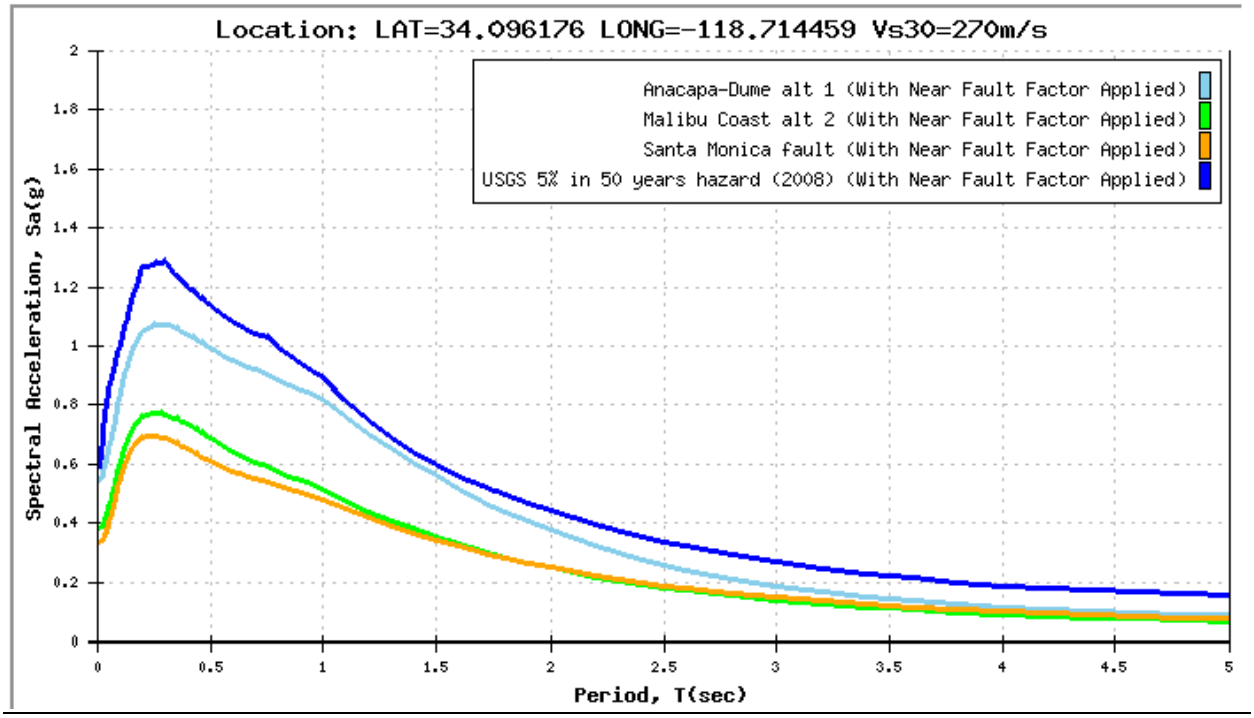
- Soil Internal Friction Angle of Phi= 28 degrees
- Soil Internal Friction Angle of Phi= 35 degrees
- Groundwater elevation = 0 feet below ground surface
- Soil Dry Density (Fill and Alluvium) = 100 pcf
- Soil Dry Density (Volcanics) = 110 pcf

5.8 Seismic Design Criteria

The seismic ground motion values listed in the following Table 5.8 were derived in accordance with the ASCE 7-10 Standard. This was accomplished by establishing the Site Class based on the soil properties at the site, and then calculating the site coefficients and parameters using the United States Geological Survey Seismic Design Maps application for the 2013 and 2016 CBC values. These values are intended for the design of structures to resist the effects of earthquake ground motions for the site coordinates 34.096176° latitude and –118.714459° longitude, as underlain by soils corresponding to site Class D.

TABLE 5.8 SEISMIC GROUND MOTION VALUES		
PARAMETER	VALUE	CBC REFERENCE (2013)
Site Class	D	ASCE 7, Chapter 20
Mapped Spectral Response Acceleration Parameter, S_S	2.097 g	Figure 1613.3.1 (1)
Mapped Spectral Response Acceleration Parameter, S_1	0.735 g	Figure 1613.3.1 (2)
Seismic Coefficient, F_a	1.000 g	Table 1613.3.3 (1)
Seismic Coefficient, F_v	1.500 g	Table 1613.3.3 (2)
MCE Spectral Response Acceleration Parameter, S_{MS}	2.097 g	Section 1613.3.3
MCE Spectral Response Acceleration Parameter, S_{M1}	1.102 g	Section 1613.3.3
Design Spectral Response Acceleration, Parameter S_{DS}	1.398 g	Section 1613.3.4
Design Spectral Response Acceleration, Parameter S_{D1}	0.735 g	Section 1613.3.4
Peak Ground Acceleration PGA_M	0.811 g	ASCE 7, Section 11.8.3

The Acceleration Response Spectrum (ARS) curves provided in the chart below were derived using the State of California's "ARS Online Version 2.3.09" online calculator, available at http://dap3.dot.ca.gov/ARS_Online/, and tabular data is provided in Appendix E. The data was generated using site coordinates 34.096176° latitude and –118.714459° longitude, and v_s30 = 270 m/s, as underlain by soils corresponding to site Class D.



5.9 Retaining Walls

Retaining walls up to approximately 15 feet high and backfilled using granular soils may be designed using the equivalent fluid weights given on Table 5.9 below.

TABLE 5.9
EQUIVALENT FLUID UNIT WEIGHTS (G_h)
(pounds per cubic foot)

WALL TYPE	LEVEL BACKFILL	SLOPE BACKFILL 2:1 (HORIZONTAL: VERTICAL)
CANTILEVER WALL (YIELDING)	35	60
RESTRAINED WALL	60	85

Lateral pressures on cantilever retaining walls (yielding walls) due to earthquake motions may be calculated based on work by Seed and Whitman (1970). The total lateral thrust against a properly drained and backfilled cantilever retaining wall above the groundwater level can be expressed as:

$$P_{AE} = P_A + \Delta P_{AE}$$

For non-yielding (or "restrained") walls, the total lateral earth pressure may be similarly calculated based on work by Wood (1973):

$$P_{KE} = P_K + \Delta P_{KE}$$

Where P_A/b = Static Active Earth Pressure = $G_h H^2/2$
P_K/b = Static Restrained Wall Earth Pressure = $G_h H^2/2$
$\Delta P_{AE}/b$ = Dynamic Active Earth Pressure Increment = (3/8) $k_h \gamma H^2/2$
$\Delta P_{KE}/b$ = Dynamic Restrained Earth Pressure Increment = $k_h \gamma H^2/2$
b = unit length of wall (usually 1 foot)
k_h = 2/3 PGA_m (PGA_m given previously Table 5.8)
G_h = Equivalent Fluid Unit Weight (given previously Table 5.9)
H = Total Height of the retained soil
γ = Total Unit Weight of Soil ≈ 135 pounds per cubic foot

The static and increment of dynamic thrust in both cases should be distributed triangularly with a line of action located at H/3 above the bottom of the wall (SEAOC, 2013).

In addition to the recommended earth pressure, the upper 10 feet of subterranean walls adjacent to streets or other traffic loads should be designed to resist a uniform lateral pressure of 100 psf. This is the result of an assumed 300-psf surcharge behind the walls due to typical traffic loading. If the

traffic loads are set back at least 10 feet from the subject walls, the traffic surcharge may be neglected.

CTE recommends that all walls be backfilled with soil having an Expansion Index of 20 or less. The backfill area should include the zone defined by a 1:1 sloping plane, extended back from the base of the wall. Retaining wall backfill should be compacted to between 95 and 98 percent relative compaction, based on ASTM D1557. Backfill should not be placed until walls have achieved adequate structural strength. Heavy equipment, which could cause distress to walls, should not be used for compaction of soils behind retaining walls. Measures should be taken to prevent moisture buildup behind all retaining walls. Drainage measures should include free-draining backfill materials and sloped, perforated drains. These drains should discharge to an appropriate off-site location. Waterproofing should be as specified by the project architect or the waterproofing specialty consultant.

5.10 Vehicular Pavements

Pavement sections presented below are based on an assumed "R"-Value. Existing compacted fill materials should be prepared as indicated in the previous sections of this report. Subgrade and all aggregate base materials in pavement areas should be compacted to a minimum of 95% relative compaction at a moisture content slightly above optimum. After grading, testing of subgrade soils for Resistance "R"-Value should be performed to assist in revising pavement recommendations based upon as-built conditions.

TABLE 5.10
RECOMMENDED PAVEMENT THICKNESS

Traffic Area	Assumed Traffic Index	Assumed Subgrade "R"-Value	AC Thickness (inches)	Class II Aggregate Base Thickness (inches)	Full Depth Concrete (inches)
Truck Drive/ Loading Areas	6.0	<5	5.0	10.0	7.5
Auto Parking & Drive Areas	5.0	<5	4.0	8.0	6.5

* Auto parking and drive areas sections are anticipated to be adequate for infrequently used fire lanes or similar for the pavement as currently prepared.

Concrete pavements should have a modulus of rupture of at least 600 psi. PCC pavement can be constructed with No. 4 reinforcing bars placed at no more than 24 inches on center, each way, at or above mid-pavement height. As an alternative, pavements may be constructed without reinforcement if construction or expansion/contraction joints are spaced no greater than a distance equal to 24 times the pavement thickness, in both directions. Concrete pavement details should be in accordance with, for example, the recommendations of the American Concrete Institute or other widely recognized authority, particularly with regard to thickened edges, joint spacing, doweling, and drainage. The closest bottom edge of structural foundations and curb stops should be below a 3:1 (horizontal to vertical) ratio plane extending upward from the bottom of unlined infiltration basins.

5.11 Exterior Concrete Flatwork

Exterior concrete slabs for lightly loaded pedestrian use (e.g., sidewalks), if proposed, should measure a minimum four inches thick and have minimal reinforcement of #3 rebar on 24-inch

centers (both ways), or equivalent pre-fabricated reinforcement. Soils to a depth of at least one foot below the lightly loaded concrete (e.g., sidewalks) should be processed to 90 percent of maximum dry density at least two over optimum moisture content. As applicable, soils below concrete slab subgrade should be over excavated, and a properly engineered, compacted moisture conditioned subgrade placed in the resulting volume. Exterior flatwork subgrade soils to a depth of one foot should be at or above a two percent of optimum moisture just prior to concrete pour. Reinforcement should be placed at or above mid-height in the slab, but with proper cover, or as recommended by the project engineer or architect. Flatwork should be installed with reinforcement and crack control joints spaced as recommended by the project engineer or architect. Positive drainage to convey water away from all flatwork should be established and maintained. However, site drainage should be designed and detailed by the project civil engineer.

5.12 Drainage

Surface runoff should be collected and directed away from improvements by means of erosion control devices and positive drainage should be established around the proposed improvements. Positive drainage should be directed away from improvements at a gradient of at least two percent for a distance of at least five feet. However, the project civil engineer should evaluate the on-site drainage and make necessary provisions to keep surface water from affecting the site.

5.13 Slopes

Existing slopes for Stokes Creek have eroded and attempts have been made to stabilize the affected embankments. It is recommended slopes within Stokes Creek be adequately protected to prevent erosion of the bridge supports and abutments. Graded slopes at this site should be constructed at 2:1

(horizontal: vertical) or flatter ratio. Surface water should not be permitted to drain over the edges of slopes unless that water is confined to properly designed and constructed drainage facilities. Erosion resistant vegetation should be maintained on the face of all slopes that may influence the performance of the proposed bridge.

5.14 Construction Observation

The recommendations provided in this report are based on design information for the proposed earthwork and the subsurface conditions found in the exploration locations. The interpolated subsurface conditions should be further evaluated in the field during construction.

All geotechnical related work should be observed and tested by a qualified geotechnical consultant. All soil preparation and foundation excavations should be evaluated by a designated geotechnical consultant. The geotechnical consultant should change and modify the recommendations of this report prepared by CTE based upon exposed conditions.

6.0 LIMITATIONS OF INVESTIGATION

The field evaluation, laboratory testing, and geotechnical analysis presented in this report have been conducted according to current geotechnical practice and the standard of care exercised by reputable geotechnical consultants performing similar tasks in this area. No other warranty, expressed or implied, is made regarding the conclusions, recommendations and opinions expressed in this report. Variations may exist and conditions not observed or described in this report may be encountered during construction.

The geotechnical recommendations herein have been developed in order to reduce the potential for post-construction soil movements or settlement. However, even with the design and construction recommendations herein, some post-construction soil movement and associated distress should be anticipated. This geotechnical report should not be construed to provide information and recommendations pertinent to any necessary hydraulic and/or hydrologic studies pertaining to channel bed scour with associated effects on foundations and foundation bearing materials, and/or any other potential effects (e.g., debris collisions, debris accumulation, etc.).

The findings of this report are valid as of the present date. However, changes in the conditions of a property can occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside of CTE's control. Therefore, this report is subject to review and should not be relied upon after a period of three years or project development plans change. This report is prepared for the project described. It is not suitable for use on any other projects.

Any future geotechnical work on this project is at the responsibility of the geotechnical consultant performing those services. CTE does not accept any liabilities for third party geotechnical consultants performing follow on work to include but not limited to construction observations. It is the responsibility of the third party geotechnical consultant to professionally implement the

recommendations of this report and/or provide any necessary recommendations to successfully complete the project.

The conclusions and recommendations of this report are based on an analysis of the observed conditions. If conditions different from those described in this report are encountered, this office should be notified and additional recommendations, if required, will be provided upon request.

The opportunity to be of service on this project is appreciated. If you have any questions regarding this report, please do not hesitate to contact the undersigned.

Respectfully submitted,
CONSTRUCTION TESTING & ENGINEERING, INC.

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GFR/DTM:nri
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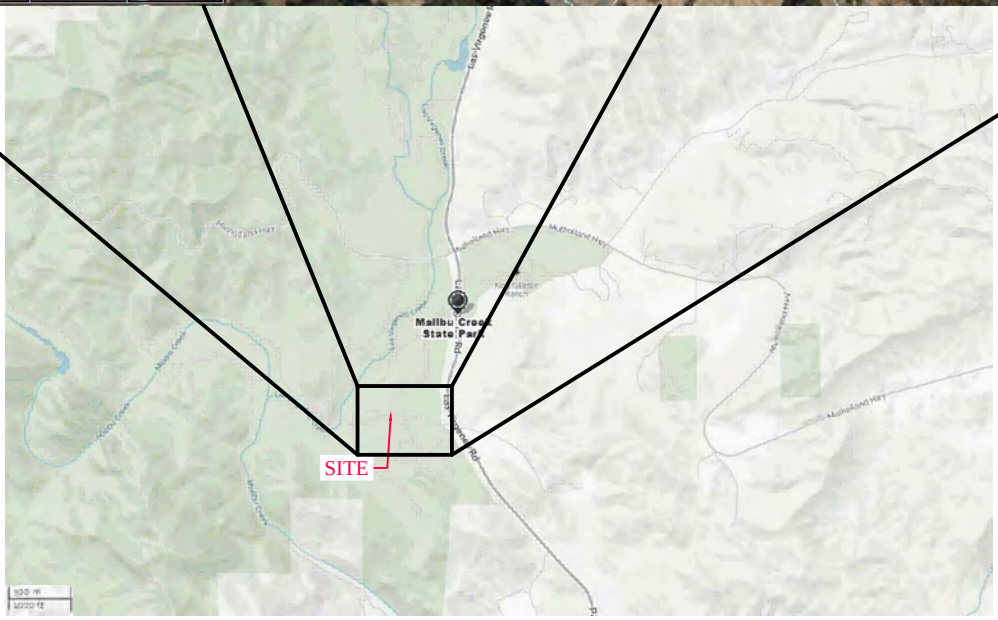

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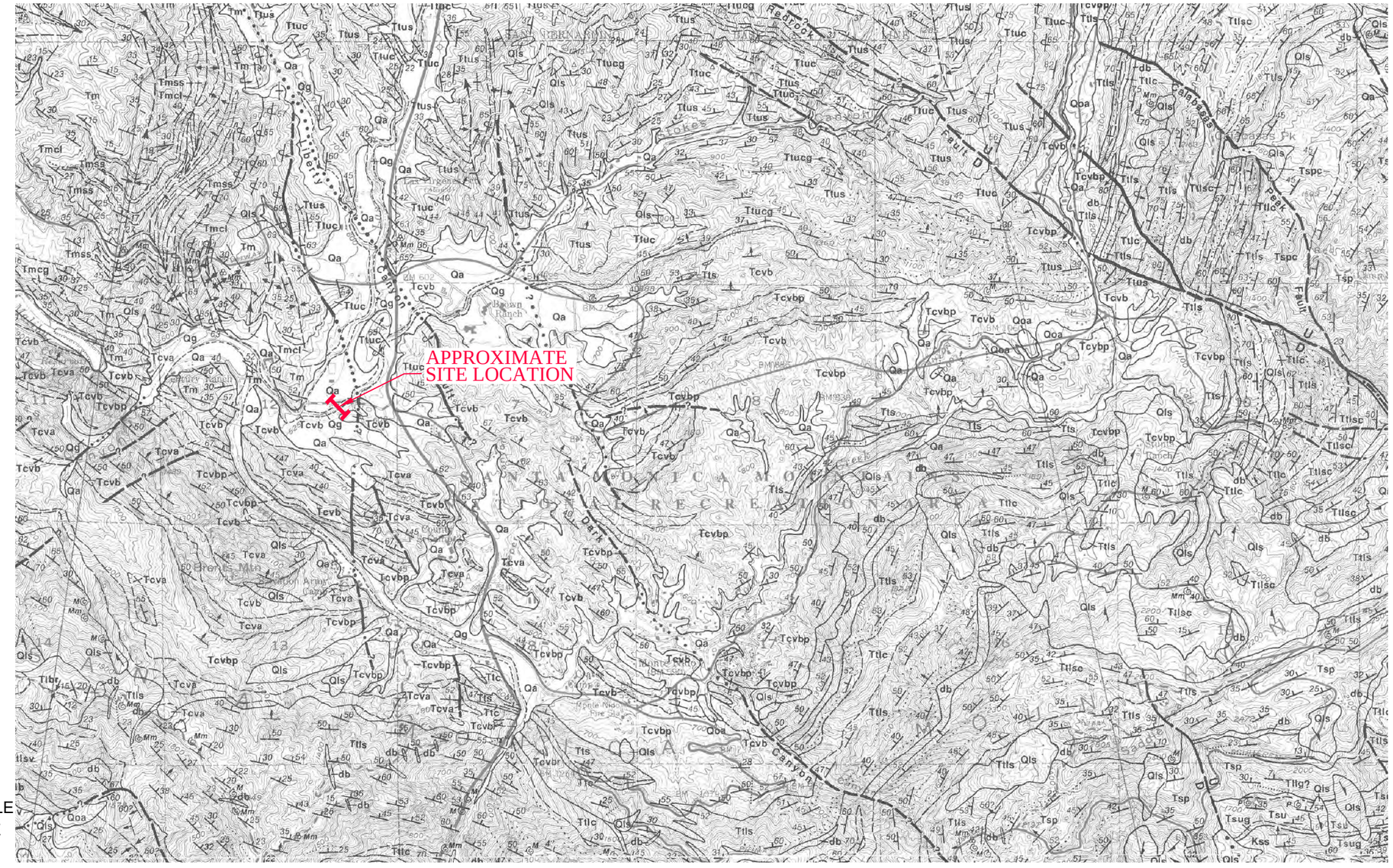
SITE INDEX MAP

NEW STOKES CREEK BRIDGE
MALIBU CREEK STATE PARK, LAS VIRGENES ROAD
LOS ANGELES COUNTY, CALIFORNIA

SCALE:	DATE:
AS SHOWN	8/17
CTE JOB NO.: 10-13252G	FIGURE: 1



LEGEND

Qa	QUATERNARY ALLUVIUM
Tm	TERTIARY MONTEREY FORMATION
Tmcl	TERTIARY MONTEREY FORMATION, CLAYEY SHALE
Ttuc	TERTIARY TOPANGA FORMATION, CLAYEY SHALE
Tcvb	TERTIARY CONEJO VOLCANICS, BASALT

SYMBOLS

(not all symbols present on each map)

FORMATION CONTACT *dashed where inferred or indefinite* — **MEMBER CONTACT** *between units of a formation* — **CONTACT BETWEEN SURFICIAL SEDIMENTS** *located only approximately in places*

FAULT: *Dashed where indefinite or inferred, dotted where concealed, queried where existance is doubtful. Parallel arrows indicate inferred relative lateral movement. Relative vertical movement is shown by U/D (U=upthrown side, D=downthrown side). Short arrow indicates dip of fault plane. Sawteeth are on upper plate of low angle thrust fault.*

FOLD: ANTICLINE — SYNCLINE
arrow on axial trace of fold indicates direction of plunge; dotted where concealed by surficial sediments

STRIKE AND DIP OF STRATIFIED ROCKS: inclined (18) — inclined (20) (approximate) — overturned (80) — inclined (75) — approximate — vertical — horizontal

thin basaltic or mafic dikes, largely from Yerkes & Campbell 1980 — Microfossil locality* — Fossil locality* — Direction of landslide movement — Sandstone marker bed — Conglomerate marker bed — Calcareous bed or unit — Abandoned exploratory oil (or gas) well

*Ages: K= Cretaceous; P= Paleocene; E= Eocene; M= Miocene; (Ma= early, Mm= early to middle, Mm= middle, Ml= late)

REFERENCE: DIBBLE, 1993

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REGIONAL GEOLOGIC MAP

NEW STOKES CREEK BRIDGE
MALIBU CREEK STATE PARK, LAS VIRGENES ROAD
LOS ANGELES COUNTY, CALIFORNIA

CTE JOB NO:	10-13252G
SCALE:	AS SHOWN
DATE:	8/17
FIGURE:	2

\\Esc_server\projects\10-13252G\Report\working docs\Figure 2 (Regional Geologic Map).dwg

MAP EXPLANATION

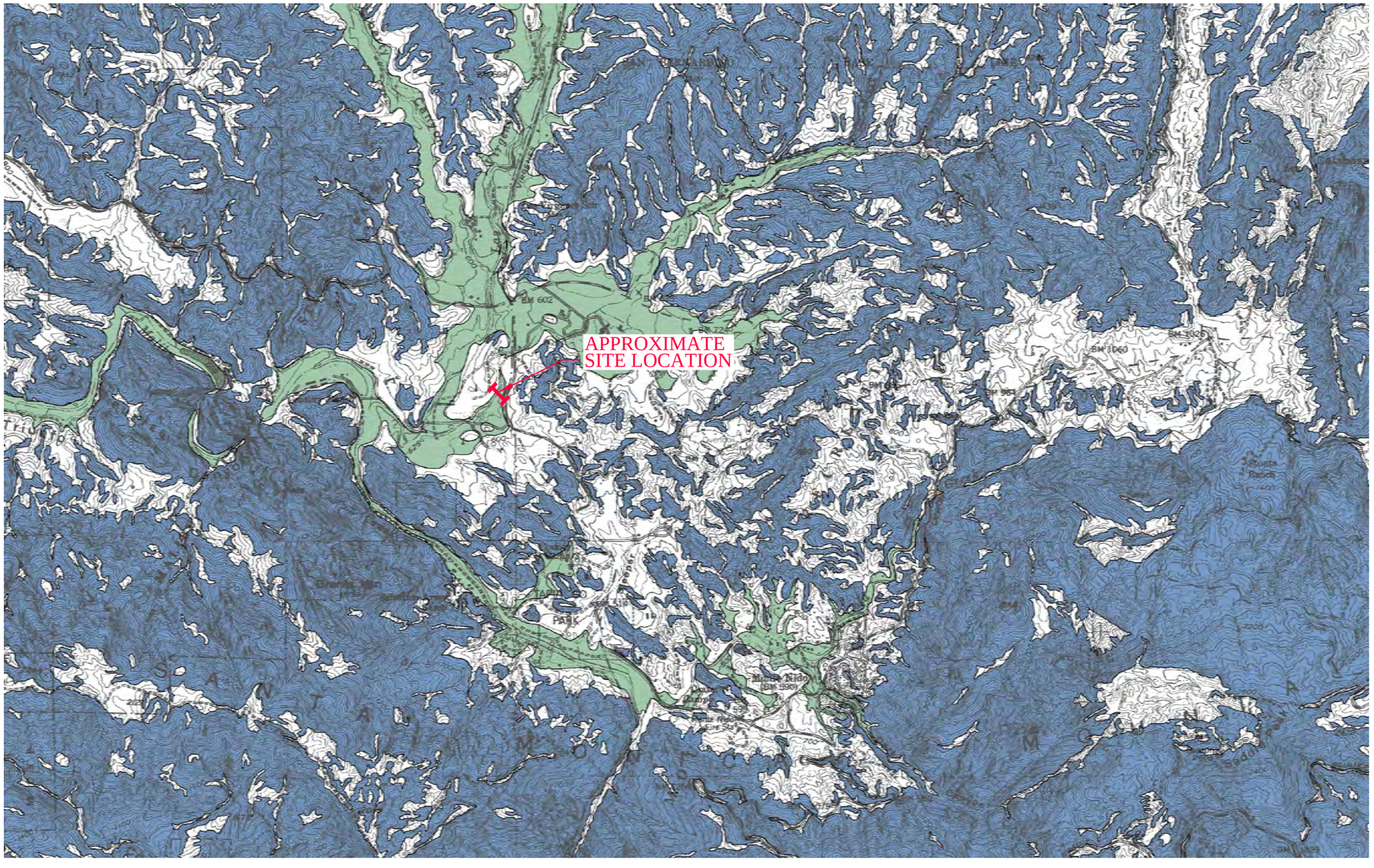
Zones of Required Investigation:

Liquefaction

Areas where historic occurrence of liquefaction, or local geological, geotechnical and groundwater conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.

Earthquake-Induced Landslides

Areas where previous occurrence of landslide movement, or local topographic, geological, geotechnical and subsurface water conditions indicate a potential for permanent ground displacements such that mitigation as defined in Public Resources Code Section 2693(c) would be required.



1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

REFERENCE: Seismic Hazard Evaluation of the Malibu Beach 7.5 minute quadrangle, Los Angeles County California: California Division of Mines and Geology, Seismic Hazards Report 050.

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SEISMIC HAZARDS ZONES MAP

NEW STOKES CREEK BRIDGE
MALIBU CREEK STATE PARK, LAS VIRGENES ROAD
LOS ANGELES COUNTY, CALIFORNIA

CTE JOB NO:	10-13252G
SCALE:	AS SHOWN
DATE: 8/17	FIGURE: 2A

\\Esc_server\projects\10-13252G\Report\working docs\Figure 2A (Seismic Hazards Zone).dwg

CURVE DATA				
No.	Δ	R	T	L
1	31°	150'	41.6'	81.16'
2	28.7°	100'	25.6'	50.09'

LEGEND

- GABION WALL
- GEO–FABRIC REINFORCEMENT WRAPS
- RSP (EXIST. ROCK/CRIBWALL)
- APPROXIMATE BOUNDARY OF REPLACE AC

NORTH

17'5" X 11'6" X 50' METAL PLATE PIPE–ARCH

PROTECT TREE IN PLACE

EXISTING CONC. CRIB WALL TO BE USED AS RSP

MATCH EXISTING PAVEMENT

REMOVE & DISPOSE OF EXIST 96" CSP

CONTROL PT. #PK1
1.63' Lt. 3+00.00
ASSUMED COORDINATES (N,E) & ELEV.
(5009.66,5186.31)
106.40'

CONTROL PT. #PK2
0.93' Lt. 3+30.31
ASSUMED COORDINATES (N,E) & ELEV.
(5016.32,5215.97)
108.66'

G WAYCROSS RD

N 73° 45' 16 E

N 76° 01' 16" E

Metal Beam Guard Railing
(Exact location as determined by State's Representative)

LEGEND

B-1	APPRO□IMATE BORING LOCATION
– – – – –	APPRO□IMATE GEOLOGIC CONTACT, DASHED WHERE APPRO□IMATE
• • • • • • • • • •	APPRO□IMATE GEOLOGIC CONTACT, DOTTED WHERE COVERED
A A□	GEOLOGIC CROSS SECTION
Qudf	QUATERNARY UNDOCUMENTED FILL
Qg	QUATERNARY GRAVEL OF RECENT ALLUVIAL STREAM DEPOSIT
Qa	QUATERNARY ALLUVIAL
Tcv	TERTIARY CONEJO VOLCANICS □UNDIFFERENTIATED□

20' 0 10' 20'

1 inch = 20' ft.

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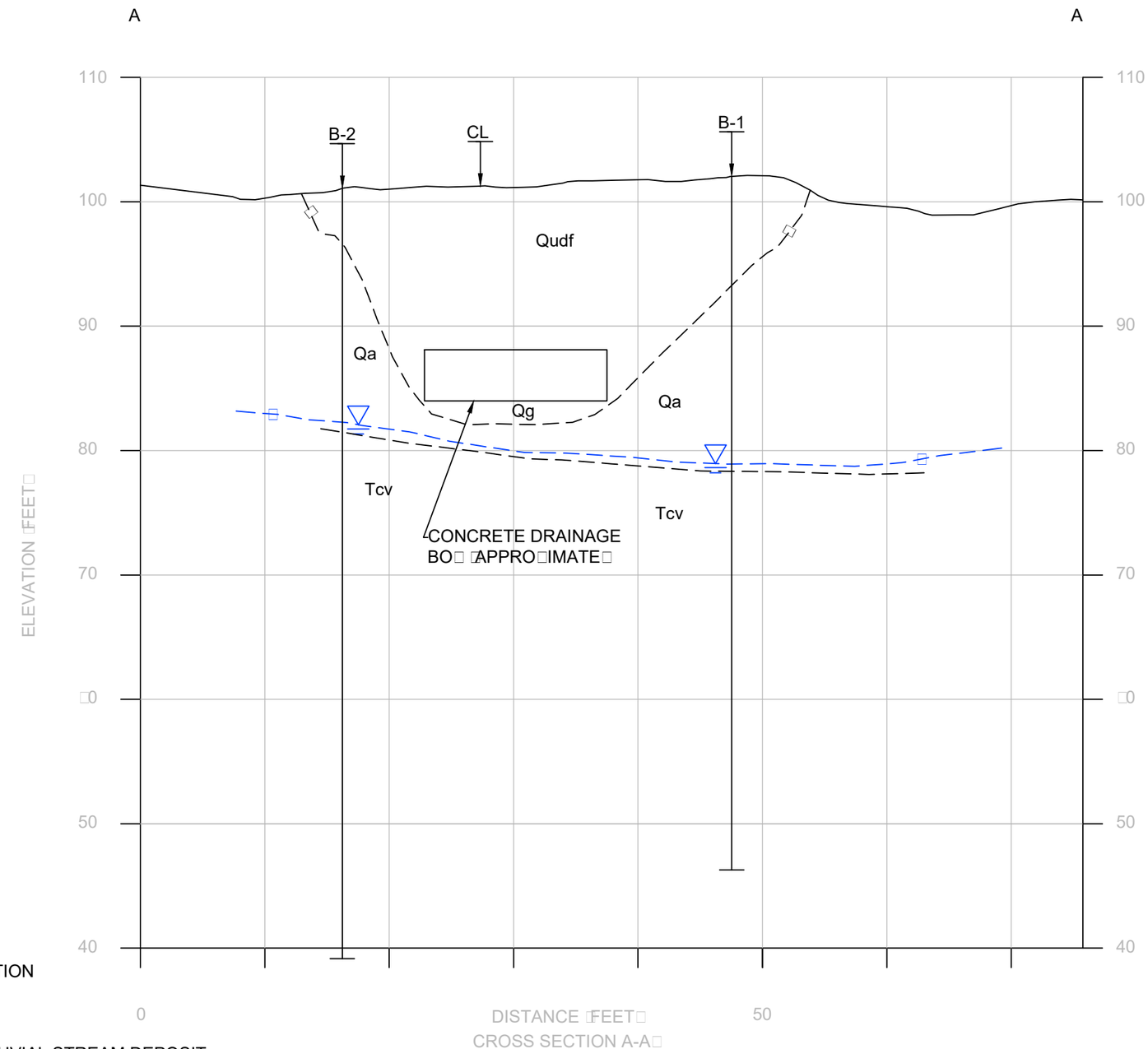
GEOTECHNICAL MAP
NEW STOKES CREEK BRIDGE
MALIBU CREEK STATE PARK, LAS VIRGENES ROAD
LOS ANGELES COUNTY, CALIFORNIA

CTE JOB NO:	
10-13252G	
SCALE: 1" ~ 20'	
DATE: 8/17	FIGURE: 2B

\\Esc_server\projects\10-13252G\Report working docs\Figure 2B (Geotechnical Map).dwg



LEGEND

B-1	APPRO IMATE BORING LOCATION
- - - - - - -	APPRO IMATE GEOLOGIC CONTACT
▽	APPRO IMATE GROUNDWATER ELEVATION
Qudf	QUATERNARY UNDOCUMENTED FILL
Qg	QUATERNARY GRAVEL OF RECENT ALLUVIAL STREAM DEPOSIT
Qa	QUATERNARY ALLUVIUM
Tcv	TERTIARY CONEJO VOLCANICS UNDIFFERENTIATED

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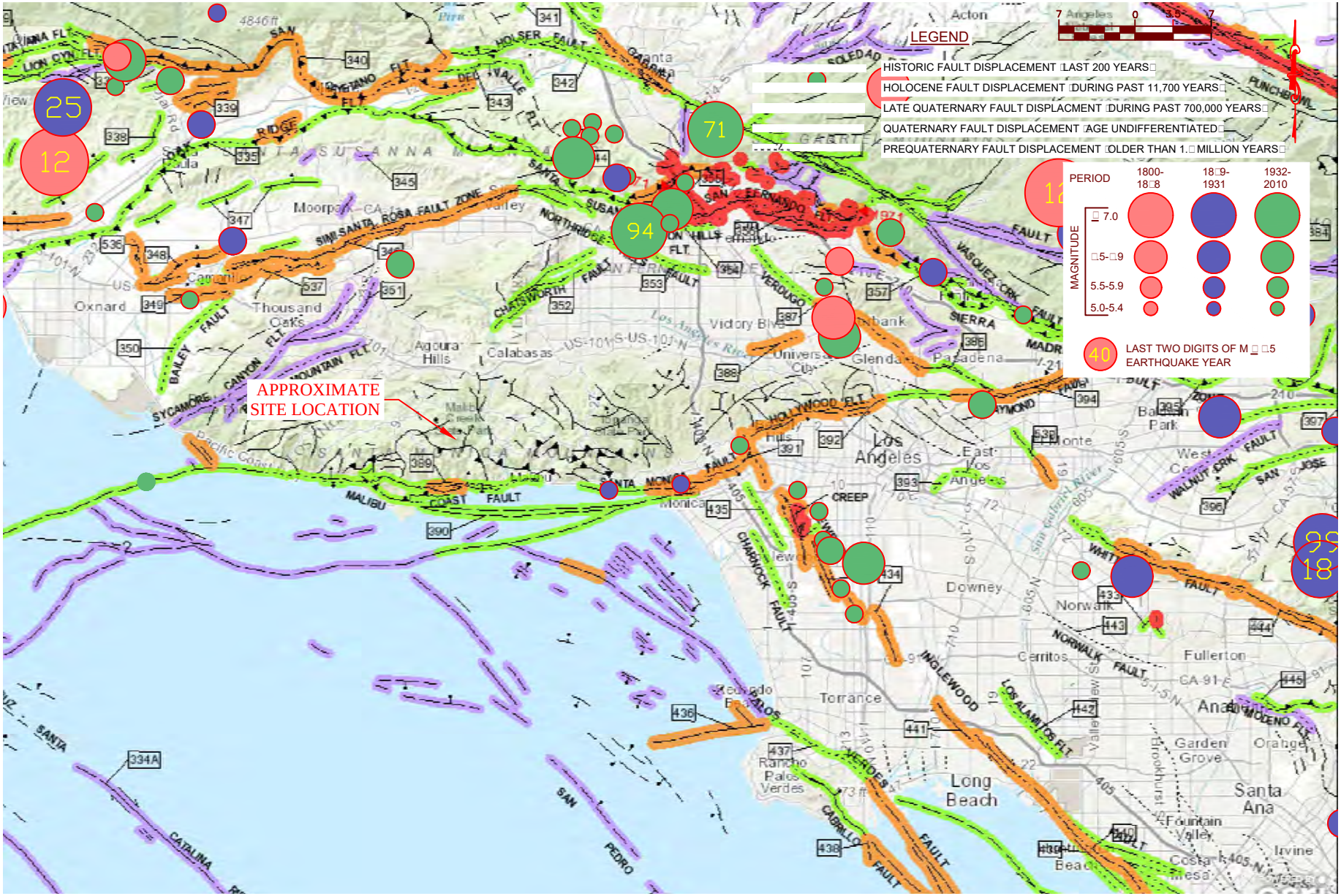
GEOTECHNICAL CROSS SECTION

NEW STOKES CREEK BRIDGE
MALIBU CREEK STATE PARK, LAS VIRGENES ROAD
LOS ANGELES COUNTY, CALIFORNIA

CTE JOB NO: 10-13252G
SCALE: 1" ~ 10'
DATE: 8/17
FIGURE: 2C

\\Esc_server\projects\10-13252G\Report\working docs\Figure 2C (Cross Section).dwg



NOTES: FAULT ACTIVITY MAP OF CALIFORNIA, 2010, CALIFORNIA GEOLOGIC DATA MAP SERIES MAP NO. 6; EPICENTERS OF AND AREAS DAMAGED BY M>5 CALIFORNIA EARTHQUAKES 1800-1999 ADAPTED AFTER TOPOZADA, BRANUM, PETERSON, HALLSTRON, CRAMER, AND REICH 2000, CDMG MAP SHEET 49

REFERENCE FOR ADDITIONAL EXPLANATION; MODIFIED WITH CISN AND USGS SEISMIC MAPS

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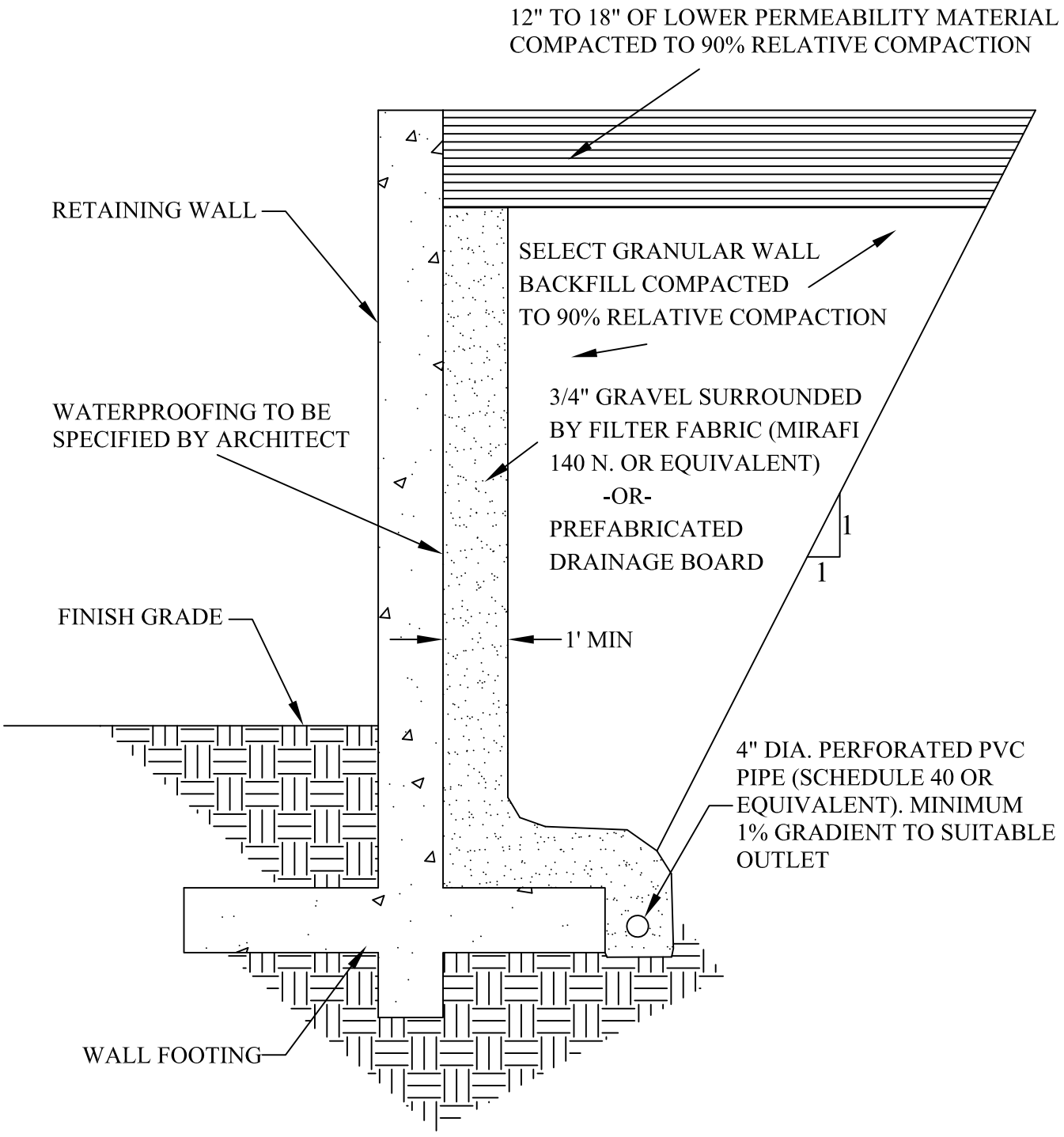
REGIONAL FAULT AND SEISMICITY MAP

NEW STOKES CREEK BRIDGE
MALIBU CREEK STATE PARK LAS VIRGENES ROAD
LOS ANGELES COUNTY, CALIFORNIA

CTE JOB NO: 10-13252
SCALE: 1" = 7 mi
DATE: 8/17
FIGURE: 3



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RETAINING WALL DRAINAGE DETAIL

SCALE:	DATE:
NO SCALE	8/17
CTE JOB NO.:	FIGURE:
10-13252G	4

APPENDIX A

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REFERENCES CITED

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APPENDIX B

FIELD EXPLORATION LOGS

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Inspection | Testing | Geotechnical | Environmental & Construction Engineering | Civil Engineering | Surveying

DEFINITION OF TERMS

PRIMARY DIVISIONS			SYMBOLS	SECONDARY DIVISIONS
COARSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN NO. 4 SIEVE	CLEAN GRAVELS < 5% FINES	GW	WELL GRADED GRAVELS, GRAVEL-SAND MIXTURES LITTLE OR NO FINES
			GP	POORLY GRADED GRAVELS OR GRAVEL SAND MIXTURES, LITTLE OF NO FINES
		GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES, NON-PLASTIC FINES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES, PLASTIC FINES
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN NO. 4 SIEVE	CLEAN SANDS < 5% FINES	SW	WELL GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES, NON-PLASTIC FINES
			SC	CLAYEY SANDS, SAND-CLAY MIXTURES, PLASTIC FINES
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50		ML	INORGANIC SILTS, VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS, SLIGHTLY PLASTIC CLAYEY SILTS
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY, SANDY, SILTS OR LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SANDY OR SILTY SOILS, ELASTIC SILTS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY, FAT CLAYS
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTY CLAYS
HIGHLY ORGANIC SOILS			PT	PEAT AND OTHER HIGHLY ORGANIC SOILS

GRAIN SIZES

BOULDERS	COBBLES	GRAVEL		SAND			SILTS AND CLAYS
		COARSE	FINE	COARSE	MEDIUM	FINE	

12" 3" 3/4" 4 10 40 200

CLEAR SQUARE SIEVE OPENING U.S. STANDARD SIEVE SIZE

ADDITIONAL TESTS

(OTHER THAN TEST PIT AND BORING LOG COLUMN HEADINGS)

MAX- Maximum Dry Density
GS- Grain Size Distribution
SE- Sand Equivalent
EI- Expansion Index
CHM- Sulfate and Chloride Content , pH, Resistivity
COR - Corrosivity
SD- Sample Disturbed
PM- Permeability
SG- Specific Gravity
HA- Hydrometer Analysis
AL- Atterberg Limits
RV- R-Value
CN- Consolidation
CP- Collapse Potential
HC- Hydrocollapse
REM- Remolded
PP- Pocket Penetrometer
WA- Wash Analysis
DS- Direct Shear
UC- Unconfined Compression
MD- Moisture/Density
M- Moisture
SC- Swell Compression
OI- Organic Impurities

FIGURE: BL1

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PROJECT:	DRILLER:	SHEET: of
CTE JOB NO:	DRILL METHOD:	DRILLING DATE:
LOGGED BY:	SAMPLE METHOD:	ELEVATION:

BORING LEGEND

Depth (Feet)	Sample: Bulk	Sample: Driven Type	Blows/Foot	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests

Block or Chunk Sample

Bulk Sample

Standard Penetration Test

Modified Split-Barrel Drive Sampler (Cal Sampler)

Thin Walled Army Corp. of Engineers Sample

Groundwater Table

Soil Type or Classification Change

? — ? — ? — ? — ? — ? — ?

Formation Change [(Approximate boundaries queried (?)]

"SM"

Quotes are placed around classifications where the soils exist in situ as bedrock

FIGURE: BL2

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PROJECT:	Malibu Creek State Park	DRILLER:	HD Drilling	SHEET:	1 of 3
CTE JOB NO:	10-13252G	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	7/25/17
LOGGED BY:	Josh Myers	SAMPLE METHOD:	CAL, Bulk, SPT	ELEVATION:	~

BORING: B-1

Depth (Feet)	Sample: Bulk	Sample: Driven	Blows/Foot	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0						ML/SM		**(Qudf): QUATERNARY UNDOCUMENTED FILL** Stiff, moist, light brown clayey, SILT, intermixed medium dense moist, brown silty SAND	EI, MAX
						ML		Stiff, moist, light brown fine sandy SILT. Scattered wood fragments.	MD, CN
5			5 11 11	99.6	7.6				
						SC		**(Qa): OLD ALLUVIAL FLOOD PLAIN DEPOSITS** Medium dense, moist, light brown, clayey fine to medium SAND.	GS
10			3 5 8						
						ML		Stiff, moist, brown, clayey SILT with fine sand.	
15									
						SM		Medium dense, moist red brown silty fine to medium SAND.	
20			5 5 10						
					▼	SM		**(Tcv): CONEJO VOLCANICS** Medium dense, wet, dark gray green, silty fine to medium SAND. Very weathered to soil matrix.	
25									

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PROJECT:	Malibu Creek State Park	DRILLER:	HD Drilling	SHEET:	2 of 3
CTE JOB NO:	10-13252G	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	7/25/17
LOGGED BY:	Josh Myers	SAMPLE METHOD:	CAL, Bulk, SPT	ELEVATION:	~

BORING: B-1

Depth (Feet)	Sample: Bulk	Sample: Driven Type	Blows/Foot	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
25			14 15 16			SM		Dense, no sample recovered.	
30			60 50			SC		Very dense, wet, gray green, clayey SAND. Soil matrix remains scattered, secondary mineral growth	
35			50/5"					Vey dense, no sample recovered.	
40			34 50/5"					Very dense, no sample recovered.	
45			50/4"					Very dense, wet, dark gray, clayey fine to medium SAND. Appears to be highly weathered basalt	
50									

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PROJECT:	Malibu Creek State Park	DRILLER:	HD Drilling	SHEET:	3 of 3
CTE JOB NO:	10-13252G	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	7/25/17
LOGGED BY:	Josh Myers	SAMPLE METHOD:	CAL, Bulk, SPT	ELEVATION:	~

BORING: B-1

Depth (Feet)	Sample: Bulk	Sample: Driven	Type	Blows/Foot	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
50				50/5"			SC		Very dense, wet, olive gray, clayey fine to medium SAND. Highly weathered basalts	
				50/5"			CL		Becomes sandy, wet, hard; olive gray CLAY. Highly weathered basalt	
55									TD: 55.5' Groundwater Encountered at 22' Caving at 50' Backfilled With Bentonite	
60										
65										
70										
75										

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PROJECT:	Malibu Creek State Park	DRILLER:	HD Drilling	SHEET:	1 of 3
CTE JOB NO:	10-13252G	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	7/25/17
LOGGED BY:	Josh Myers	SAMPLE METHOD:	CAL, Bulk, SPT	ELEVATION:	~

BORING: B-2

Depth (Feet)	Sample: Bulk	Sample: Driven	Type	Blows/Foot	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
0							SW		**(Qudf): QUATERNARY UNDOCUMENTED FILL** Medium dense, dry, light brown, gravelly SAND with silt and clay.	EI
							CL		**(Qa): QUATERNARY ALLUVIUM** Very stiff, dry, light brown, silty CLAY with fine sand.	
5				8 11 14						
10				3 5 6					Stiff, increased fine sand.	CHM
15				15 20 32					Hard, moist, dark brown, fine to medium sandy CLAY with gravel.	
							SM		Medium dense, moist, dark brown, silty fine to medium SAND with clay and gravel.	
20				5 6 9						
25										

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PROJECT:	Malibu Creek State Park	DRILLER:	HD Drilling	SHEET:	2 of 3
CTE JOB NO:	10-13252G	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	7/25/17
LOGGED BY:	Josh Myers	SAMPLE METHOD:	CAL, Bulk, SPT	ELEVATION:	~

BORING: B-2

Depth (Feet)	Sample Bulk	Sample Driven	Type	Blows/Foot	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
25				12 15 19	108.2	17.6	CL		**(Tcv): CONEJO VOLCANICS** Dense, moist, dark gray, fine sandy CLAY. Very weathered to soil like matrix.	MD
30				6 6 8					Medium dense, wet.	
35				33 50/5"			GP		Very dense, moist, brown to gray, fine to medium sandy GRAVEL with clay. Decreased weathering, poor sample recovery.	
40				50/6"			SC		Very dense, wet, gray green, clayey fine to medium SAND.	
45				50/3"					Very dense, no sample recovery.	
50										

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PROJECT:	Malibu Creek State Park	DRILLER:	HD Drilling	SHEET:	3 of 3
CTE JOB NO:	10-13252G	DRILL METHOD:	8" Hollow Stem Auger	DRILLING DATE:	7/25/17
LOGGED BY:	Josh Myers	SAMPLE METHOD:	CAL, Bulk, SPT	ELEVATION:	~

BORING: B-2

Depth (Feet)	Sample: Bulk	Sample: Driven Type	Blows/Foot	Dry Density (pcf)	Moisture (%)	U.S.C.S. Symbol	Graphic Log	DESCRIPTION	Laboratory Tests
50			50/3"			GP		Very dense, wet, gray green, fine to coarse sandy GRAVEL. Decreased weathering.	
						SP		Very dense, wet, gray green, gravelly fine to coarse SAND. Scattered layering.	CHM
55			50/5"						
						SC		Very dense, wet, gray green clayey, fine to medium SAND	
60			50/3"						
								TD: 61.5' Groundwater at 18.5' Caved at 43' Backfill With Bentonite	
65									
70									
75									

APPENDIX C

LABORATORY METHODS AND RESULTS

APPENDIX C
LABORATORY METHODS AND RESULTS

Laboratory tests were performed on selected soil samples to evaluate their engineering properties. Tests were performed following test methods of the American Society for Testing and Materials, or other accepted standards. The following presents a brief description of the various test methods used. Laboratory results are presented in the following section of this Appendix.

Classification

Soils were classified visually according to the Unified Soil Classification System. Visual classifications were supplemented by laboratory testing of selected samples according to ASTM D 2487.

Particle-Size Analysis

Particle-size analyses was performed on selected representative sample according to ASTM D 422.

Modified Proctor

Laboratory maximum dry density and optimum moisture content were evaluated according to ASTM D 1557, Method A. A mechanically operated rammer was used during the compaction process.

Chemical Analysis

Soil materials were collected and tested for Sulfate and Chloride content, pH, and Resistivity.

In-Place Moisture/Density

The in-place moisture content and dry unit weight of selected samples were determined using relatively undisturbed soil samples.

Consolidation

To assess their compressibility and volume change behavior when loaded and wetted, a relatively undisturbed sample of representative soils from the investigation were subject to consolidation tests in accordance with ASTM D 2435.

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EXPANSION INDEX TEST

ASTM D 4829

LOCATION	DEPTH (feet)	EXPANSION INDEX	EXPANSION POTENTIAL
B-1	0-5.5	32	LOW
B-2	0-5.5	18	VERY LOW

IN-PLACE MOISTURE AND DENSITY

LOCATION	DEPTH (feet)	% MOISTURE	DRY DENSITY
B-1	5-6.5	7.6	99.6
B-2	25-26.5	17.6	108.2

SULFATE

CALIFORNIA TEST 417

LOCATION	DEPTH (feet)	RESULTS ppm
B-2	10-11.5	511.5
B-2	40-61.5	587.4

CHLORIDE

CALIFORNIA TEST 422

LOCATION	DEPTH (feet)	RESULTS ppm
B-2	10-11.5	214.6
B-2	40-61.5	180.5

p.H.

CALIFORNIA TEST 643

LOCATION	DEPTH (feet)	RESULTS
B-2	10-11.5	6.98
B-2	40-61.5	10.31

RESISTIVITY

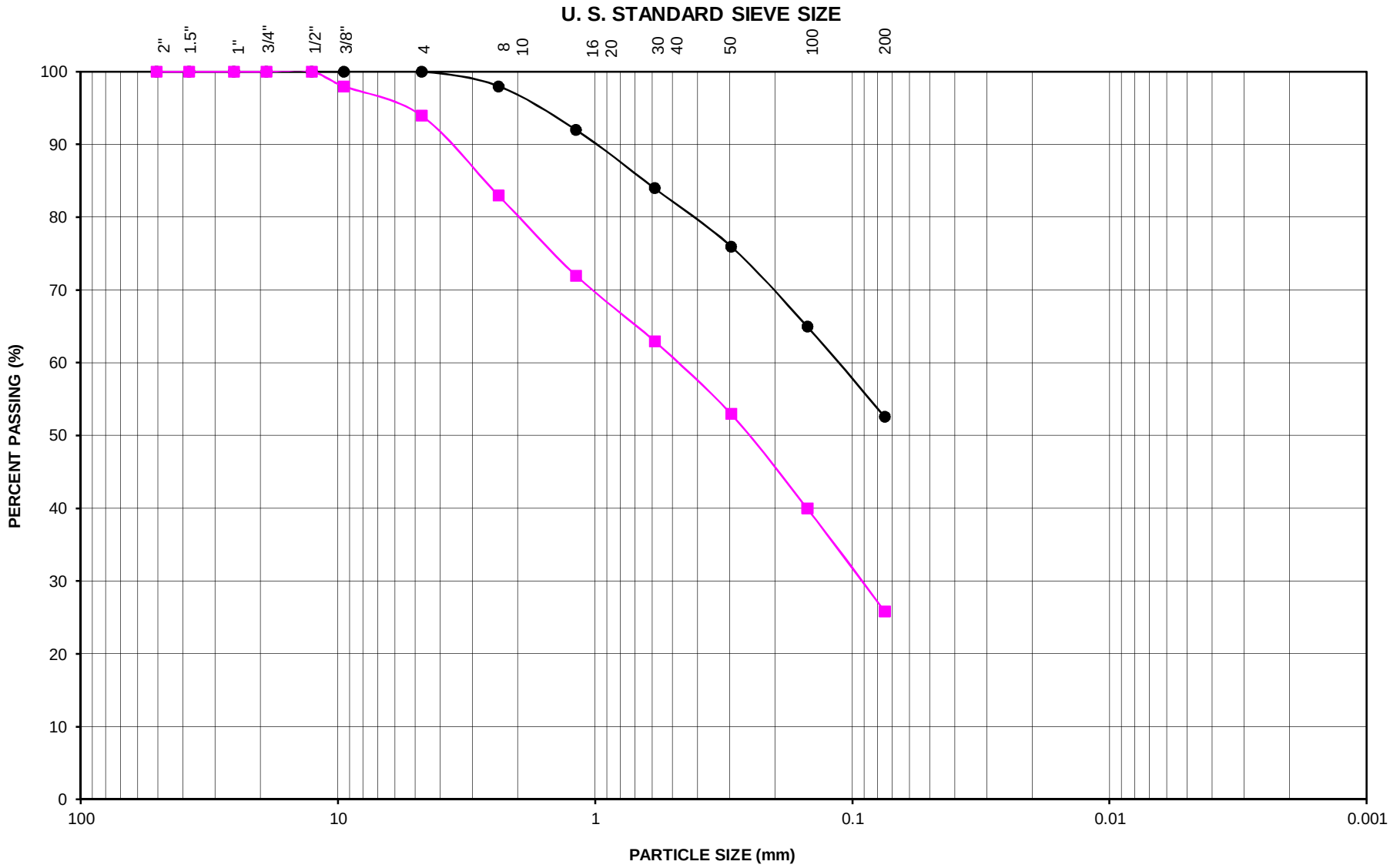
CALIFORNIA TEST 643

LOCATION	DEPTH (feet)	RESULTS ohms-cm
B-2	10-11.5	1840
B-2	40-61.5	1940

MODIFIED PROCTOR

ASTM D 1557

LOCATION	DEPTH (feet)	MAXIUM DRY DENSITY (PCF)	OPTIMUM MOISTURE (%)
B-1	0-5.5	115.6	12.2
B-1	0-5.5 Rock Correction	120.7	10.6



PARTICLE SIZE ANALYSIS

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Sample Designation	Sample Depth (feet)	Symbol	Liquid Limit (%)	Plasticity Index	Classification
B-1	10-11.5	●	1	1	ML
B-2	20-21.5	■	1	1	SM
CTE JOB NUMBER:		10-13252G		FIGURE:	C-1

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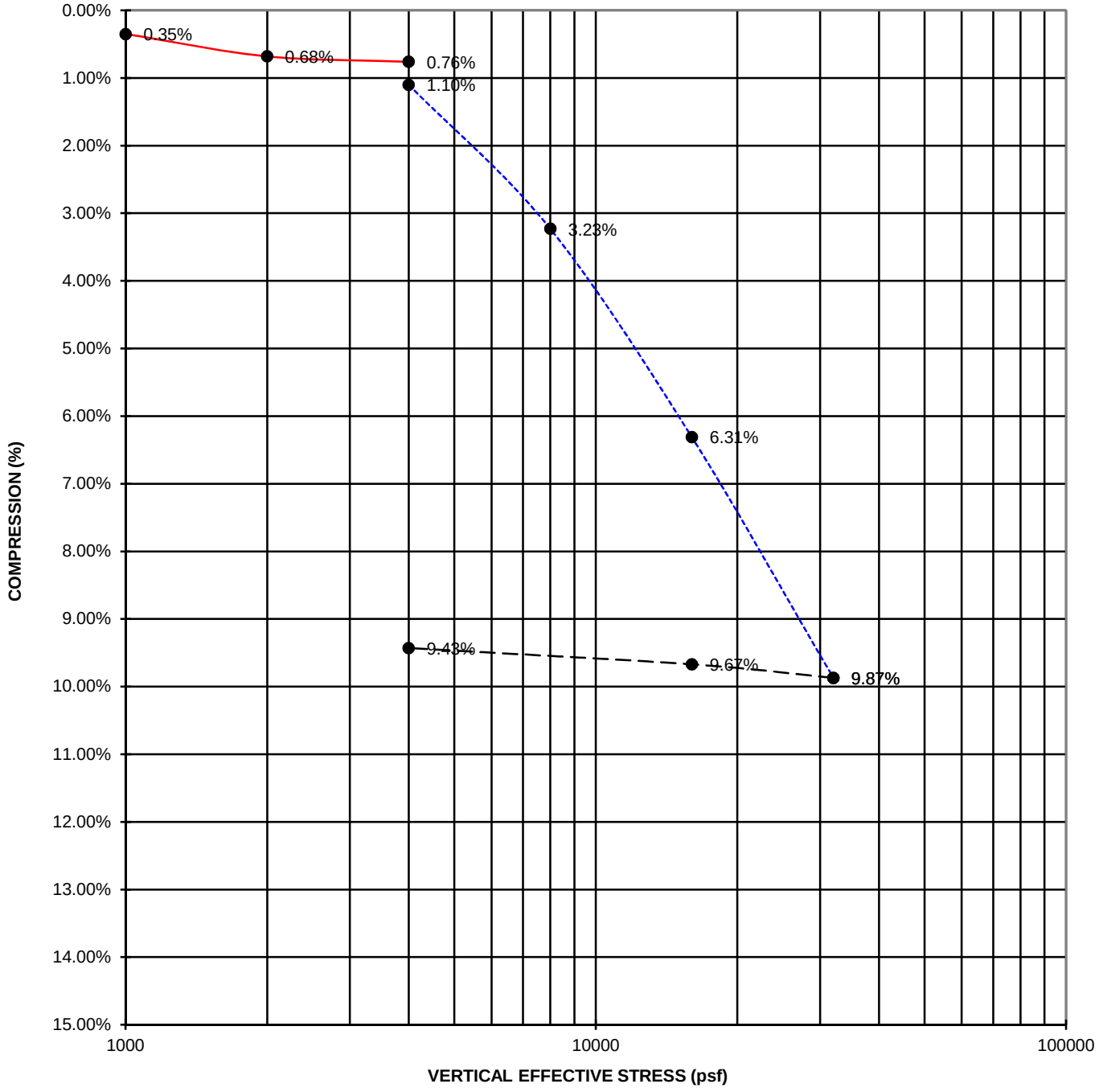


Consolidation Test ASTM D2435

Project Name:	Malibu Creek				
Project Number:	10-13252G	Sample Date:	7/25/2017	Initial Moisture (%):	7.6
Lab Number:	27626	Test Date:	8/7/2017	Final Moisture (%):	17.1
Sample Location:	B-1 @ 5-6.5'	Tested By:	RCV	Initial Dry Density (PCF):	99.6
Sample Description:	Moderate brown SM			Final Dry Density (PCF):	110.0

APPENDIX D

STANDARD SPECIFICATIONS FOR GRADING

Section 1 - General

Construction Testing & Engineering, Inc. presents the following standard recommendations for grading and other associated operations on construction projects. These guidelines should be considered a portion of the project specifications. Recommendations contained in the body of the previously presented soils report shall supersede the recommendations and or requirements as specified herein. The project geotechnical consultant shall interpret disputes arising out of interpretation of the recommendations contained in the soils report or specifications contained herein.

Section 2 - Responsibilities of Project Personnel

The geotechnical consultant should provide observation and testing services sufficient to general conformance with project specifications and standard grading practices. The geotechnical consultant should report any deviations to the client or his authorized representative.

The Client should be chiefly responsible for all aspects of the project. He or his authorized representative has the responsibility of reviewing the findings and recommendations of the geotechnical consultant. He shall authorize or cause to have authorized the Contractor and/or other consultants to perform work and/or provide services. During grading the Client or his authorized representative should remain on-site or should remain reasonably accessible to all concerned parties in order to make decisions necessary to maintain the flow of the project.

The Contractor is responsible for the safety of the project and satisfactory completion of all grading and other associated operations on construction projects, including, but not limited to, earth work in accordance with the project plans, specifications and controlling agency requirements.

Section 3 - Preconstruction Meeting

A preconstruction site meeting should be arranged by the owner and/or client and should include the grading contractor, design engineer, geotechnical consultant, owner’s representative and representatives of the appropriate governing authorities.

Section 4 - Site Preparation

The client or contractor should obtain the required approvals from the controlling authorities for the project prior, during and/or after demolition, site preparation and removals, etc. The appropriate approvals should be obtained prior to proceeding with grading operations.

Clearing and grubbing should consist of the removal of vegetation such as brush, grass, woods, stumps, trees, root of trees and otherwise deleterious natural materials from the areas to be graded. Clearing and grubbing should extend to the outside of all proposed excavation and fill areas.

Demolition should include removal of buildings, structures, foundations, reservoirs, utilities (including underground pipelines, septic tanks, leach fields, seepage pits, cisterns, mining shafts, tunnels, etc.) and other man-made surface and subsurface improvements from the areas to be graded. Demolition of utilities should include proper capping and/or rerouting pipelines at the project perimeter and cutoff and capping of wells in accordance with the requirements of the governing authorities and the recommendations of the geotechnical consultant at the time of demolition.

Trees, plants or man-made improvements not planned to be removed or demolished should be protected by the contractor from damage or injury.

Debris generated during clearing, grubbing and/or demolition operations should be wasted from areas to be graded and disposed off-site. Clearing, grubbing and demolition operations should be performed under the observation of the geotechnical consultant.

Section 5 - Site Protection

Protection of the site during the period of grading should be the responsibility of the contractor. Unless other provisions are made in writing and agreed upon among the concerned parties, completion of a portion of the project should not be considered to preclude that portion or adjacent areas from the requirements for site protection until such time as the entire project is complete as identified by the geotechnical consultant, the client and the regulating agencies.

Precautions should be taken during the performance of site clearing, excavations and grading to protect the work site from flooding, ponding or inundation by poor or improper surface drainage. Temporary provisions should be made during the rainy season to adequately direct surface drainage away from and off the work site. Where low areas cannot be avoided, pumps should be kept on hand to continually remove water during periods of rainfall.

Rain related damage should be considered to include, but may not be limited to, erosion, silting, saturation, swelling, structural distress and other adverse conditions as determined by the geotechnical consultant. Soil adversely affected should be classified as unsuitable materials and should be subject to overexcavation and replacement with compacted fill or other remedial grading as recommended by the geotechnical consultant.

The contractor should be responsible for the stability of all temporary excavations. Recommendations by the geotechnical consultant pertaining to temporary excavations (e.g., backcuts) are made in consideration of stability of the completed project and, therefore, should not be considered to preclude the responsibilities of the contractor. Recommendations by the geotechnical consultant should not be considered to preclude requirements that are more restrictive by the regulating agencies. The contractor should provide during periods of extensive rainfall plastic sheeting to prevent unprotected slopes from becoming saturated and unstable. When deemed appropriate by the geotechnical consultant or governing agencies the contractor shall install checkdams, desilting basins, sand bags or other drainage control measures.

In relatively level areas and/or slope areas, where saturated soil and/or erosion gullies exist to depths of greater than 1.0 foot; they should be overexcavated and replaced as compacted fill in accordance with the applicable specifications. Where affected materials exist to depths of 1.0 foot or less below proposed finished grade, remedial grading by moisture conditioning in-place, followed by thorough recompaction in accordance with the applicable grading guidelines herein may be attempted. If the desired results are not achieved, all affected materials should be overexcavated and replaced as compacted fill in accordance with the slope repair recommendations herein. If field conditions dictate, the geotechnical consultant may recommend other slope repair procedures.

Section 6 - Excavations

6.1 Unsuitable Materials

Materials that are unsuitable should be excavated under observation and recommendations of the geotechnical consultant. Unsuitable materials include, but may not be limited to, dry, loose, soft, wet, organic compressible natural soils and fractured, weathered, soft bedrock and nonengineered or otherwise deleterious fill materials.

Material identified by the geotechnical consultant as unsatisfactory due to its moisture conditions should be overexcavated; moisture conditioned as needed, to a uniform at or above optimum moisture condition before placement as compacted fill.

If during the course of grading adverse geotechnical conditions are exposed which were not anticipated in the preliminary soil report as determined by the geotechnical consultant additional exploration, analysis, and treatment of these problems may be recommended.

6.2 Cut Slopes

Unless otherwise recommended by the geotechnical consultant and approved by the regulating agencies, permanent cut slopes should not be steeper than 2:1 (horizontal: vertical).

The geotechnical consultant should observe cut slope excavation and if these excavations expose loose cohesionless, significantly fractured or otherwise unsuitable material, the materials should be overexcavated and replaced with a compacted stabilization fill. If encountered specific cross section details should be obtained from the Geotechnical Consultant.

When extensive cut slopes are excavated or these cut slopes are made in the direction of the prevailing drainage, a non-erodible diversion swale (brow ditch) should be provided at the top of the slope.

6.3 Pad Areas

All lot pad areas, including side yard terrace containing both cut and fill materials, transitions, located less than 3 feet deep should be overexcavated to a depth of 3 feet and replaced with a uniform compacted fill blanket of 3 feet. Actual depth of overexcavation may vary and should be delineated by the geotechnical consultant during grading, especially where deep or drastic transitions are present.

For pad areas created above cut or natural slopes, positive drainage should be established away from the top-of-slope. This may be accomplished utilizing a berm drainage swale and/or an appropriate pad gradient. A gradient in soil areas away from the top-of-slopes of 2 percent or greater is recommended.

Section 7 - Compacted Fill

All fill materials should have fill quality, placement, conditioning and compaction as specified below or as approved by the geotechnical consultant.

7.1 Fill Material Quality

Excavated on-site or import materials which are acceptable to the geotechnical consultant may be utilized as compacted fill, provided trash, vegetation and other deleterious materials are removed prior to placement. All import materials anticipated for use on-site should be sampled tested and approved prior to and placement is in conformance with the requirements outlined.

Rocks 12 inches in maximum and smaller may be utilized within compacted fill provided sufficient fill material is placed and thoroughly compacted over and around all rock to effectively fill rock voids. The amount of rock should not exceed 40 percent by dry weight passing the 3/4-inch sieve. The geotechnical consultant may vary those requirements as field conditions dictate.

Where rocks greater than 12 inches but less than four feet of maximum dimension are generated during grading, or otherwise desired to be placed within an engineered fill, special handling in accordance with the recommendations below. Rocks greater than four feet should be broken down or disposed off-site.

7.2 Placement of Fill

Prior to placement of fill material, the geotechnical consultant should observe and approve the area to receive fill. After observation and approval, the exposed ground surface should be scarified to a depth of 6 to 8 inches. The scarified material should be conditioned (i.e. moisture added or air dried by continued discing) to achieve a moisture content at or slightly above optimum moisture conditions and compacted to a minimum of 90 percent of the maximum density or as otherwise recommended in the soils report or by appropriate government agencies.

Compacted fill should then be placed in thin horizontal lifts not exceeding eight inches in loose thickness prior to compaction. Each lift should be moisture conditioned as needed, thoroughly blended to achieve a consistent moisture content at or slightly above optimum and thoroughly compacted by mechanical methods to a minimum of 90 percent of laboratory maximum dry density. Each lift should be treated in a like manner until the desired finished grades are achieved.

The contractor should have suitable and sufficient mechanical compaction equipment and watering apparatus on the job site to handle the amount of fill being placed in consideration of moisture retention properties of the materials and weather conditions.

When placing fill in horizontal lifts adjacent to areas sloping steeper than 5:1 (horizontal: vertical), horizontal keys and vertical benches should be excavated into the adjacent slope area. Keying and benching should be sufficient to provide at least six-foot wide benches and a minimum of four feet of vertical bench height within the firm natural ground, firm bedrock or engineered compacted fill. No compacted fill should be placed in an area after keying and benching until the geotechnical consultant has reviewed the area. Material generated by the benching operation should be moved sufficiently away from

the bench area to allow for the recommended review of the horizontal bench prior to placement of fill.

Within a single fill area where grading procedures dictate two or more separate fills, temporary slopes (false slopes) may be created. When placing fill adjacent to a false slope, benching should be conducted in the same manner as above described. At least a 3-foot vertical bench should be established within the firm core of adjacent approved compacted fill prior to placement of additional fill. Benching should proceed in at least 3-foot vertical increments until the desired finished grades are achieved.

Prior to placement of additional compacted fill following an overnight or other grading delay, the exposed surface or previously compacted fill should be processed by scarification, moisture conditioning as needed to at or slightly above optimum moisture content, thoroughly blended and recompacted to a minimum of 90 percent of laboratory maximum dry density. Where unsuitable materials exist to depths of greater than one foot, the unsuitable materials should be over-excavated.

Following a period of flooding, rainfall or overwatering by other means, no additional fill should be placed until damage assessments have been made and remedial grading performed as described herein.

Rocks 12 inch in maximum dimension and smaller may be utilized in the compacted fill provided the fill is placed and thoroughly compacted over and around all rock. No oversize material should be used within 3 feet of finished pad grade and within 1 foot of other compacted fill areas. Rocks 12 inches up to four feet maximum dimension should be placed below the upper 10 feet of any fill and should not be closer than 15 feet to any slope face. These recommendations could vary as locations of improvements dictate. Where practical, oversized material should not be placed below areas where structures or deep utilities are proposed. Oversized material should be placed in windrows on a clean, overexcavated or unyielding compacted fill or firm natural ground surface. Select native or imported granular soil (S.E. 30 or higher) should be placed and thoroughly flooded over and around all windrowed rock, such that voids are filled. Windrows of oversized material should be staggered so those successive strata of oversized material are not in the same vertical plane.

It may be possible to dispose of individual larger rock as field conditions dictate and as recommended by the geotechnical consultant at the time of placement.

The contractor should assist the geotechnical consultant and/or his representative by digging test pits for removal determinations and/or for testing compacted fill. The contractor should provide this work at no additional cost to the owner or contractor's client.

Fill should be tested by the geotechnical consultant for compliance with the recommended relative compaction and moisture conditions. Field density testing should conform to ASTM Method of Test D 1556-00, D 2922-04. Tests should be conducted at a minimum of approximately two vertical feet or approximately 1,000 to 2,000 cubic yards of fill placed. Actual test intervals may vary as field conditions dictate. Fill found not to be in conformance with the grading recommendations should be removed or otherwise handled as recommended by the geotechnical consultant.

7.3 Fill Slopes

Unless otherwise recommended by the geotechnical consultant and approved by the regulating agencies, permanent fill slopes should not be steeper than 2:1 (horizontal: vertical).

Except as specifically recommended in these grading guidelines compacted fill slopes should be over-built two to five feet and cut back to grade, exposing the firm, compacted fill inner core. The actual amount of overbuilding may vary as field conditions dictate. If the desired results are not achieved, the existing slopes should be overexcavated and reconstructed under the guidelines of the geotechnical consultant. The degree of overbuilding shall be increased until the desired compacted slope surface condition is achieved. Care should be taken by the contractor to provide thorough mechanical compaction to the outer edge of the overbuilt slope surface.

At the discretion of the geotechnical consultant, slope face compaction may be attempted by conventional construction procedures including backrolling. The procedure must create a firmly compacted material throughout the entire depth of the slope face to the surface of the previously compacted firm fill intercore.

During grading operations, care should be taken to extend compactive effort to the outer edge of the slope. Each lift should extend horizontally to the desired finished slope surface or more as needed to ultimately established desired grades. Grade during construction should not be allowed to roll off at the edge of the slope. It may be helpful to elevate slightly the outer edge of the slope. Slough resulting from the placement of individual lifts should not be allowed to drift down over previous lifts. At intervals not

exceeding four feet in vertical slope height or the capability of available equipment, whichever is less, fill slopes should be thoroughly dozer trackrolled.

For pad areas above fill slopes, positive drainage should be established away from the top-of-slope. This may be accomplished using a berm and pad gradient of at least two percent.

Section 8 - Trench Backfill

Utility and/or other excavation of trench backfill should, unless otherwise recommended, be compacted by mechanical means. Unless otherwise recommended, the degree of compaction should be a minimum of 90 percent of the laboratory maximum density.

Within slab areas, but outside the influence of foundations, trenches up to one foot wide and two feet deep may be backfilled with sand and consolidated by jetting, flooding or by mechanical means. If on-site materials are utilized, they should be wheel-rolled, tamped or otherwise compacted to a firm condition. For minor interior trenches, density testing may be deleted or spot testing may be elected if deemed necessary, based on review of backfill operations during construction.

If utility contractors indicate that it is undesirable to use compaction equipment in close proximity to a buried conduit, the contractor may elect the utilization of light weight mechanical compaction equipment and/or shading of the conduit with clean, granular material, which should be thoroughly jetted in-place above the conduit, prior to initiating mechanical compaction procedures. Other methods of utility trench compaction may also be appropriate, upon review of the geotechnical consultant at the time of construction.

In cases where clean granular materials are proposed for use in lieu of native materials or where flooding or jetting is proposed, the procedures should be considered subject to review by the geotechnical consultant. Clean granular backfill and/or bedding are not recommended in slope areas.

Section 9 - Drainage

Where deemed appropriate by the geotechnical consultant, canyon subdrain systems should be installed in accordance with CTE's recommendations during grading.

Typical subdrains for compacted fill buttresses, slope stabilization or sidehill masses, should be installed in accordance with the specifications.

Roof, pad and slope drainage should be directed away from slopes and areas of structures to suitable disposal areas via non-erodible devices (i.e., gutters, downspouts, and concrete swales).

For drainage in extensively landscaped areas near structures, (i.e., within four feet) a minimum of 5 percent gradient away from the structure should be maintained. Pad drainage of at least 2 percent should be maintained over the remainder of the site.

Drainage patterns established at the time of fine grading should be maintained throughout the life of the project. Property owners should be made aware that altering drainage patterns could be detrimental to slope stability and foundation performance.

Section 10 - Slope Maintenance

10.1 - Landscape Plants

To enhance surficial slope stability, slope planting should be accomplished at the completion of grading. Slope planting should consist of deep-rooting vegetation requiring little watering. Plants native to the southern California area and plants relative to native plants are generally desirable. Plants native to other semi-arid and arid areas may also be appropriate. A Landscape Architect should be the best party to consult regarding actual types of plants and planting configuration.

10.2 - Irrigation

Irrigation pipes should be anchored to slope faces, not placed in trenches excavated into slope faces.

Slope irrigation should be minimized. If automatic timing devices are utilized on irrigation systems, provisions should be made for interrupting normal irrigation during periods of rainfall.

10.3 - Repair

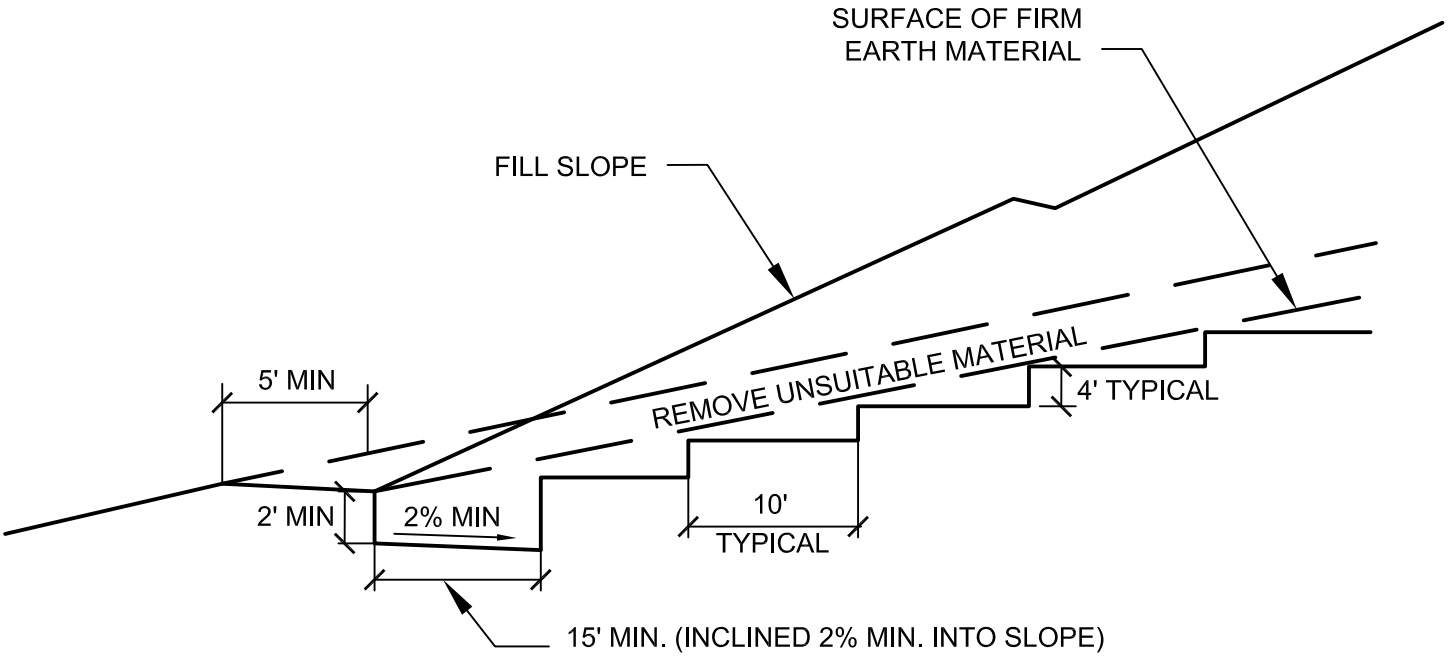
As a precautionary measure, plastic sheeting should be readily available, or kept on hand, to protect all slope areas from saturation by periods of heavy or prolonged rainfall. This measure is strongly recommended, beginning with the period prior to landscape planting.

If slope failures occur, the geotechnical consultant should be contacted for a field review of site conditions and development of recommendations for evaluation and repair.

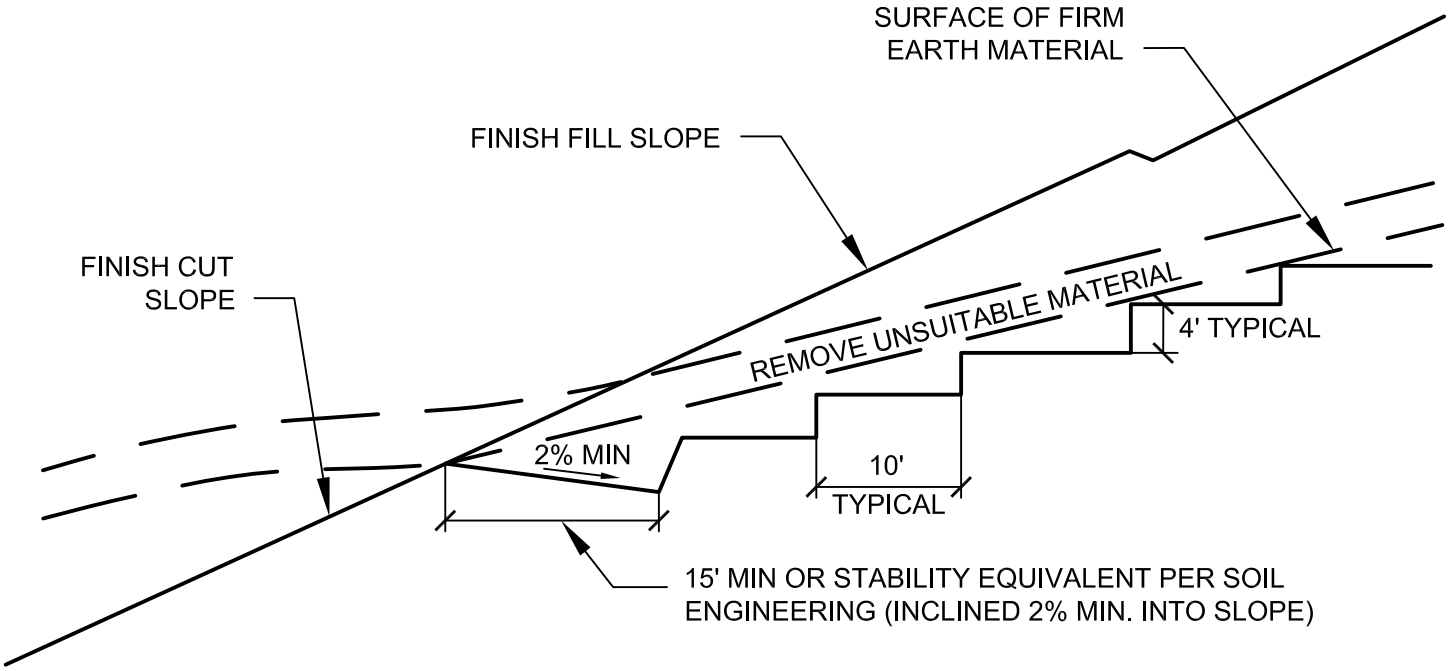
If slope failures occur as a result of exposure to period of heavy rainfall, the failure areas and currently unaffected areas should be covered with plastic sheeting to protect against additional saturation.

In the accompanying Standard Details, appropriate repair procedures are illustrated for superficial slope failures (i.e., occurring typically within the outer one foot to three feet of a slope face).

BENCHING FILL OVER NATURAL

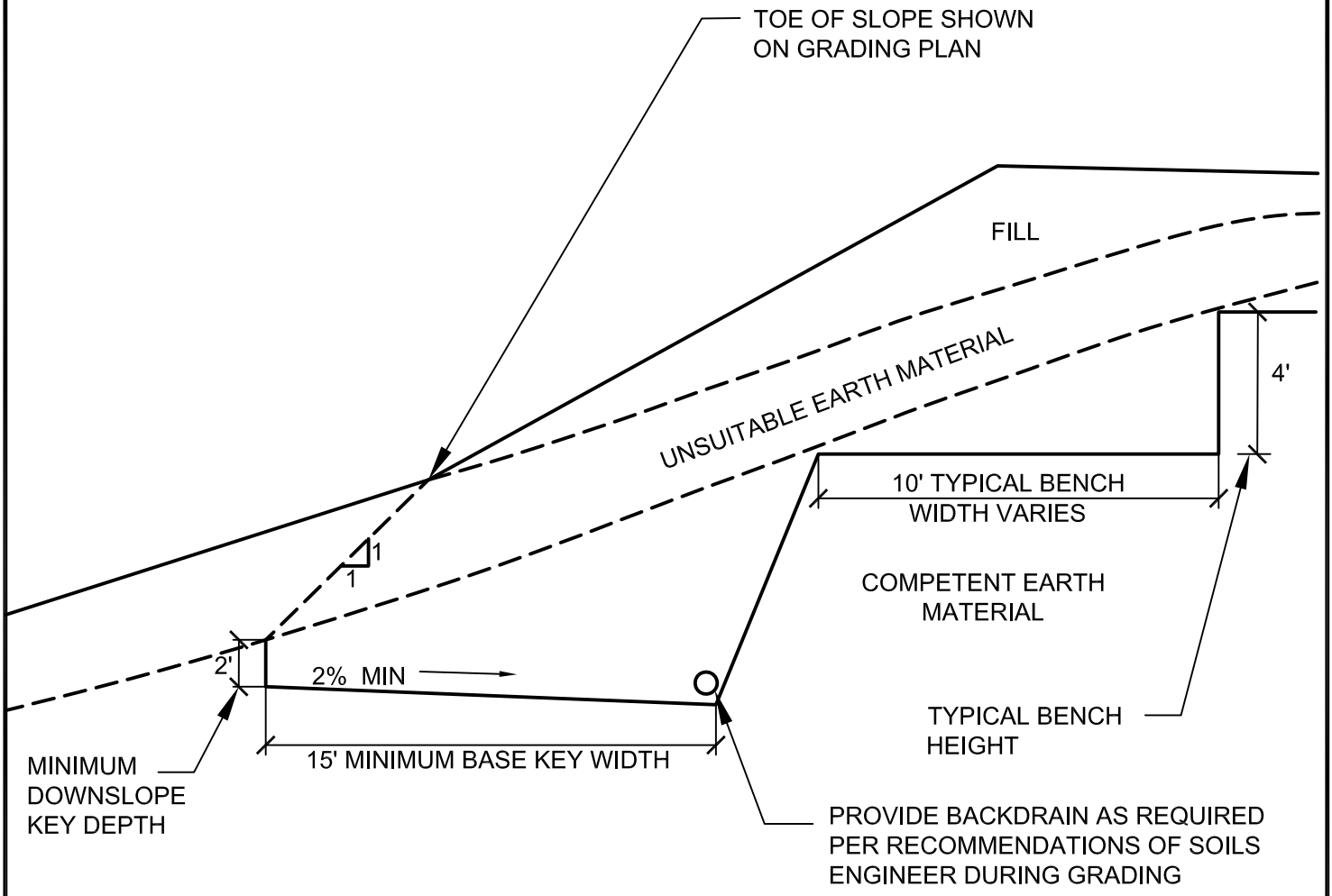


BENCHING FILL OVER CUT



NOT TO SCALE

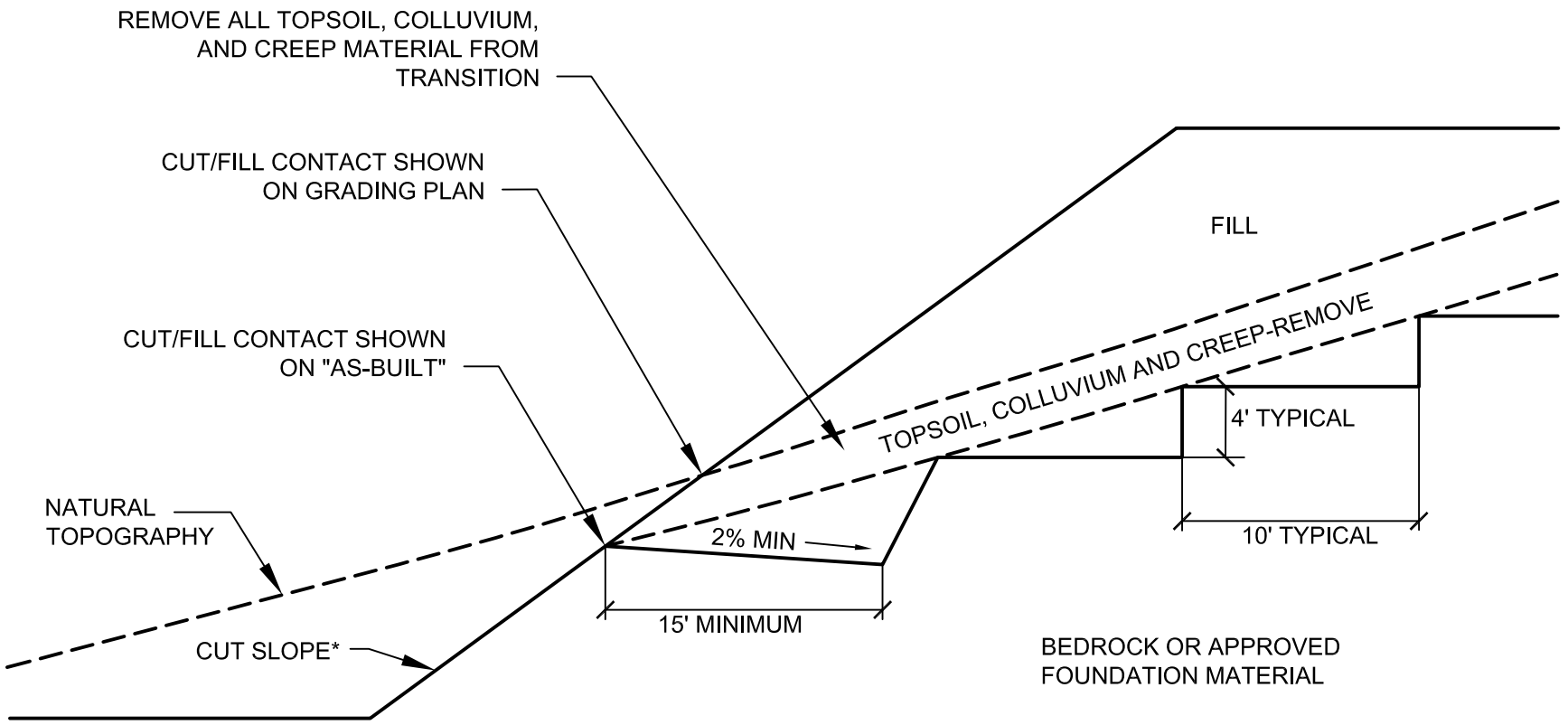
BENCHING FOR COMPACTED FILL DETAIL



WHERE NATURAL SLOPE GRADIENT IS 5:1 OR LESS, BENCHING IS NOT NECESSARY. FILL IS NOT TO BE PLACED ON COMPRESSIBLE OR UNSUITABLE MATERIAL.

NOT TO SCALE

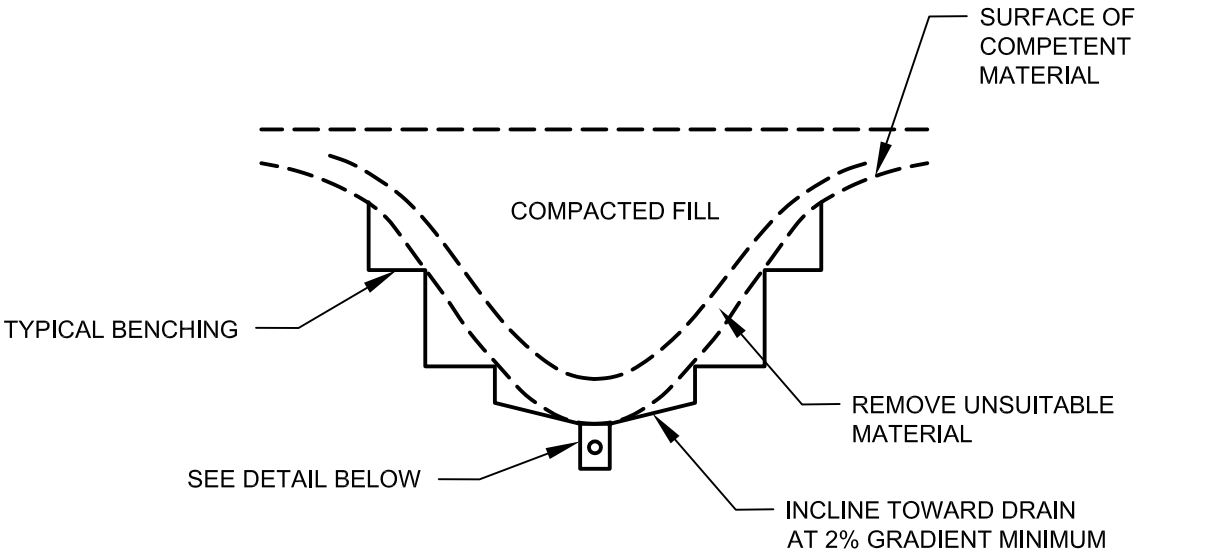
FILL SLOPE ABOVE NATURAL GROUND DETAIL



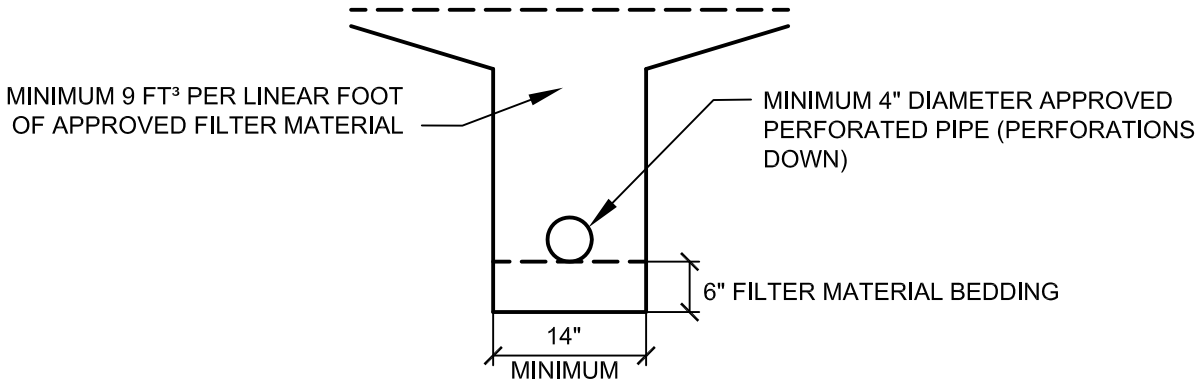
*NOTE: CUT SLOPE PORTION SHOULD BE MADE PRIOR TO PLACEMENT OF FILL

NOT TO SCALE

FILL SLOPE ABOVE CUT SLOPE DETAIL



DETAIL



CALTRANS CLASS 2 PERMEABLE MATERIAL
FILTER MATERIAL TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUAL:

SIEVE SIZE	PERCENTAGE PASSING
1"	100
¾"	90-100
⅜"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

APPROVED PIPE TO BE SCHEDULE 40 POLY-VINYL-CHLORIDE (P.V.C.) OR APPROVED EQUAL. MINIMUM CRUSH STRENGTH 1000 psi

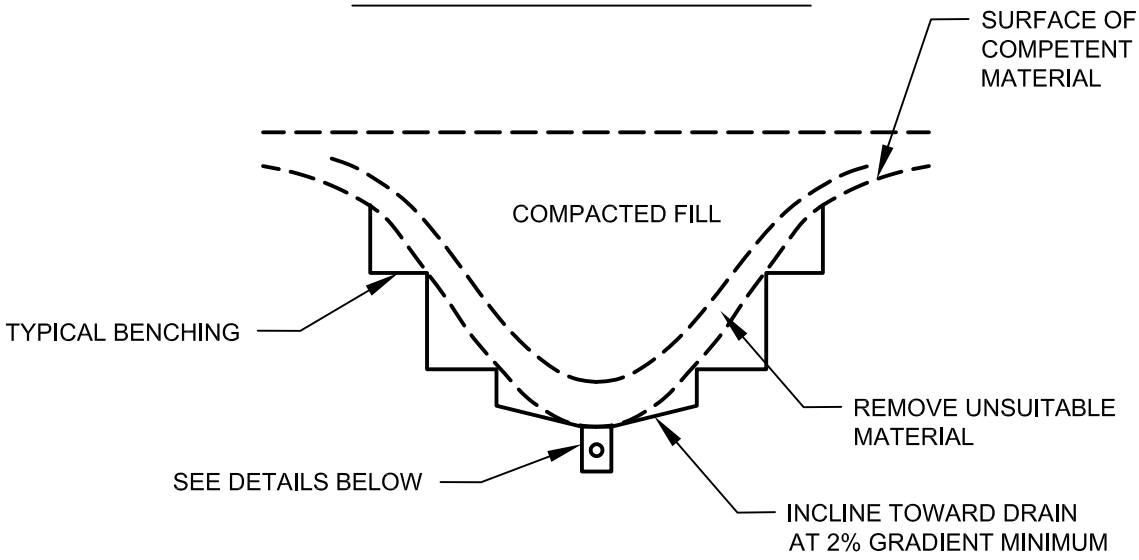
PIPE DIAMETER TO MEET THE FOLLOWING CRITERIA, SUBJECT TO FIELD REVIEW BASED ON ACTUAL GEOTECHNICAL CONDITIONS ENCOUNTERED DURING GRADING

LENGTH OF RUN	PIPE DIAMETER
INITIAL 500'	4"
500' TO 1500'	6"
> 1500'	8"

NOT TO SCALE

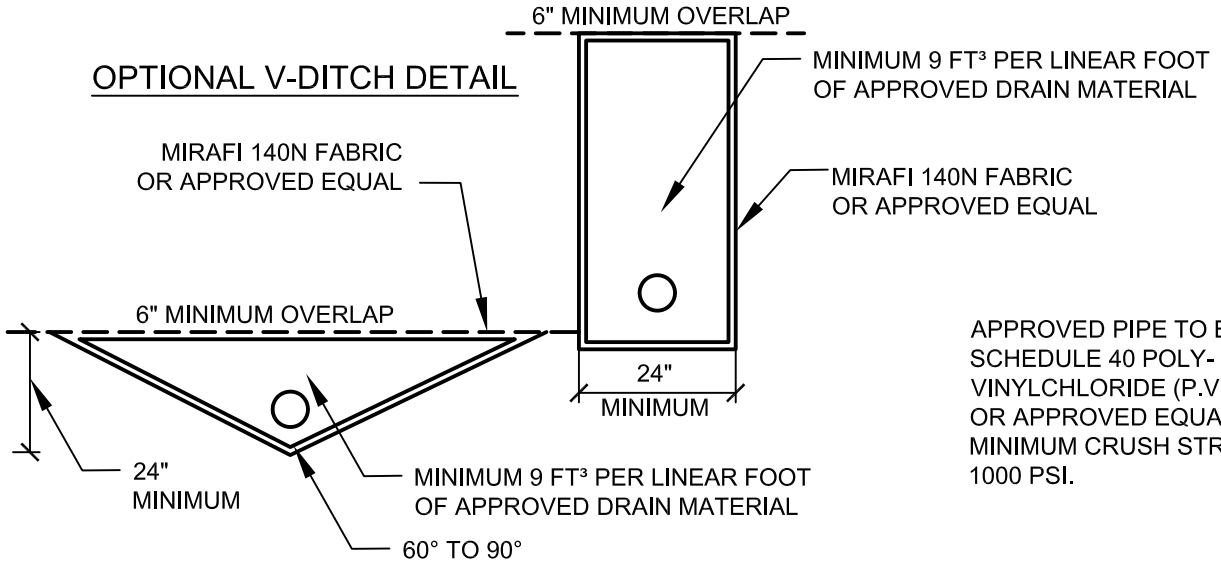
TYPICAL CANYON SUBDRAIN DETAIL

CANYON SUBDRAIN DETAILS



TRENCH DETAILS

OPTIONAL V-DITCH DETAIL



APPROVED PIPE TO BE SCHEDULE 40 POLY-VINYLCHLORIDE (P.V.C.) OR APPROVED EQUAL. MINIMUM CRUSH STRENGTH 1000 PSI.

DRAIN MATERIAL TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUAL:

SIEVE SIZE	PERCENTAGE PASSING
1 ½"	88-100
1"	5-40
¾"	0-17
⅜"	0-7
NO. 200	0-3

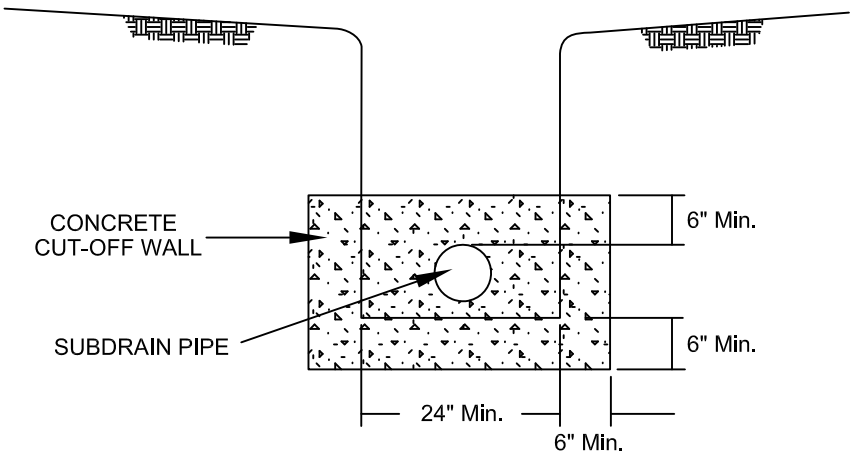
PIPE DIAMETER TO MEET THE FOLLOWING CRITERIA, SUBJECT TO FIELD REVIEW BASED ON ACTUAL GEOTECHNICAL CONDITIONS ENCOUNTERED DURING GRADING

LENGTH OF RUN	PIPE DIAMETER
INITIAL 500'	4"
500' TO 1500'	6"
> 1500'	8"

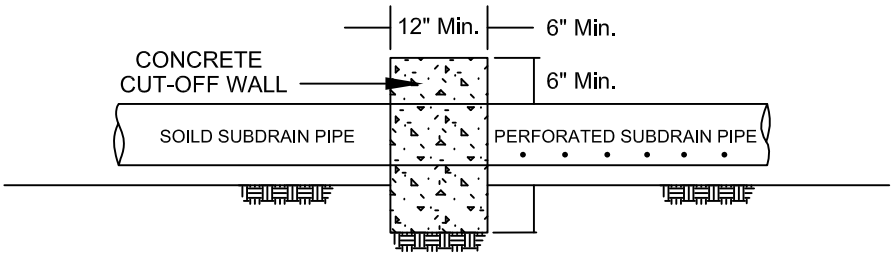
NOT TO SCALE

GEOFABRIC SUBDRAIN

FRONT VIEW



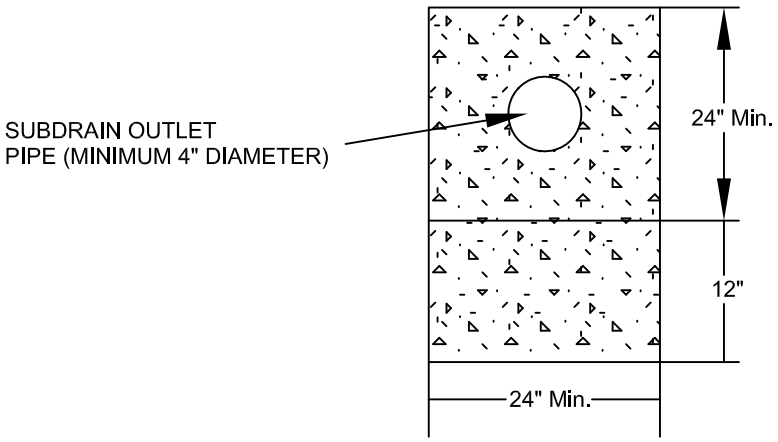
SIDE VIEW



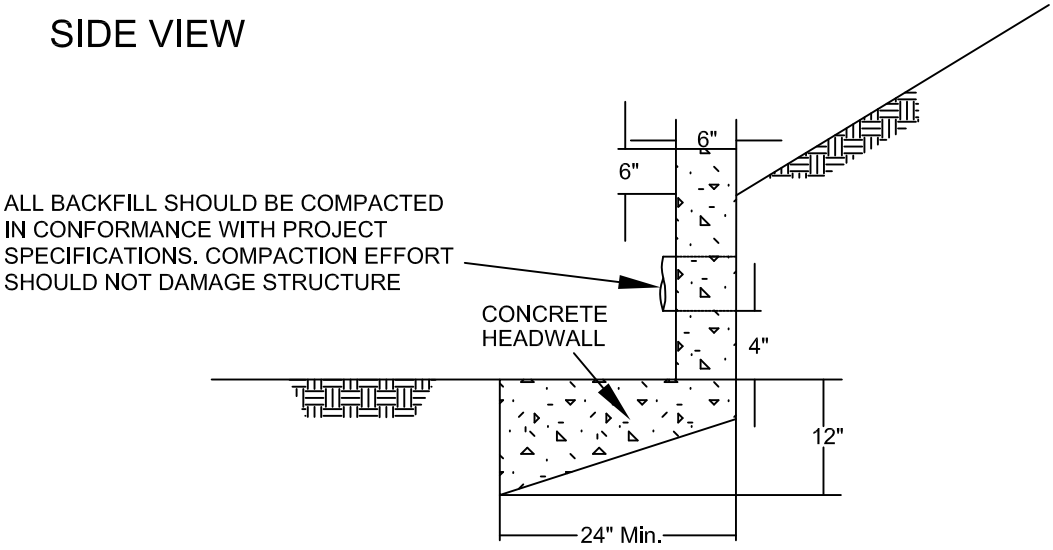
NOT TO SCALE

RECOMMENDED SUBDRAIN CUT-OFF WALL

FRONT VIEW



SIDE VIEW



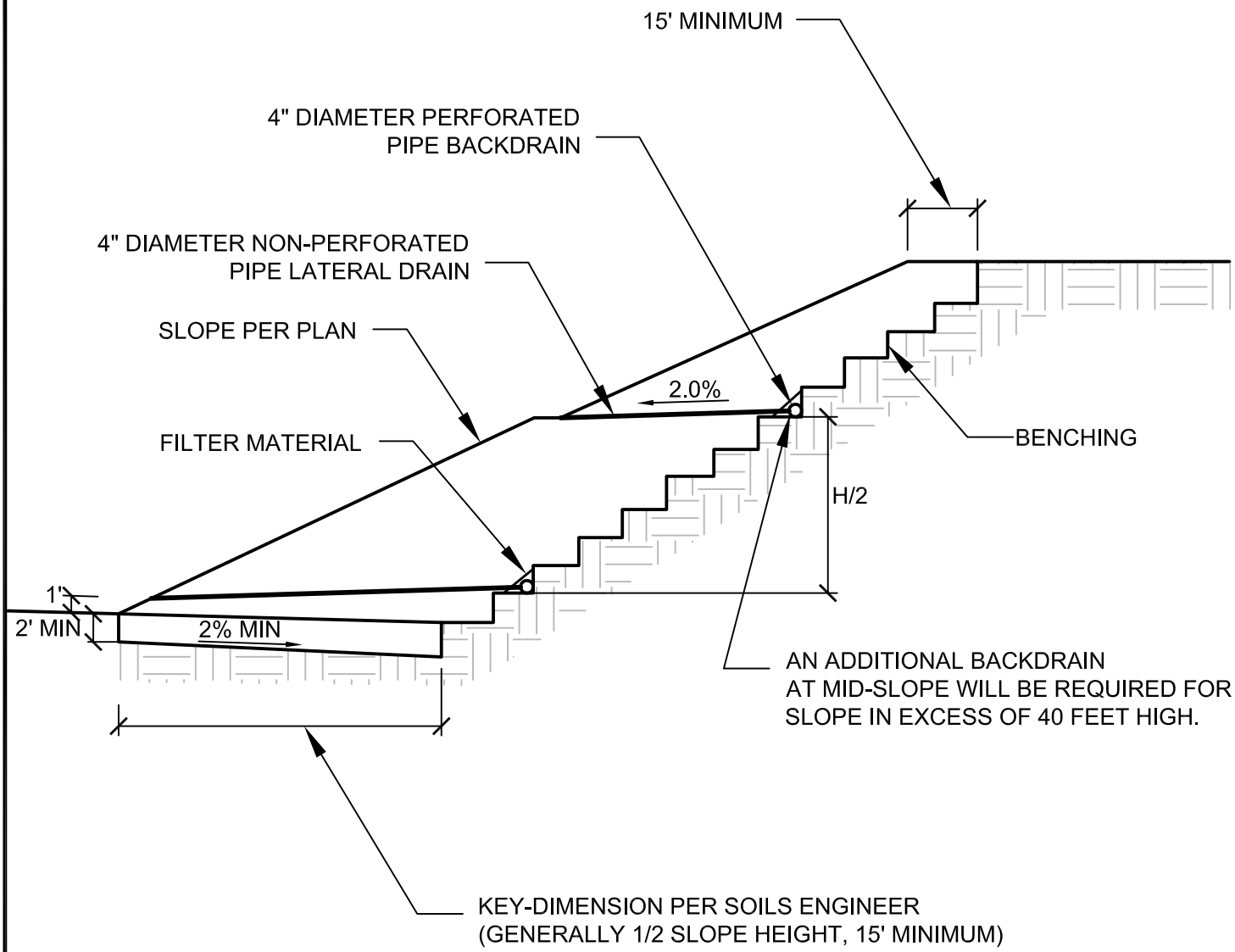
NOTE: HEADWALL SHOULD OUTLET AT TOE OF SLOPE
OR INTO CONTROLLED SURFACE DRAINAGE DEVICE

ALL DISCHARGE SHOULD BE CONTROLLED

THIS DETAIL IS A MINIMUM DESIGN AND MAY BE
MODIFIED DEPENDING UPON ENCOUNTERED
CONDITIONS AND LOCAL REQUIREMENTS

NOT TO SCALE

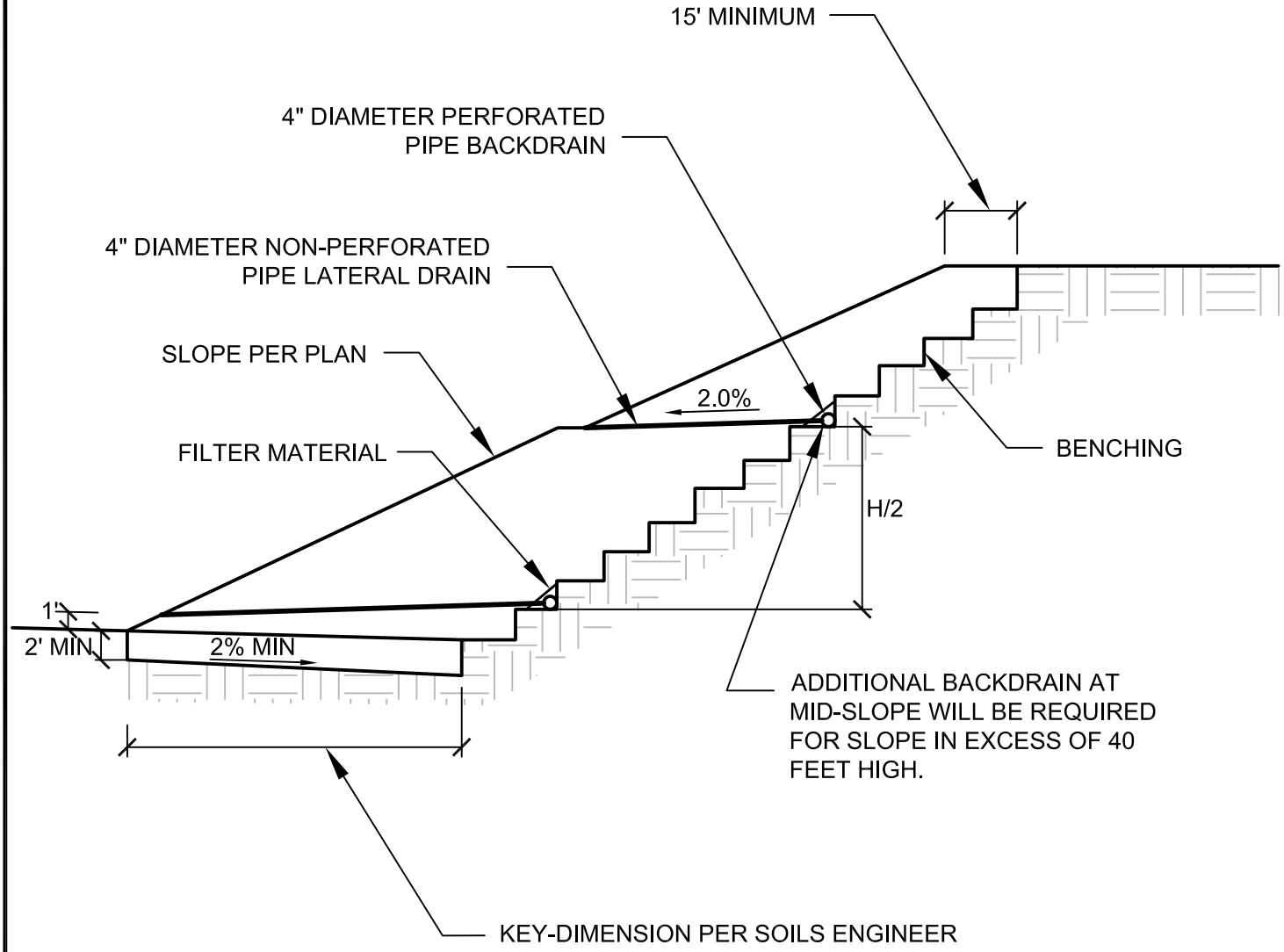
TYPICAL SUBDRAIN OUTLET HEADWALL DETAIL



DIMENSIONS ARE MINIMUM RECOMMENDED

NOT TO SCALE

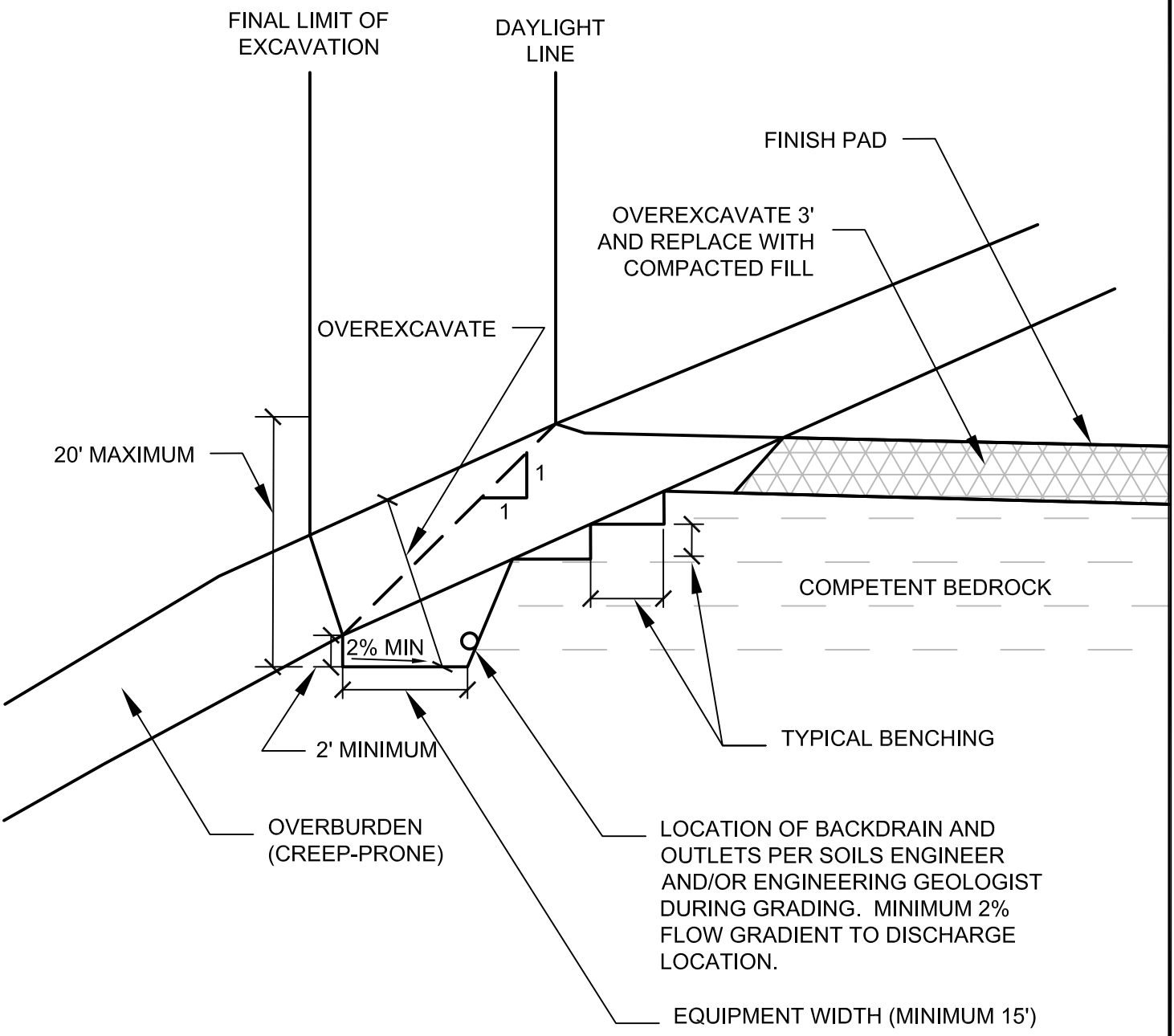
TYPICAL SLOPE STABILIZATION FILL DETAIL



DIMENSIONS ARE MINIMUM RECOMMENDED

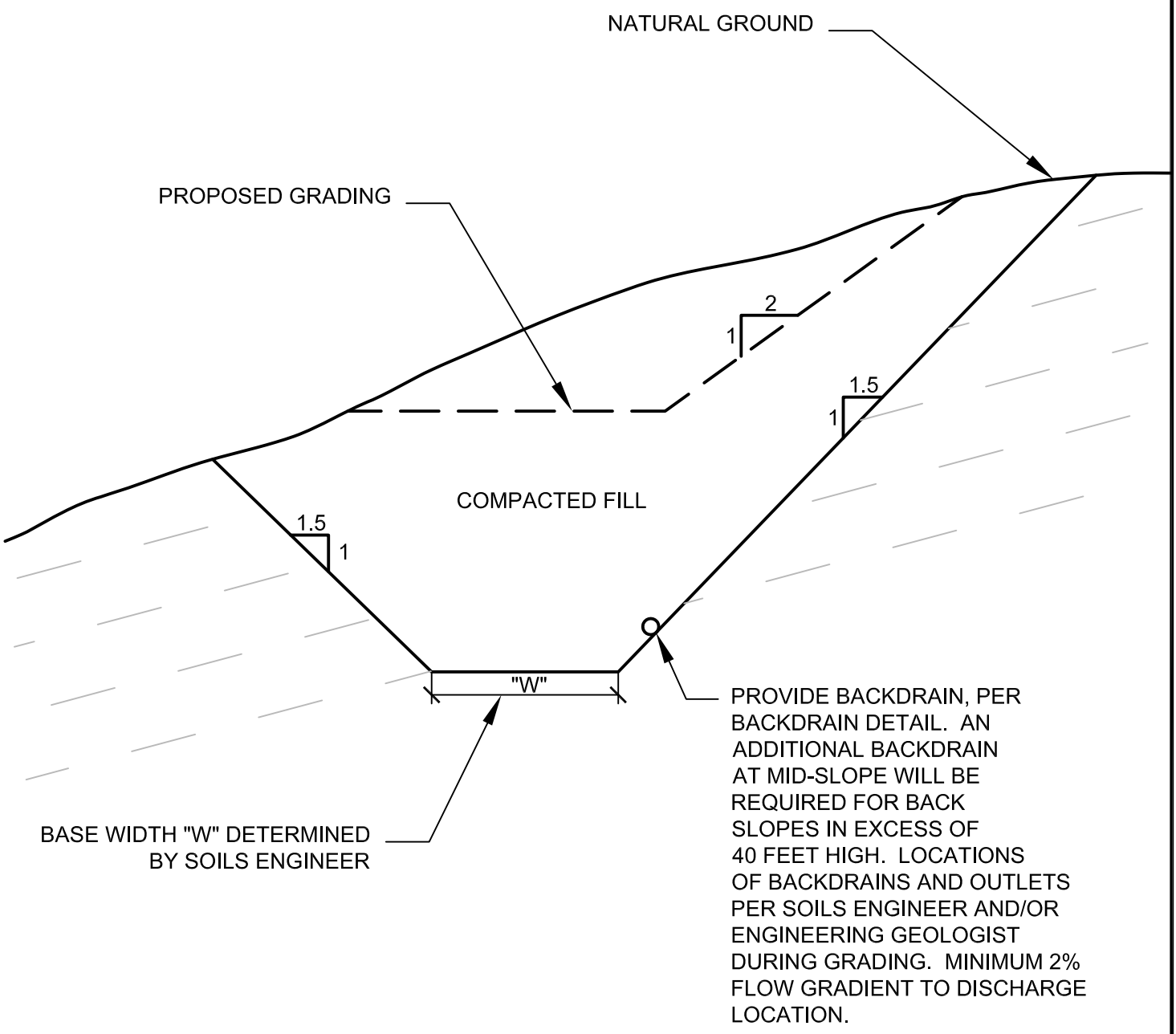
NOT TO SCALE

TYPICAL BUTTRESS FILL DETAIL



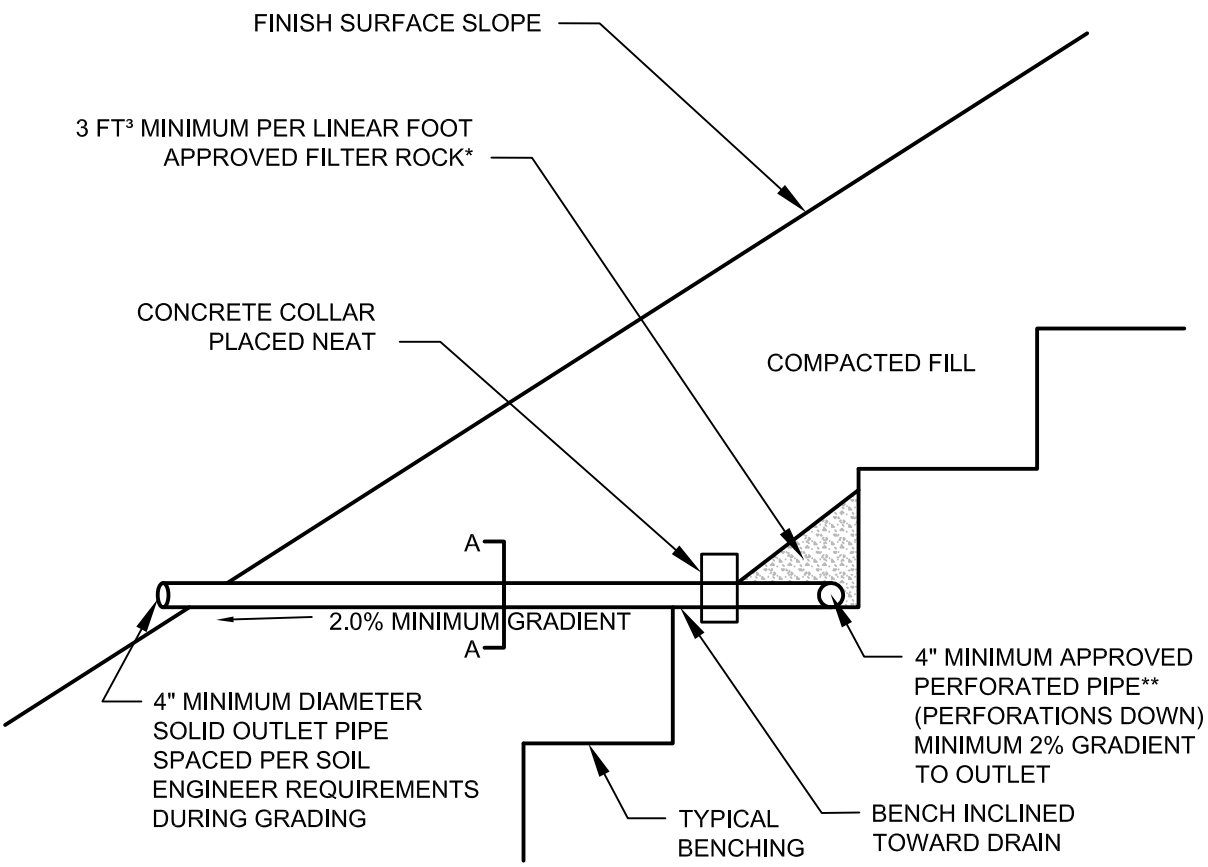
NOT TO SCALE

DAYLIGHT SHEAR KEY DETAIL

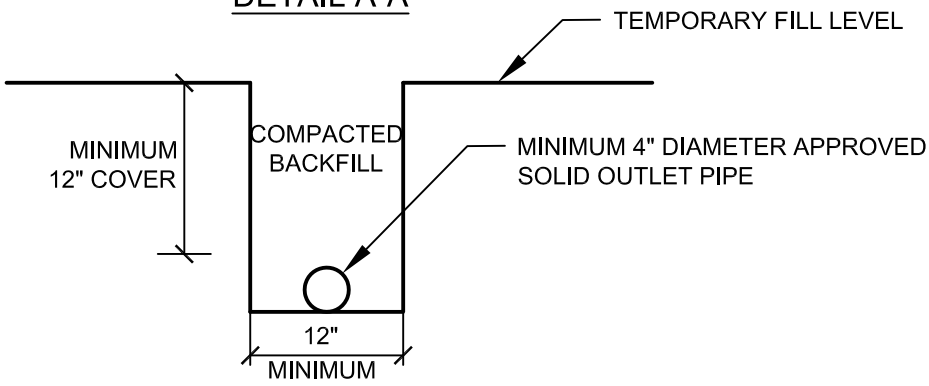


NOT TO SCALE

TYPICAL SHEAR KEY DETAIL



DETAIL A-A



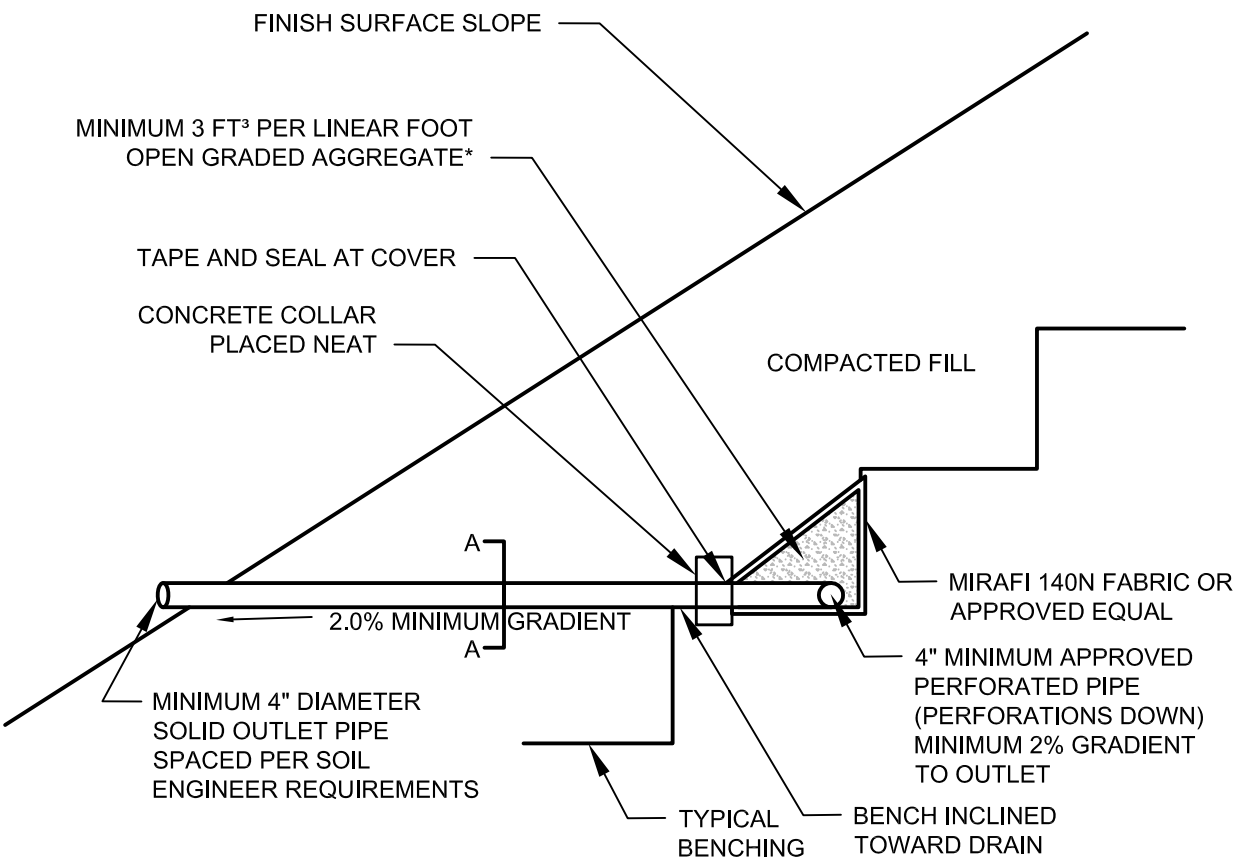
**APPROVED PIPE TYPE:
SCHEDULE 40 POLYVINYL CHLORIDE
(P.V.C.) OR APPROVED EQUAL.
MINIMUM CRUSH STRENGTH 1000 PSI

*FILTER ROCK TO MEET FOLLOWING
SPECIFICATIONS OR APPROVED EQUAL:

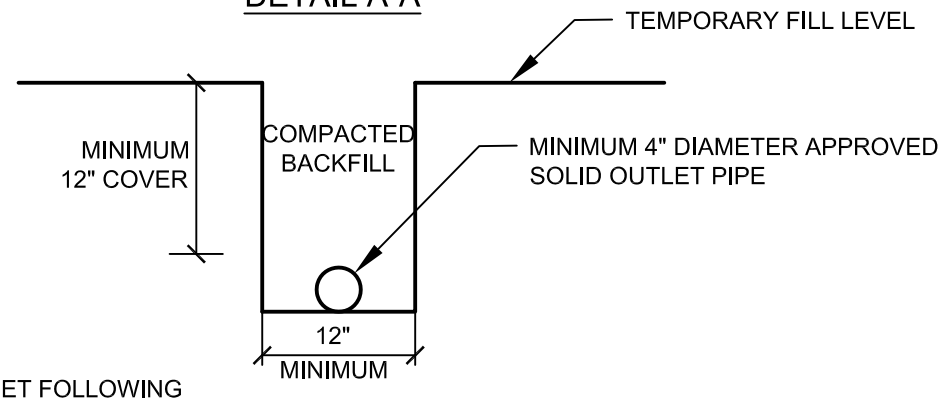
SIEVE SIZE	PERCENTAGE PASSING
1"	100
¾"	90-100
⅜"	40-100
NO. 4	25-40
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

NOT TO SCALE

TYPICAL BACKDRAIN DETAIL



DETAIL A-A

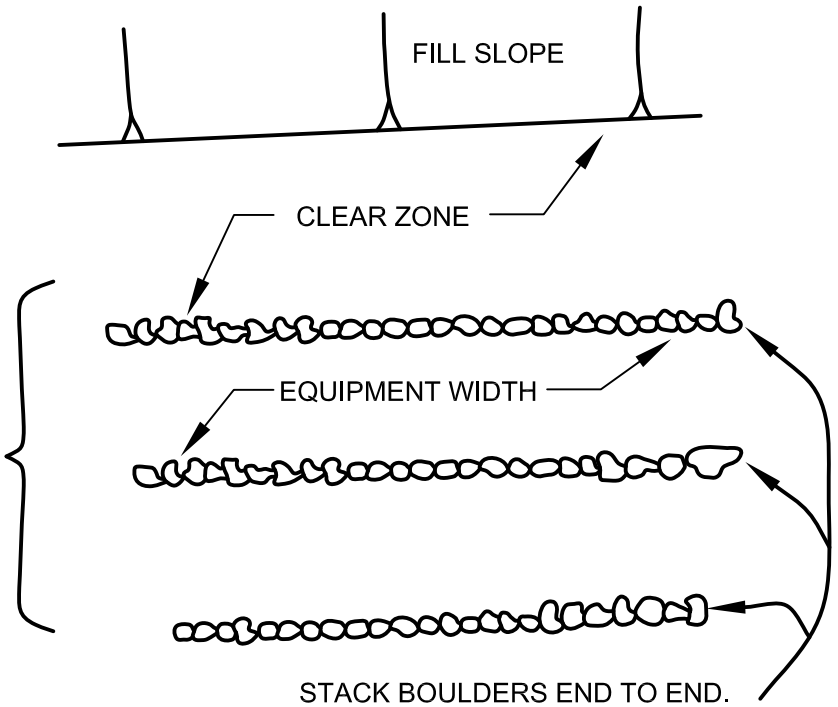


*NOTE: AGGREGATE TO MEET FOLLOWING SPECIFICATIONS OR APPROVED EQUAL:

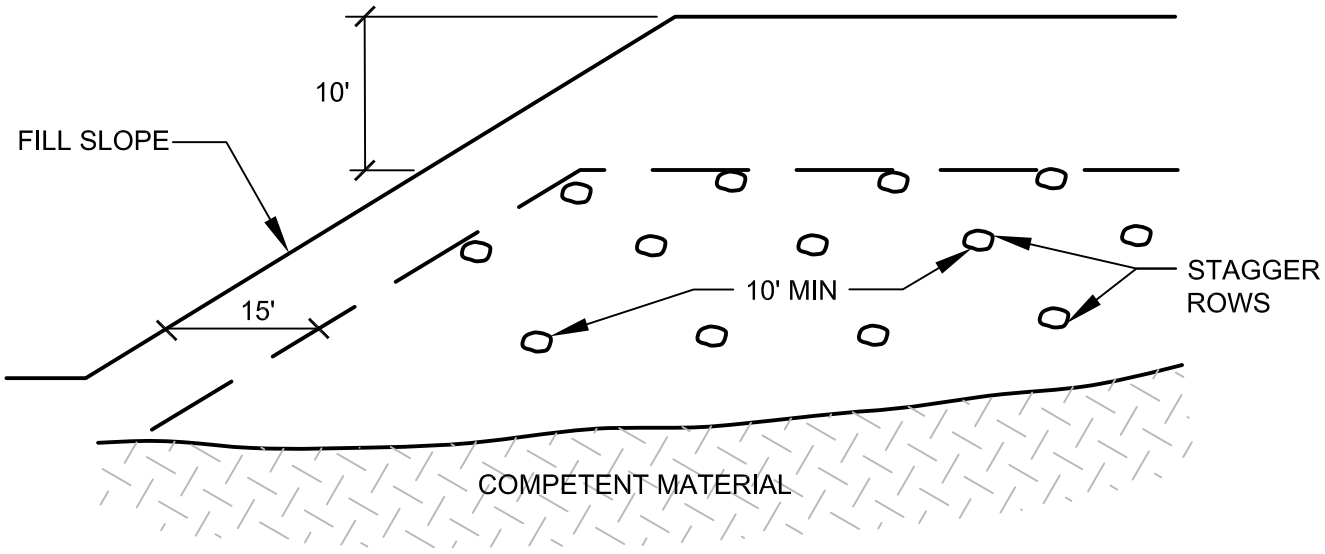
SIEVE SIZE	PERCENTAGE PASSING
1 ½"	100
1"	5-40
¾"	0-17
⅜"	0-7
NO. 200	0-3

NOT TO SCALE

BACKDRAIN DETAIL (GEOFRABIC)

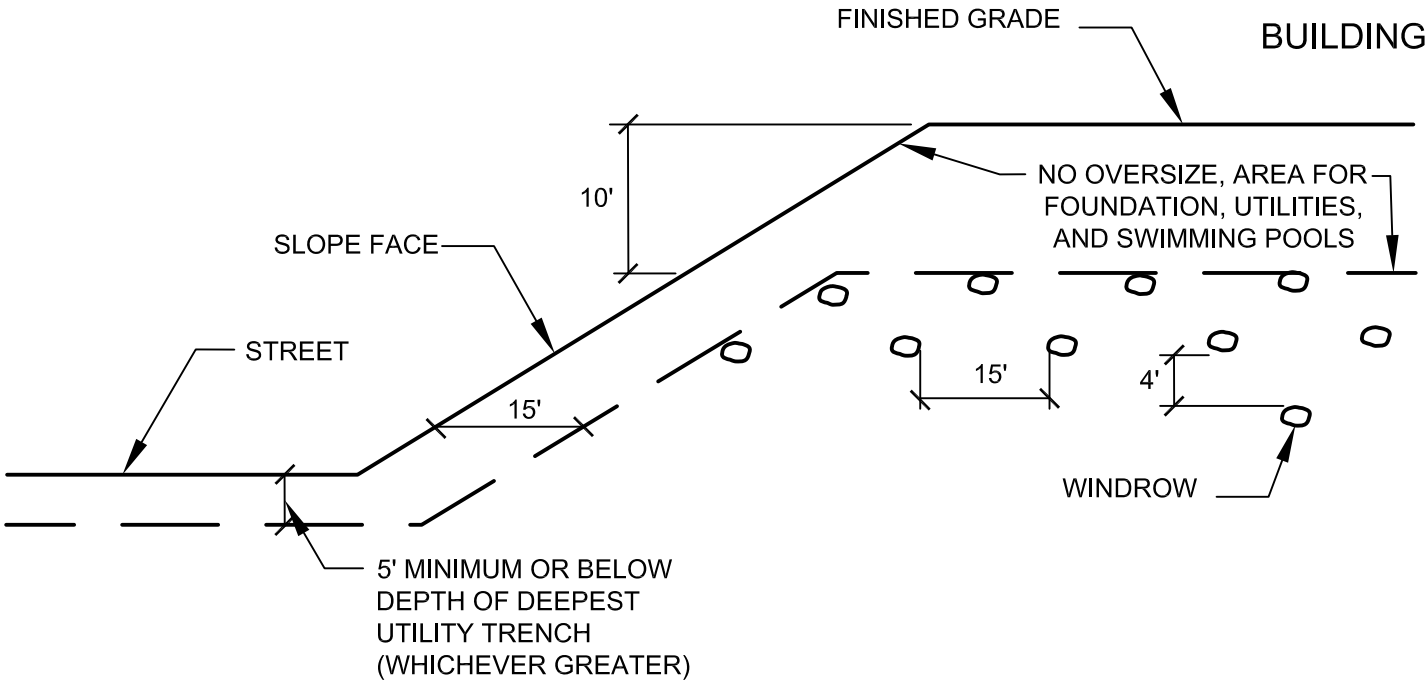


SOIL SHALL BE PUSHED OVER ROCKS AND FLOODED INTO VOIDS. COMPACT AROUND AND OVER EACH WINDROW.

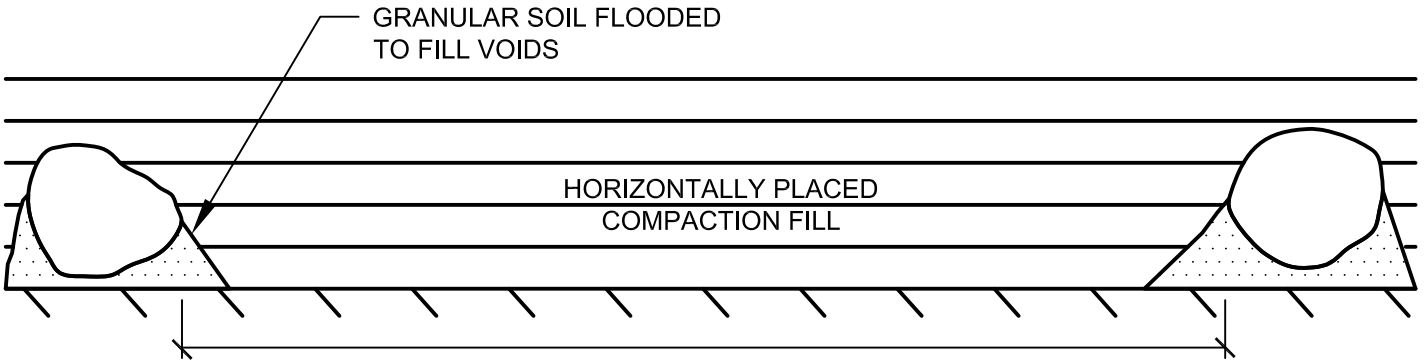


NOT TO SCALE

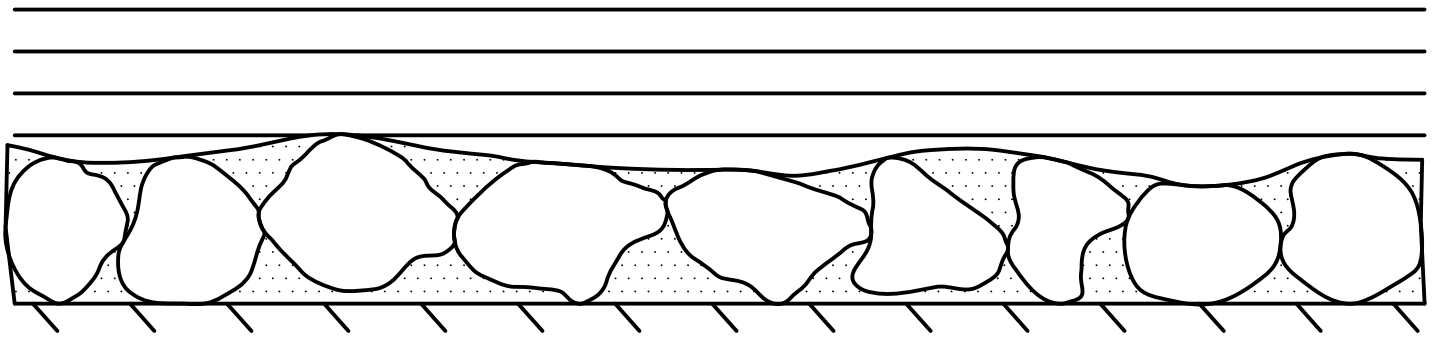
ROCK DISPOSAL DETAIL



TYPICAL WINDROW DETAIL (EDGE VIEW)



PROFILE VIEW

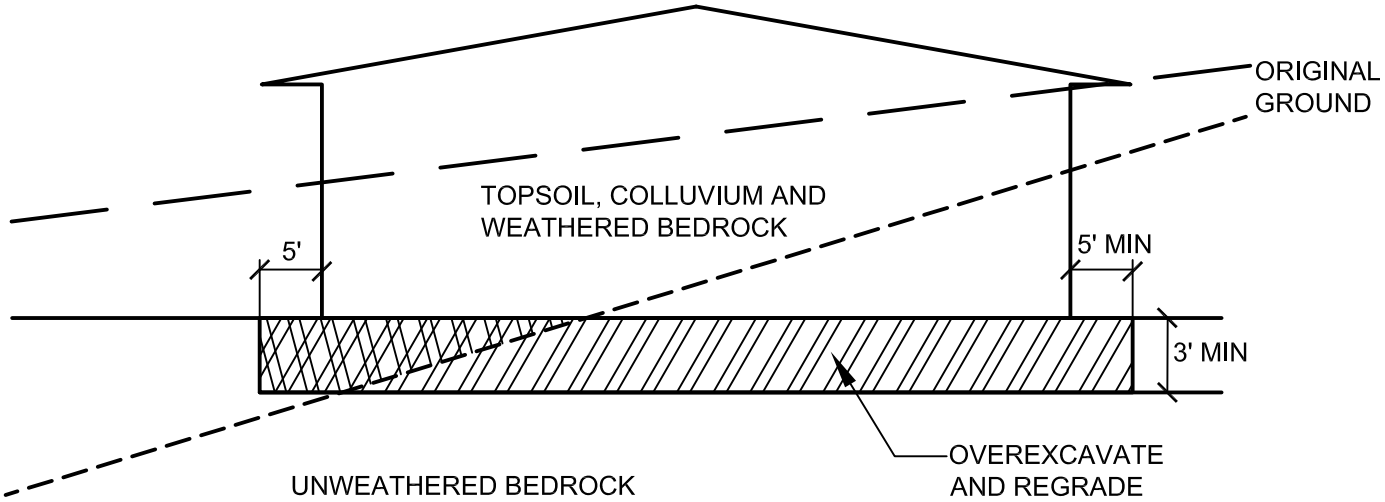


NOT TO SCALE

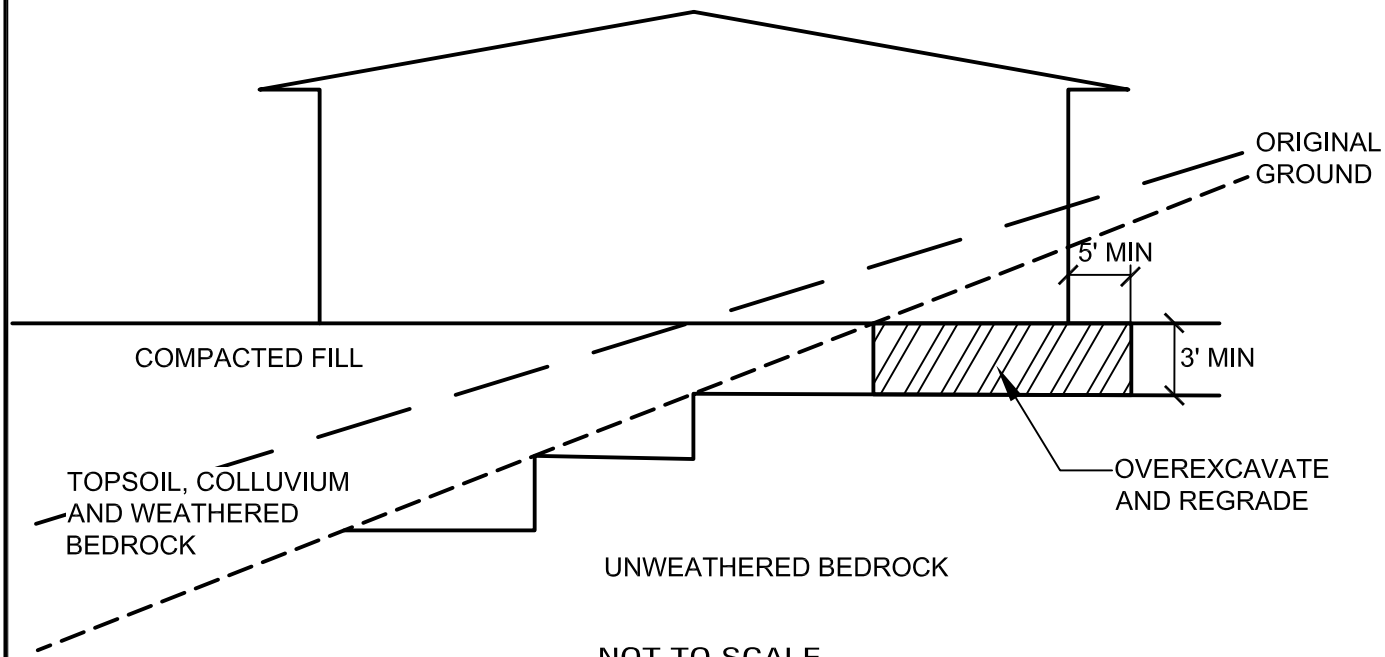
ROCK DISPOSAL DETAIL

GENERAL GRADING RECOMMENDATIONS

CUT LOT



CUT/FILL LOT (TRANSITION)



NOT TO SCALE

TRANSITION LOT DETAIL

APPENDIX E

ACCELERATION RESPONSE SPECTRUM

SITE DATA (ARS Online Version 2.3.09)

Shear Wave Velocity, V_{S30}:	270 m/s
Latitude:	34.096176
Longitude:	-118.714459
Depth to Vs = 1.0 km/s:	N/A
Depth to Vs = 2.5 km/s:	N/A

DETERMINISTIC

Anacapa-Dume alt 1

Fault ID:	348
Maximum Magnitude (MMax):	7.2
Fault Type:	Rev
Fault Dip:	45 Deg
Dip Direction:	N
Bottom of Rupture Plane:	15.60 km
Top of Rupture Plane(Ztor):	0.00 km
Rrup	9.12 km
Rjb:	0.00 km
Rx:	12.90 km
Fnorm:	0
Frev:	1

Period	SA(Base Spectrum)	Basin Factor	Near Fault Factor(Applied)	SA(Final Spectrum)
0.01	0.543	1.000	1.000	0.543
0.05	0.650	1.000	1.000	0.650
0.1	0.839	1.000	1.000	0.839
0.15	0.978	1.000	1.000	0.978
0.2	1.049	1.000	1.000	1.049
0.25	1.071	1.000	1.000	1.071
0.3	1.073	1.000	1.000	1.073
0.4	1.038	1.000	1.000	1.038
0.5	0.991	1.000	1.000	0.991
0.6	0.916	1.000	1.040	0.952
0.7	0.851	1.000	1.080	0.920
0.85	0.763	1.000	1.140	0.870
1	0.683	1.000	1.200	0.819
1.2	0.586	1.000	1.200	0.703
1.5	0.470	1.000	1.200	0.564
2	0.314	1.000	1.200	0.377
3	0.156	1.000	1.200	0.187
4	0.096	1.000	1.200	0.115
5	0.073	1.000	1.200	0.088

Malibu Coast alt 2

Fault ID:	346
Maximum Magnitude (MMax):	6.6
Fault Type:	SS
Fault Dip:	74 Deg
Dip Direction:	N
Bottom of Rupture Plane:	16.30 km
Top of Rupture Plane(Ztor):	0.00 km
Rrup	6.50 km
Rjb:	2.09 km
Rx:	6.76 km
Fnorm:	0
Frev:	0

Period	SA(Base Spectrum)	Basin Factor	Near Fault Factor(Applied)	SA(Final Spectrum)
0.01	0.385	1.000	1.000	0.385
0.05	0.455	1.000	1.000	0.455
0.1	0.607	1.000	1.000	0.607

0.15	0.709	1.000	1.000	0.709
0.2	0.761	1.000	1.000	0.761
0.25	0.771	1.000	1.000	0.771
0.3	0.767	1.000	1.000	0.767
0.4	0.737	1.000	1.000	0.737
0.5	0.687	1.000	1.000	0.687
0.6	0.617	1.000	1.040	0.642
0.7	0.562	1.000	1.080	0.606
0.85	0.490	1.000	1.140	0.558
1	0.431	1.000	1.200	0.517
1.2	0.367	1.000	1.200	0.440
1.5	0.296	1.000	1.200	0.355
2	0.208	1.000	1.200	0.249
3	0.116	1.000	1.200	0.140
4	0.076	1.000	1.200	0.091
5	0.057	1.000	1.200	0.068

Santa Monica fault

Fault ID:	341
Maximum Magnitude (MMax):	7
Fault Type:	SS
Fault Dip:	75 Deg
Dip Direction:	N
Bottom of Rupture Plane:	17.90 km
Top of Rupture Plane(Ztor):	0.00 km
Rrup	9.40 km
Rjb:	4.93 km
Rx:	9.73 km
Fnorm:	0
Frev:	0

Period	SA(Base Spectrum)	Basin Factor	Near Fault Factor(Applied)	SA(Final Spectrum)
0.01	0.335	1.000	1.000	0.335
0.05	0.399	1.000	1.000	0.399
0.1	0.548	1.000	1.000	0.548
0.15	0.649	1.000	1.000	0.649
0.2	0.691	1.000	1.000	0.691
0.25	0.695	1.000	1.000	0.695
0.3	0.687	1.000	1.000	0.687
0.4	0.651	1.000	1.000	0.651
0.5	0.609	1.000	1.000	0.609
0.6	0.553	1.000	1.040	0.575
0.7	0.508	1.000	1.080	0.548
0.85	0.450	1.000	1.140	0.512
1	0.402	1.000	1.200	0.482
1.2	0.348	1.000	1.200	0.417
1.5	0.287	1.000	1.200	0.344
2	0.208	1.000	1.200	0.250
3	0.123	1.000	1.200	0.148
4	0.083	1.000	1.200	0.100
5	0.063	1.000	1.200	0.076

PROBABILISTIC

Probabilistic Model
USGS Seismic Hazard Map(2008) 975 Year Return Period

Period	SA(Base Spectrum)	Basin Factor	Near Fault Factor(Applied)	SA(Final Spectrum)
0.01	0.587	1.000	1.000	0.587
0.05	0.853	1.000	1.000	0.853
0.1	1.002	1.000	1.000	1.002
0.15	1.150	1.000	1.000	1.150
0.2	1.268	1.000	1.000	1.268

0.25	1.277	1.000	1.000	1.277
0.3	1.285	1.000	1.000	1.285
0.4	1.200	1.000	1.000	1.200
0.5	1.138	1.000	1.000	1.138
0.6	1.042	1.000	1.040	1.083
0.7	0.966	1.000	1.080	1.043
0.85	0.848	1.000	1.140	0.967
1	0.749	1.000	1.200	0.898
1.2	0.622	1.000	1.200	0.747
1.5	0.497	1.000	1.200	0.596
2	0.371	1.000	1.200	0.445
3	0.224	1.000	1.200	0.269
4	0.156	1.000	1.200	0.187
5	0.128	1.000	1.200	0.154

MINIMUM DETERMINISTIC SPECTRUM

Period	SA
0.01	0.226
0.05	0.275
0.1	0.400
0.15	0.481
0.2	0.505
0.25	0.499
0.3	0.486
0.4	0.446
0.5	0.400
0.6	0.350
0.7	0.311
0.85	0.265
1	0.230
1.2	0.192
1.5	0.152
2	0.107
3	0.064
4	0.043
5	0.032

Envelope Data

Period	SA
0.01	0.587
0.05	0.853
0.1	1.002
0.15	1.150
0.2	1.268
0.25	1.277
0.3	1.285
0.4	1.200
0.5	1.138
0.6	1.083
0.7	1.043
0.85	0.967
1	0.898
1.2	0.747
1.5	0.596
2	0.445
3	0.269
4	0.187
5	0.154

APPENDIX D
Hydrology and Hydraulic Study

Hydrology and Hydraulic Study

for

Stokes Creek Bridge
Malibu Creek State Park
Calabasas, CA 91302

PREPARED FOR:

California Department of Parks and Recreation
Southern Service Center
2797 Truxton Rd, Barracks 26, San Diego, CA 92106

PREPARED BY:

BergerABAM

10525 Vista Sorrento Parkway, Suite 350
San Diego, CA 92121
(858) 500-4500 FAX: (858) 500-4501

BergerABAM #A13.0037.08
December 2016

Table of Contents

TAB A

1.0 GENERAL PROJECT INFORMATION

A. Project Site Information

Project Name: Stokes Creek Bridge
Site disturbance Acreage: 6,000 SF (0.14Ac)
Project Location: Existing Arch Culvert is on Crags Rd about 920' west of intersection of las Virginenes Rd and Crags Rd. in Calabasas, CA 91302
Flood Plain Status: Zone "A" per FEMA Map Number 06037C1527G, dated January 6th 2016.

C. Existing Conditions

The existing Arch Culvert is on Crags Rd is 17.5' x 11.5 CMP with pave bottom See photo below. Both upstream and downstream is establish with Gabion head wall to makeup the surrounding grade.

CMP Culvert Upstream

CMP Culvert Downstream

Top of Culvert

Water was reported having over toped the bridge to cause damage to the road above the culvert and downstream river channel.

D. Proposed Conditions

To alleviate the flooding situation, California State park is proposed to replace the Existing CMP Culvert with premanufactured Bridge, and provide a 1' freeboard between the bottom of the bridge deck to the 100 year water surface elevation. The channel width is set at 25' with creek bank side slope maximum of 1 to 1 slope.

The proposed bridge is approximately 70' in length by 14' in width. Longitudinal slope is about 1.43% slope running westerly. The upper end is set at elevation 551 feet and the lower end is at elevation 550 feet.

2.0 DESIGN CRITERIA

HEC-RAS (Hydrologic Engineering Centers River Analysis system) was used to determine the water surface elevation for both existing and proposed conditions. The Flow Rate of 100 year Storm was obtained from Flood insurance Study (FIS) of Stokes Canyon Creek and Las Virgenes Creek

The 100 year Flow rate Q of 3717cfs is determine as follows:

1. Stokes Canyon creek flow rate at 1,000 feet upstream of Mulholland Highway
Flow Rate Q(100) = 3067 CFS

2. Las Virgenes creek flow rate at confluence of Stokes Canyon Creek
Flow Rate Q(100) = 15646 CFS

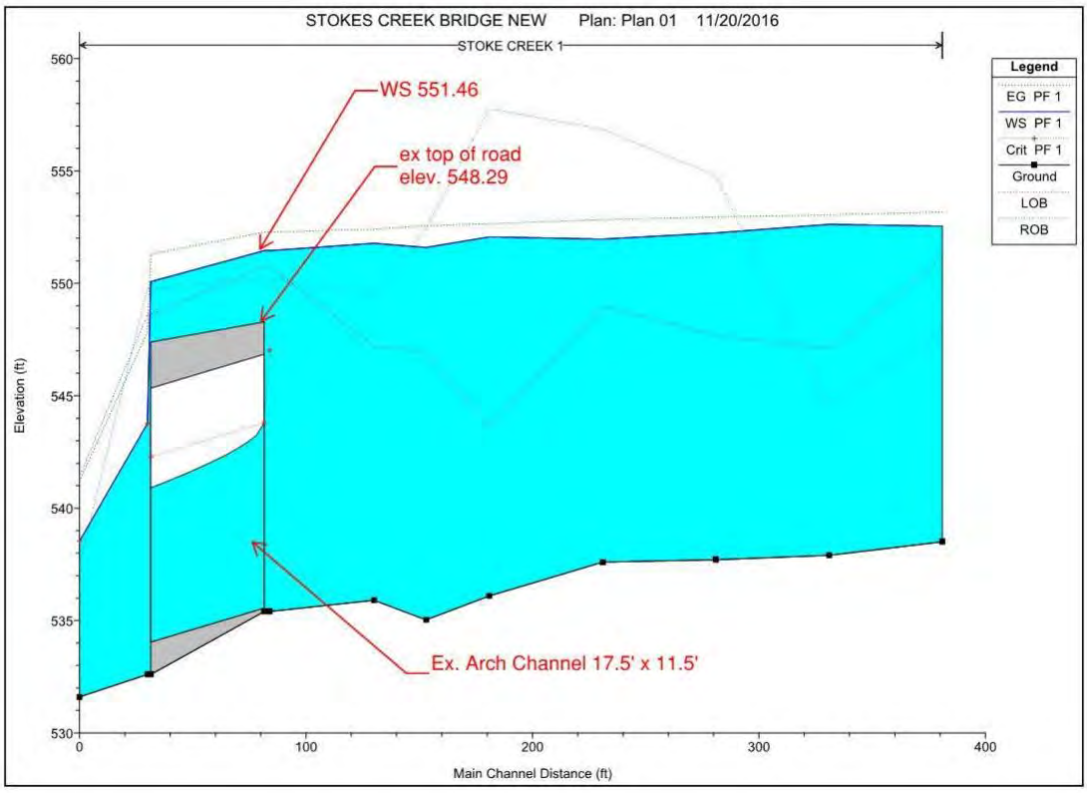
3. Las Virgenes creek flow rate just downstream of Mulholland Highway
Flow Rate Q = 11929 CFS

Design Flow Rate is obtained from the difference of Las Virgenes Creek at Stokes Canyon Creek Confluence and Mulhollan Highway.
Design Flow Rate is 3717 CFS, this is more than the flow rate of Stokes Canyon Creek 1000 feet upstream of Mulholland highway (3067 CFS)

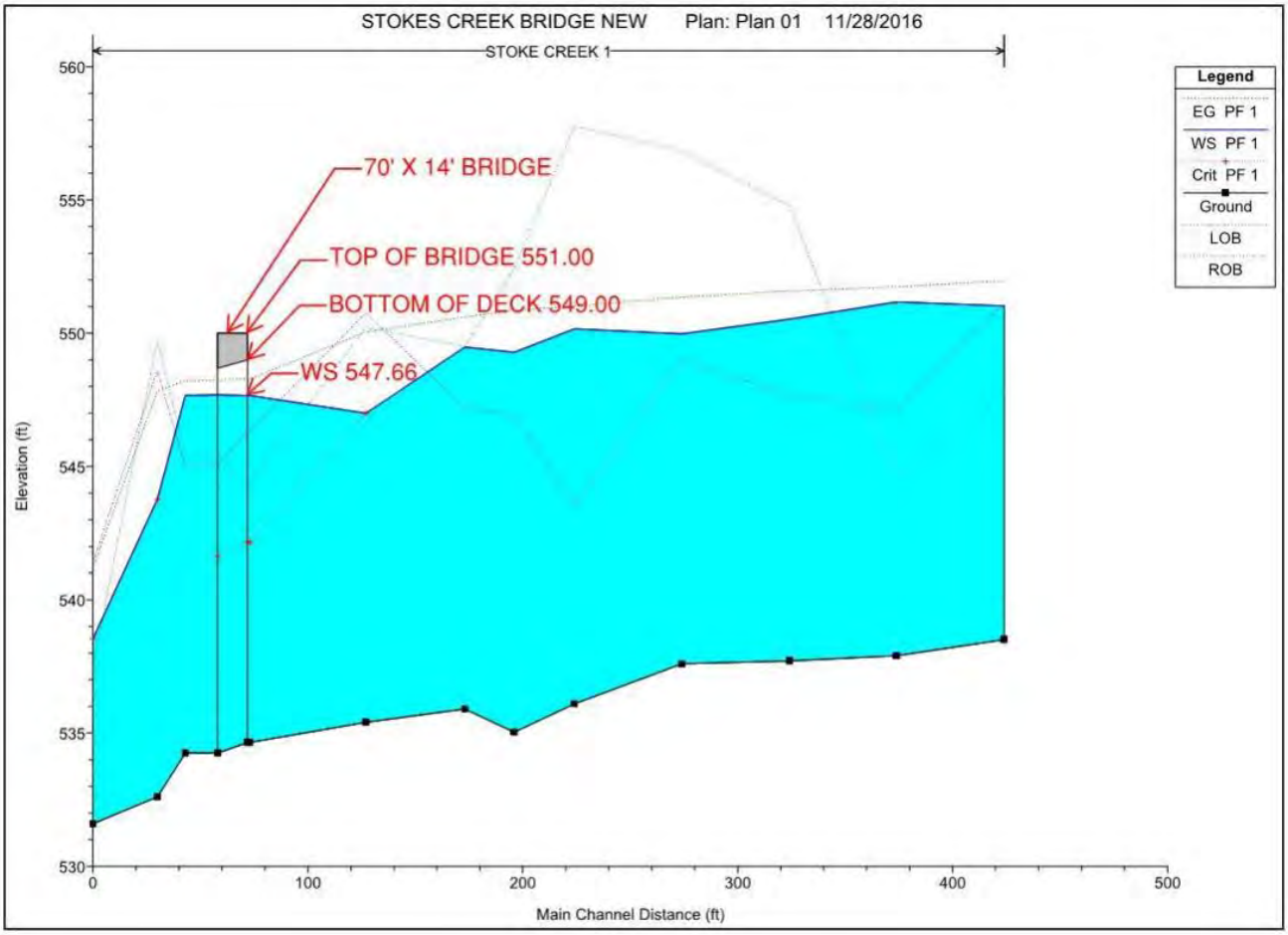
3.0 HEC RAS CALCULATIONS

Existing Condition
Q(100) = 3717 CFS
Water Surface at Bridge: 551.46 ft
Top of the Bridge (road): 548.29 ft
Overtop of road: 3.17 ft

Q(100)=3,717 CFS



proposed Condition
Q(100) = 3717 CFS
Water Surface at Bridge: 547.66 ft
Top of the Bridge (road): 551.00 ft
Bottom of Deck: 549.00
Freeboard: 1.34 ft



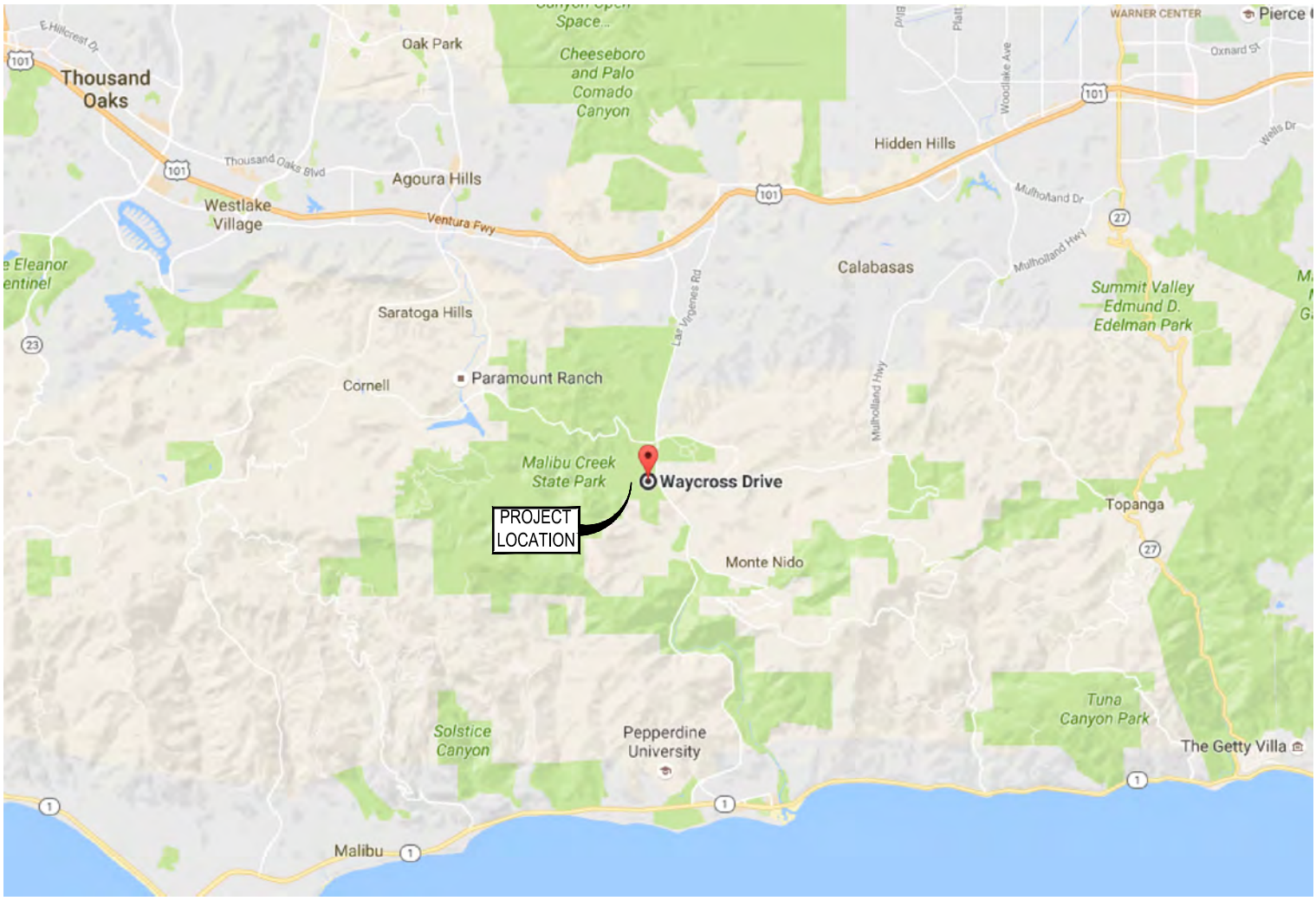
4.0 Conclusions

Installing the new bridge allows the channel width to increase from 17.5' to 25', this allows the water to pass the crossing without overtopping, and provides 1' of freeboard under the bridge.

References

1. FEMA map panel Number 06037C1527 G Revision Date January 6, 2016
2. Flood insurance Study (FIS) for Los Angeles County, CA FIS Number 06037CV001C Version Number 2.3.3.2 Date 03/25/2016

TAB B



BergerABAM
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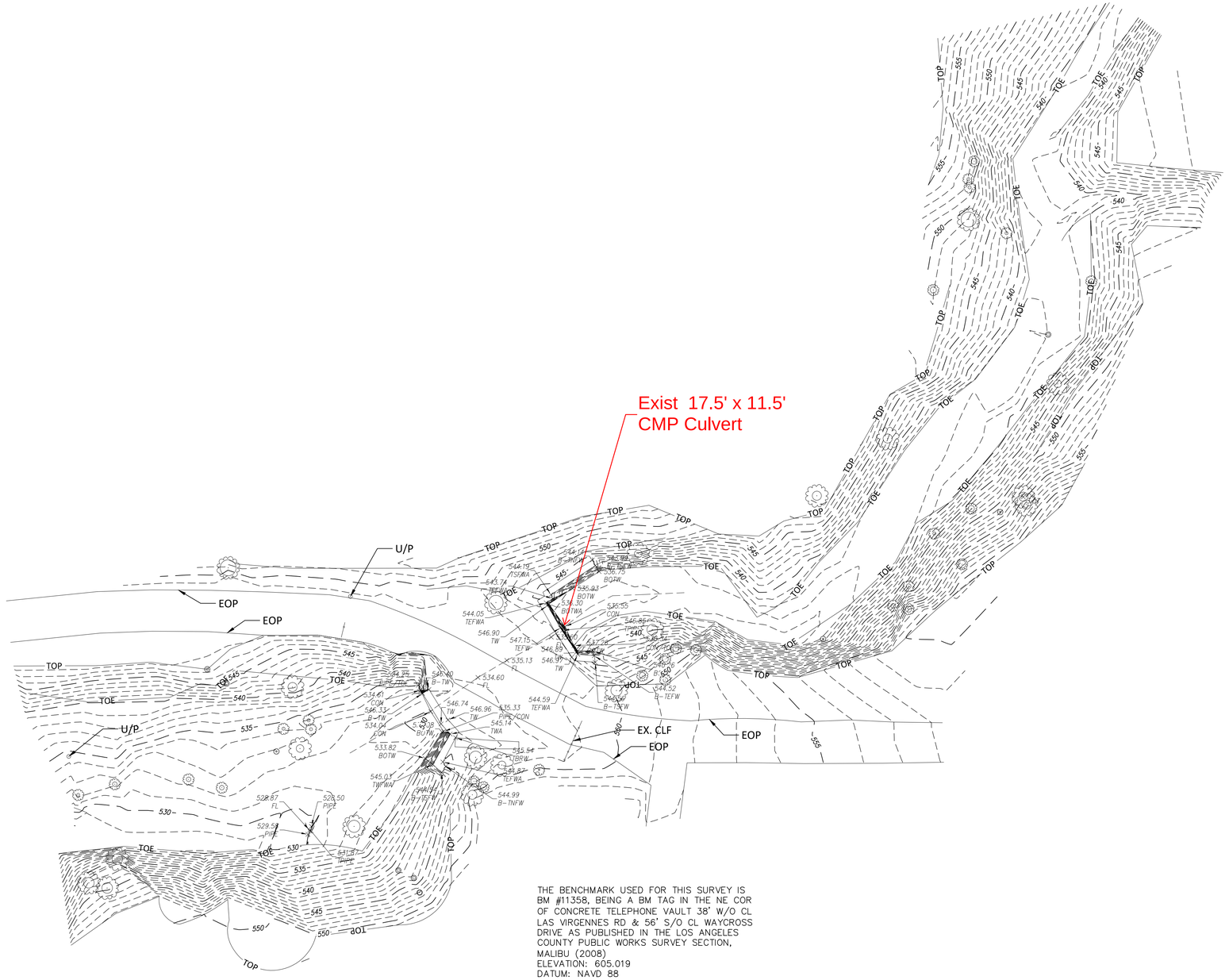
VICINITY MAP

Stokes Canyon Creek Bridge
Calabasas, CA 91302

CZL		PLOT NO: 1	DATE: Nov. 29, 2016	PROJECT NUMBER: A13.037.08	FIG 1

BergerABAM
10525 Vista Sorrento Parkway Suite 350
San Diego, CA 92121 (858) 500-4500

CALIFORNIA STATE PARKS SINCE 1864 ®
ACQUISITION & DEVELOPMENT DIVISION
One Capitol Mall
Sacramento, CA
95814-3229



CALIFORNIA STATE FIRE MARSHAL- APPROVED

Approval of this plan does not authorize or approve any omission of deviation from applicable regulations. Final approval is subject to field inspection. One set of approved plans shall be available on the project site at all times.

Reviewed by Date

DPR ACCESS COMPLIANCE REVIEW
ACCESSIBILITY SECTION

CERTIFICATION #

Reviewed by Date

ACCESSIBILITY COMPLIANCE AND STATE FIRE MARSHAL SIGNED ORIGINALS ARE ON FILE AT THE DEPARTMENT OF PARKS AND RECREATION, NORTHERN SERVICE CENTER

DESIGNED:	-
DRAWN:	-
CHECKED:	-
DATE:	11-02-201□

REVISIONS

	DATE
1	

CALIFORNIA DEPARTMENT OF PARKS AND RECREATION
STOKES CREEK'S NEW BRIDGE

E□ISTING CONDITION PLAN-

DESIGN DEVELOPMENT

DRAWING NO.
A13.0037.08

SHEET NO.
-
- OF -

TAB C

Existing 17.5' x 11.5' CMP Culvert

HEC-RAS Plan: Plan 01 River: STOKE CREEK Reach: 1 Profile: PF 1

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
1	400	PF 1	553.41	552.83	0.58	0.06	0.05	2.57	3248.62	465.81	83.82
1	350	PF 1	553.30	552.90	0.40	0.06	0.03	71.18	3571.56	74.26	79.01
1	300	PF 1	553.21	552.54	0.67	0.10	0.01	63.68	3653.32		63.59
1	250	PF 1	553.10	552.29	0.81	0.09	0.08		3717.00		53.24
1	200	PF 1	552.94	552.38	0.56	0.05	0.04	172.48	3544.52		61.62
1	173	PF 1	552.85	551.94	0.91	0.05	0.10	10.95	3706.05	0.00	47.69
1	150	PF 1	552.71	552.13	0.58	0.09	0.02		3660.10	56.90	80.00
1	104	PF 1	552.60	551.85	0.74			0.77	3686.71	29.52	82.14
1	101.5		Culvert								
1	50	PF 1	547.83	543.76	4.07	0.49	0.42		3717.00		28.37
1	20	PF 1	541.21	538.54	2.67				3715.16	1.84	55.48

HEC-RAS Plan: Plan 01 River: STOKE CREEK Reach: 1 Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	400	PF 1	3717.00	538.50	552.83		553.41	0.001942	6.45	672.37	83.82	0.39
1	350	PF 1	3717.00	537.90	552.90		553.30	0.000789	5.16	796.17	79.01	0.27
1	300	PF 1	3717.00	537.70	552.54		553.21	0.001734	6.62	587.39	63.59	0.37
1	250	PF 1	3717.00	537.60	552.29		553.10	0.002432	7.20	515.90	53.24	0.41
1	200	PF 1	3717.00	536.10	552.38		552.94	0.001270	6.11	660.79	61.62	0.32
1	173	PF 1	3717.00	535.03	551.94		552.85	0.002397	7.66	492.46	47.69	0.41
1	150	PF 1	3717.00	535.90	552.13		552.71	0.001667	6.14	638.18	80.00	0.34
1	104	PF 1	3717.00	535.40	551.85	547.03	552.60	0.002508	6.95	556.69	82.14	0.41
1	101.5		Culvert									
1	50	PF 1	3717.00	532.60	543.76	543.76	547.83	0.018792	16.18	229.75	28.37	1.00
1	20	PF 1	3717.00	531.60	538.54	538.54	541.21	0.014385	13.11	284.54	55.48	1.00

HEC-RAS Plan: Plan 01 River: STOKE CREEK Reach: 1 Profile: PF 1

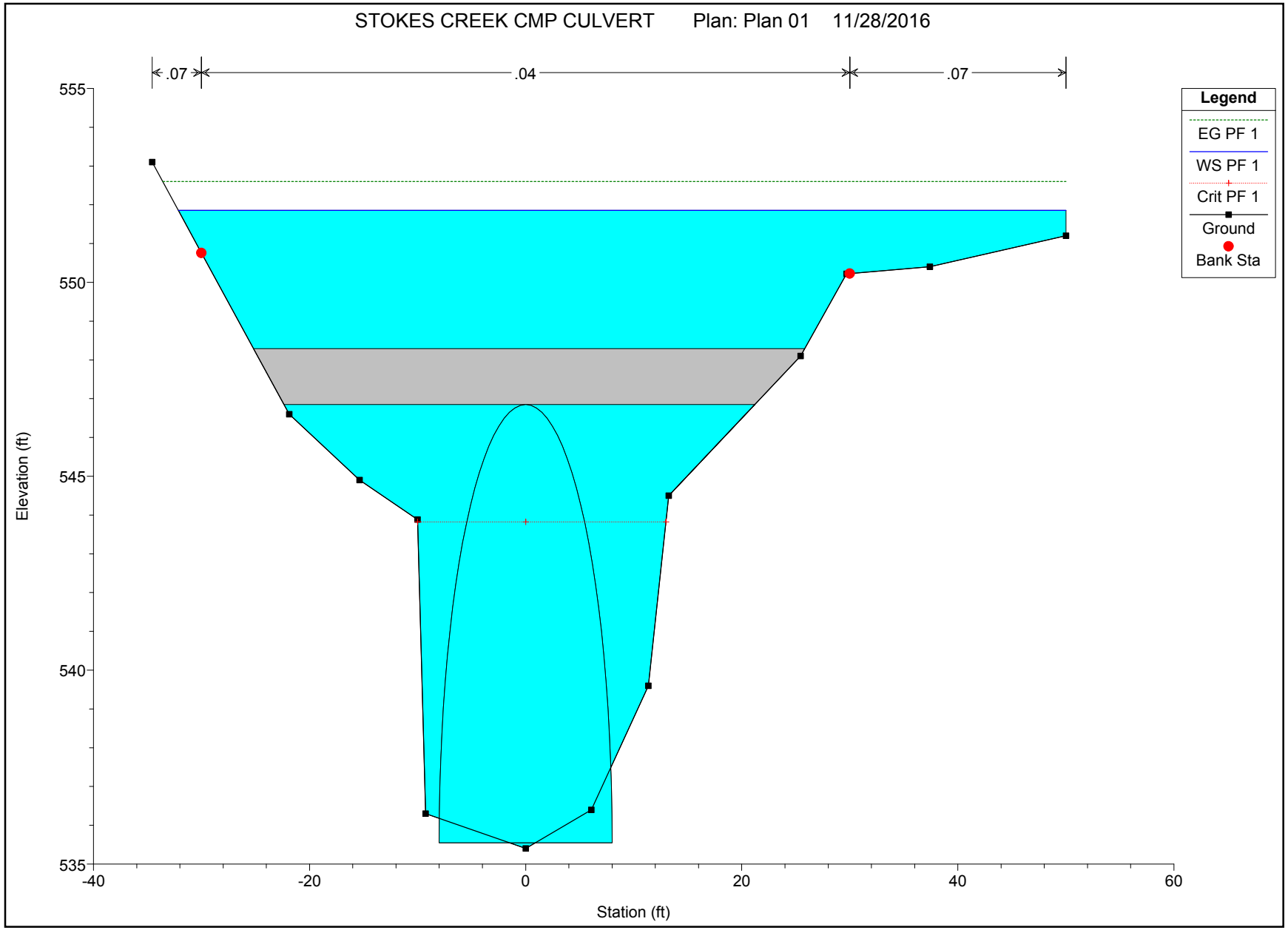
Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
1	150	PF 1	552.71	552.13	0.58	0.09	0.02		3660.10	56.90	80.00
1	104	PF 1	552.60	551.85	0.74			0.77	3686.71	29.52	82.14
1	101.5		Culvert								
1	50	PF 1	547.83	543.76	4.07	0.49	0.42		3717.00		28.37
1	20	PF 1	541.21	538.54	2.67				3715.16	1.84	55.48

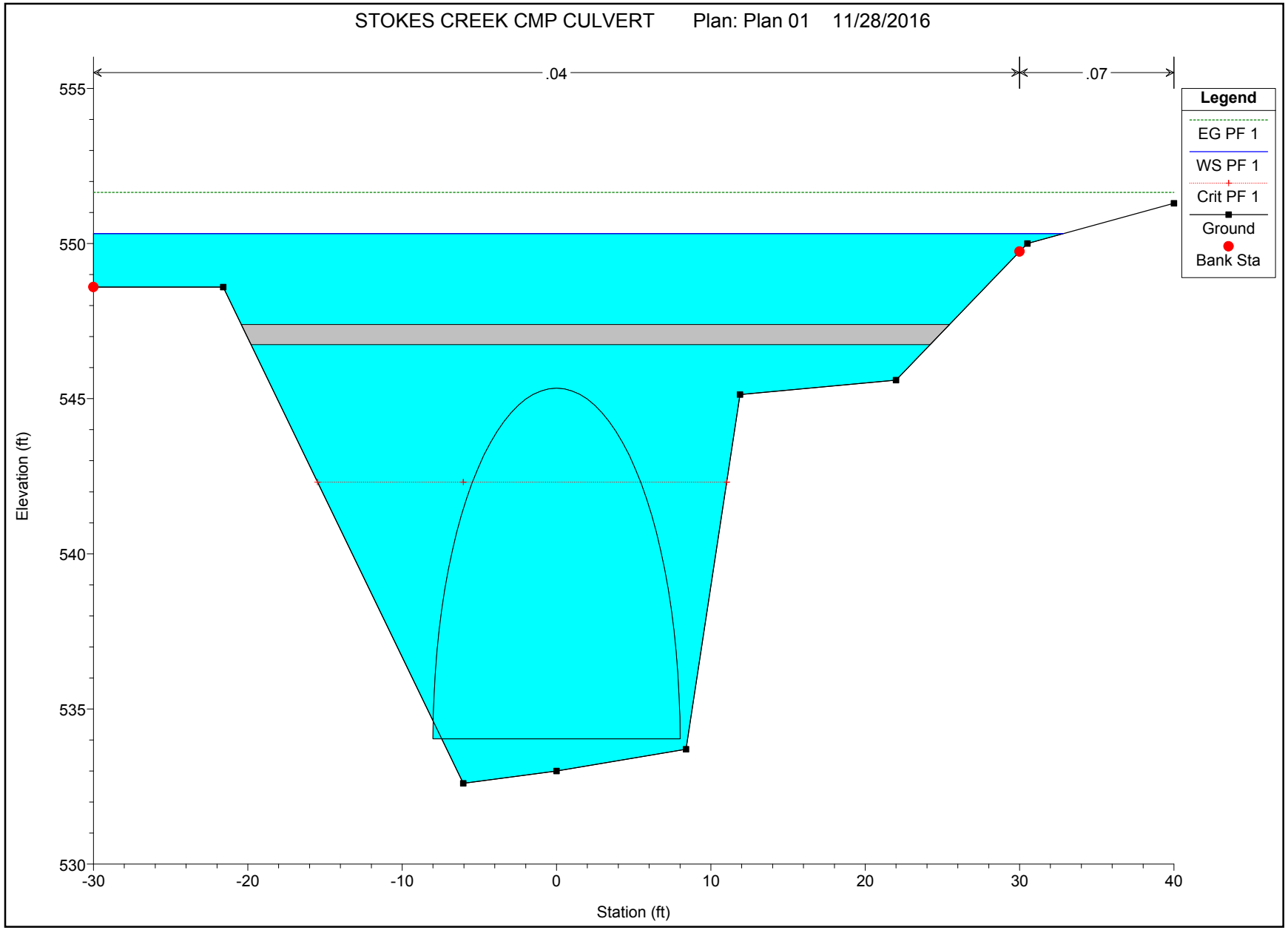
HEC-RAS Plan: Plan 01 River: STOKE CREEK Reach: 1 Profile: PF 1

Reach	River Sta	Profile	E.G. US.	W.S. US.	E.G. IC	E.G. OC	Min El Weir Flow	Q Culv Group	Q Weir	Delta WS	Culv Vel US	Culv Vel DS
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(ft)	(ft/s)	(ft/s)
1	101.5 Culvert #1	PF 1	552.60	551.85	552.60	552.03	548.30	2238.89	1478.11	8.09	15.77	24.41

Plan: Plan 01 STOKE CREEK 1 RS: 101.5 Culv Group: Culvert #1 Profile: PF 1

Q Culv Group (cfs)	2238.89	Culv Full Len (ft)	
# Barrels	1	Culv Vel US (ft/s)	15.77
Q Barrel (cfs)	2238.89	Culv Vel DS (ft/s)	24.41
E.G. US. (ft)	552.60	Culv Inv El Up (ft)	535.55
W.S. US. (ft)	551.85	Culv Inv El Dn (ft)	534.04
E.G. DS (ft)	547.83	Culv Frctn Ls (ft)	0.00
W.S. DS (ft)	543.76	Culv Exit Loss (ft)	1.50
Delta EG (ft)	4.77	Culv Entr Loss (ft)	1.93
Delta WS (ft)	8.09	Q Weir (cfs)	1478.11
E.G. IC (ft)	552.60	Weir Sta Lft (ft)	-33.61
E.G. OC (ft)	552.03	Weir Sta Rgt (ft)	50.00
Culvert Control	Inlet	Weir Submerg	0.00
Culv WS Inlet (ft)	546.85	Weir Max Depth (ft)	4.32
Culv WS Outlet (ft)	540.07	Weir Avg Depth (ft)	3.49
Culv Nml Depth (ft)	6.23	Weir Flow Area (sq ft)	292.01
Culv Crt Depth (ft)	8.27	Min El Weir Flow (ft)	548.30


STOKES CREEK CMP CULVERT Plan: Plan 01 11/28/2016
.07
.04
.07
555
550
545
540
535
Elevation (ft)
-40
-20
0
20
40
60
Station (ft)
Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta


STOKES CREEK CMP CULVERT Plan: Plan 01 11/28/2016
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Legend
EG PF 1
WS PF 1
Crit PF 1
Ground
Bank Sta
Elevation (ft)
555
550
545
540
535
530
-30
-20
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10
20
30
40
Station (ft)

New Bridge 70' X 14'

HEC-RAS Plan: Plan 01 River: STOKE CREEK Reach: 1 Profile: PF 1

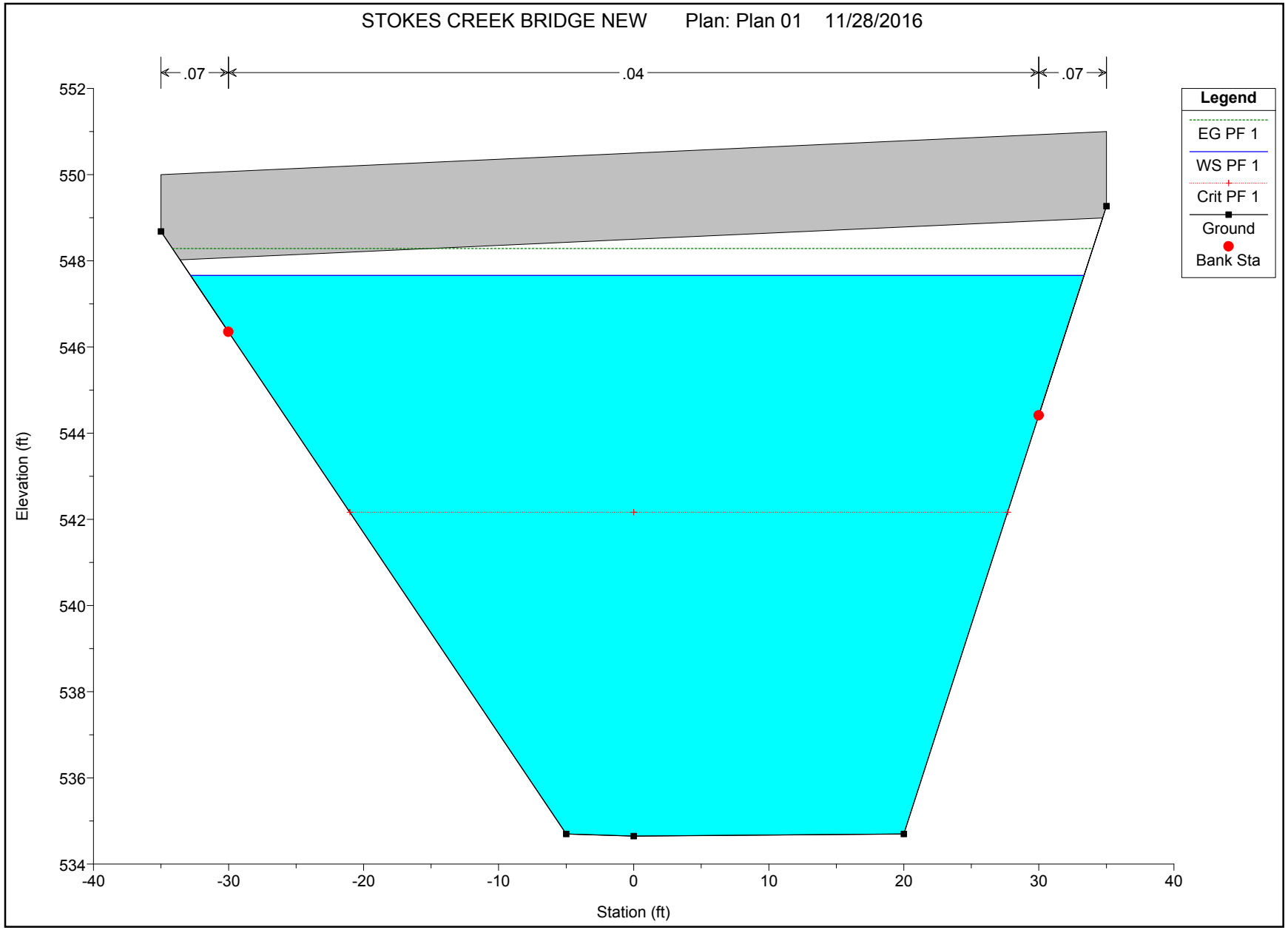
Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Vel Head	Frctn Loss	C & E Loss	Q Left	Q Channel	Q Right	Top Width
			(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft)
1	400	PF 1	551.96	551.03	0.94	0.11	0.11		3238.25	478.75	79.78
1	350	PF 1	551.74	551.17	0.57	0.10	0.05	43.91	3604.04	69.05	79.01
1	300	PF 1	551.59	550.53	1.06	0.20	0.03	34.62	3682.38		59.44
1	250	PF 1	551.35	549.98	1.37	0.17	0.15		3717.00		50.88
1	200	PF 1	551.03	550.16	0.87	0.10	0.07	143.51	3573.49		59.63
1	173	PF 1	550.86	549.28	1.58	0.12	0.14	5.76	3711.24		44.53
1	150	PF 1	550.61	549.48	1.12	0.37	0.19		3717.00		59.75
1	104	PF 1	550.04	547.00	3.04	0.21	0.72		3717.00		44.39
1	80	PF 1	548.29	547.66	0.63	0.00	0.00	1.12	3710.75	5.13	66.16
1	79		Bridge								
1	63	PF 1	548.22	547.66	0.56	0.04	0.35	4.77	3709.36	2.87	67.68
1	50	PF 1	547.83	543.76	4.07	0.49	0.42		3717.00		28.37
1	20	PF 1	541.21	538.54	2.67				3715.16	1.84	55.48

HEC-RAS Plan: Plan 01 River: STOKE CREEK Reach: 1 Profile: PF 1

Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
1	400	PF 1	3717.00	538.50	551.03		551.96	0.004297	8.19	525.02	79.78	0.56
1	350	PF 1	3717.00	537.90	551.17		551.74	0.001378	6.12	659.90	79.01	0.34
1	300	PF 1	3717.00	537.70	550.53		551.59	0.003264	8.28	463.74	59.44	0.50
1	250	PF 1	3717.00	537.60	549.98		551.35	0.005232	9.39	395.70	50.88	0.59
1	200	PF 1	3717.00	536.10	550.16		551.03	0.002426	7.60	526.30	59.63	0.43
1	173	PF 1	3717.00	535.03	549.28		550.86	0.005542	10.08	371.75	44.53	0.61
1	150	PF 1	3717.00	535.90	549.48		550.61	0.004578	8.51	436.96	59.75	0.55
1	104	PF 1	3717.00	535.40	547.00	547.00	550.04	0.017964	13.99	265.71	44.39	1.01
1	80	PF 1	3717.00	534.65	547.66	542.15	548.29	0.001614	6.35	591.48	66.16	0.36
1	79		Bridge									
1	63	PF 1	3717.00	534.25	547.66		548.22	0.001340	6.01	626.59	67.68	0.33
1	50	PF 1	3717.00	532.60	543.76	543.76	547.83	0.018792	16.18	229.75	28.37	1.00
1	20	PF 1	3717.00	531.60	538.54	538.54	541.21	0.014385	13.11	284.54	55.48	1.00

HEC-RAS Plan: Plan 01 River: STOKE CREEK Reach: 1 Profile: PF 1

Reach	River Sta	Profile	E.G. Elev	W.S. Elev	Crit W.S.	Frctn Loss	C & E Loss	Top Width	Q Left	Q Channel	Q Right	Vel Chnl
			(ft)	(ft)	(ft)	(ft)	(ft)	(ft)	(cfs)	(cfs)	(cfs)	(ft/s)
1	104	PF 1	550.04	547.00	547.00	0.21	0.72	44.39		3717.00		13.99
1	80	PF 1	548.29	547.66	542.15	0.00	0.00	66.16	1.12	3710.75	5.13	6.35
1	79 BR U	PF 1	548.29	547.66	542.17	0.02	0.02	66.16	1.11	3710.76	5.13	6.35
1	79 BR D	PF 1	548.25	547.69	541.64	0.02	0.00	67.75	4.87	3709.19	2.94	6.00
1	63	PF 1	548.22	547.66		0.04	0.35	67.68	4.77	3709.36	2.87	6.01
1	50	PF 1	547.83	543.76	543.76	0.49	0.42	28.37		3717.00		16.18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Elevation (ft)
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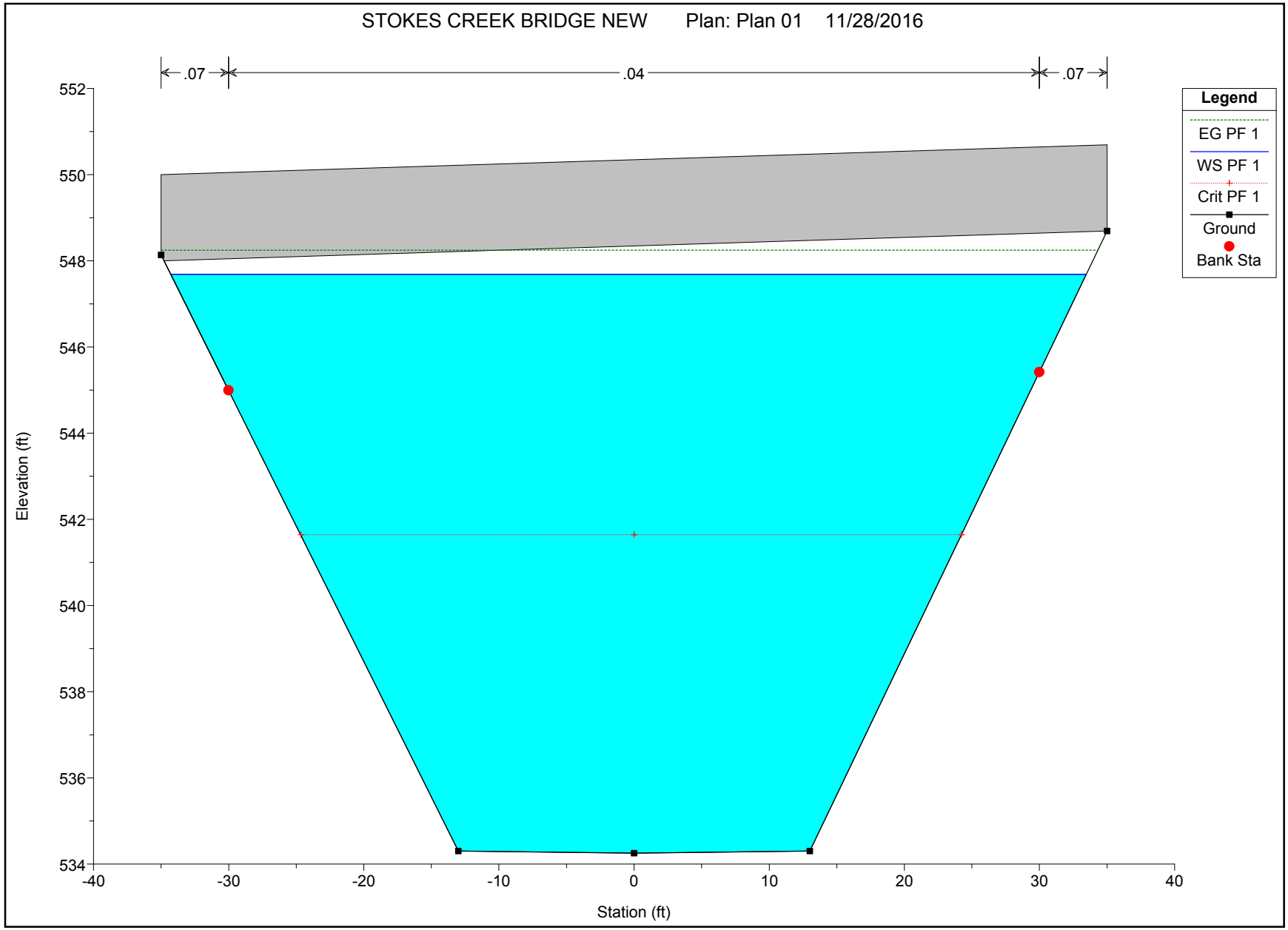
STOKES CREEK BRIDGE NEW Plan: Plan 01 11/28/2016
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Station (ft)
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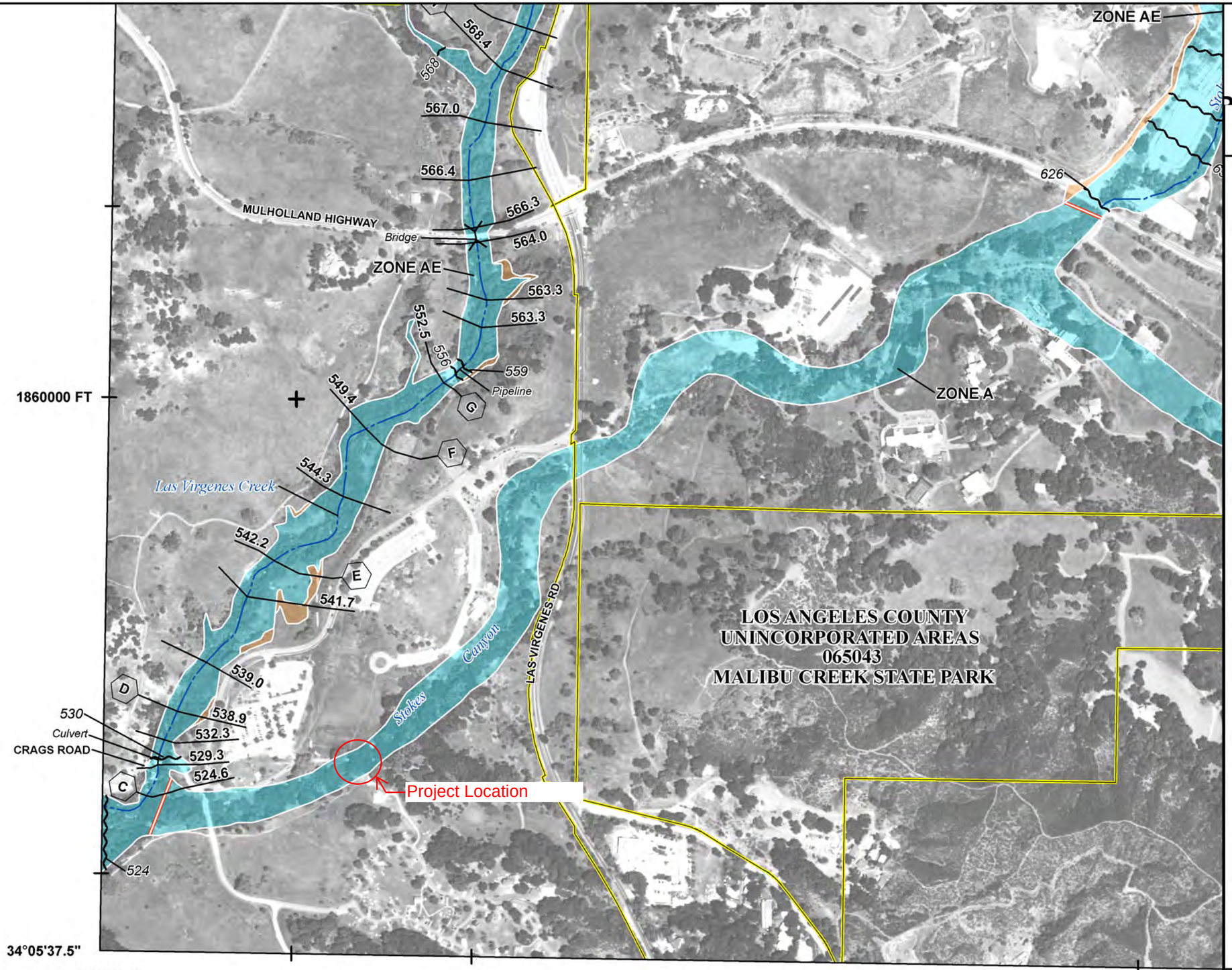
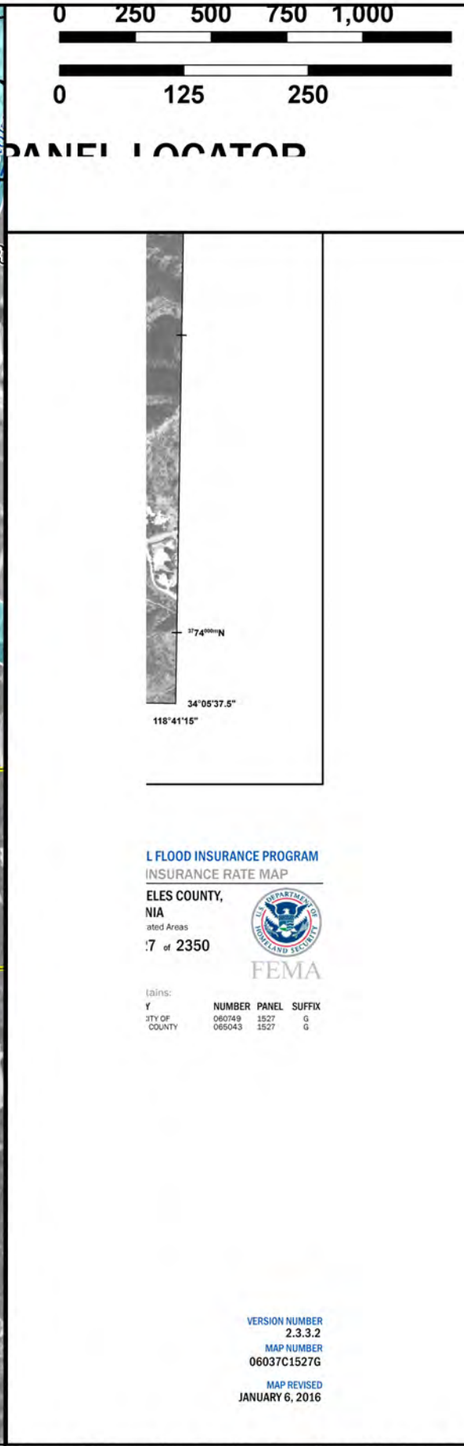
TAB D





L FLOOD INSURANCE PROGRAM
INSURANCE RATE MAP
ELES COUNTY,
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	NUMBER	PANEL	SUFFIX
ITY OF	060749	1527	G
COUNTY	065043	1527	G

VERSION NUMBER
2.3.3.2
MAP NUMBER
06037C1527G
MAP REVISED
JANUARY 6, 2016

This is an official copy of a portion of the above referenced flood map. It was extracted using F-MIT On-Line. This map does not reflect changes or amendments which may have been made subsequent to the date on the title block. For the latest product information about National Flood Insurance Program flood maps check the FEMA Flood Map Store at www.msc.fema.gov

APPENDIX E
Jurisdictional Delineation Report

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San Diego, CA 92101
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619.610.7600 tel
619.610.7601 fax

December 21, 2016

Mr. Carl Shaffer
Associate Architect
California State Parks
Southern Service Center
NTC at Liberty Station, Barracks 26
2797 Truxtun Road
San Diego, CA 92106

Subject: Jurisdictional Delineation Report for the California State Parks Stokes Creek Bridge Replacement Project

Dear Mr. Shaffer:

This letter summarizes the findings of a jurisdictional delineation and vegetation/cover mapping conducted in support of the California State Parks' Stokes Creek Bridge Replacement Project located in Malibu Creek State Park, Calabasas, California.

The survey was conducted to delineate aquatic resources under the jurisdiction of the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and/or the California Department of Fish and Wildlife (CDFW). Vegetation communities and cover types were also mapped. Sensitive species surveys were not conducted as part of the site evaluation; however, incidental observations of special-status species were recorded, if observed.

Project Description

The project site is located within Malibu Creek State Park in Calabasas, California. California State Parks proposes to replace the existing undersized corrugated metal pipe culvert beneath Waycross Road at the Stokes Creek crossing with a new bridge in order to reduce deferred maintenance costs, provide a secondary escape route in case of fire, reduce disruption to campers, and restore Stokes Creek to a natural configuration.

Methodology

Desktop Review

Prior to conducting the field investigation, a desktop review of the site was conducted using the following resources:

- National Hydrography Dataset review via My Waters Mapper (USEPA 2016)
- National Wetlands Inventory review via Wetlands Mapper (USFWS 2016)
- Watershed analysis via My Waters Mapper (USEPA 2016)
- NRCS soils data review via Web Soil Survey (USDA 2016)
- Historical Aerial Imagery (Google Earth 1994 – 2015)
- USGS Stream gauge data for Malibu Creek (USGS 2016)

Field Assessment

USACE and CDFW jurisdictional boundaries were recorded in the field with global positioning system (GPS) points and lines within the proposed limits of disturbance and 200-foot survey buffer. Additionally, ground width measurements were recorded for the ordinary high water mark (OHWM[1]) and top of bank or outer extent of riparian. These field data were used in combination with aerial imagery to delineate jurisdictional boundaries. Where field points did not correlate precisely with aerial imagery or field measurements due to the limitations of GPS unit accuracy, the delineation was adjusted to align with aerial imagery and field measurements.

In addition to the delineation of jurisdictional waters, vegetation communities and cover types were mapped within the proposed limits of disturbance. Nomenclature used for mapping generally follows *A Manual of California Vegetation 2nd Edition* (Sawyer et al. 2009). Special-status species surveys were not conducted as part of the field assessment; however, incidental observations of special-status species were recorded, if observed.

U.S. Army Corps of Engineers Jurisdictional Delineation

AECOM biologists assessed whether an aquatic feature located within the project area and surrounding 200-foot buffer would meet the definition of USACE-jurisdictional wetland waters of the U.S. using the following guidance:

- *Corps of Engineers Wetlands Delineation Manual* (1987 Manual) (Environmental Laboratory 1987)
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008)
- Arid West Wetland Plant List (Lichvar et al. 2016)
- 2014 Hydric Soils List (USDA-NRCS 2014).

Aquatic features were assessed to determine whether they would meet the definition of "waters of the U.S." as defined in 33 Code of Federal Regulations Part 328. The USACE's published guidance (Environmental Laboratory 1987) (USACE 2008) defines a wetland by the presence of each of three wetland indicators (hydrophytic vegetation, hydric soils, and wetland hydrology).

[1] Ordinary high water mark as defined under 33 CFR 328.3(e) which states: "The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

Wetland and non-wetland areas were verified by completion of Wetland Determination Data Forms at survey plots selected at locations within and adjacent to the watercourse where changes were observed in plant community composition or significant transitions between riverine hydrology and adjacent upland areas (Attachment A).

In addition to the delineation of USACE-jurisdictional wetlands, AECOM biologist conducted a delineation of other (non-wetland) waters of the United States under the jurisdiction of USACE pursuant to the USACE's guidance listed below.

- *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008)
- *Clean Water Act Jurisdiction Following the Supreme Court Decision in Rapanos v. U.S. and Carabell v. U.S.* (USEPA 2008)

During the field survey, GPS lines were taken along the OHWM and wetland boundaries (where present). Additionally, OHWM width measurements were taken at regular intervals including at the upstream and downstream openings of the culvert as well as at 50', 100', and 200' upstream and downstream of the culvert.

Following completion of the field survey, field data collected using ESRI's Collector™ application were processed using ESRI's ArcMap for desktop to create polygons representing the boundaries of wetland and non-wetland waters of the U.S.

In light of the U.S. Supreme Court's 2008 *Rapanos v. U.S.* ruling, USACE published new guidance on jurisdictional determination. According to the USACE's internal guidance regarding jurisdictional determination, there are now two analytical standards for determining whether water bodies that are not traditional navigable waters [TNWs] (including wetlands adjacent to those non-TNWs), are subject to Clean Water Act (CWA) jurisdiction: (1) if the water body is relatively permanent, or if the water body is a wetland that directly abuts (e.g., the wetland is not separated from the tributary by uplands, a berm, dike, or similar feature) a relatively permanent water body (RPW), or (2) if a water body, in combination with all wetlands adjacent to that water body, has a *significant nexus* with TNWs. A *significant nexus* exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological, integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands.

Criteria and thresholds to consider in the aforementioned evaluation are presented within the USACE published Jurisdictional Determination Form Instructional Guidebook (USACE 2007) including:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

All waters meeting the physical (OHWM) definitions of waters of the U.S. were assumed to be jurisdictional for purposes of a Preliminary Jurisdictional Determination, therefore a formal significant nexus test and jurisdictional determination following the USACE's published Jurisdictional Determination Form Instructional Guidebook (USACE 2007) was not performed. Instead, the results below present a site specific qualitative assessment of some of the analytical standards applied to preliminary jurisdictional determinations (e.g. proximity to a TNW).

Regional Water Quality Control Board Jurisdictional Assessment

The extent of waters of the state subject to the regulatory authority of the RWQCB under CWA Section 401 was considered to mirror the delineated waters of the U.S. subject to USACE jurisdiction pursuant to Section 404 of the CWA.

California Department of Fish and Wildlife Jurisdictional Delineation

Within the survey area, potential state jurisdictional waters were assessed and delineated pursuant to California Fish and Game Code (CFGC) Section 1600 et seq., California Fish and Game Commission policies (adopted pursuant to CFGC Section 703), and other relevant guidance as summarized below:

- *Wetlands* - When determining whether an area is a wetland, CDFW relies on the U.S. Fish and Wildlife Service (USFWS) non-regulatory wetland definition provided in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). According to Cowardin et al., wetlands are "lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year."

The Cowardin method requires care to avoid falsely positive conclusions (e.g., concluding that an area with no transitional relation to the aquatic system is a wetland based on presence of vegetation equally apt to be found in wetland or non-wetland circumstances).

- *Streambed and Riparian Habitat* – Pursuant to CFGC Section 1600 et seq., CDFW is authorized to regulate any activity that would substantially divert or obstruct the natural flow, or substantially change or use any material from the bed, channel, or bank, of any river, stream, or lake. Therefore, CDFW generally asserts CFGC Section 1600 et seq. jurisdiction over wetlands, the destruction or alteration of which could substantially affect associated rivers, streams, or lakes. Consistent with CDFW practice, for the subject delineation, CDFW jurisdictional wetlands associated with the tributaries and waterbodies within the survey area were delineated to the outer (landward) edge of riparian habitat.
- Boundaries for state jurisdictional waters in the form of open water and unvegetated channels were delineated by the presence of shelving and/or scour resulting in an established bank, bed, or channel. Consistent with CDFW practice, for the subject delineation, non-wetland waters associated with rivers, streams, or lakes were delineated to the top of the bank.

Results

Desktop Review

A review of the resources determined that the project site is located within the Malibu Creek Watershed, Las Virgenes Creek subwatershed (HUC12 180701040103). Stokes Creek, the primary drainage found within the proposed work limits, conveys waters from the nearby foothills and flows from northeast to southwest through the Santa Monica Mountains National Recreation Area and Malibu Creek State Park. Within the project area Stokes Creek is ephemeral and conveys waters only during and immediately following precipitation events.

Soils within the Stokes Creek streambed / floodplain are mapped as Fluvaquents – Riverwash (Soil Map Unit Code 202) on the Natural Resource Conservation Service's Web Soil Survey (USDA- NRCS 2016). Additionally, this soil map unit is classified as hydric on the National List of Hydric Soils (USDA-NRCS 2014). The National Wetland Inventory also indicates that Freshwater Emergent Wetlands (NWI Code: PFOC) exist within the project area and 200 foot buffer, as well as riverine wetlands located only within the 200-foot buffer (USFWS 2016).

Stokes Creek drains to Los Virgenes Creek approximately 1,100 feet downstream of the project site, which subsequently discharges to Malibu Creek roughly 1,400 feet farther downstream. Malibu Creek then flows approximately 6 miles before ultimately discharging into the Pacific Ocean (a Traditional Navigable Water [TNW]). Based on stream gauge data (USGS 2016) and visual observation, Malibu Creek and Los Virgenes Creek are Relatively

Permanent Waters (RPWs) and non-Relatively Permanent Waters (non-RPWs) (respectively) subject to USACE jurisdiction as waters of the U.S.

Since Stokes Creek has a direct surface hydrological connection to a downstream TNW through Los Virgenes and Malibu Creeks, and because Stokes Creek, in combination with all of its adjacent wetlands, appears to have a more than speculative or insubstantial effect on the chemical, physical, and/or biological integrity of this TNW, it is presumed that it possesses a *significant nexus* with downstream TNWs and, therefore, is subject to the regulatory jurisdiction of the USACE.

Field Assessment

On October 17, 2016, AECOM biologist Jonathan Appelbaum conducted a formal jurisdictional delineation of the project area and 200-foot radius buffer.

Wetland and non-wetland areas were verified by completion of Wetland Determination Data Forms in accordance with USACE published wetland determination protocols (Environmental Laboratory 1987) (USACE 2008). At each wetland sampling point, the vegetation community composition, hydrological indicators, and soil characteristics (including soil color and texture were documented and recorded on Wetland Determination Data Forms (Attachment A). During the formal jurisdictional delineation survey, AECOM biologist completed Wetland Determination Data Forms at 7 sampling plots selected to document the representative physical conditions present where conspicuous changes were observed in plant community composition or significant transitions between riverine hydrology and adjacent upland areas (e.g. conspicuous “break in bank slope” or “shelving” between sampling points 1 & 7). The presence or absence of each of the three wetland indicators (hydrophytic vegetation, hydric soils, and wetland hydrology) were then assessed to determine, per the USACE’s 3 parameter protocol, the boundaries of USACE-defined wetlands onsite.

Additionally, GPS lines were taken along the OHWM (as defined by the USACE’s guidance for the field identification of the OHWM [Lichvar and McColley 2008]) and the outer limits of riparian canopy throughout the project area and surrounding 200 foot buffer using ESRI’s Collector™ application run on an IPad Mini 4 with external submeter GPS receiver.

The limits of regulatory jurisdiction are depicted in the Jurisdictional Delineation Map (Attachment B), with site photographs included as Attachment C. The extent and type of jurisdictional areas within the project area and surrounding 200 foot buffer are provided in Table 1 below.

Table 1
Jurisdictional Waters of the U.S. and State within the Project Area and 200-ft Butter

Waters under USACE, RWQCB, and CDFW Jurisdiction Acres (Linear Feet)			CDFW-Only Jurisdictional Areas Acres		
Waters Type	**Acreage within Study Area and 200-foot Buffer**	**Potential Project Impacts**	**Waters Type**	**Acreage within Study Area and 200-foot Buffer**	**Potential Project Impacts**
Wetlands	0	0	Riparian Habitat	2.098	0.331
Other (Non-Wetland) Waters of the U.S.	0.080 (609)	0.049 (140)	Seasonal Streambed	0	0
Total	**0.080 (609)**	**0.048 (140)**		**2.098**	**0.331**

Vegetation Communities

As described above, vegetation communities and cover types were mapped within the proposed limits of disturbance and 200 foot buffer. The vegetation community classification follows the *A Manual of California Vegetation 2nd Edition* (Sawyer et al. 2009). In general, the dominant plant community along Stokes Creek within the project area and 200-foot buffer is classified as *Quercus lobata – Salix lasiolepis* alliance. Dominant plant species within the floodplain and along the adjacent terraces is dominated by valley oak (*Quercus lobata*) and coast live oak (*Quercus agrifolia*). The current The USACE Wetland Plant List (Lichvar et al 2016) recognizes *Quercus lobata* as a Facultative Upland (FACU) plant species and does not list *Quercus agrifolia*. Subdominant species within this alliance in the project area and buffer includes arroyo willow (*Salix lasiolepis, FACW*), western sycamore (*Platanus racemosa, FAC*), Fremont cottonwood (*Populus fremontii, NL*), California black walnut (*Juglans californica californica, FACU*), blue elderberry (*Sambucus nigra, FACU*), mugwort (*Artemisia douglasiana*, FAC), stinging nettle (*Urtica dioica, FAC*), California blackberry (*Rubus ursinus*, FAC), mule fat (*Baccharis salicifolia*, FAC), and California coffeeberry (*Frangula californica*, NL).

U.S. Army Corps of Engineers Jurisdictional Areas

Direct analysis of the project site following the protocols outlined in the 1987 Manual (Environmental Laboratory 1987) and 2008 USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE 2008) determined that no USACE-jurisdictional wetland exist within the project area and surrounding 200-foot buffer; therefore, the proposed project would not result in any permanent or temporary impacts to USACE-jurisdictional wetlands. Wetland Determination Data Forms documenting the physical conditions present within Stokes Creek in the project

area and 200 foot buffer were completed during the field investigation and are included herein as Attachment A.

Within the survey area and 200-foot buffer, numerous indicators of an OHWM (e.g., drift deposits, litter, break in bank slope, and changes in particle size distribution) were documented within Stokes Creek. Stokes Creek also possesses a direct surface hydrological connection with downstream USACE- jurisdictional TNWs in the form of the Pacific Ocean. As a result, Stokes Creek would be subject to the regulatory jurisdiction of USACE as waters of the U.S.

Based on an overlay analysis of the project area and the delineated limits of Stokes Creek's OHWM, the proposed Bridge Replacement Project will likely impact approximately 0.049 acres of other waters of the U.S. (Table 1). The relative proportion of permanent vs. temporary impacts, however, cannot be determined at this time, but upon finalization of the project design.

Regional Water Quality Control Board Jurisdictional Areas

Waters of the state, under the jurisdiction of the RWQCB, are congruent with the USACE's non-wetland waters of the U.S. As such the impacts of the proposed project will potentially affect 0.048 acres of RWQCB non-wetland waters of the state.

California Department of Fish and Wildlife Jurisdictional Areas

Based on an overlay analysis of the project area and the delineated limits of CDFW-jurisdictional riparian habitat, the proposed Bridge Replacement Project would likely impact approximately 0.331 acres of CDFW-jurisdictional riparian habitat classified as part of a *Quercus lobata – Salix lasiolepis* alliance. The relative proportion of permanent vs. temporary impacts to CDFW jurisdiction; however, will be determined upon completion of the final project design.

Discussion

Bridge installation activities associated with the proposed project may require regulatory authorizations or permits from USACE, RWQCB, and CDFW. These requirements are discussed further under each respective section below.

U.S. Army Corps of Engineers Jurisdictional Areas

Under Section 404 of the CWA, USACE regulates the discharge of dredged or fill material into jurisdictional waters of the U.S. Many activities (including the Stokes Creek Bridge Replacement Project) may be authorized under one or more of the *proposed* 2017 Nationwide Permits (NWPs) such as NWP 14 (Linear Transportation Projects).[2]

[2] The current Nationwide Permits, issued in 2012, will expire on March 18, 2017. The proposed 2017 Nationwide Permits will then replace the 2012 permits beginning at that time.

NWPs require compliance with general conditions. Under General Condition 18 part (c), non-federal permittees must submit a pre-construction notification to the district engineer if any listed species might be affected or are present in the vicinity of the project, and shall not begin work on the activity until notified by the district engineer that the requirements of the Endangered Species Act have been satisfied and that the activity is authorized. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-federal applicant of USACE's determination within 45 days of receipt of a complete preconstruction notification. In cases where the non-federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified USACE, the applicant shall not begin work until USACE has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-federal applicant has not heard back from USACE within 45 days, the applicant must still wait for notification from USACE.

Additionally, NWP 14 would require pre-construction notification if the project were to: 1) result in impacts to >0.10 acre of USACE jurisdictional waters of the U.S., or 2) result in discharges to special aquatic sites (e.g. wetlands).

Regional Water Quality Control Board Jurisdictional Areas

Under Section 401 of the CWA, RWQCB has the regulatory authority to certify or deny that the proposed discharge complies with state water quality standards and water quality objectives. No permit to discharge into regulated waters may be issued by USACE until certification required by Section 401 has been issued. In addition to its regulatory jurisdiction under Section 401 of the CWA, RWQCB holds regulatory jurisdiction over waters of the State of California pursuant to the Porter-Cologne Water Quality Act.

California Department of Fish and Wildlife Jurisdictional Areas

Impacts to CDFW jurisdictional streambed and riparian habitat would require a Lake and Streambed Alteration Agreement (LSAA) from CDFW, pursuant to Section 1600 of the CFGC. A review cycle for a complete LSAA notification is about 90 days, this includes: 30 days for completion review, plus 60 days for preparation of draft agreement by CDFW. The standard LSAA timeline can be extended by mutual agreement. Execution of the LSAA follows the receipt of a signed draft agreement from the Applicant and CDFW compliance with all CEQA requirements.

Thank you for the opportunity to work with California State Parks and please feel free to call me at 619.610.7600 if you have any questions.

Sincerely,

Jonathan Appelbaum
Biologist

cc: Michelle Fehrensen, AECOM Project Manager

Attachments:
A – Wetland Determination Data Forms
B – Figure
C – Site Photographs

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ATTACHMENT A

WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 01

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096231 | Long: 118.714767 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ●
Wetland Hydrology Present?	Yes ○	No ●	

Remarks: Asphalt & concrete mixed w. natural cobbles.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix lasiolepis*	60	Yes	FACW
2.			
3.			
4.			
Total Cover:	60 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *None*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 100% % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	60	x 2 =	120
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	60 (A)		120 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ○

Remarks: Willow canopy over unvegetated channel.

SOIL

Sampling Point: 01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2						Sand & Cobble	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 6

Hydric Soil Present? Yes ○ No ◉

Remarks: Thin alluvial deposits on bedrock. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ○	Depth (inches): NA
Water Table Present?	Yes ○	No ○	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches): NA

Wetland Hydrology Present? Yes ○ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Riverine hydrology indicators characteristic of ephemeral drainages.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 02

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096168 | Long: 118.714906 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ○
Wetland Hydrology Present?	Yes ○	No ○	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus agrifolia*	70	Yes	NI
2.			
3.			
4.			
Total Cover:	70 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *None*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 100% % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	70	x 5 =	350
Column Totals:	70 (A)		350 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- ● Dominance Test is >50%
- ● Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ○

Remarks: Coast live oak canopy over unvegetated channel.

SOIL

Sampling Point: 02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 3/2						Sand & Cobble	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 13

Hydric Soil Present? Yes ◯ No ◯

Remarks: Thin alluvial deposits on bedrock. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◯ No ◯ Depth (inches): NA

Water Table Present? Yes ◯ No ◯ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ◯ No ◯ Depth (inches): NA

Wetland Hydrology Present? Yes ◯ No ◯

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Riverine hydrology indicators characteristic of ephemeral drainages.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 03

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096276 | Long: 118.714698 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Freshwater Emergent Wetl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ○
Wetland Hydrology Present?	Yes ○	No ○	

Remarks: Roadway failure & collapse 20' upstream

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus agrifolia*	70	Yes	NI
2.			
3.			
4.			
Total Cover:	70 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *None*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 100% % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	70	x 5 =	350
Column Totals:	70 (A)		350 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- ● Dominance Test is >50%
- ● Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ○

Remarks: Coast live oak canopy over unvegetated channel.

SOIL

Sampling Point: 03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2						Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◯ No ◯

Remarks: Alluvial deposits and road fill. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◯	No ◯	Depth (inches): NA
Water Table Present?	Yes ◯	No ◯	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes ◯	No ◯	Depth (inches): NA

Wetland Hydrology Present? Yes ◯ No ◯

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Riverine hydrology indicators characteristic of ephemeral drainages.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 04

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096406 | Long: 118.71440 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Freshwater Emergent Wetl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ○
Wetland Hydrology Present?	Yes ○	No ○	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus agrifolia*	70	Yes	NI
2.			
3.			
4.			
Total Cover:	70 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *Piptantherum millaceum*	10	No	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	10 %		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 90 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	80	x 5 =	400
Column Totals:	80 (A)		400 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- ● Dominance Test is >50%
- ● Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ○

Remarks: Coast live oak canopy over sparsely vegetated channel.

SOIL

Sampling Point: 04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2						Silt	
3-12	10 YR 3/2						loamy sand & gra	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 12

Hydric Soil Present? Yes ◯ No ◯

Remarks: Shallow alluvial deposits over bedrock. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◯ No ◯ Depth (inches): NA

Water Table Present? Yes ◯ No ◯ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ◯ No ◯ Depth (inches): NA

Wetland Hydrology Present? Yes ◯ No ◯

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Riverine hydrology indicators characteristic of ephemeral drainages.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 05

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096424 | Long: 118.714175 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Freshwater Emergent Wetl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ○
Wetland Hydrology Present?	Yes ○	No ○	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus lobata*	50	Yes	FACU
2. *Quercus agrifolia*	25	Yes	NI
3.			
4.			
Total Cover:	75 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *Piptantherum millaceum*	10	No	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	10 %		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 90 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	50	x 4 =	200
UPL species	35	x 5 =	175
Column Totals:	85 (A)		375 (B)

Prevalence Index = B/A = 4.41

Hydrophytic Vegetation Indicators:

- ● Dominance Test is >50%
- ● Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ○

Remarks: Coast live oak canopy over sparsely vegetated channel.

SOIL

Sampling Point: 05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2						Sand & cobble	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 7

Hydric Soil Present? Yes ◯ No ◯

Remarks: Thin alluvial deposits over bedrock. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◯ No ◯	Depth (inches):	NA
Water Table Present?	Yes ◯ No ◯	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ◯ No ◯	Depth (inches):	NA

Wetland Hydrology Present? Yes ◯ No ◯

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Riverine hydrology indicators characteristic of ephemeral drainages.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 06

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096389 | Long: 118.714464 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Freshwater Emergent Wetl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ○
Wetland Hydrology Present?	Yes ○	No ●	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus agrifolia*	80	Yes	NI
2.			
3.			
4.			
Total Cover:	80 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *None*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 100% % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	80	x 5 =	400
Column Totals:	80 (A)		400 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- ● Dominance Test is >50%
- ● Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ○

Remarks: Coast live oak canopy over unvegetated channel.

SOIL

Sampling Point: 06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 3/2						Loamy sand & co	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 13

Hydric Soil Present? Yes ○ No ○

Remarks: Thin alluvial deposits over bedrock. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ○ Depth (inches): NA

Water Table Present? Yes ○ No ○ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ○ No ○ Depth (inches): NA

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Riverine hydrology indicators characteristic of ephemeral drainages.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 07

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096243 | Long: 118.714779 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Freshwater Emergent Wetl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ○
Wetland Hydrology Present?	Yes ○	No ●	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix lasiolepis*	50	Yes	FACW
2.			
3.			
4.			
Total Cover:	50 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *Piptantherum millaceum*	20	Yes	NI
2. *Phacelia cicutaria*	5	No	NI
3. *Vinca major*	5	No	NI
4.			
5.			
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 70 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	50	x 2 =	100
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	30	x 5 =	150
Column Totals:	80 (A)		250 (B)

Prevalence Index = B/A = 3.13

Hydrophytic Vegetation Indicators:

- ● Dominance Test is >50%
- ● Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ● No ○

Remarks: Willow canopy over sparsely vegetated flood terrace.

SOIL

Sampling Point: 07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2						Loamy sand & co	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 10

Hydric Soil Present? Yes ○ No ○

Remarks: Thin, coarse alluvial deposits over bedrock. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ○ Depth (inches): NA

Water Table Present? Yes ○ No ○ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ○ No ○ Depth (inches): NA

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Insufficient secondary (Riverine) hydrology indicators.

ATTACHMENT B

FIGURE

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS

70 35 0 70 Feet

Scale: 1:840; 1 inch = 70 feet

Attachment B
Jurisdictional Delineation Map

Stokes Creek Bridge Replacement

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\JD_figure-11x17.mxd, 12/19/2016, augellop

ATTACHMENT C

SITE PHOTOGRAPHS

Attachment C: Site Photographs
Stokes Creek Bridge Replacement Project
Jurisdictional Delineation Survey 10-17-2016

Photo 1. Photo of Stokes Creek Channel upstream of Waycross Rd. bridge. Note approximate locations of sampling plots 4 & 6

Photo 2. Photo of Stokes Creek downstream of Waycross Rd. Note collapsing roadway and debris.

Photo 3. Photo of Waycross Rd. Culvert from downstream. Note bank / road collapse in upper left of photograph.

Photo 4: Photo facing downstream from culvert beneath Waycross Rd.

Attachment C: Site Photographs
Stokes Creek Bridge Replacement Project
Jurisdictional Delineation Survey 10-17-2016

Photo 5. Photo of Stokes Creek Channel downstream of Waycross Rd. Culvert at Sampling Plots 1 & 7. Note break in bank slope & drift deposits demarcating limits of OHWM.

Photo 6. Photo of Sampling Plot 1 soil pit. Note: restrictive layer of bedrock very shallow (pit depth 6”). No indicators of hydric soils or reducing conditions present within soil pit.

APPENDIX F
Biological Assessment Report

Prepared by:
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October 2018

Biological Assessment Report

New Stokes Creek Bridge Project
Los Angeles County, California

Biological Assessment Report

New Stokes Creek Bridge Project
Los Angeles County, California

Project Number: R2016-002414-(3)
Permit Number: RPPL2016004669
APN: 4462-029-901

Prepared For:

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ABBREVIATIONS AND ACRONYMS

APN	Assessor's Parcel Number
BCC	Birds of Conservation Concern
BCR	Bird Conservation Region
BSA	biological survey area
CCC	California Coastal Commission
CCR	California Code of Regulations
CDFG	California Department of Fish and Game
CDFW	California Department of Fish and Wildlife
CDP	Coastal Development Permit
CDPR	California Department of Parks and Recreation
CESA	California Endangered Species Act
CFGC	California Fish and Game Code
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CNPS	California Native Plant Society
CWA	Clean Water Act
dbh	diameter at breast height
ESA	Federal Endangered Species Act
GPS	Global Positioning System
ITP	Incidental Take Permit
LCP	Local Coastal Program
LOD	limits of disturbance
MBTA	Migratory Bird Treaty Act
NPS	National Park Service
OHWM	ordinary high water mark
RPR	Rare Plant Rank
RWQCB	Regional Water Quality Control Board
SSC	Species of Special Concern

TNW	Traditional Navigable Water
USACE	U.S. Army Corps of Engineers
U.S.C.	United States Code
USDA-NRCS	U.S. Department of Agriculture, National Resources Conservation Service
USGS	U.S. Geological Survey
USFWS	U.S. Fish and Wildlife Service
WEAT	Worker Environmental Awareness Training

SUMMARY OF FINDINGS

The California Department of Parks and Recreation (CDPR) proposes to remove an existing culverted stream crossing and construct a new bridge at Waycross Road over Stokes Creek as part of the New Stokes Creek Bridge Project (project) at Malibu Creek State Park outside Calabasas, California. The existing culvert is undersized, and the CDPR seeks to improve egress routes in case of a wildfire and to restore Stokes Creek to its natural configuration.

Field surveys were conducted within a biological survey area (BSA), which includes the existing culverted crossing, an estimated disturbance footprint, and a 200-foot buffer. Surveys were conducted to assess any sensitive biological resources that occur within the BSA or with potential to occur within the BSA. Surveys included a reconnaissance-level biological resources survey, a tree survey, a rare plant survey, jurisdictional delineation of federal and state waters, wildlife surveys, and field verification of previously mapped vegetation communities. This report presents the results of these surveys. Information gathered is intended to support the planning and design phases of the project, to be used to assess potential direct and indirect impacts due to project-related activities, and to develop appropriate avoidance and minimization measures to protect biological resources during project implementation.

The BSA consists of an existing creek crossing within native valley oak woodland surrounded by non-native annual grassland habitats; existing development in the vicinity is minimal and consists of paved roadways and parking lots and a few buildings. The BSA encompasses 5.32 acres within a designated state park. It is adjacent to the Santa Monica Mountains National Recreation Area and is part of a larger area of relatively unfragmented natural habitats. Stokes Creek bisects the BSA northeast to southwest; this ephemeral creek is tributary to Malibu Creek, a relatively permanent stream that flows south to the Pacific Ocean.

One special-status plant, Ojai navarettia (*Navarettia ojaiensis*), and two special-status wildlife species, oak titmouse (*Baelophus inornatus*) and Nuttall's woodpecker (*Picoides nuttallii*), were observed within the BSA. In addition, two special-status plants were determined to have a moderate-to-high potential to occur within the BSA: round-leaved filaree (*California macrophylla*) and Lyon's pentachaeta (*Pentachaeta lyonii*). Potentially suitable habitat is present for one special-status mammal, western red bat (*Lasiurus blossevillii*). The valley oak woodland documented within the BSA is considered a sensitive natural habitat by the California Department of Fish and Wildlife (CDFW).

Approximately 0.13 acre of non-wetland waters of the U.S. and state and 2.30 acres of riparian habitat were mapped within the BSA. Of these, an estimated 0.04 acre of non-wetland waters under the jurisdiction of the U.S. Army Corps of Engineers (USACE), CDFW, and the Regional Water Quality Control Board, and 0.16 acre of riparian habitat under the jurisdiction of the CDFW would be subject to temporary impacts due to project-related activities, including culvert removal and construction of a new bridge, and grading of the stream bank slopes. No wetland waters of the U.S. were delineated within the BSA.

The proposed project was designed to avoid impacts to native trees. Construction plans do not call for the disturbance or removal of any trees. In addition, the plans do not call for the trimming of any tree canopy. The proposed bridge and road would replace existing structures. The protected zone of native trees would not change from those currently permanently impacted from encroachment of development, as the proposed project would be limited to the existing footprint of the road and culvert crossing. However, the Santa Monica Mountains Local Coastal Program prohibits excavation within the protected zone of any native tree. Therefore, removing the existing road and culvert crossing, recontouring the stream banks, and installing the new road and bridge would impact the protected zone of some native trees within the BSA.

There are a total of 24 trees with protection zones within the impact area for this project. Of the 24 trees, 18 are oak trees. Of the oak trees, nine oak trees could have impacts to 30 percent or more of their tree protected zones; seven oak trees could have impacts between 10 to 30 percent; and two oak trees could have less than 10 percent of their protected zone impacted by project activities.

General avoidance and minimization measures have been prepared based on the biological resources that are or may be present. These measures are the following:

- **BIO-1** Worker Environmental Awareness Training;
- **BIO-2** Pre-construction surveys;
- **BIO-3** Vegetation clearing outside the nesting bird season, nesting bird surveys;
- **BIO-4** Work only during the dry season;
- **BIO-5** Tree protection and mitigation measures;
- **BIO-6** Post-construction restoration and mitigation using native vegetation; and
- **BIO-7** Pre-construction bat surveys.

CHAPTER 1. INTRODUCTION

At the request of the California Department of Parks and Recreation (CDPR), AECOM conducted a series of field surveys October 17 through 19, 2016, in support of the proposed Stokes Creek Bridge Replacement Project (project) at Malibu Creek State Park outside Calabasas, California (Project Number R2016-002414-(3); Permit Number RPPL2016004669). The applicant, CDPR, Southern Service Center (contact: Jim Engelke, 2979 Truxtun Road, Barracks 26 San Diego, California 92106) requested a jurisdictional delineation, tree survey, reconnaissance-level biological resources survey, and field verification of vegetation mapping. Surveys were conducted to identify sensitive biological resources and common plant and wildlife species within the project vicinity (Assessor's Parcel Number [APN] 4462-029-901), verify plant communities and distribution within the project vicinity, assess the potential for special-status plant and wildlife species to occur within the project vicinity, and to support future assessments of biological constraints and potential impacts due to project activities.

This biological assessment report presents the findings for the biological resources surveys conducted in support of the project.

1.1 Project Description

The project entails the replacement of an existing crossing along Waycross Road over Stokes Creek. The CDPR proposes to remove the existing, undersized corrugated metal pipe culvert crossing and replace it with a new bridge in order to reduce deferred maintenance costs and provide a secondary escape route for vehicles in case of wildfire. The project also will reduce disruption to campers in the vicinity and restore Stokes Creek to its natural configuration.

1.2 Project Location

The project is located in the Malibu Creek State Park within the Santa Monica Mountains National Recreation Area in Los Angeles County, California (Figure 1). It is located approximately 0.55 mile south of the city of Calabasas, California, and is accessible from Highway 101 via Las Virgenes Road. The project occurs within the Malibu Beach, California, U.S. Geological Survey (USGS) 7.5-minute quadrangle, Township 1S, Range 18W, Section 12. See Appendix A for photographs documenting the existing condition of the proposed development site. Figure 2 shows historical aerials for the BSA from 1990, 2005, and 2016. As depicted in this figure, the regional context has not changed drastically over the last 26 years.

1.3 Physical Characteristics

The biological survey area (BSA) for the assessment conducted in October 2016 includes the existing crossing beneath Waycross Road at Stokes Creek and an approximate 200-foot buffer of the crossing (APN 4462-029-901) (Figure 3). The BSA encompasses a total area of approximately 5.32 acres. The BSA is surrounded primarily by State Park land, consisting of largely undisturbed native and naturalized habitats with limited areas of existing roadways and development. Elevations through the BSA range from approximately 535 to 560 feet above mean sea level (Figure 4). Soil types are primarily Botella series soils and fluvaquents-riverwash complex, which are described in detail in Section 4.2. Stokes Creek runs approximately 25 miles from Boney Mountain to Malibu Lagoon. It is located in the Malibu Creek Hydrologic Area of the Santa Monica Bay Hydrologic Unit (Figure 5). The BSA is part of the Santa Monica National Recreation Area and provides opportunities for wildlife movement. Wildlife movement corridors and habitat fragmentation are discussed in more detail in Section 4.9

The climate in the State Park is characterized by dry summers with frequent coastal fog and wet, cooler winters. Seasonal precipitation in the Santa Monica Mountains averages between 15 and 24 inches, with most falling between November and April and the greatest amounts on the upper ridges. Along the coast, particularly in the spring and early summer, the cooler ocean water and onshore breezes buffer temperatures, preventing the extreme temperatures found inland. The cooler ocean water often condenses atmospheric water vapor producing cloud cover that drifts inland overnight.

During the summer, precipitation is rare so the climate is quite dry (except for coastal fog), which makes the area prone to wildfires. Fire hazard is especially severe during the fall "Santa Ana" wind events when the air flow reverses due to interior high-pressure systems. During “Santa Anas” compression heated air with very low humidity flows from the inland toward the coast, sometimes with strong winds, creating extreme fire conditions that periodically result in wildfires.

Due to the surrounding topography, elevation, and distance from the coast, the BSA is in a transition zone between the coastal and interior climatic areas with a greater interior influence. It is located on the leeward side of the 2,000-foot-high Santa Monica Mountain ridge formed by Castro Peak and Goat Buttes East, which obstructs interior penetration of clouds. When clouds do form during the night, they quickly give way to warmer conditions during the day. Therefore, temperatures in this location would typically be much warmer than those along the coastal side of the State Park. However, during winter, the temperatures can be quite cooler during nighttime hours due to the elevation and transitional interior position.

Within the BSA, significant tree cover (e.g., shade) and presence of water contribute to cooler temperatures when compared to surrounding open areas with more sun exposure.

CHAPTER 2. REGULATORY SETTING

Biological resources, including special-status species, sensitive habitats, and wetlands and waterways, are protected by a number of federal, state, and local acts, statutes, and regulations. The following sections provide a brief overview of the regulations that may be applicable to the resources that occur within or adjacent to the proposed project and their respective requirements. Permits or other authorizations potentially required under these regulations are noted where applicable.

2.1 Federal

The federal legislation and regulations that protect biological resources and may apply to the proposed project include the Endangered Species Act (ESA), the Migratory Bird Treaty Act (MBTA), and the Clean Water Act (CWA). This section briefly summarizes these legislative acts and regulations.

2.1.1 Endangered Species Act

The ESA (16 United States Code [U.S.C.] §§1531–1544, 87 Stat. 884, as amended) provides for the conservation of federally listed threatened and endangered species and their ecosystems. Section 9 of the ESA prohibits actions that result in the "take" of threatened and endangered species, without special exemption. Under the ESA, "take" is defined as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture or collect, or to attempt to engage in any such conduct." "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. "Harass" is defined as intentional or negligent actions that create the likelihood of injury to listed species by annoying them to such an extent as to significantly disrupt normal behavioral patterns including, but not limited to, breeding, feeding, or sheltering (50 Code of Federal Regulations [CFR] §17.3).

"Incidental take" is defined as take that is incidental to (i.e., not the purpose of) the carrying out of an otherwise lawful activity. Sections 7 and 10 of the ESA contain provisions for allowing take that would otherwise be prohibited under Section 9. Section 7 requires federal agencies proposing to conduct, fund, or approve an action that may result in take of listed species to ensure that their actions, including issuing permits, do not jeopardize the continued existence of listed species or destroy or adversely modify critical habitat. Under Section 7, federal agencies must consult with the U.S. Fish and Wildlife Service (USFWS). The result of this formal consultation is either a biological opinion that includes a non-jeopardy determination and authorization for incidental take, or a jeopardy opinion prohibiting the incidental take. If the proposed project requires a federally issued permit and listed species may be impacted by proposed activities, formal or informal consultation under Section 7 of the ESA will be required.

Section 10(a) of the ESA provides a method for permitting a state or private action (in the absence of a federal nexus) that may result in the incidental take of threatened or endangered species from an otherwise lawful activity. Under Section 10(a), the project proponent must provide the USFWS with a Habitat Conservation Plan for the affected species and publish notification of the application for a permit in the Federal Register.

The ESA also prohibits the adverse modification of designated critical habitat for listed species. Section 3(5)(A) of the ESA defines critical habitat as "(i) the specific areas within the geographical area occupied by the species on which are found those physical or biological features (I) essential to the conservation of the species, and (II) which may require special management considerations or protection; and (ii) specific areas outside of the geographical area occupied by the species upon a determination by the Secretary of Commerce or the Secretary of the Interior (Secretary) that such areas are essential for the conservation of the species."

Formal consultation under Section 10 of the ESA would be required if the proposed project has the potential to adversely affect any federally listed species detected within or adjacent to the proposed project, or destroy or adversely modify designated critical habitat. Consultation under Section 10 may result in obtainment of take authorization for federally listed species with potential to be impacted by actions carried out within the BSA. Federally listed species with potential to occur are identified, described, and discussed in Chapter 4.

2.1.2 Migratory Bird Treaty Act

The MBTA of 1918 (16 U.S.C. §§703-712) prohibits pursuing, hunting, killing, capturing, possessing, purchasing, bartering for, or transporting of native migratory birds, or any part, nest, or egg of any such bird unless allowed by another regulation adopted in accordance with the MBTA. The migratory bird species protected by the MBTA are published in 50 CFR 10.13 (USFWS 2013). The MBTA does not discriminate between live or dead birds, and grants full protection to any bird parts including feathers, eggs, and nests that are included on the published list. The USFWS has statutory authority and responsibility for enforcing the MBTA. Under the MBTA, the proposed project would need to comply with the measures that would avoid or minimize effects to nesting migratory bird species included on the published list.

2.1.3 Clean Water Act – Section 404

Pursuant to Section 404 of the CWA, the USACE regulates the discharge of dredge and/or fill material into waters of the U.S. Section 404 requires that any person proposing an activity that would discharge these materials must first obtain a permit from the USACE. For regulated activities in the project region, Section 404 Permits are issued by the USACE's Los Angeles District. The CWA stipulates that the USACE may not issue a Section 404 Permit if the proposed activity would be contrary to the public interest or would cause substantial degradation of the nation's waters, or if a less environmentally damaging practicable alternative exists, among other restrictions.

Waters of the U.S. generally include navigable waterways and wetlands adjacent to navigable waterways, non-navigable tributaries to navigable waterways, and wetlands adjacent to non-navigable waters that are contiguous with navigable waterways. Regulatory definitions of wetlands and waters of the U.S., as well as recent U.S. Supreme Court decisions affecting the interpretation of those definitions, are discussed below.

2.1.3.1 *Waters of the United States Defined*

The term "waters of the U.S." is defined in regulations promulgated by the USACE and the U.S. Environmental Protection Agency under the authority of the CWA in June 2015 (see 80 Federal Register 37054). This recent regulatory definition supersedes the definition that had been in use previously, and incorporates direction from the *Solid Waste Agency of North Cook County v. United States Army Corps of Engineers* (2001) and *Rapanos v. United States* and *Carabell v. United States* (2006, consolidated) Supreme Court decisions. In summary, as currently defined, the term "waters of the U.S." includes the following:

1. All waters that are currently used, were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide.
2. All interstate waters, including interstate wetlands.
3. The territorial seas.
4. All impoundments of waters otherwise identified as waters of the U.S in items 1 through 3 above.

5. All tributaries, as defined at 40 CFR 230.3(s)(3)(iii), of waters identified in items 1 through 3 above.
6. All waters adjacent to waters identified in items 1 through 3 above, including wetlands, ponds, lakes, oxbows, impoundments, and similar waters.
7. Prairie potholes, Carolina bays and Delmarva bays, pocosins, western vernal pools, and Texas coastal prairie wetlands, where they are determined, on a case-specific basis, to have a significant nexus to waters identified in items 1 through 3 above [see 40 CFR 230.3(s)(1)(vii)(A) through (E)].
8. All waters located within the 100-year floodplain of waters identified in items 1 through 3 above and all waters located within 4,000 feet of the high tide line or ordinary high water mark of a water identified in items 1 through 5 above where they are determined on a case-specific basis to have a significant nexus to a water identified in items 1 through 3 above [see 40 CFR 230.3(s)(1)(viii)].

In water bodies lacking adjacent wetlands, the lateral extent of the USACE's jurisdiction is bounded by the ordinary high water mark (OHWM). The OHWM is defined at 33 CFR 328.3(e) as "that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas." Where adjacent wetlands are present, CWA jurisdiction extends laterally to the landward edge of the adjacent wetlands. The upstream/downstream limit of CWA jurisdiction is the point beyond which the OHWM is no longer perceptible.

2.1.3.2 *Wetlands Defined*

Wetlands are defined in USACE regulations at 33 CFR 328.3(b) as "those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions." In 1987, the USACE published the *Wetland Delineation Manual* (Environmental Laboratory 1987) to guide its field personnel in determining jurisdictional wetland boundaries. In 2008, the Corps published the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (USACE 2008) to complement the *Wetland Delineation Manual* in the southwestern United States. The methods set forth in these documents involve the delineation of wetlands based on the presence of three wetland parameters: a predominance of hydrophytic vegetation, wetland hydrology, and hydric soils.

2.1.4 Clean Water Act – Section 401

Under Section 401 of the CWA, every applicant for a federal permit or license for an activity that may result in a discharge of dredge or fill material to a water body must obtain a state-issued Water Quality Certification that the proposed activity will comply with state water quality standards (i.e., beneficial uses, water quality objectives, and anti-degradation policy). In California, the State Water Resources Control Board has delegated the responsibility for issuing Section 401 Certifications to nine Regional Water Quality Control Boards (RWQCBs) throughout the state. The Los Angeles RWQCB issues Section 401 Certifications for projects in Los Angeles County, where the project is located.

A CWA Section 404 Permit is a federal permit subject to the terms of Section 401 as described above, and the USACE therefore cannot issue a Section 404 permit in the project region until the permit applicant also receives a Section 401 Certification from the RWQCB. Because Section 401 of the CWA is restricted to activities requiring a federal license or permit, this section does not apply to activities affecting waters outside federal jurisdiction, such as isolated, intrastate waters or those excluded from federal jurisdiction based on the significant nexus standard.

2.2 State

State regulations pertaining to biological resources and which may apply to the proposed project include the Porter-Cologne Water Quality Control Act; the California Endangered Species Act (CESA); and California Fish and Game Code (CFGC) Sections 1600-1616, 1900 et seq., 3503, 3511, 4700, 5050, and 5515. These regulations are described briefly below.

2.2.1 Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (California Water Code, Division 7, Sections 13000-14958) provides for statewide coordination of water quality regulations. This act established the California State Water Resources Control Board as the statewide authority on water quality, and designated nine separate RWQCBs to oversee water quality on a day-to-day basis at the regional/local level. Proposed discharges of waste that would affect State waters (that are not federal waters) within or adjacent to the BSA would require a Report of Waste Discharge from the RWQCB. The project occurs within the jurisdiction of the Los Angeles RWQCB.

2.2.2 California Coastal Act

The project is located within the California coastal zone. Development within the coastal zone may not commence until a coastal development permit (CDP) has been issued by the California Coastal Commission (CCC) or a local government that has a CCC-certified Local Coastal Program (LCP), such as the County of Los Angeles' adopted LCP. The proposed project is within the Santa Monica Mountains LCP and CDP authority is delegated to the County of Los Angeles.

2.2.3 California Endangered Species Act

The CFGC considers threatened and endangered species to be of ecological, educational, historical, recreational, esthetic, economic, and scientific value to the people of California. The State of California enacted the CESA of 1973 (CFGC Sections 2050-2115.5) to protect threatened and endangered species. The CESA prohibits take of any species that the California Fish and Game Commission determines threatened or endangered, and allows for take incidental to otherwise lawful development projects upon approval from the CDFW. Under Section 2080 of the CFGC, "No person shall import into this state, export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission determines to be an endangered species or a threatened species, or attempt any of those acts, except as otherwise provided" in the CFGC.

Title 14, Section 670.2 of the California Code of Regulations (CCR), lists the subspecies and varieties of California native plants that are endangered or threatened (as defined by Section 2067 of the CFGC), and Section 670.5 lists the wildlife species and subspecies that are designated as threatened or endangered in California. California also has identified wildlife Species of Special Concern (SSC). Having been so designated, SSC also are considered in resource planning and management. The "Rare" designation applies to plants only and includes those plants that are not threatened or endangered, but that could become eligible due to decreasing numbers or further restrictions to habitat. Title 14, Section 670.2 of the CCR lists the subspecies and varieties of California native plants that are considered rare (as defined by Section 1901 of the CFGC).

The CESA contains provisions to authorize take of California-listed rare, threatened, or endangered species under Section 2081 of the CFGC, through issuance of Incidental Take Permits (ITPs) or memorandums of understanding. Take must be deemed "incidental to an otherwise lawful activity." In most cases, the applicant must agree to mitigate proportionally to the impacts to identified species, implement protection measures for the affected species, and define the list of permitted/allowable activities. Any proposed impact to state-listed species within the proposed project area would require an ITP under CESA.

2.2.4 California Fish and Game Code 1600-1616

Pursuant to Sections 1600-1616 of CFGC, the CDFW regulates all diversions, obstructions, or substantial changes to the natural flow or bed, channel, or bank of any river, stream, or lake that supports fish or wildlife. In regulations promulgated by the CDFW at 14 CCR 1.72, a stream is defined as "a body of water that flows at least periodically or intermittently through a bed or channel having banks and supports fish or other aquatic life. This includes watercourses having surface or subsurface flow that supports or has supported riparian vegetation." In practice, the CDFW has interpreted the term "streambed" to encompass all portions of the bed, banks, and channel of any stream, including intermittent and ephemeral streams, extending laterally to the upland edge of riparian vegetation. In the case of watercourses with vegetated floodplains, this interpretation often results in a jurisdictional area that is much wider than the active channel of the stream. The upstream limit of CDFW jurisdiction is the point upstream at which there is no evidence of a defined bed and bank, and riparian vegetation is not present.

The CDFW jurisdiction within altered or artificial waterways is based on the value of those waterways to fish and other wildlife. Generally:

- Natural waterways that have been subsequently modified and which have the potential to contain fish, aquatic insects, and riparian vegetation will be treated as natural waterways.
- Artificial waterways that have acquired the physical attributes of natural stream courses and which have been viewed by the community as natural stream courses should be treated by the CDFW as natural waterways.
- Artificial waterways without the attributes of natural waterways should generally not be subject to CFGC provisions.

Projects with potential to impact waters of the state must complete a Notification of Lake or Streambed Alteration and obtain an agreement issued by the CDFW.

2.2.5 California Fish and Game Code Sections 1900 et seq.

CFGC Sections 1900 et seq. is known as the Native Plant Protection Act of 1977 and designates California rare, threatened, and endangered plant species. The purpose of this Act is to preserve, protect, and enhance endangered or rare native plants of California. Many species and subspecies of native plants in California are in danger of extinction because their habitats are threatened with destruction, drastic modification, or severe curtailment as a result of exploitation by commercial or other means, or due to disease or other factors. Title 14, Section 670.2 of the CCR lists the subspecies and varieties of California native plants that are endangered, threatened (as defined by CFGC Section 2067), or rare (as defined by CFGC Section 1901).

2.2.6 California Fish and Game Code Section 3503

CFGC Section 3503 protects California migratory birds by making it unlawful to take or possess any migratory non-game bird (or any part of such bird) as designated in the MBTA.

2.2.7 California Fish and Game Code Sections 3511, 4700, 5050, and 5515

CFGC Sections 3511, 4700, 5050, and 5515 specifically prohibit the take of wildlife species that are classified as "fully protected" in California, even if other CFGC sections provide for incidental take of the species.

2.3 County

Los Angeles County in 1988 adopted an oak tree protection ordinance that established that a County-issued oak tree permit must be obtained prior to the removal of any trees of the oak (*Quercus)* genus. The ordinance recognizes that "oak trees as significant historical, aesthetic and ecological resources, and as one of the most picturesque trees in Los Angeles County, lending beauty and charm to the natural and manmade landscape, enhancing the value of property, and the character of the communities in which they exist… It is the intent of the *oak* tree permit to maintain and enhance the general health, safety and welfare by assisting in counteracting air pollution and in minimizing soil erosion and other related environmental damage. The oak tree permit is also intended to preserve and enhance property values by conserving and adding to the distinctive and unique aesthetic character of many areas of Los Angeles County in which oak trees are indigenous" (§22.56.2050).

The ordinance makes it unlawful for any person to cut, destroy, remove, relocate, inflict damage or encroach into the protected zone of any tree of the oak genus that is 25 inches or more in circumference, or 8 inches in diameter, as measured 4.5 feet above the mean natural grade. Should the proposed project plan to remove any oak trees at or above this size, a County-issued oak tree permit may be required in conjunction with any County Land Use Permits or Zoning Clearances that may be needed.

CHAPTER 3. METHODOLOGY

Biological investigations to determine the presence of and potential for sensitive biological resources to occur within the BSA included both a desktop literature review and field surveys. The methods employed for these investigations are described in the following sections. For the purposes of this report, sensitive and special-status species are defined as species that are included on one or more of the following lists:

- Plant and wildlife species that are listed as threatened or endangered, or are candidates for listing as threatened or endangered, under the ESA;
- Plant and wildlife species that are listed as threatened or endangered, or are candidates for listing as threatened or endangered, under the CESA;
- CDFW-designated SSC and Rare plant species;
- CDFW-designated Fully Protected Species;
- Plants designated by the CNPS with a California Rare Plant Rank (RPR) of 1, 2, or 4; or
- Birds of Conservation Concern (BCC) by the USFWS (USFWS 2008).

3.1 Literature Review

Prior to conducting field surveys, AECOM biologists reviewed state and federal databases and historic reports to identify sensitive biological resources including federally and state-listed plant and wildlife species, other special-status species, and sensitive natural communities with potential to occur within BSA. The literature review included an assessment of the USGS Malibu Beach, California, 7.5-minute quadrangle map (USGS 2015), the Soil Survey Geographic Database (USDA-NRCS 2017a), and the National Hydrography Dataset (USGS 2017), as well as high-quality aerial photography of the BSA and vicinity to identify all features subject to potential indirect impacts. The USFWS Endangered Species database (USFWS 2017a) and the California Native Plant Society (CNPS) Inventory of Rare and Endangered Plants (CNPS 2017) were reviewed to compile a list of special-status species with potential to occur, and the USFWS Critical Habitat Portal (USFWS 2017b) was consulted to determine the extent, if any, of any designated critical habitat units in the vicinity. Additionally, AECOM reviewed the California Natural Diversity Database (CNDDB) for records of special-status plant and wildlife occurrences in the vicinity of the BSA (CDFW 2017a). Parameters for the search included a 5-mile radius of the BSA, and a review of aquatic species occurrences in downstream waters features. Additionally, sensitive environmental resource areas as defined by the Santa Monica Mountains LCP were reviewed.

3.2 Biological Field Surveys

AECOM biologists Julie Niceswanger Hickman and Jonathon Appelbaum conducted biological field surveys of the BSA from October 17 through 19, 2016, and May 12, 2017. Field efforts were focused on identifying sensitive resources and special-status plant and wildlife species and their sign, and potentially suitable habitat for special-status species within the BSA. Field efforts included a reconnaissance-level biological resources survey, tree survey, rare plant survey, jurisdictional delineation, and general wildlife surveys. These activities are discussed in more detail in the following sections.

3.2.1 Reconnaissance-level Biological Survey

A reconnaissance-level biological survey was conducted on October 18, 2016, to identify special-status plant and wildlife species, or potentially suitable habitat for such species, within the BSA, and to verify the continued accuracy of existing vegetation community mapping. Biologists walked meandering transects with

100 percent coverage throughout the BSA. Plant species observed were identified to species wherever feasible and recorded in field notes.

Vegetation mapping was previously completed by the CDPR in 2006 as part of the Vegetation Classification of the Santa Monica Mountains National Recreation Area and Environs in Ventura and Los Angeles Counties, California (CDFG et al. 2006). Community rules are based on the dominant and characteristic plant species as described in the International Ecological Classification Standard: Terrestrial Ecological Classification of the Santa Monica Mountains National Recreation Area (NatureServe 2006), and *A Manual of California Vegetation*, Second Edition (Sawyer et al. 2009). AECOM verified the continued accuracy of the mapping effort in the field on October 18, 2016, in conjunction with other field efforts.

3.2.2 Tree Survey

A tree survey was completed October 18 and 19, 2016 (updated January 10, 2018) to document any oak (*Quercus* sp.), western sycamore (*Platanus racemosa*), California black walnut (*Juglans californica*), California bay laurel (*Umbellularia californi*ca), and toyon (*Heteromeles arbutifolia*) trees within the BSA. Biologists identified each tree to species taxon and documented the location of each using ESRI Collector for ArcGIS and attached Global Positioning System (GPS) device accurate to within 0.5 meter. The circumference of each tree was measured at diameter at breast height (dbh), approximately 4.5 feet above mean surface level and trees with a dbh of at least 5 inches were tagged and recorded in field notes. Additionally, the canopy was measured by recording the width along two axes, north-south and east-west to establish the dripline for each tree, and 5 feet were added to the canopy to establish the tree's protected zone. If the canopy was less than 15 feet from the trunk (s), a protected zone default value of 15 feet was recorded. The overall apparent health of each tree was also recorded.

3.2.3 Rare Plant Survey

A rare plant survey was conducted on May 12, 2017, to identify special-status plant species during the spring blooming period within the BSA, and to verify the continued accuracy of existing vegetation community mapping. Biologists walked meandering transects with 100 percent coverage throughout the BSA. Plant species observed were identified to species wherever feasible and recorded in field notes.

3.2.4 Jurisdictional Delineation

A formal jurisdictional delineation was conducted October 17, 2016; results of that survey are discussed in a letter report submitted by AECOM to the California State Parks Department, and included herein as Appendix B (AECOM 2016). Results of that delineation are briefly summarized in Section 4.10.

During the jurisdictional delineation, the USACE and CDFW jurisdictional boundaries were recorded in the field via GPS points and lines. Ground width measurements were recorded for the OHWM and top of bank or outer extent of the riparian vegetation. These field data were used in combination with aerial imagery to delineate jurisdictional boundaries. Where field points did not correlate precisely with aerial imagery or field measurements due to the limitations of GPS unit accuracy, the delineation was adjusted to align with aerial imagery and field measurements.

3.2.5 Wildlife Surveys

General wildlife surveys were conducted concurrently with all other field efforts. Biologists recorded incidental wildlife observations and observations of sign, including burrows, middens, tracks, scat, and other evidence of activity by common and special-status wildlife species in the vicinity.

3.3 Potential to Occur Assessment

Habitat conditions within the BSA were assessed to determine the general habitat suitability for special-status plant and wildlife species with potential to occur based on the known species within a 5-mile radius, as identified in the literature review. The following criteria were used to determine the potential for species not observed but with potential to occur within the BSA:

- **High Potential –** All of the habitat components meeting the species requirements are present and/or most of the habitat within the BSA is highly suitable. The BSA is within the known range of the species. The species has a high probability of being found within the BSA.
- **Moderate Potential –** Some of the habitat components meeting the species requirements are present, and/or only some of the habitat within the BSA is unsuitable, and the BSA is within the known range for the species. Plants requiring specific habitat (e.g., scrub) and specific soils (e.g., sand) that were both found on-site were assigned to the moderate category. Plants that require specific habitat (e.g., scrub) but did not have specific soil requirements were assumed to be in the moderate category.
- **Low Potential –** Few of the habitat components meeting the species requirements are present, and/or the majority of habitat within the BSA is unsuitable or of very poor quality, and/or the BSA is somewhat outside of the known range of the species. Plants were assigned to the low category if a specific soil type (e.g., sand), but not the specific habitat (e.g., scrub), was found within the BSA. These species are not likely to be found within the BSA.
- **No Potential (None) –** The habitat within the BSA is clearly unsuitable for the species requirements (foraging, breeding, cover, substrate, elevation, hydrology, plant community, site history, disturbance regime) and/or the BSA is clearly out of the known range for the species. The potential for plant species to occur was categorized as none in situations where the CNDDB or CNPS databases stated the species is extirpated within the BSA.

CHAPTER 4. RESULTS

The BSA occurs within the boundaries of the Malibu Creek State Park and encompasses the existing road crossing at Stokes Creek. Native oak woodland and native and naturalized grasslands are the dominant vegetation types within and around the BSA. Limited areas of existing development in the form of roadways and parking lots occur in the vicinity. The BSA includes portions of the ephemeral stream channel and associated banks, an existing culverted road crossing, and surrounding woodland and grassland areas (Figure 3). Appendix A provides photographic documentation of site conditions.

The sections below describe the physical and biological resources present and with potential to occur within the BSA. The surveys were conducted from 8 a.m. to 5 p.m.; air temperatures were approximately 68 to 75 degrees Fahrenheit, with calm winds and clear skies.

4.1 Landforms and Geomorphology

The BSA occurs in Malibu Creek State Park in the Santa Monica Mountains. Elevations through the BSA range from approximately 535 to 560 feet above mean sea level. Stokes Creek runs approximately 25 miles from Boney Mountain to Malibu Lagoon. The BSA is part of the Santa Monica National Recreation Area. The project area itself is characterized by a natural stream course (Stokes Creek) with steep banks ranging from 10 to 20 feet in height. The geologic formations underlying the BSA primarily include Alluvial Wash and Young Alluvial Valley Deposits. These geologic formations predominately correspond to/underlay Stokes Creek. In the outer upland areas of the BSA, Alluvial Fan Deposits, Old Alluvial Valley Deposits, and Tertiary age formations of volcanic origin are also present (California Geological Survey 2012).

4.2 Soils

Two soil types occur within the BSA; Botella loamy soils occur on the uplands and fluvaquents-riverwash complex occurs within the channel. These soils complexes are described briefly below.

4.2.1 Botella Series Soils

Botella series soils are very deep, well-drained soils that occur in small valley bottoms and on alluvial fans, and generally have slopes of 0 to 15 percent. They are of moderate extent throughout the coastal valley of central and southern California. These soils form in alluvial material from sedimentary and mixed rock on stream terraces and alluvial fans. Botella series soils exhibit low to high runoff and moderately slow permeability. They are typically used for growing field, forage, and truck crops; orchards; and non-irrigated grain pasture, hay, and range. They also may be used for urban development. Native and naturalized vegetation communities typically consist of annual grasses and forbs with scattered oak trees and some areas of coastal sagebrush (USDA-NRCS 2017b). Within the BSA, Botella series soils exhibit slopes of 2 to 9 percent (USDA-NRCS 2017a).

4.2.2 Fluvaquents-Riverwash Complex

Fluvaquents-riverwash complex is not a recognized soils type in the USDA-NRCS Soils Survey. Fluvaquents (wet soils produced by frequent flooding) associated with this complex typically occur on floodplains and are formed in alluvium derived from sandstone and shale. Riverwash within this complex typically occurs within drainages and is formed from alluvium derived from mixed rock, sandstone, and shale. Within the BSA, this complex occurs on slopes of 0 to 5 percent and consists of approximately 70 percent fluvaquents and similar soils, 20 percent riverwash, and 10 percent other components, including Botella series soils (USDA-NRCS 2017a).

4.3 Vegetation Communities

Three native vegetation communities are present within the BSA; one anthropogenic unvegetated land cover type, urban/disturbed or built-up, was observed in the BSA (Figure 6). Table 1 lists the vegetation communities and their acreages within the BSA. The following sections describe these communities and land cover type in more detail.

Table 1. Vegetation Communities and Acreages within the BSA

Vegetation Community	LOD Acreage	Buffer Acreage	Total Acreage in BSA
Native and Non-native Herbaceous Superalliance Mapping Unit	0.00	2.19	2.19
Coast live oak woodland (*Quercus agrifolia* woodland alliance)	0.00	0.70	0.70
Valley oak woodland (*Quercus lobata* woodland alliance) [1]	0.20	2.23	2.43
TOTAL [2]	0.20	5.12	5.32

[1] Valley oak woodland within the LOD and buffer also contains anthropogenic unvegetated land cover in the form of urban/disturbed or built-up lands in the form of the existing road. Approximately 0.06 acre of existing road occurs within the LOD. This was not mapped separately, due to mapping scale and presence of woodland tree canopy.
[2] Exact acreages were calculated using Geographic Information System software; small discrepancies may exist due to rounding.

4.3.1 Native and Non-native Herbaceous Superalliance Mapping Unit

As described in Section 3.2.1, community rules are based on the dominant and characteristic plant species as described in the *International Ecological Classification Standard: Terrestrial Ecological Classification of the Santa Monica Mountains National Recreation Area* (NatureServe 2006), and *A Manual of California Vegetation*, Second Edition (Sawyer et al. 2009). Native and non-native herbaceous superalliance mapping unit is characterized by dominant native or non-native grasses, typically non-native *Bromus* species, in the herbaceous layer. The National Park Service (NPS) describes this vegetation community as California annual grassland/herbaceous alliance (NatureServe 2006), and Sawyer et al. describes it as annual brome grasslands (*Bromus diandrus/hordeaceus* semi-natural herbaceous stands) (2009). Herbs are less than 2.5 feet in height and emergent trees or shrubs may be present at low cover. This community occurs on flat to steep slopes in foothills, waste places, rangelands, and openings in woodlands from sea level to 7,218 feet in elevation (NatureServe 2006; Sawyer et al. 2009). Annual grasslands are a naturalized vegetation community that is prevalent through the state of California.

Annual grasslands within the BSA are as described by Sawyer et al., as well as the description provided by the NPS (NatureServe 2006). It occurs within the southern and northern portions of the BSA, outside the stream channel, and is prevalent within the buffer and in the vicinity. This community is not located within the limits of disturbance (LOD) but encompasses 2.19 acres within the BSA.

4.3.2 *Quercus agrifolia* Woodland Alliance

Coast live oak woodland (*Quercus agrifolia* woodland alliance) is characterized by dominant or co-dominant coast live oak (*Quercus agrifolia*) in the tree canopy, with an open to continuous canopy. Trees may be up to 98 feet in height. Other species that may be co-dominant in the tree canopy include California walnut (*Juglans californica*); western sycamore (*Platanus racemosa*); Fremont cottonwood (*Populus fremontii*); other *Quercus* genus oaks including blue oak (*Quercus douglasii*), valley oak (*Quercus lobata*), Engelmann oak (*Quercus engelmannii*), and California black oak (*Quercus kelloggii*); arroyo willow (*Salix lasiolepis*);

and California bay (*Umbellularia californica*). The shrub layer is sparse to intermittent, and the herbaceous layer is sparse to grassy, the latter of which is typical within the BSA. This community occurs on alluvial terraces, canyon bottoms, stream banks, slopes, and flats at elevations of sea level to 3,937 feet. Soils are typically deep with high organic matter and may be sandy or loamy (Sawyer et al. 2009). The NPS describes this vegetation community as *Quercus agrifolia*/Annual Grass-Herb woodland/forest association (NatureServe 2006).

Coast live oak woodland observed within the BSA closely abides by the community rules as described by Sawyer et al., as well as the description provided by the NPS (NatureServe 2006). Coast live oak woodland does not occur within the LOD but does encompass approximately 0.70 acre within the BSA.

4.3.3 *Quercus lobata* Woodland Alliance

Valley oak woodland (*Quercus lobata* woodland alliance) is classified by the CDFW as a sensitive natural community (CDFG 2010). This vegetation community is characterized by dominant or co-dominant valley oak (*Quercus lobata*) in the tree canopy, with an open to continuous canopy. Trees may be up to 98 feet in height. Other tree species that may be present include Oregon ash (*Fraxinus latifolia*); western sycamore; Fremont cottonwood; other *Quercus* genus oaks including coast live oak, blue oak, and California black oak; and several willow species including Gooding's willow (*Salix gooddingii*) and arroyo willow, the latter of which is co-dominant with valley oak within the BSA. Shrubs may be common to occasional, and the herbaceous layer may be grassy. This community generally occurs on valley bottoms from sea level to 2,542 feet. Soils are typically alluvial or residual, are often seasonally saturated, and may be intermittently flooded (Sawyer et al. 2009). The NPS describes this vegetation community as *Quercus lobata-Salix lasiolepis* woodland/forest association (NatureServe 2006).

Valley oak woodland observed within the BSA closely abides by the community rules as described by Sawyer et al. as well as the description of this provisional association provided by NPS (NatureServe 2006). While there is a significant presence of coast live oak within the BSA itself, the area retains a vegetation mapping category of valley oak woodland consistent with overall broader vegetation mapping conducted by CDPR in 2006 as part of the Vegetation Classification of the Santa Monica Mountains National Recreation Area and Environs in Ventura and Los Angeles Counties, California (CDFG et al. 2006). Within the BSA, valley oak woodland occurs on the banks of Stokes Creek, with a canopy that overhangs the creek channel. This vegetation community dominates the BSA, encompassing a total of 0.20 acre within the LOD and an additional 2.23 acres of the buffer, totaling 2.43 acres. Valley oak woodland within the BSA also contains anthropogenic unvegetated land cover in the form of the existing road. Approximately 0.06 acre of existing road occurs within the LOD. This was not mapped separately, due to mapping scale and presence of woodland tree canopy.

4.4 Designated Critical Habitat

No designated critical habitat occurs within the BSA or the buffer. The nearest designated critical habitat is for Lyon's pentachaeta (*Pentachaeta lyonii*) and occurs approximately 1.78 miles west of the BSA. No direct or indirect impacts to this critical habitat unit are anticipated due to project-related activities. It is not discussed further herein.

Additionally, critical habitat units for the federally endangered tidewater goby (*Eucyclogobius newberryii*) and the federally endangered Southern California Coast steelhead *(Oncorhynchus mykiss irideus)* have been designated at the mouth of Malibu Creek, downstream of the BSA. The tidewater goby critical habitat, unit LA-3, includes 64 acres within Malibu Lagoon at the mouth of Malibu Creek, and was known to be occupied at the time of designation in 2013 (78 Federal Register 8746). Critical habitat for Southern California Coast steelhead was designated in 2005 within the Malibu hydrologic sub-area from the mouth of Malibu Creek upstream approximately 3 miles to Rindge Dam (70 Federal Register 52488).

4.5 Flora and Fauna Observations

Forty species of plants were recorded during the 2016 survey of the BSA. Of these, 28 are native and 12 are non-native. One special-status plant species, Ojai navarettia was observed on-site. This species is described in Section 4.5.3.3. A list of the plant species observed is provided in Appendix C.

The BSA is an active, native riparian corridor that provides habitat for a number of native wildlife species. Incidental wildlife observations primarily consisted of common species, including red-tailed hawk (*Buteo jamaicensis*), acorn woodpecker (*Melanerpes formicivorus*), white-crowned sparrow (*Zonotrichia leucophyrys*), mule deer (*Odocoileus hemionus*), coyote (*Canis latrans*), and California ground squirrel (*Otospermophilus beecheyi*). Two special-status bird species, oak titmouse (*Baelophus inornatus*) and Nuttall's woodpecker (*Picoides nuttallii*) were observed; these species are described in Sections 4.5.3.1 and 4.5.3.2, respectively. A list of the wildlife species observed is provided in Appendix C. The species observed represent wildlife use during dry conditions. Additional use of the BSA by reptile and amphibian species during wet conditions is probable.

4.5.1 Tree Inventory

The tree survey documented a total of 144 native trees within the BSA, including coast live oak, valley oak, California black walnut, western sycamore, Freemont cottonwood, and tree forms of arroyo willow. Figure 7 displays the locations of each of these trees. Table 2 provides a summary of the number of each tree species documented. A detailed discussion of the native tree survey results is included in the Native Tree Survey Report (Appendix D).

Table 2. Tree Inventory Summary by Species

Scientific Name	Common Name	Individuals within LOD and Buffer
Juglans californica var. *californica*	California black walnut	6
Platanus racemosa	Western sycamore	1
Populus fremontii	Freemont cottonwood	1
Quercus agrifolia	Coast live oak	107
Quercus lobata	Valley oak	19
Salix lasiolepis	Arroyo willow	10
Total		**144**

4.5.2 Sensitive Natural Communities

Sensitive natural communities are those that are considered rare in the region, support special-status plant or wildlife species, or receive regulatory protection (i.e., CWA Section 404 and/or CFGC Sections 1600 et seq.). In addition, the CDFW has designated a number of communities as rare; these communities are given the highest inventory priority (Holland 1986; CDFG 2010).

One sensitive natural community, valley oak woodland alliance, was observed within the BSA. Valley oak woodland alliance, which occurs in association with arroyo willow, is designated as a CDFW sensitive natural community. As discussed, valley oak woodland alliance occupies a total of approximately 2.43 acres within the BSA, of which 0.20 acre occurs within the LOD (Figure 6).

4.5.3 Special-status Species Observed in the BSA

Two special-status bird species and one special-status plant species were observed during field surveys of the BSA. These species are depicted in Figure 8, and described briefly below. Special-status criteria are defined in Chapter 3.

4.5.3.1 *Oak Titmouse*

The oak titmouse is a common year-round resident of open oak woodlands, including blue oak woodlands, valley oak woodlands, and coast live oak woodlands, and a variety of other habitats, including montane hardwood-conifer forests, montane forest, and montane and valley foothill riparian habitats. This species forages primarily for insects and spiders, berries, acorns, and some seeds, by gleaning prey items from foliage, branches, and occasionally the ground. Oak titmice are cavity nesters, which build a nest in a natural cavity, nest box, or woodpecker hole. Breeding generally occurs from March into July (CDFW 2017d). Oak titmice are listed by the USFWS as a BCC for the Coastal California Bird Conservation Region (BCR) (USFWS 2008).

4.5.3.2 *Nuttall's Woodpecker*

The Nuttall's woodpecker is a common, permanent resident of low-elevation deciduous riparian woodlands and oak woodlands. This small woodpecker forages for adult and larval insects, especially beetles, by gleaning, probing, or drilling for prey items. Berries, poison oak seeds, nuts, sap, and other fruits also may be taken. Nesting occurs from late March through July in an excavated cavity between 2 and 60 feet above ground level. Nest cavities are typically excavated in riparian habitats in dead limbs or trunks of willows (*Salix* sp.), sycamore, cottonwood (*Populus* sp.), or alder (*Alnus* sp.) trees; nest cavities are rarely excavated in oak trees (CDFW 2017d). Nuttall's woodpeckers are listed by the USFWS as a BCC for the Coastal California BCR (USFWS 2008).

4.5.3.3 Ojai Navarettia

Ojai navarettia (*Navarettia ojaiensis*) is an annual herb in the Polemoniaceae family or phlox family. It blooms from May through July and can be found in Santa Barbara, Ventura, and Los Angeles Counties. It is found in the open areas of chaparral, coastal sage scrub, and grassland habitats. This plant is a California RPR of 1B.1 (considered rare, threatened, or endangered in California and elsewhere).

4.5.4 Special-status Species Not Observed but with Potential to Occur

The literature review identified numerous special-status plant and wildlife species, including 18 plants, four mammals, three birds, four reptiles, and three fish with potential to occur based on the type and quality of habitat present and historic occurrence records in the vicinity. Additionally, seven sensitive natural communities were identified within a 5-mile radius of the BSA.

Appendix E presents a summary of each species' natural history and habitat requirement and an assessment of its potential to occur based on these factors. Appendix F presents a table of all other species with CNDDB records within a 5-mile radius that were determined not to have potential to occur based on habitat requirements and were excluded from analysis.

The following sections discuss those species with some potential to occur within the BSA based on this analysis.

4.5.4.1 *Special-status Plant Species Not Observed but with Potential to Occur within the BSA*

A total of 18 special-status plant species with records within a 5-mile radius of the BSA were identified during the literature review. Of these, 11 were determined to have low to high probability of occurring within

the BSA, and 7 were determined based on habitat requirements including habitat and soil types, elevations, and other factors, to have no potential to occur. Appendix E includes a summary of the species with a low or greater probability to occur, including habitat requirements and potential to occur. Appendix F includes a list of those species determined to have no potential and are excluded from further analysis. Two special-status plant species not observed but with potential to occur were determined to have a moderate to high probability to occur within the BSA; these species are discussed in more detail in this section.

Round-leaved Filaree

Round-leaved filaree (*California macrophylla*) is an annual herb that occurs in open sites in scrub, cismontane woodland, and valley and foothill grassland habitats. Round-leaved filaree is not state or federally listed, but does have a California RPR of 1B.2 (rare, threatened, or endangered in California and elsewhere; fairly endangered in California) (CNPS 2017). Soils are generally clay, though occasionally may be serpentine in content, and elevations range from sea level to 3,900 feet (Jepson 2017). The blooming period for this species is March through July (CNPS 2017). Round-leaved filaree is threatened by development, urbanization, and habitat alteration. Other threats may include vehicular traffic, grazing activities, and competition with non-native plants (CNPS 2017).

The nearest record of round-leaved filaree occurs approximately 0.9 mile northwest of the BSA (CDFW 2017a). This species has a moderate probability to occur within the BSA based on the presence of potentially suitable woodland and grassland habitats and proximity of historical occurrences. Soils within the BSA are not ideal for this species, but may be marginally suitable. . This species was not observed during the rare plant survey conducted on May 12, 2017.

Lyon's Pentachaeta

Lyon's pentachaeta (*Pentachaeta lyonii*) is an annual herb that is listed as federally endangered, state endangered, and has a California RPR of 1B.1 (CDFW 2017b). It occurs in rocky or clay soils in coastal scrub, valley and foothill grassland, and openings in chaparral habitats (CNPS 2017). Elevations range from sea level to 1,312 feet (Jepson 2017). The blooming period for this species is March through August. Lyon's pentachaeta is threatened by development, alteration of fire regimes, trampling, vehicular traffic, and recreational activities, as well as competition with non-native grasses (CNPS 2017).

Numerous records for this species occur in the vicinity of the BSA, with the nearest located approximately 1.68 miles west of the BSA; two of these records are dated as recently as 2012 (CDFW 2017a). This species has a moderate likelihood to occur within the BSA based on the number and proximity of records in the vicinity and the presence of potentially suitable grassland habitats. However, grasslands within the BSA are dominated by non-native species, which reduces the suitability of habitat for this species. This species was not observed during the rare plant survey conducted on May 12, 2017.

4.5.4.2 *Special-Status Wildlife Species Not Observed but with Potential to Occur within the BSA*

A total of 14 special-status wildlife species with records within a 5-mile radius of the BSA were identified during the literature review. Of these, 11 were determined to have low to high probability of occurring within the BSA, and three were determined based on habitat requirements to have no potential to occur. Aquatic species with no potential to occur within the BSA, but which had moderate-to-high probability to occur downstream and would be potentially subject to indirect impacts due to project activities were not excluded from analysis. Appendix E includes a summary of the species with a low or greater probability to occur, and those aquatic species with no potential to occur within the BSA but with potential to occur in downstream habitats. Appendix F includes a list of those species determined to have no potential to occur and excluded from further analysis. Only the western red bat was determined to have a moderate or high probability to occur with the BSA; this species is discussed in more detail in this section.

Western Red Bat

The western red bat (*Lasiurus blossevillii*) is a locally common species in certain parts of California, occurring west of the Sierra Nevada and Cascades ranges from Shasta County to the Mexican border. Roosting sites are primarily in trees, often in mosaic habitats and edge habitats adjacent to streams, fields, or urban areas. Preferred sites are protected from above, open below, and located above dark ground cover, in order to minimize water loss. Western red bats may roost at heights from 2 to 40 feet above ground level. Foraging habitat may include grasslands, shrublands, open woodland and forests, and croplands. Western red bats typically emerge 1 to 2 hours after sunset and forage using echolocation to locate a variety of insects, with moths, crickets, beetles, and cicadas being important prey items. Short seasonal migrations are common in California, with the spring migration occurring March through May and the fall migration in September and October. Young are born from late May to early July, with a typical litter consisting of two to three pups. Young are capable of flight between 3 to 6 weeks of age (CDFW 2017d). The western red bat is not federally or state listed, but is considered a CDFW SCC (CDFW 2017c).

The CNDDB contains three records for the western red bat within a 5-mile radius of the BSA, all recorded in 2004. The nearest of these is located approximately 2.7 miles northwest of the BSA (CDFW 2017a). The BSA contains potentially suitable woodland roosting sites. Additionally, potentially suitable foraging habitat, including preferred edge habitats adjacent to the creek, is present within the BSA.

4.6 Santa Monica Mountains LCP Habitat Categories

The Santa Monica Mountains LCP has developed a system of habitat categories based on biological resources that designate development standards for each category within the LCP boundaries. Habitat categories are defined as the following: H1 Habitat – most sensitive and valuable habitats, vigorously protected; H2 Habitat –sensitive and valuable habitats, limited development allowed; and H3 Habitat – primarily disturbed or non-native habitats, fewer restrictions on development. The BSA has approximately 3.91 acres of H1 habitat and 1.41 acres of H3 habitat (Figure 9).

As described in Section 4.3.1, vegetation communities were mapped in the field studies conducted for this project. In accordance with the Santa Monica Mountains LCP, these acreages were compared to the Habitat Category Delineation Maps (Figure 9) delineated for the BSA. Because the vegetation mapping included herein is not within plus or minus 5 percent of the Habitat Category Delineation Maps (Table 3), it is recommended that the Habitat Category Delineation map be updated to reflect Figure 6 of this report.

Table 3. Santa Monica Mountains LCP Habitat Category Changes in the BSA

Habitat Type	Vegetation Mapping Conducted for Bio Assessment Report (acres)	LCP Habitat Category Delineation Mapping (acres)	Percent Difference (acres)
H1 Habitat	2.67	3.13	117%
H3 Habitat	2.65	2.19	83%

4.7 Migratory and Nesting Birds

The vegetation communities of the BSA provide potentially suitable nesting habitat for several species of migratory birds. The oak woodland within and surrounding the creek channel, and grassland areas in the vicinity both have high potential to support nesting by tree-, cavity-, and ground-nesting species. Any work activities in the BSA during the breeding bird season (February 15–September 1) should be evaluated for potential direct and indirect impacts to nesting birds.

4.8 Wildfires

Malibu Creek State Park was potentially impacted by wildfires in 2007; the State Park was included in the closure of 22 State Parks during those fires. The impacts of the wildfires on the BSA are unknown.

4.9 Wildlife Movement Corridors and Habitat Fragmentation

Impacts to wildlife movement corridors and habitat fragmented through development can be detrimental to populations of species that rely on these areas for seasonal migration (usually one direction per season), interpopulation movement (long-term genetic exchange), and daily movements within an animal's territory (small travel pathways). Small travel pathways facilitate movement for daily home range activities such as foraging and escape from predators; however, they also provide connection between outlying populations and larger movement corridors, permitting an increase in gene flow between populations. Larger linkages between habitat types can extend for miles between primary habitat areas and occur on a regional scale throughout California. Habitat linkages facilitate movement between populations located in discrete areas and populations located within larger habitat areas. Even where patches of pristine habitat are fragmented, the movement between wildlife populations is facilitated through habitat linkages, i.e., migration corridors and movement corridors.

Stokes Creek channel, including the BSA, may provide some function as a wildlife corridor for species moving through the adjacent habitats. Flows within Stokes Creek are ephemeral, occurring only immediately following significant rain events; thus, the creek is not expected to provide a valuable migration corridor for aquatic species. Habitat in the vicinity is largely continuous with the Santa Monica National Recreation Area and provides ample opportunities for wildlife movement. However, impacts to wildlife movement as a result of any proposed project activities should be minimal.

4.10 Jurisdictional Resources

As discussed in the Jurisdictional Delineation Report for the project (Appendix B), Stokes Creek is an ephemeral tributary via Los Virgenes Creek to Malibu Creek, which drains into the Pacific Ocean, a Traditional Navigable Water (TNW). As Stokes Creek has a direct surface hydrological connection to a downstream TNW through Los Virgenes and Malibu Creeks, and because Stokes Creek appears to have a more than speculative or insubstantial effect on the chemical, physical, and/or biological integrity of this TNW, it is expected that Stokes Creek possesses a *significant nexus* with a downstream TNW and is subject to USACE jurisdiction. The Jurisdictional Delineation Report includes a detailed summary of results.

The BSA contains a total of 2.43 acre of jurisdictional waters in the form of USACE, CDFW and RWQCB jurisdictional non-wetland waters of the U.S. (0.13 acre) and CDFW-jurisdictional streambed (2.30 acres). No USACE jurisdictional wetland waters were identified within the BSA. Table 4 provides a summary of the federal and state jurisdictional waters. Figure 10 provides a graphic representation of jurisdictional boundaries within the BSA.

Table 4. Estimated Jurisdictional Acreages within the BSA

Waters under USACE, RWQCB, and CDFW Jurisdiction Acres (Linear Feet)		CDFW-Only Jurisdictional Areas Acres	
Waters Type	**Acreage within BSA**	**Waters Type**	**Acreage within BSA**
Other (Non- Wetland) Waters of the U.S.	0.13	Riparian Habitat	2.30
Total	**0.13**		**2.30**

[1] Exact acreages were calculated using Geographic Information System software; small discrepancies are due to rounding.

CHAPTER 5. IMPACTS

The BSA supports native or naturalized vegetation communities, special-status species, and jurisdictional resources, as described in Chapter 4. Impacts to these natural resources are restricted by the regulatory framework described in Chapter 2. This section describes the potential impacts to these resources based on 30-percent design of the project.

5.1 Vegetation Communities

Temporary impacts to vegetation communities are illustrated in Figure 11. No permanent impacts would occur, as the proposed road, retaining walls, and bridge would fit nearly entirely within the existing road and culvert crossing footprint, and be offset by the removal of the existing culvert. Temporary impacts to individual native trees within the LOD would be avoided, as the engineering design of the project protects in-place each native tree. However, 0.20 acre of temporary impacts to *Quercus lobata-Salix lasiolepis* alliance would occur from temporary impacts within the project LOD, including grading of the stream banks, removal of the gabions, installation of the Curlex blanket, and associated construction activities. Temporary impacts to the understory of this alliance would be restored post-construction per measure BIO-6.

5.2 Designated Critical Habitat

Impacts to designated critical habitat are not expected, as no critical habitat occurs in the BSA. As described in Section 4.4, critical habitat for the tidewater goby and Southern California Coast steelhead occurs at the mouth of Malibu Creek, downstream of the BSA. Replacing the culvert crossing with a bridge and removal of the gabion walls would allow for more natural stream flow. Further, the project would not permanently alter the stream course, water volumes, or water quality downstream of the BSA. Therefore, no temporary or permanent impacts to critical habitat are expected.

5.3 Flora and Fauna

5.3.1 Tree Inventory

The proposed project was designed to avoid impacts to native trees. Figure 12 illustrates the native trees that were recorded in the Native Tree Survey (Appendix D). Twenty-four trees have a portion of their tree protected zone overlapping with the LOD, while 10 of those trees are located within the LOD. Trees located within the LOD include seven *Quercus agrifolia*, two *Quercus lobata*, and one *Salix lasiolepis*. However, construction plans do not call for the removal of these trees. In addition, the plans do not call for the trimming of any tree canopy. The proposed bridge and road would replace existing structures. Table 5 describes the impacts to native tree protected zones. Of the 24 trees 18 are oak trees. Of the 18 oak trees, nine trees could have impacts to 30 percent or more of their tree protected zones; seven trees could have impacts between 10 to 30 percent; and two trees could have less than 10 percent of their protected zone impacted by project activities.

The protected zone of native trees would not be permanently impacted from encroachment of development, as the proposed project would be limited to the existing footprint of the road and culvert crossing. However, the Santa Monica Mountains LCP prohibits excavation within the protected zone of any native tree. Therefore, removing the existing road and culvert crossing, recontouring the stream banks, and installation of new road and bridge would impact the protected zone of some native trees within the LOD. In accordance with the Santa Monica Mountains LCP, impacts to tree protected zones will be mitigated for as described in measure BIO-5. Measure BIO-5 requires that a qualified biologist monitor construction to delineate approved work areas to maximize native tree protection during construction and minimize excavation for tree root protection. Trees will continue to be monitored as part of the restoration maintenance and monitoring program outlined in measure BIO-6.

Table 5. Estimated Potential Tree Impacts

Tree Number	Species	Tree Located in LOD	Percent of Protected Zone in LOD
3	*Quercus agrifolia*	Yes	53%
4	*Quercus lobata*	Yes	22%
5	*Quercus agrifolia*	No	6%
12	*Quercus agrifolia*	Yes	49%
19	*Quercus agrifolia*	No	10%
20	*Quercus agrifolia*	Yes	55%
21	*Quercus agrifolia*	Yes	43%
22	*Quercus agrifolia*	No	19%
23	*Quercus agrifolia*	No	28%
24	*Quercus agrifolia*	No	14%
25	*Quercus agrifolia*	No	26%
26	*Quercus agrifolia*	No	45%
29	*Quercus lobata*	Yes	58%
30	*Quercus agrifolia*	Yes	60%
31	*Quercus agrifolia*	Yes	61%
32	*Quercus agrifolia*	Yes	51%
33	*Quercus lobata*	No	29%
84	*Quercus agrifolia*	No	56%
150	*Populus fremontii*	No	3%
152	*Salix lasiolepis*	No	25%
153	*Salix lasiolepis*	No	11%
154	*Salix lasiolepis*	Yes	44%
155	*Salix lasiolepis*	No	8%
156	*Salix lasiolepis*	No	6%

Impacts to *Salix lasiolepis* should be addressed through development of the habitat restoration plan. No preservation of *Salix* is recommended, as these trees are not healthy. While no evidence of pest or disease was immediately apparent, the *Salix* is not thriving within the LOD. Therefore, replacement of *Salix lasiolepis* is recommended, and would be addressed by the Restoration Ecologist as part of the habitat restoration plan outlined in measure BIO-6.

5.3.2 Sensitive Natural Communities

Impacts to the sensitive natural community that occurs within the LOD (valley oak woodland) would be avoided through design of the project, which avoids the removal of native trees. In addition, measures BIO-1 and BIO-7 (Chapter 6) will avoid, minimize, and mitigate impacts that may occur as a result of construction. Measure BIO-1 will educate the construction crews on laws and ordinances protecting biological resources within the LOD, to help avoid impacts from construction. Measure BIO-6 will mitigate impacts resulting from construction by restoring temporarily disturbed areas.

5.3.3 Sensitive Species

5.3.3.1 *Special-status Species Observed within the BSA*

The following special-status species were observed within the BSA.

Ojai Navarettia

Ojai navarettia was detected within the BSA, but outside of the temporary and permanent impact areas (Figure 8). Therefore, no permanent or temporary impacts to this species would occur.

Oak Titmouse

An individual oak titmouse was detected in the BSA, as described in Section 4.5.3.1. Impacts to this species would be avoided through the design of the project. The project would not remove trees that could provide suitable nesting habitat. In addition, construction impacts would be avoided through avoidance, mitigation, and measure BIO-3 (Chapter 6), which requires that vegetation clearing activities occur outside the bird breeding season to the extent practical. This measure also prescribes that, if construction should occur during the bird breeding season, a nesting bird survey will precede such activities, and a qualified biologist shall monitor construction activities. As such, no impacts are expected to occur to the oak titmouse.

Nuttall's Woodpecker

An individual Nuttall's woodpecker was detected in the BSA, as described in Section 4.5.3.2. Impacts to this species would be avoided through the design of the project. The project would not remove trees that could provide suitable nesting habitat. In addition, construction impacts would be avoided through measure BIO-3 (Chapter 6), which requires that vegetation clearing activities occur outside the bird breeding season to the extent practical. This measure also prescribes that, if construction should occur during the bird breeding season, a nesting bird survey will precede such activities, and a qualified biologist shall monitor construction activities. As such, no impacts are expected to occur to the Nuttall's woodpecker.

5.3.3.2 *Special-status Species Not Observed but with Potential to Occur*

Round-leaved Filaree

As described in Section 4.5.4.1, round leaved-filaree does not occur within the BSA. The nearest record of this species occurs 0.9 mile northwest of the BSA. Therefore, no impacts to this species are expected.

Lyon's Pentachaeta

As described in Section 4.5.4.1, Lyon's pentachaeta does not occur within the BSA. The nearest record of this species occurs 1.68 miles west of the BSA. Therefore, no impacts to this species are expected.

Western Red Bat

As described in Section 4.5.4.2, though this species was not detected, suitable habitat does occur in the BSA. Impacts to this species would be avoided through design of the project. The project would not remove trees that potentially provide suitable roosting habitat. In addition, in accordance with measure BIO-7, a pre-construction bat survey would avoid impacts to this species from construction activities if construction were to occur during the bat breeding season.

5.4 Wildlife Movement Corridors and Habitat Fragmentation

The BSA may provide some function as a wildlife corridor for species moving through the adjacent habitats (Section 4.9). However, impacts to wildlife movement are not expected because the project would not remove native trees nor significantly degrade the riparian habitat within the BSA. Construction activities will

occur during a short duration and should not interfere with movement corridors. The project involves replacing an existing culvert crossing, which can serve as a movement corridor. Therefore, the project would not contribute to habitat fragmentation.

5.5 Jurisdictional Resources

A jurisdictional delineation was completed for this project on October 17, 2016, and is included in this report as Appendix B. Table 6 describes the total acreages of jurisdictional waters that would be temporarily impacted within the LOD, as a result of the project.

Table 6. Estimated Potential Impacts to Jurisdictional Acreages within the LOD

Waters under USACE, RWQCB, and CDFW Jurisdiction Acres (Linear Feet)		CDFW-Only Jurisdictional Areas Acres	
Waters Type	**Estimated Temporary Impacts (In LOD)**	**Waters Type**	**Estimated Temporary Impacts (In LOD)**
Other (Non-Wetland) Waters of the U.S.	0.04	Riparian Habitat	0.16
Total	**0.04**		**0.16**

[1] Exact acreages were calculated using Geographic Information System software; small discrepancies are due to rounding.

All temporary impacts would occur within a 0.20-acre area, of which approximately 0.04 acre is non-wetland waters regulated by the USACE, CDFW, and RWQCB, and the remaining 0.16 acre is riparian habitat under the jurisdiction of the CDFW. Temporary impacts to waters under the jurisdiction of the USACE, RWQCB, and CDFW are limited to removing the existing structures, including the gabion wall, and corrugated metal pipe and associated bottom. The slopes of the stream would be graded and a Curlex blanket would be installed to prevent erosion and facilitate restoration of the bank slopes after grading. The existing culvert crossing would be replaced with a prefabricated bridge, and the road would be replaced within the existing footprint. As such, temporary impacts to waters under the jurisdiction of the USACE, RWQCB and CDFW would be 0.04 acre from grading and Curlex blanket installation. The non-wetland waters temporarily impacted by construction would be restored post-construction per measure BIO-6. No permanent impacts to waters of the U.S. and state are proposed.

In addition to impacts to waters of the U.S. and state, temporary impacts to 0.16 acre of CDFW-only riparian habitat would occur. These impacts would result from grading and installation of the Curlex blanket for erosion control. Of the 0.16 acre, approximately 0.003 acre of riparian habitat would be impacted from the construction of new retaining walls. However, the project would require demolition of 0.006 acre of existing gabion wall and concrete brow ditch. Therefore, permanent impacts from the construction of the new retaining walls would be less than the demolition of the wall and brow ditch within the riparian habitat. The riparian habitat areas that would be temporarily impacted by construction would be restored post-construction per measure BIO-6.

CHAPTER 6. AVOIDANCE, MINIMIZATION, AND MITIGATION MEASURES

The following preliminary measures are recommended to avoid, minimize, and mitigate impacts to sensitive biological resources. Impacts to resources such as jurisdictional waters and native habitat should be avoided to the maximum extent practicable during design and construction of the proposed project. Updates to these measures may be required as the project design is finalized and impacts to biological resources are assessed. Additional measures also may be required by federal, state, and local permits issued to the project.

BIO-1 A qualified biologist shall prepare a Worker Environmental Awareness Training (WEAT), which discusses the federal, state, and local laws and ordinances protecting biological resources; the fines and penalties for violating these laws; the sensitive biological resources with potential to occur within the BSA, including their identifying traits, life history, and regulatory status; and general practices to avoid impacts to these species and resources. The WEAT shall be presented to all project staff, including supervisors and subcontractors, prior to the commencement of work activities, and shall be given to new personal as needed throughout the term of construction.

BIO-2 A qualified biologist shall identify special-status plants within the disturbance footprint and buffer no more than 2 weeks prior to the start of construction. In the event that a special-status is observed, the species shall be incorporated into the restoration plan for the site (BIO-5).

BIO-3 All vegetation clearing activities shall be conducted outside the bird breeding season (late February through August 31) to the extent practicable. Where such activities must occur during the breeding bird season, activities shall be preceded by nesting bird surveys and shall be monitored by a qualified biologist. If construction is necessary during the bird breeding season (late February through August 31), nesting bird surveys of the project LOD and a 500-foot buffer shall be conducted 30 days prior to construction to detect any active bird nests within 500 feet of the construction area. The last survey shall be conducted 3 days prior to the initiation of clearance/construction. If there is a work stoppage for 7 or more days then a nesting bird survey will be required prior to resumption of construction activities. If nesting birds are encountered, no-disturbance buffers shall be established to protect the nest from disturbance. The buffer shall remain in effect until a qualified biologist determines the nest has either failed or fledged, young are no longer dependent upon the nest, and there is no evidence of a second attempt at nesting. Buffers shall be a minimum of 300 feet for migratory bird nests and 500 feet for active raptor, rare, threatened, endangered, or species of concern nests. Limits of construction to avoid a nest shall be established in the field with flagging and stakes or construction fencing and construction personnel shall be instructed on the sensitivity of the area.

BIO-4 Work within the streambed will occur only during the dry season, when limited surface waters are present within Stokes Creek at the crossing. All efforts will be made to prevent sediment from entering the streambed and dissipating downstream.

BIO-5 Where trees occur within or adjacent to the construction disturbance zone, the following measures shall be adhered to:

a. Prior to any surface-disturbing work, temporary fencing shall be installed around the protected zones of native trees within/near the project area to prevent disturbance

from construction-related activities. Fencing shall be maintained in place for the duration of work. Any breach in the protective fencing that occurs during construction shall be promptly repaired or replaced.

b. No staging or storage of materials shall be allowed within the fenced exclusion areas or within the protected zones of any on-site native trees. Additionally, no grading or construction shall occur in the fenced/protected zones, unless otherwise indicated in the project plans.

c. The services of a certified/qualified arborist shall be retained to monitor native trees that are within or adjacent to the work area.

d. Any construction, including grading or excavation, which requires encroachment into the protected zone of a native tree shall be monitored by the certified arborist to minimize impacts to a tree's root system.

BIO-6 Restore temporary impacts to 0.20 acre of jurisdictional waters and valley oak woodland understory and mitigate for impacts to native tree protected zones. In accordance with the Santa Monica Mountains LCP, greater than 30 percent encroachment into tree protected zones and encroachment that extends within 3 feet of a tree trunk will be mitigated at a ratio of 10:1. Encroachment of 10 to 30 percent into tree protected zones and trimming branches over 11 inches in diameter will be mitigated at a ratio of 5:1. For trees with less than 10 percent encroachment into protected zones, no mitigation is required, but monitoring is required.

Tree Type	Percentage Impacted	Number of Trees	Mitigation Ratio	Total Trees to be Mitigated
Quercus agrifolia	Less than or equal to 10% of Tree Protected Zone	2	NA	Monitor Trees
Quercus agrifolia	Greater than 30% of Tree Protected Zone	9	10:1	90
Quercus agrifolia	Between 10–30% of Tree Protected Zone	4	5:1	20
Quercus lobata	Greater than 30% of Tree Protected Zone	1	10:1	10
Quercus lobata	Between 10–30% of Tree Protected Zone	2	5:1	10

For impacts to trees requiring mitigation and on-site restoration of temporary impacts, the following measures shall be implemented:

a. The CDPR will prepare a habitat restoration plan that outlines the methods by which impacts to habitat/trees shall be addressed. The plan will be prepared by a qualified biologist with experience/knowledge of native vegetation communities within southern California. At a minimum, the restoration plan shall include information on: 1) the purpose and objectives, 2) existing conditions, 3) methods of implementation, 4) a planting plan, 5) maintenance program, and 6) monitoring plan, including success criteria.

b. Restoration shall occur in appropriate/suitable habitat within Malibu Creek State Park, and as close to the project site, as feasible.

BIO-7 If project construction activities are scheduled between May and August, surveys shall be conducted by a Qualified Biologist for the presence of western red bat maternity roosts. In the unlikely event that roosting western red bat are detected, a buffer shall be established by the Qualified Biologist. The buffer shall be maintained free of construction and construction related noise, until the pups are weaned and exhibiting flight behavior.

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Figures

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS; LA County 2015

4 2 0 4 Miles

Scale: 1:253,440; 1 inch = 4 miles

Figure 1
Regional Map

Malibu Creek State Park: New Stokes Creek Bridge Project

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\Regional.mxd, 3/10/2017, augellop

Source: USGS 1990; USDA 2005; DigitalGlobe 2017

400 200 0 400 Feet

Scale: 1:4,800; 1 inch = 400 feet

Figure 2
Historical Aerials

Malibu Creek State Park: New Stokes Creek Bridge Project

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\TriMap_imagery.mxd, 8/22/2018, augellop

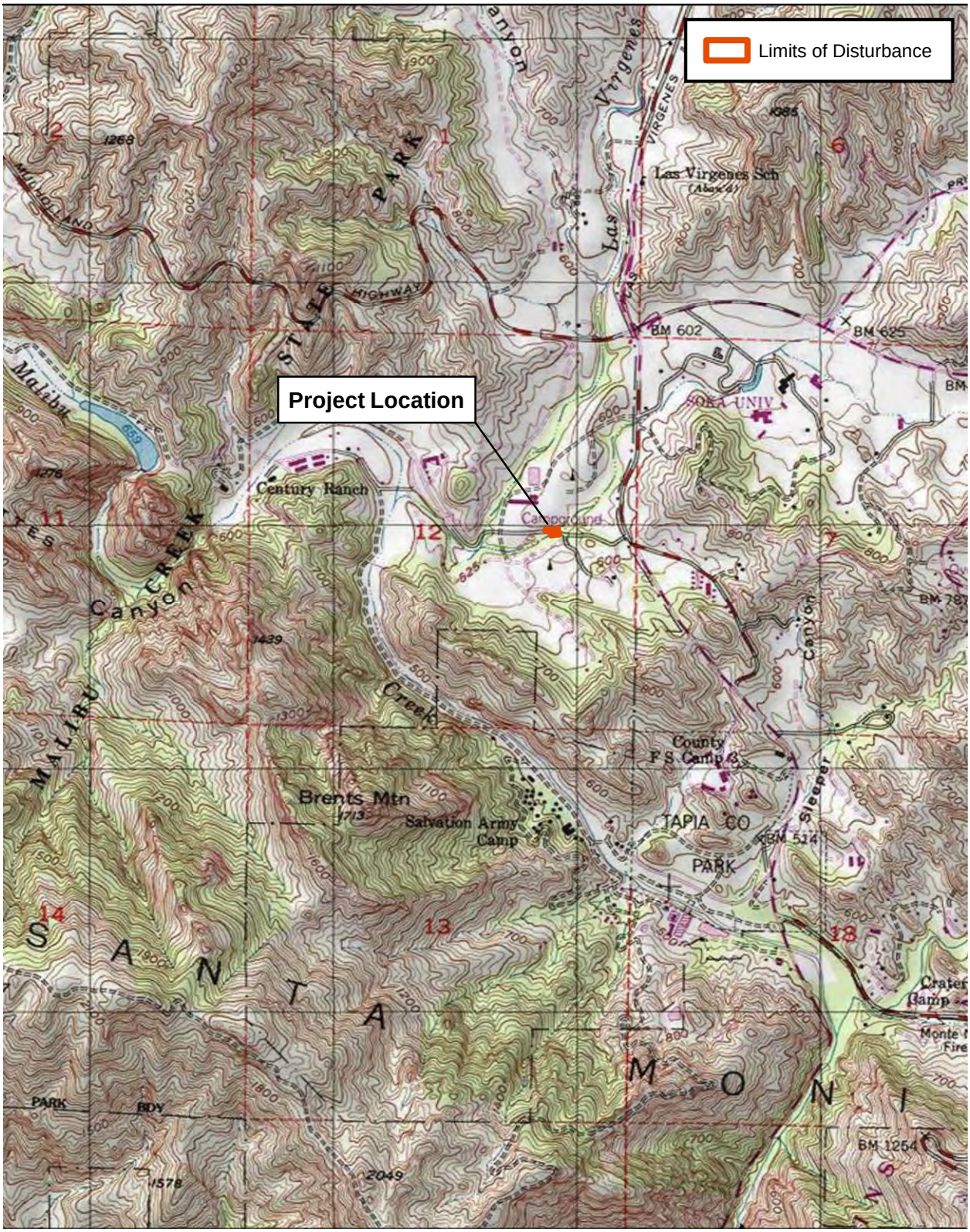
Source: Esri, DigitalGlobe, GeoEye, Microsoft, USDA; LA County 2015; USGS 2016

100 50 0 100 Feet

Scale: 1:1,200; 1 inch = 100 feet

Figure 3
Biological Survey Area

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\LOD_BSA.mxd, 8/22/2018, augellop



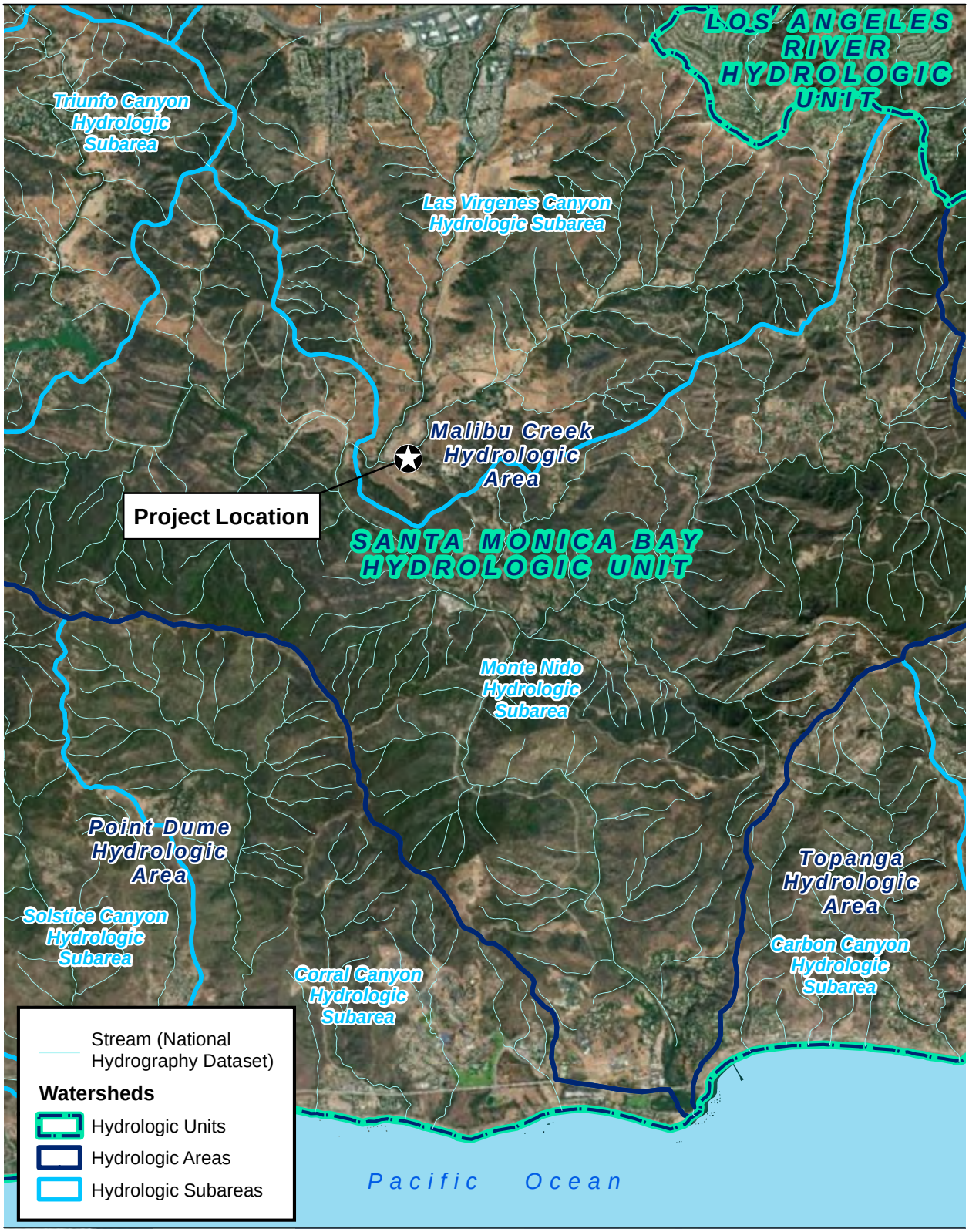
Source: Esri, USGS 7.5' Quadrangles Malibu, Calif. 1982

2,000 1,000 0 2,000 Feet

Scale: 1:24,000; 1 inch = 2,000 feet

Figure 4
Regional Topography

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\USGS_24k_topo.mxd, 8/13/2018, augellop



Source: Esri, DigitalGlobe 2017; California Interagency Watershed Mapping Committee 2004; USGS 2018

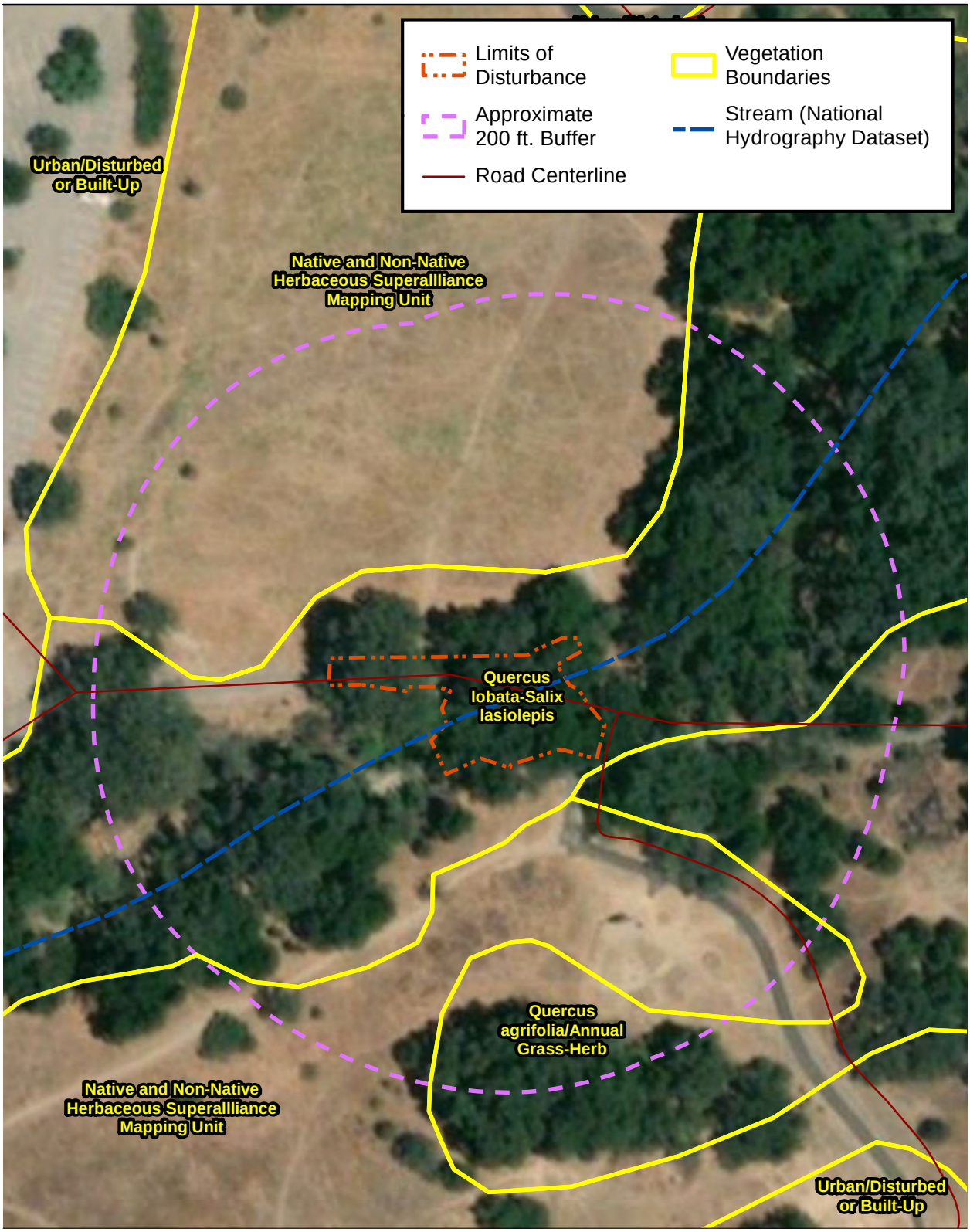
1 0.5 0 1 Mile

Scale: 1:63,360; 1 inch = 1 mile

Figure 5
Regional Aerial View & Blue Line Streams

Malibu Creek State Park: New Stokes Creek Bridge Project

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\Regional_Aerial.mxd, 7/27/2018, augellop



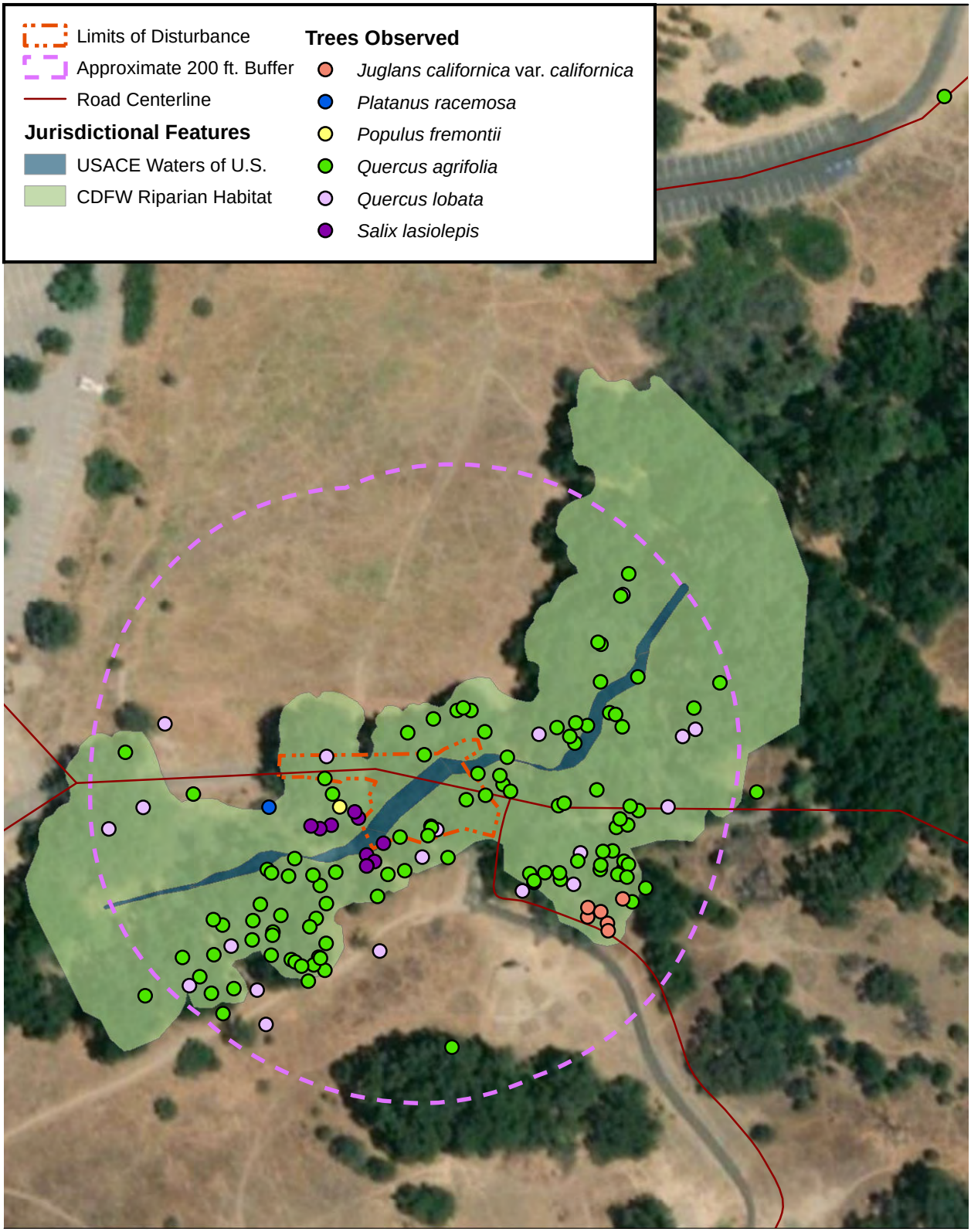
Source: Esri, DigitalGlobe, GeoEye, Microsoft, USDA; LA County 2015; USGS 2016; CA State Parks 2016

100 50 0 100 Feet

Scale: 1:1,200; 1 inch = 100 feet

Figure 6
Existing Vegetation

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\existing_veg.mxd, 8/22/2018, augellop



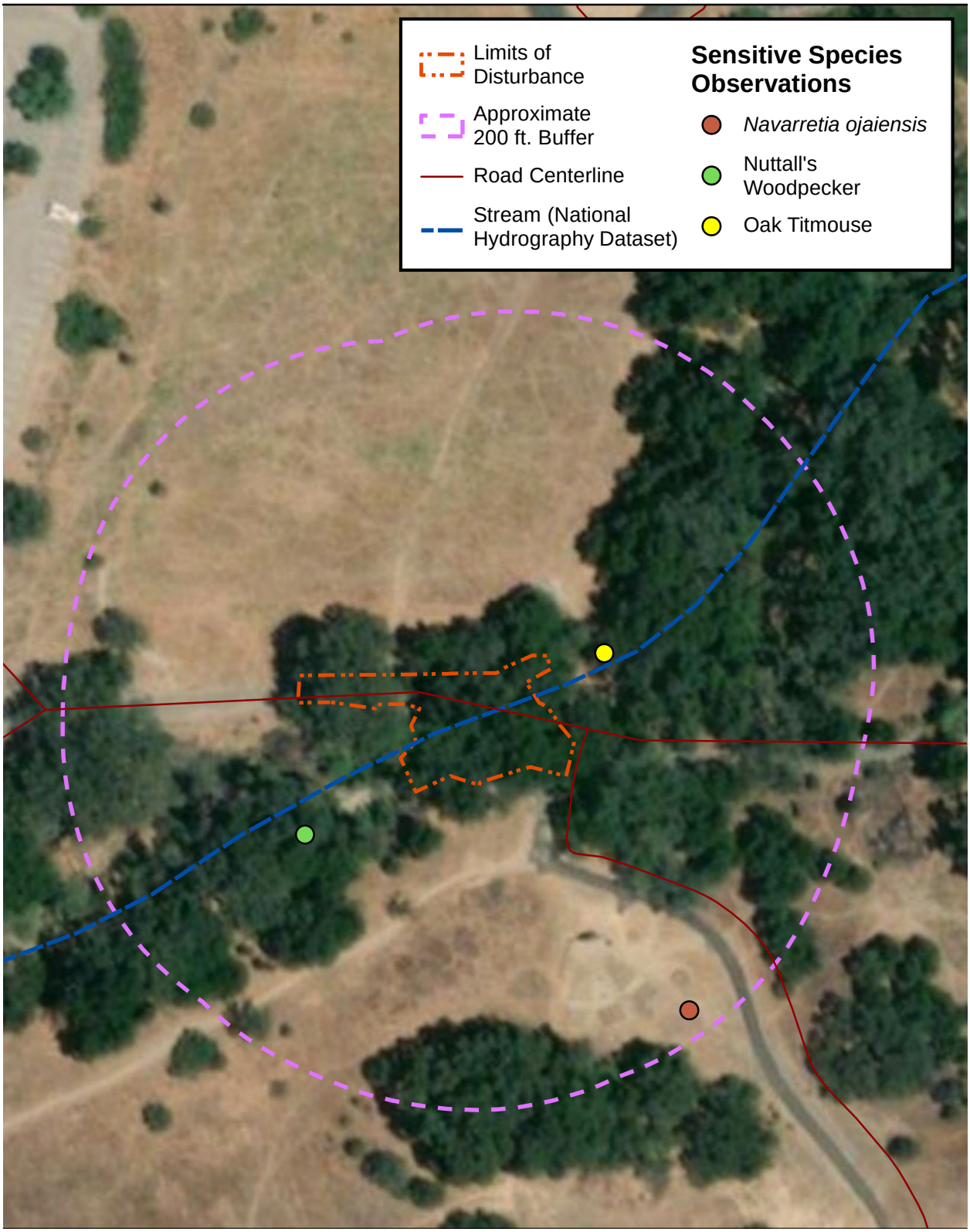
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS; LA County 2015

125 62.5 0 125 Feet

Scale: 1:1,500; 1 inch = 125 feet

Figure 7
Native Tree Survey Results

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\Bio_constraints.mxd, 8/22/2018, augellop



Source: Esri, DigitalGlobe, GeoEye, Microsoft, USDA; LA County 2015; USGS 2016

100 50 0 100 Feet

Scale: 1:1,200; 1 inch = 100 feet

Figure 8
Sensitive Species

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\sensitive_species.mxd, 8/22/2018, augellop

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS; LA County 2014; CA State Parks 2016

70 35 0 70 Feet

Scale: 1:840; 1 inch = 70 feet

Figure 9
Santa Monica Mountains LCP Habitat Categories within the Biological Survey Area

Malibu Creek State Park: New Stokes Creek Bridge Project

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\SMMLCP-11x17.mxd, 8/22/2018, augellop

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA

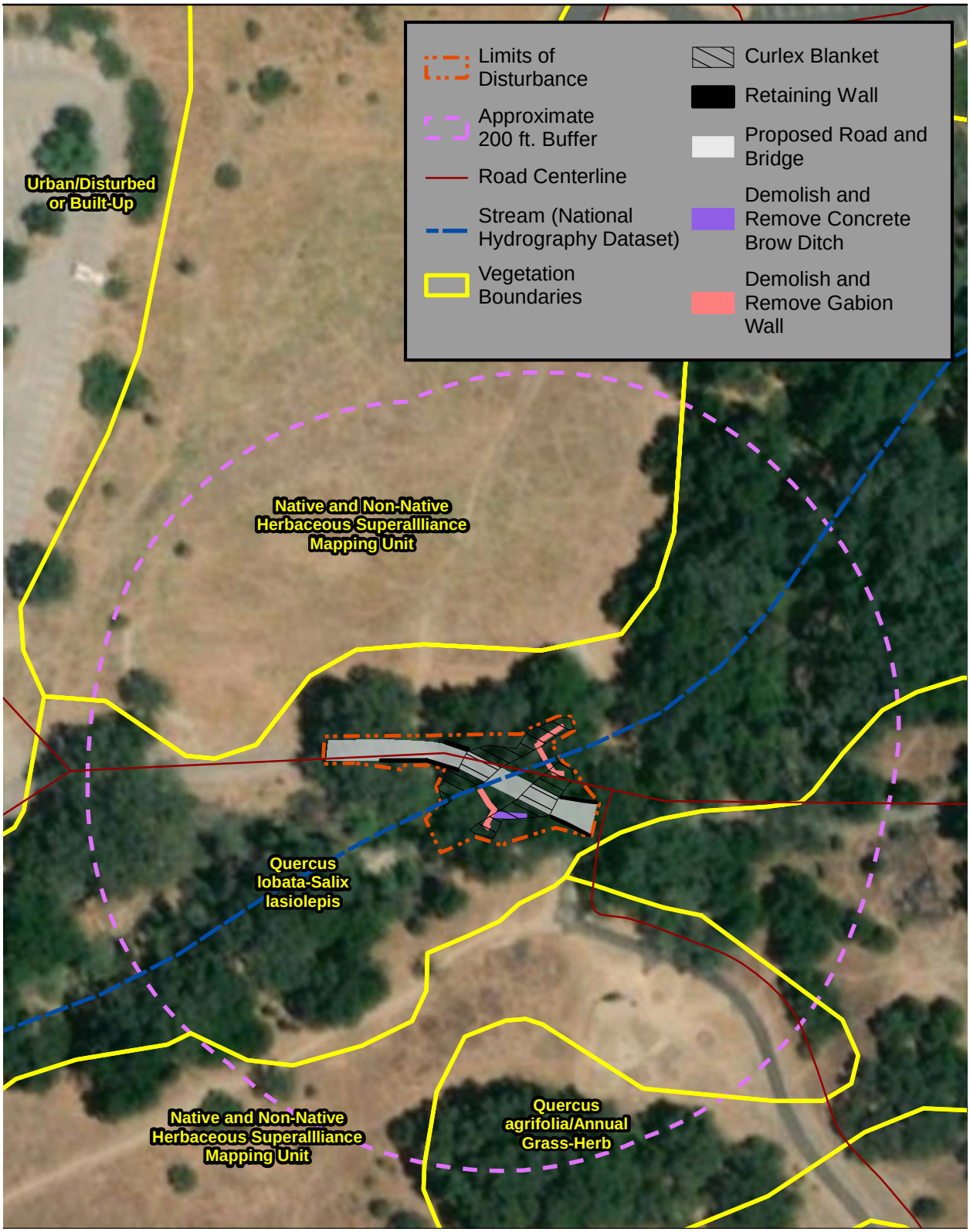
75 37.5 0 75 Feet

Scale: 1:900; 1 inch = 75 feet

Figure 10
Impacts to Jurisdictional Areas

Malibu Creek State Park: New Stokes Creek Bridge Project

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\JD_Figure_Impacts.mxd, 8/13/2018, augellop



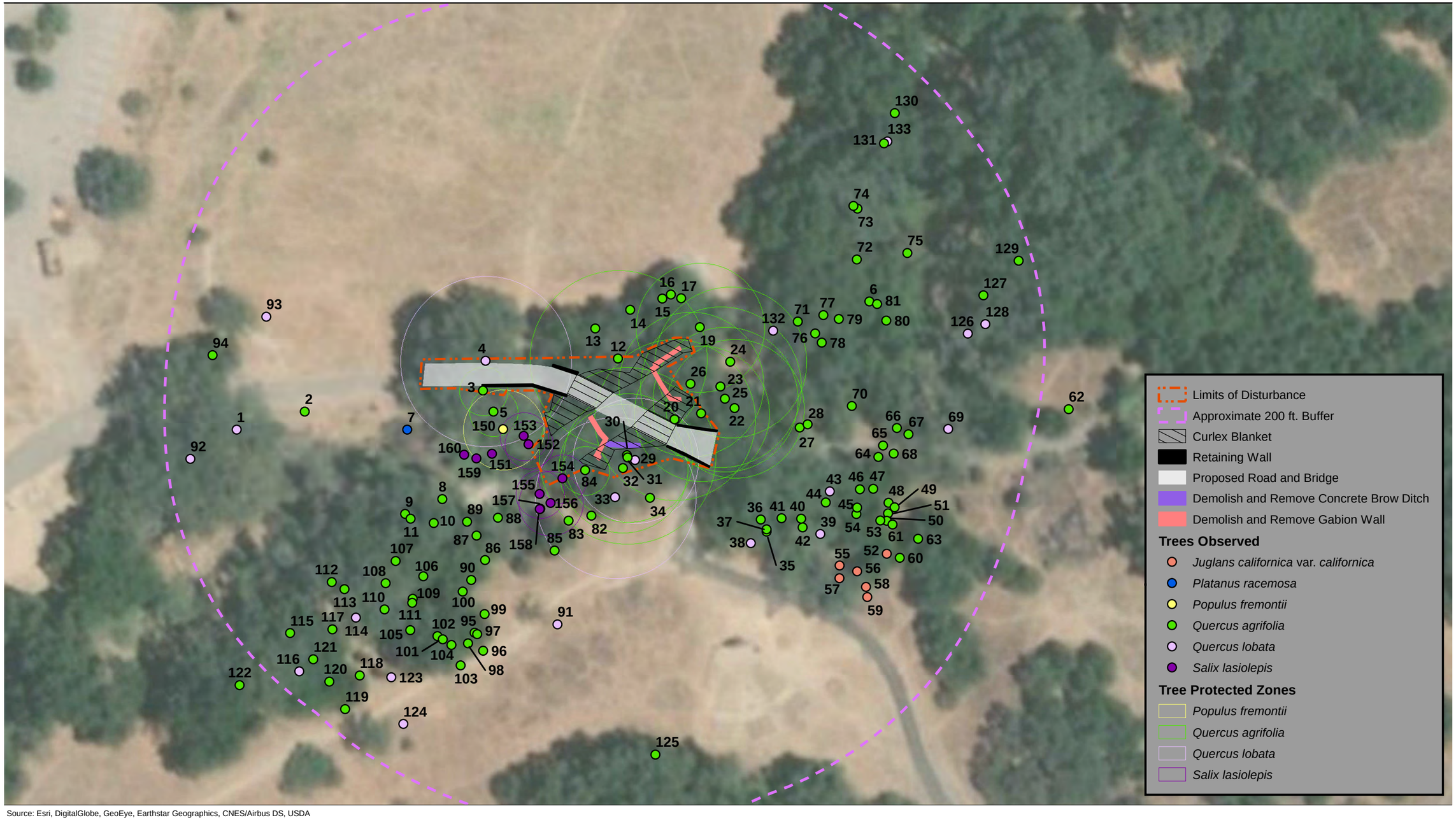
Source: Esri, DigitalGlobe, GeoEye, Microsoft, USDA; LA County 2015; USGS 2016; CA State Parks 2016

100 50 0 100 Feet

Scale: 1:1,200; 1 inch = 100 feet

Figure 11
Impacts to Vegetation Communities

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\veg_LOD_impacts.mxd, 8/22/2018, augellop



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA

60 30 0 60 Feet

Scale: 1:720; 1 inch = 60 feet

Figure 12
Native Tree Inventory Impacts

Malibu Creek State Park: New Stokes Creek Bridge Project

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\Tree_Figure_Impacts2.mxd, 8/13/2018, augellop

Appendix A

Site Photographs

Photograph 1. Facing southwest. View of the upstream end of the existing culvert at Waycross Road from upstream of the crossing in Stokes Creek.

Photograph 2. Facing northeast. View of the upstream reach of Stokes Creek from the existing culvert.

Photograph 3. Facing north. View of the upstream reach of Stokes Creek from Waycross Road.

Photograph 4. Facing north. View of the downstream end of the culvert from the south bank of Stokes Creek.

Photograph 5. Facing southwest. View of the downstream reach of Stokes Creek from the existing culvert.

Photograph 6. Facing south. View of the downstream reach of Stoke's Creek from Waycross Road.

Appendix B

Jurisdictional Delineation

AECOM
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San Diego, CA 92101
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619.610.7601 fax

December 21, 2016 (Revised August 30, 2018)

Mr. Carl Shaffer
Associate Architect
California State Parks
Southern Service Center
NTC at Liberty Station, Barracks 26
2797 Truxtun Road
San Diego, CA 92106

Subject: Jurisdictional Delineation Report for the California State Parks New Stokes Creek Bridge Project

Dear Mr. Shaffer:

This letter summarizes the findings of a jurisdictional delineation and vegetation/cover mapping conducted in support of the California State Parks' New Stokes Creek Bridge Project located in Malibu Creek State Park, Calabasas, California.

The survey was conducted to delineate aquatic resources under the jurisdiction of the U.S. Army Corps of Engineers (USACE), Regional Water Quality Control Board (RWQCB), and/or the California Department of Fish and Wildlife (CDFW). Vegetation communities and cover types were also mapped. Sensitive species surveys were not conducted as part of the site evaluation; however, incidental observations of special-status species were recorded, if observed.

Project Description

The project site is located within Malibu Creek State Park in Calabasas, California. California State Parks proposes to replace the existing undersized corrugated metal pipe culvert beneath Waycross Road at the Stokes Creek crossing with a new bridge in order to reduce deferred maintenance costs, provide a secondary escape route in case of fire, reduce disruption to campers, and restore Stokes Creek to a natural configuration.

Methodology

Desktop Review

Prior to conducting the field investigation, a desktop review of the site was conducted using the following resources:

- National Hydrography Dataset review via My Waters Mapper (USEPA 2016)
- National Wetlands Inventory review via Wetlands Mapper (USFWS 2016)
- Watershed analysis via My Waters Mapper (USEPA 2016)
- NRCS soils data review via Web Soil Survey (USDA 2016)
- Historical Aerial Imagery (Google Earth 1994 – 2015)
- USGS Stream gauge data for Malibu Creek (USGS 2016)

Field Assessment

USACE and CDFW jurisdictional boundaries were recorded in the field with global positioning system (GPS) points and lines within the proposed limits of disturbance and 200-foot survey buffer. Additionally, ground width measurements were recorded for the ordinary high water mark (OHWM[1]) and top of bank or outer extent of riparian. These field data were used in combination with aerial imagery to delineate jurisdictional boundaries. Where field points did not correlate precisely with aerial imagery or field measurements due to the limitations of GPS unit accuracy, the delineation was adjusted to align with aerial imagery and field measurements.

In addition to the delineation of jurisdictional waters, vegetation communities and cover types were mapped within the proposed limits of disturbance. Nomenclature used for mapping generally follows *A Manual of California Vegetation 2nd Edition* (Sawyer et al. 2009). Special-status species surveys were not conducted as part of the field assessment; however, incidental observations of special-status species were recorded, if observed.

U.S. Army Corps of Engineers Jurisdictional Delineation

AECOM biologists assessed whether an aquatic feature located within the study area and surrounding 200-foot buffer would meet the definition of USACE-jurisdictional wetland waters of the U.S. using the following guidance:

- *Corps of Engineers Wetlands Delineation Manual* (1987 Manual) (Environmental Laboratory 1987)
- *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)* (USACE 2008)
- Arid West Wetland Plant List (Lichvar et al. 2016)
- 2014 Hydric Soils List (USDA-NRCS 2014).

Aquatic features were assessed to determine whether they would meet the definition of "waters of the U.S." as defined in 33 Code of Federal Regulations Part 328. The USACE's published guidance (Environmental Laboratory 1987) (USACE 2008) defines a wetland by the presence of each of three wetland indicators (hydrophytic vegetation, hydric soils, and wetland hydrology).

Wetland and non-wetland areas were verified by completion of Wetland Determination Data Forms at survey plots selected at locations within and adjacent to the watercourse where

[1] Ordinary high water mark as defined under 33 CFR 328.3(e) which states: "The term ordinary high water mark means that line on the shore established by the fluctuations of water and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter and debris, or other appropriate means that consider the characteristics of the surrounding areas."

changes were observed in plant community composition or significant transitions between riverine hydrology and adjacent upland areas (Attachment A).

In addition to the delineation of USACE-jurisdictional wetlands, AECOM biologist conducted a delineation of other (non-wetland) waters of the United States under the jurisdiction of USACE pursuant to the USACE's guidance listed below.

- *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States* (Lichvar and McColley 2008)
- *Clean Water Act Jurisdiction Following the Supreme Court Decision in Rapanos v. U.S. and Carabell v. U.S.* (USEPA 2008)

During the field survey, GPS lines were taken along the OHWM and wetland boundaries (where present). Additionally, OHWM width measurements were taken at regular intervals including at the upstream and downstream openings of the culvert as well as at 50', 100', and 200' upstream and downstream of the culvert.

Following completion of the field survey, field data collected using ESRI's Collector™ application were processed using ESRI's ArcMap for desktop to create polygons representing the boundaries of wetland and non-wetland waters of the U.S.

In light of the U.S. Supreme Court's 2008 *Rapanos v. U.S.* ruling, USACE published new guidance on jurisdictional determination. According to the USACE's internal guidance regarding jurisdictional determination, there are now two analytical standards for determining whether water bodies that are not traditional navigable waters [TNWs] (including wetlands adjacent to those non-TNWs), are subject to Clean Water Act (CWA) jurisdiction: (1) if the water body is relatively permanent, or if the water body is a wetland that directly abuts (e.g., the wetland is not separated from the tributary by uplands, a berm, dike, or similar feature) a relatively permanent water body (RPW), or (2) if a water body, in combination with all wetlands adjacent to that water body, has a *significant nexus* with TNWs. A *significant nexus* exists if the tributary, in combination with all of its adjacent wetlands, has more than a speculative or an insubstantial effect on the chemical, physical, and/or biological, integrity of a TNW. Principal considerations when evaluating significant nexus include the volume, duration, and frequency of the flow of water in the tributary and the proximity of the tributary to a TNW, plus the hydrologic, ecologic, and other functions performed by the tributary and all of its adjacent wetlands.

Criteria and thresholds to consider in the aforementioned evaluation are presented within the USACE published Jurisdictional Determination Form Instructional Guidebook (USACE 2007) including:

- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to carry pollutants or flood waters to TNWs, or to reduce the amount of pollutants or flood waters reaching a TNW?

- Does the tributary, in combination with its adjacent wetlands (if any), provide habitat and lifecycle support functions for fish and other species, such as feeding, nesting, spawning, or rearing young for species that are present in the TNW?
- Does the tributary, in combination with its adjacent wetlands (if any), have the capacity to transfer nutrients and organic carbon that support downstream foodwebs?
- Does the tributary, in combination with its adjacent wetlands (if any), have other relationships to the physical, chemical, or biological integrity of the TNW?

All waters meeting the physical (OHWM) definitions of waters of the U.S. were assumed to be jurisdictional for purposes of a Preliminary Jurisdictional Determination, therefore a formal significant nexus test and jurisdictional determination following the USACE's published Jurisdictional Determination Form Instructional Guidebook (USACE 2007) was not performed. Instead, the results below present a site specific qualitative assessment of some of the analytical standards applied to preliminary jurisdictional determinations (e.g. proximity to a TNW).

Regional Water Quality Control Board Jurisdictional Assessment

The extent of waters of the state subject to the regulatory authority of the RWQCB under CWA Section 401 was considered to mirror the delineated waters of the U.S. subject to USACE jurisdiction pursuant to Section 404 of the CWA.

California Department of Fish and Wildlife Jurisdictional Delineation

Within the survey area, potential state jurisdictional waters were assessed and delineated pursuant to California Fish and Game Code (CFGC) Section 1600 et seq., California Fish and Game Commission policies (adopted pursuant to CFGC Section 703), and other relevant guidance as summarized below:

- *Wetlands* - When determining whether an area is a wetland, CDFW relies on the U.S. Fish and Wildlife Service (USFWS) non-regulatory wetland definition provided in *Classification of Wetlands and Deepwater Habitats of the United States* (Cowardin et al. 1979). According to Cowardin et al., wetlands are "lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year." The Cowardin method requires care to avoid falsely positive conclusions (e.g., concluding that an area with no transitional relation to the aquatic system is a wetland based on presence of vegetation equally apt to be found in wetland or non-wetland circumstances).

- *Streambed and Riparian Habitat* – Pursuant to CFGC Section 1600 et seq., CDFW is authorized to regulate any activity that would substantially divert or obstruct the natural flow, or substantially change or use any material from the bed, channel, or bank, of any river, stream, or lake. Therefore, CDFW generally asserts CFGC Section 1600 et seq. jurisdiction over wetlands, the destruction or alteration of which could substantially affect associated rivers, streams, or lakes. Consistent with CDFW practice, for the subject delineation, CDFW jurisdictional wetlands associated with the tributaries and waterbodies within the survey area were delineated to the outer (landward) edge of riparian habitat.
- Boundaries for state jurisdictional waters in the form of open water and unvegetated channels were delineated by the presence of shelving and/or scour resulting in an established bank, bed, or channel. Consistent with CDFW practice, for the subject delineation, non-wetland waters associated with rivers, streams, or lakes were delineated to the top of the bank.

Results

Desktop Review

A review of the resources determined that the project site is located within the Malibu Creek Watershed, Las Virgenes Creek subwatershed (HUC12 180701040103). Stokes Creek, the primary drainage found within the proposed work limits, conveys waters from the nearby foothills and flows from northeast to southwest through the Santa Monica Mountains National Recreation Area and Malibu Creek State Park. Within the study area Stokes Creek is ephemeral and conveys waters only during and immediately following precipitation events.

Soils within the Stokes Creek streambed / floodplain are mapped as Fluvaquents – Riverwash (Soil Map Unit Code 202) on the Natural Resource Conservation Service's Web Soil Survey (USDA- NRCS 2016). Additionally, this soil map unit is classified as hydric on the National List of Hydric Soils (USDA-NRCS 2014). The National Wetland Inventory also indicates that Freshwater Emergent Wetlands (NWI Code: PFOC) exist within the study area and 200 foot buffer, as well as riverine wetlands located only within the 200-foot buffer (USFWS 2016).

Stokes Creek drains to Los Virgenes Creek approximately 1,100 feet downstream of the project site, which subsequently discharges to Malibu Creek roughly 1,400 feet farther downstream. Malibu Creek then flows approximately 6 miles before ultimately discharging into the Pacific Ocean (a Traditional Navigable Water [TNW]). Based on stream gauge data (USGS 2016) and visual observation, Malibu Creek and Los Virgenes Creek are Relatively Permanent Waters (RPWs) and non-Relatively Permanent Waters (non-RPWs) (respectively) subject to USACE jurisdiction as waters of the U.S.

Since Stokes Creek has a direct surface hydrological connection to a downstream TNW through Los Virgenes and Malibu Creeks, and because Stokes Creek, in combination with

all of its adjacent wetlands, appears to have a more than speculative or insubstantial effect on the chemical, physical, and/or biological integrity of this TNW, it is presumed that it possesses a *significant nexus* with downstream TNWs and, therefore, is subject to the regulatory jurisdiction of the USACE.

Field Assessment

On October 17, 2016, AECOM biologist Jonathan Appelbaum conducted a formal jurisdictional delineation of the study area and 200-foot radius buffer.

Wetland and non-wetland areas were verified by completion of Wetland Determination Data Forms in accordance with USACE published wetland determination protocols (Environmental Laboratory 1987) (USACE 2008). At each wetland sampling point, the vegetation community composition, hydrological indicators, and soil characteristics (including soil color and texture were documented and recorded on Wetland Determination Data Forms (Attachment A). During the formal jurisdictional delineation survey, AECOM biologist completed Wetland Determination Data Forms at 7 sampling plots selected to document the representative physical conditions present where conspicuous changes were observed in plant community composition or significant transitions between riverine hydrology and adjacent upland areas (e.g. conspicuous “break in bank slope” or “shelving” between sampling points 1 & 7). The presence or absence of each of the three wetland indicators (hydrophytic vegetation, hydric soils, and wetland hydrology) were then assessed to determine, per the USACE’s 3 parameter protocol, the boundaries of USACE-defined wetlands onsite.

Additionally, GPS lines were taken along the OHWM (as defined by the USACE’s guidance for the field identification of the OHWM [Lichvar and McColley 2008]) and the outer limits of riparian canopy throughout the study area and surrounding 200 foot buffer using ESRI’s Collector™ application run on an IPad Mini 4 with external submeter GPS receiver.

The limits of regulatory jurisdiction are depicted in the Jurisdictional Delineation Map (Attachment B), with site photographs included as Attachment C. The extent and type of jurisdictional areas within the study area and surrounding 200 foot buffer are provided in Table 1 below.

Table 1
Jurisdictional Waters of the U.S. and State within the Study Area and 200-ft Butter

Waters under USACE, RWQCB, and CDFW Jurisdiction Acres		CDFW-Only Jurisdictional Areas Acres	
Waters Type	**Acreage within Study Area and 200-foot Buffer**	**Waters Type**	**Acreage within Study Area and 200-foot Buffer**
Other (Non-Wetland) Waters of the U.S.	0.13	Riparian Habitat	2.30
Total	**0.13**		**2.30**

Vegetation Communities

As described above, vegetation communities and cover types were mapped within the proposed limits of disturbance and 200 foot buffer. The vegetation community classification follows the *A Manual of California Vegetation 2nd Edition* (Sawyer et al. 2009). In general, the dominant plant community along Stokes Creek within the study area and 200-foot buffer is classified as *Quercus lobata* – *Salix lasiolepis* alliance. Dominant plant species within the floodplain and along the adjacent terraces is dominated by valley oak (*Quercus lobata*) and coast live oak (*Quercus agrifolia*). The current USACE Wetland Plant List (Lichvar et al 2016) recognizes *Quercus lobata* as a Facultative Upland (FACU) plant species and does not list *Quercus agrifolia*. Subdominant species within this alliance in the study area and buffer includes arroyo willow (*Salix lasiolepis, FACW*), western sycamore (*Platanus racemosa, FAC*), Fremont cottonwood (*Populus fremontii, NL*), California black walnut (*Juglans californica californica, FACU*), blue elderberry (*Sambucus nigra, FACU*), mugwort (*Artemisia douglasiana*, FAC), stinging nettle (*Urtica dioica, FAC*), California blackberry (*Rubus ursinus*, FAC), mule fat (*Baccharis salicifolia*, FAC), and California coffeeberry (*Frangula californica*, NL).

U.S. Army Corps of Engineers Jurisdictional Areas

Direct analysis of the project site following the protocols outlined in the 1987 Manual (Environmental Laboratory 1987) and 2008 USACE Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0) (USACE 2008) determined that no USACE-jurisdictional wetlands exist within the study area and surrounding 200-foot buffer; therefore, the proposed project would not result in any permanent or temporary impacts to USACE-jurisdictional wetlands. Wetland Determination Data Forms documenting the physical conditions present within Stokes Creek in the study area and 200 foot buffer were completed during the field investigation and are included herein as Attachment A.

Within the survey area and 200-foot buffer, numerous indicators of an OHWM (e.g., drift deposits, litter, break in bank slope, and changes in particle size distribution) were documented within Stokes Creek. Stokes Creek also possesses a direct surface hydrological connection with downstream USACE- jurisdictional TNWs in the form of the Pacific Ocean. As a result, Stokes Creek would be subject to the regulatory jurisdiction of USACE as waters of the U.S.

Within the study area and buffer, approximately 0.13 acre of non-wetland waters of the U.S. are present. Minimal permanent and temporary impacts may occur from removal of the culvert and bridge installation. Impacts will be determined upon finalization of the project design.

Regional Water Quality Control Board Jurisdictional Areas

Waters of the state, under the jurisdiction of the RWQCB, are congruent with the USACE's non-wetland waters of the U.S. As such, 0.13 acre of RWQCB non-wetland waters of the state are present within the study area and buffer.

California Department of Fish and Wildlife Jurisdictional Areas

Within the study area and buffer, approximately 2.30 acres of CDFW-jurisdictional riparian habitat classified as part of a *Quercus lobata* – *Salix lasiolepis* alliance is present. In addition, 0.13 acre of non-wetland waters of the U.S. are also under the jurisdiction of CDFW. Therefore, a total of 2.43 acres of CDFW-jurisdictional area occurs within the study area and buffer. As noted above, minimal permanent and temporary impacts may occur from removal of the culvert and bridge installation. Impacts will be determined upon finalization of the project design.

Discussion

Bridge installation activities associated with the proposed project may require regulatory authorizations or permits from USACE, RWQCB, and CDFW. These requirements are discussed further under each respective section below.

U.S. Army Corps of Engineers Jurisdictional Areas

Under Section 404 of the CWA, USACE regulates the discharge of dredged or fill material into jurisdictional waters of the U.S. Many activities (including the Stokes Creek Bridge Replacement Project) may be authorized under one or more of the 2017 Nationwide Permits (NWPs) such as NWP 14 (Linear Transportation Projects).[2]

[2] The current Nationwide Permits, issued in 2017, will expire in 2022.

NWPs require compliance with general conditions. Under General Condition 18 part (c), non-federal permittees must submit a pre-construction notification to the district engineer if any listed species might be affected or are present in the vicinity of the project, and shall not begin work on the activity until notified by the district engineer that the requirements of the

Endangered Species Act have been satisfied and that the activity is authorized. The district engineer will determine whether the proposed activity "may affect" or will have "no effect" to listed species and designated critical habitat and will notify the non-federal applicant of USACE's determination within 45 days of receipt of a complete preconstruction notification. In cases where the non-federal applicant has identified listed species or critical habitat that might be affected or is in the vicinity of the project, and has so notified USACE, the applicant shall not begin work until USACE has provided notification the proposed activities will have "no effect" on listed species or critical habitat, or until Section 7 consultation has been completed. If the non-federal applicant has not heard back from USACE within 45 days, the applicant must still wait for notification from USACE.

Additionally, NWP 14 would require pre-construction notification if the project were to: 1) result in impacts to >0.10 acre of USACE jurisdictional waters of the U.S., or 2) result in discharges to special aquatic sites (e.g. wetlands).

Regional Water Quality Control Board Jurisdictional Areas

Under Section 401 of the CWA, RWQCB has the regulatory authority to certify or deny that the proposed discharge complies with state water quality standards and water quality objectives. No permit to discharge into regulated waters may be issued by USACE until certification required by Section 401 has been issued. In addition to its regulatory jurisdiction under Section 401 of the CWA, RWQCB holds regulatory jurisdiction over waters of the State of California pursuant to the Porter-Cologne Water Quality Act.

California Department of Fish and Wildlife Jurisdictional Areas

Impacts to CDFW jurisdictional streambed and riparian habitat would require a Lake and Streambed Alteration Agreement (LSAA) from CDFW, pursuant to Section 1600 of the CFGC. A review cycle for a complete LSAA notification is about 90 days, this includes: 30 days for completion review, plus 60 days for preparation of draft agreement by CDFW. The standard LSAA timeline can be extended by mutual agreement. Execution of the LSAA follows the receipt of a signed draft agreement from the Applicant and CDFW compliance with all CEQA requirements.

Thank you for the opportunity to work with California State Parks and please feel free to call me at 619.610.7600 if you have any questions.

Sincerely,

Michelle Fehrensen
Project Manager

Attachments:
- A – Wetland Determination Data Forms
- B – Figure
- C – Site Photographs

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ATTACHMENT A

WETLAND DETERMINATION DATA FORMS

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 01

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096231 | Long: 118.714767 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ○	
Hydric Soil Present?	Yes ◉	No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ◉
Wetland Hydrology Present?	Yes ◉	No ○	

Remarks: Asphalt & concrete mixed w. natural cobbles.

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix lasiolepis*	60	Yes	FACW
2.			
3.			
4.			
Total Cover:	60 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *None*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 100% % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	60	x 2 =	120
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species		x 5 =	0
Column Totals:	60 (A)		120 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- ☒ Dominance Test is >50%
- ☒ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ○

Remarks: Willow canopy over unvegetated channel.

SOIL

Sampling Point: 01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/2						Sand & Cobble	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 6

Hydric Soil Present? Yes ○ No ◉

Remarks: Thin alluvial deposits on bedrock. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ○	No ○	Depth (inches): NA
Water Table Present?	Yes ○	No ○	Depth (inches): NA
Saturation Present? (includes capillary fringe)	Yes ○	No ◉	Depth (inches): NA

Wetland Hydrology Present? Yes ○ No ○

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Riverine hydrology indicators characteristic of ephemeral drainages.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 02

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096168 | Long: 118.714906 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Riverine

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ○
Wetland Hydrology Present?	Yes ○	No ○	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus agrifolia*	70	Yes	NI
2.			
3.			
4.			
Total Cover:	70 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *None*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 100% % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	70	x 5 =	350
Column Totals:	70 (A)		350 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- ● Dominance Test is >50%
- ● Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ○

Remarks: Coast live oak canopy over unvegetated channel.

SOIL

Sampling Point: 02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 3/2						Sand & Cobble	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 13

Hydric Soil Present? Yes ◯ No ◯

Remarks: Thin alluvial deposits on bedrock. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◯ No ◯ Depth (inches): NA

Water Table Present? Yes ◯ No ◯ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ◯ No ◯ Depth (inches): NA

Wetland Hydrology Present? Yes ◯ No ◯

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Riverine hydrology indicators characteristic of ephemeral drainages.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 03

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096276 | Long: 118.714698 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Freshwater Emergent Wetl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ○
Wetland Hydrology Present?	Yes ○	No ○	

Remarks: Roadway failure & collapse 20' upstream

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus agrifolia*	70	Yes	NI
2.			
3.			
4.			
Total Cover:	70 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *None*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 100% % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	70	x 5 =	350
Column Totals:	70 (A)		350 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- ● Dominance Test is >50%
- ● Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ○

Remarks: Coast live oak canopy over unvegetated channel.

SOIL

Sampling Point: 03

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 3/2						Sand	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type:

Depth (inches):

Hydric Soil Present? Yes ◯ No ◯

Remarks: Alluvial deposits and road fill. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◯ No ◯ Depth (inches): NA

Water Table Present? Yes ◯ No ◯ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ◯ No ◯ Depth (inches): NA

Wetland Hydrology Present? Yes ◯ No ◯

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Riverine hydrology indicators characteristic of ephemeral drainages.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 04

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096406 | Long: 118.71440 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Freshwater Emergent Wetl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ○
Wetland Hydrology Present?	Yes ○	No ○	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus agrifolia*	70	Yes	NI
2.			
3.			
4.			
Total Cover:	70 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *Piptantherum millaceum*	10	No	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	10 %		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 90 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	80	x 5 =	400
Column Totals:	80 (A)		400 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- ● Dominance Test is >50%
- ● Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ○

Remarks: Coast live oak canopy over sparsely vegetated channel.

SOIL

Sampling Point: 04

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-3	10YR 3/2						Silt	
3-12	10 YR 3/2						loamy sand & gra	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 12

Hydric Soil Present? Yes ◯ No ◯

Remarks: Shallow alluvial deposits over bedrock. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☐ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ◯ No ◯ Depth (inches): NA

Water Table Present? Yes ◯ No ◯ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ◯ No ◯ Depth (inches): NA

Wetland Hydrology Present? Yes ◯ No ◯

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Riverine hydrology indicators characteristic of ephemeral drainages.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 05

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096424 | Long: 118.714175 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Freshwater Emergent Wetl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ○
Wetland Hydrology Present?	Yes ○	No ○	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus lobata*	50	Yes	FACU
2. *Quercus agrifolia*	25	Yes	NI
3.			
4.			
Total Cover:	75 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *Piptantherum millaceum*	10	No	NI
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	10 %		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 90 % | % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species	50	x 4 =	200
UPL species	35	x 5 =	175
Column Totals:	85 (A)		375 (B)

Prevalence Index = B/A = 4.41

Hydrophytic Vegetation Indicators:

- ● Dominance Test is >50%
- ● Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ○

Remarks: Coast live oak canopy over sparsely vegetated channel.

SOIL

Sampling Point: 05

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/2						Sand & cobble	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 7

Hydric Soil Present? Yes ◯ No ◯

Remarks: Thin alluvial deposits over bedrock. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☒ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ◯ No ◯	Depth (inches):	NA
Water Table Present?	Yes ◯ No ◯	Depth (inches):	NA
Saturation Present? (includes capillary fringe)	Yes ◯ No ◯	Depth (inches):	NA

Wetland Hydrology Present? Yes ◯ No ◯

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Riverine hydrology indicators characteristic of ephemeral drainages.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 06

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096389 | Long: 118.714464 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Freshwater Emergent Wetl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ○	No ●	
Hydric Soil Present?	Yes ○	No ●	**Is the Sampled Area within a Wetland?** Yes ○ No ○
Wetland Hydrology Present?	Yes ○	No ●	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Quercus agrifolia*	80	Yes	NI
2.			
3.			
4.			
Total Cover:	80 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *None*			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
Total Cover:	%		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 100% % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species		x 2 =	0
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	80	x 5 =	400
Column Totals:	80 (A)		400 (B)

Prevalence Index = B/A = 5.00

Hydrophytic Vegetation Indicators:

- ● Dominance Test is >50%
- ● Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ○ No ○

Remarks: Coast live oak canopy over unvegetated channel.

SOIL

Sampling Point: 06

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	%	Redox Features Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-13	10YR 3/2						Loamy sand & co	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 13

Hydric Soil Present? Yes ○ No ○

Remarks: Thin alluvial deposits over bedrock. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☒ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ○ Depth (inches): NA

Water Table Present? Yes ○ No ○ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ○ No ○ Depth (inches): NA

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Riverine hydrology indicators characteristic of ephemeral drainages.

WETLAND DETERMINATION DATA FORM - Arid West Region

Project/Site: Stokes Creek Bridge | City/County: Calabasas / Los Angeles | Sampling Date: 10/17/16

Applicant/Owner: CA State Parks | State: CA | Sampling Point: 07

Investigator(s): J. Appelbaum | Section, Township, Range: Section 12 T 1S

Landform (hillslope, terrace, etc.): Streambed | Local relief (concave, convex, none): None | Slope (%): 1%

Subregion (LRR): C - Mediterranean California | Lat: 34.096243 | Long: 118.714779 | Datum: WGS 84

Soil Map Unit Name: Fluvaquents - Riverwash | NWI classification: Freshwater Emergent Wetl

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ○ No ○ (If no, explain in Remarks.)

Are Vegetation ☐ Soil ☐ or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ○ No ○

Are Vegetation ☐ Soil ☐ or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ◉	No ○	
Hydric Soil Present?	Yes ○	No ◉	**Is the Sampled Area within a Wetland?** Yes ○ No ○
Wetland Hydrology Present?	Yes ○	No ◉	

Remarks:

VEGETATION

Tree Stratum (Use scientific names.)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Salix lasiolepis*	50	Yes	FACW
2.			
3.			
4.			
Total Cover:	50 %		
Sapling/Shrub Stratum			
1. *None*	0		
2.			
3.			
4.			
5.			
Total Cover:	0 %		
Herb Stratum			
1. *Piptantherum millaceum*	20	Yes	NI
2. *Phacelia cicutaria*	5	No	NI
3. *Vinca major*	5	No	NI
4.			
5.			
6.			
7.			
8.			
Total Cover:	30 %		
Woody Vine Stratum			
1. *None*	0		
2.			
Total Cover:	0 %		

% Bare Ground in Herb Stratum 70 % % Cover of Biotic Crust 0 %

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0 % (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	0
FACW species	50	x 2 =	100
FAC species		x 3 =	0
FACU species		x 4 =	0
UPL species	30	x 5 =	150
Column Totals:	80 (A)		250 (B)

Prevalence Index = B/A = 3.13

Hydrophytic Vegetation Indicators:

- ◉ Dominance Test is >50%
- ◉ Prevalence Index is ≤3.0[1]
- ☐ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ☐ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present.

Hydrophytic Vegetation Present? Yes ◉ No ○

Remarks: Willow canopy over sparsely vegetated flood terrace.

SOIL

Sampling Point: 07

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-10	10YR 3/2						Loamy sand & cob	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5) (**LRR C**)
- ☐ 1 cm Muck (A9) (**LRR D**)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)
- ☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils[3]:

- ☐ 1 cm Muck (A9) (**LRR C**)
- ☐ 2 cm Muck (A10) (**LRR B**)
- ☐ Reduced Vertic (F18)
- ☐ Red Parent Material (TF2)
- ☐ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Bedrock

Depth (inches): 10

Hydric Soil Present? Yes ○ No ○

Remarks: Thin, coarse alluvial deposits over bedrock. No hydric soil formation / reducing conditions.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (any one indicator is sufficient)

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1) (**Nonriverine**)
- ☐ Sediment Deposits (B2) (**Nonriverine**)
- ☐ Drift Deposits (B3) (**Nonriverine**)
- ☐ Surface Soil Cracks (B6)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
- ☐ Biotic Crust (B12)
- ☐ Aquatic Invertebrates (B13)
- ☐ Hydrogen Sulfide Odor (C1)
- ☐ Oxidized Rhizospheres along Living Roots (C3)
- ☐ Presence of Reduced Iron (C4)
- ☐ Thin Muck Surface (C7)
- ☐ Recent Iron Reduction in Plowed Soils (C6)
- ☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (**Riverine**)
- ☐ Sediment Deposits (B2) (**Riverine**)
- ☒ Drift Deposits (B3) (**Riverine**)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Shallow Aquitard (D3)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ○ No ○ Depth (inches): NA

Water Table Present? Yes ○ No ○ Depth (inches): NA

Saturation Present? (includes capillary fringe) Yes ○ No ○ Depth (inches): NA

Wetland Hydrology Present? Yes ○ No ◉

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks: Insufficient secondary (Riverine) hydrology indicators.

ATTACHMENT B

FIGURE

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS

70 35 0 70 Feet

Scale: 1:840; 1 inch = 70 feet

Attachment B
Jurisdictional Delineation Map

New Stokes Creek Bridge Project

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\JD_figure-11x17.mxd, 12/19/2016, augellop

ATTACHMENT C

SITE PHOTOGRAPHS

Attachment C: Site Photographs
New Stokes Creek Bridge Project
Jurisdictional Delineation Survey 10-17-2016

Photo 1. Photo of Stokes Creek Channel upstream of Waycross Rd. bridge. Note approximate locations of sampling plots 4 & 6

Photo 2. Photo of Stokes Creek downstream of Waycross Rd. Note collapsing roadway and debris.

Photo 3. Photo of Waycross Rd. Culvert from downstream. Note bank / road collapse in upper left of photograph.

Photo 4: Photo facing downstream from culvert beneath Waycross Rd.

Attachment C: Site Photographs
New Stokes Creek Bridge Project
Jurisdictional Delineation Survey 10-17-2016

Photo 5. Photo of Stokes Creek Channel downstream of Waycross Rd. Culvert at Sampling Plots 1 & 7. Note break in bank slope & drift deposits demarcating limits of OHWM.

Photo 6. Photo of Sampling Plot 1 soil pit. Note: restrictive layer of bedrock very shallow (pit depth 6”). No indicators of hydric soils or reducing conditions present within soil pit.

Appendix C

Plant and Wildlife Species Observed Within the Study Area and Buffer

TABLE C-1: PLANT SPECIES OBSERVED WITHIN THE STUDY AREA AND BUFFER

Family Scientific Name	Common Name	Native/ Non-native	Regulatory Status
Adoxaceae			
Sambucus nigra	Black elderberry	Native	-
Apocynaceae			
Asclepias fasicularis	Narrow-leaf milkweed	Native	-
Asclepias eriocarpa	Kotolo	Native	-
Anacardiaceae			
Toxicodendron diversilobum	Poison oak	Native	-
Apiaceae			
Torilis arvensis/nodosa	Hedge parsley	Non-native	-
Apocynaceae			
Vinca major	Greater periwinkle	Non-native[1]	-
Asteraceae			
Ambrosia psilostachya	Western ragweed	Native	-
Artemisia douglasiana	Mugwort	Native	-
Baccharis pilularis	Coyote brush	Native	-
Baccharis salicifolia	Mulefat	Native	-
Carduus pycnocephalus	Italian thistle	Non-native[1]	-
Centaurea meletensis	Tocalote	Non-native[1]	-
Centaurea solstitialis	Yellow star-thistle	Non-native[1]	-
Corethrogyne (*Lessingia*) *filaginifolia*	California-aster	Native	-
Deinandra (Hemizonia) fasciculata	Tarplant	Native	-
Heterotheca grandiflora	Telegraph weed	Native	-
Boraginaceae			
Amsinckia menziesii	Common fiddleneck	Native	-
Phacelia cicutaria	Caterpillar phacelia	Native	-
Plagiobothrys sp.	Popcorn flower	Native	-
Brassicaceae			
Brassica nigra/Hirschfeldia incana	Mustard sp.	Non-native[1]	-
Nasturtium (*Rorippa*) *officinale*	Water cress	Native	-
Caprifoliaceae			
Lonicera subspicata	Southern honeysuckle	Native	-
Symphoricarpos albus var. *laevigatus*	Snowberry	Native	-
Chenopodiaceae			
Salsola tragus	Russian thistle	Non-native[1]	-
Cucurbitaceae			

TABLE D-1: PLANT SPECIES OBSERVED WITHIN THE STUDY AREA AND BUFFER, *continued*

Family Scientific Name	Common Name	Native/ Non-native	Regulatory Status
Cucurbita foetidissima	Buffalo gourd	Native	-
Marah fabacea	California man-root	Native	-
Marah macrocarpa	Chilicothe	Native	-
Euphorbiaceae			
Croton (*Eremocarpus*) *setigerus*	Turkey-mullein	Native	-
Fabaceae			
Acmispon americanus var. *americanus* (*Lotus purshianus*)	Deervetch	Native	-
Lupinus bicolor	Miniature lupine	Native	-
Vicia sativa	Vetch	Non-native	-
Fagaceae			
Quercus agrifolia	Coast live oak	Native	-
Quercus lobata	Valley oak	Native	-
Geraniaceae			
Erodium cicutarium	Redstem filaree	Non-native	-
Erodium botrys	Filaree	Non-native	-
Grossulariaceae			
Ribes sp.	Currant	Native	-
Iridaceae			
Sisyrinchium bellum	Western blue-eyed-grass	Native	-
Juglandaceae			
Juglans californica var. *californica*	Southern California black walnut	Native	-
Lamiaceae			
Marrubium vulgare	Horehound	Non-native[1]	-
Myrsinaceae			
Anagallis arvensis	Scarlet pimpernel	Non-native	
Oleaceae			
Fraxinus dipetala	California ash	Native	-
Onagraceae			
Clarkia purpurea	Clarkia	Native	-
Clarkia unguiculata	Clarkia	Native	-
Polemoniaceae			
Navarretia ojaiensis	Ojai navarretia	Native	1B.1
Polygonaceae			
Rumex crispus	Curly dock	Non-native	-
Phyrmaceae			

TABLE D-1: PLANT SPECIES OBSERVED WITHIN THE STUDY AREA AND BUFFER, *continued*

Family Scientific Name	Common Name	Native/ Non-native	Regulatory Status
Mimulus aurantiacus	Bush monkey flower	Native	-
Plantaginaceae			
Keckiella cordifolia	Bush penstemon	Native	-
Platanaceae			
Platanus racemosa	Western sycamore	Native	-
Poaceae			
Arundo donax	Giant reed	Non-native[1]	-
Avena barbata	Slender wild oats	Non-native[1]	-
Bromus diandrus	Ripgut brome	Non-native[1]	-
Bromus hordeaceus	Soft chess brome	Non-native	-
Bromus madritensis	Red brome	Non-native	-
Distichlis spicata	Salt grass	Native	-
Elymus (Leymus) condensatus	Giant wild grass	Native	-
Festuca (Vulpia) myuros	Rattail sixweeks grass	Non-native	
Melica californica	California melic	Native	-
Stipa (Nassella) pulchra	Purple needle grass	Native	-
Stipa (Piptatherum) millacea	Smilo grass	Non-native[1]	-
Stipa pulchra	Purple needle grass	Native	-
Ranunculaceae			
Ranunculus californicus	Buttercup	Native	-
Rhamnaceae			
Frangula (Rhamnus) californica	California coffee berry	Native	-
Rosaceae			
Drymocallis glandulosa	Woodbeauty/Cinquefoil	Native	-
Prunus ilicifolia	Holly-leafed cherry	Native	-
Rosa californica	California rose	Native	-
Rubus ursinus	California blackberry	Native	-
Rubiaceae			
Galium angustifoluim	Narrowly leaved bedstraw	Native	-
Galium nuttallii subsp. *nuttallii*	San Diego bedstraw	Native	-
Salicaceae			
Populus fremontii	Fremont cottonwood	Native	-
Salix gooddingii	Goodding's black willow	Native	-
Salix lasiolepis	Arroyo willow	Native	-
Simaroubaceae			

TABLE D-1: PLANT SPECIES OBSERVED WITHIN THE STUDY AREA AND BUFFER, *continued*

Family Scientific Name	Common Name	Native/ Non-native	Regulatory Status
Ailanthus altissima	Tree of heaven	Non-native[1]	-
Solanaceae			
Datura wrightii	Jimsonweed	Native	-
Urticaceae			
Urtica dioca	Stinging nettle	Native	-
Urtica urens	Dwarf nettle	Non-native	-
Verbenaceae			
Verbena lasiostachys	Vervain	Native	-

Source: CDFW 2017b.
[1] Listed as invasive by Cal-IPC for the southwest region (Cal-IPC 2017).

TABLE C-2: WILDLIFE SPECIES OBSERVED WITHIN THE STUDY AREA AND BUFFER

Scientific Name	Common Name	Regulatory Status
Birds		
Thryomanes bewickii	Bewick's wren	-
Corvus corax	Common raven	-
Buteo jamaicensis	Red-tailed hawk	-
Melanerpes formicivorus	Acorn woodpecker	-
Sialia Mexicana	Western bluebird	-
Zonotrichia leucophrys	White-crowned sparrow	-
Baeolophus inornatus	Oak titmouse	BCC
Aphelocoma wollweberi	Western scrub jay	-
Callipepla californica	California quail	-
Picioides nuttallii	Nuttall's woodpecker	BCC
Troglodytes aedon	House wren	-
Sayornis nigricans	Black phoebe	-
Mammals		
Otospermophilus beecheyi	California ground squirrel	-
Neotoma sp.	Wood rat sp.	-
Odocoileus hemionus	Mule deer	-
Sciurus sp.	Squirrel sp.	-

[1] Regulatory Status (CDFW 2017c):
FE = Federally Endangered
FT = Federally Threatened
SE = State Endangered
ST = State Threatened
FP = State Fully Protected
SSC = State Species of Special Concern.
BCC = Bird of Conservation Concern

Appendix D

Native Tree Survey Report

AECOM Imagine it. Delivered.

NEW STOKES CREEK BRIDGE PROJECT NATIVE TREE SURVEY REPORT

MALIBU, LOS ANGELES COUNTY, CALIFORNIA

California Department of Parks and Recreation, Southern Service Center

Quality information

Prepared by	Checked by
	
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Abbreviations and Acronyms

CDPR	California Department of Parks and Recreation
DBH	Diameter at breast height
LIP	Local Implementation Plan
USGS	U.S. Geological Survey

1. Introduction

1.1 Purpose of Assessment

At the request of the California Department of Parks and Recreation (CDPR), AECOM conducted a native tree survey on October 18-19, 2016, and January 4, 2018, in support of the proposed Stokes Creek Bridge Replacement Project (Project) at Malibu Creek State Park outside Calabasas, California. Surveys were conducted in order to identify native trees in the project vicinity, and to support future assessments of biological constraints and potential impacts due to project activities.

1.2 Location

The Project is located in Malibu Creek State Park within the Santa Monica Mountains National Recreation Area in Los Angeles County, California. It is located approximately 0.55 miles south of the city of Calabasas, California, and is accessible from Highway 101 via Las Virgenes Road. The Project occurs within the Malibu Beach, CA U.S. Geological Survey (USGS) 7.5-minute quadrangle, Township 1S, Range 18W, Section 12.

1.3 Project Description

The Project entails the replacement of an existing crossing along Waycross Road over Stokes Creek. The CDPR proposes to remove the existing, undersized corrugated metal pipe culvert crossing and replace it with a new bridge in order to reduce deferred maintenance costs and provide a secondary escape route for vehicles in case of wildfire. The Project also will reduce disruption to campers in the vicinity and restore Stokes Creek to its natural configuration.

2. Methods

A native tree survey was conducted on the project site by AECOM biologist Jonathan Appelbaum October 18-19, 2016. This survey was conducted to collect an inventory of native trees and an assessment of their health in the vicinity of the project study area. An additional survey was conducted by AECOM biologists Brenda McMillan and Julie Niceswanger Hickman on January 4, 2018, to add the arroyo willows (*Salix lasiolepis*) present near the study area to the inventory. The project study area is defined as the proposed temporary work area. An additional 200-foot buffer was surveyed around the project study area (Figure 1).

The methods used in the field closely followed those described in the Santa Monica Mountains Local Coastal Program, Local Implementation Plan (LIP) (County of Los Angeles 2014). For the purposes of this report, and under the requirements of the LIP, native trees are defined as native oak (*Quercus* sp.), California walnut (*Juglans californica* var. *californica*), western sycamore (*Plantanus racemosa*), bay (*Ubellularia californica*), or any other species of native trees such as alder (*Alnus rhombifolia*), toyon (*Heteromeles arbutifolia*) or arroyo willow. The following data were collected for each native tree within the project study area:

1. Circumference and diameter of the trunk measured 4.5-feet above natural grade (i.e., diameter at breast height, or DBH) was recorded. The DBH of multi-trunk trees was measured for each trunk belonging to that tree.

2. All trees 5 inches or greater were recorded, assigned a unique identifying number, and a tree tag was affixed to the north side of the tree.

3. Some tree diameters were estimated and no tree tag was installed when steep topography or poison oak (*Toxicodendron diversilobum*) prevented access to the tree.

4. The diameter of the trees' canopy, plus 5 feet, or 15 feet from the trunk of the tree, whichever is greater, was recorded to establish the protected zone.

5. Evaluation of the health of the tree included an aesthetic assessment, indications of diseases or pests, and an overall health rating.

In addition to the collection of the data described above, trees were identified as heritage oaks if they met the criteria. Heritage oak trees are either: 1) any oak tree measuring 36 inches or more in diameter, or 2) any oak tree having significant historical or cultural importance to the community, notwithstanding that the tree diameter is less than 36 inches. As data were recorded, each tree was affixed with a tree tag and identification number on the north side of the tree.

3. Results

A total of 144 native trees were surveyed in the project study area. The results of the native tree survey are presented in Table 1 and Figures 1 through 3. The recorded trees included 6 California walnut trees, 1 western sycamore, 1 cottonwood (*Populus fremontii*), 19 valley oaks (*Quercus lobata*), 107 coast live oaks (*Quercus agrifolia*), and 10 arroyo willows. Collected information for each tree including tag numbers and all other observations are presented in Table 1. A total of 17 trees were not able to be tagged due to the presence of poison oak or their position on a steep bank. One of the untagged trees (Table 1. Record 81-16) was recorded as diseased. The diseased tree was 6 inches DBH, and its trunk was broken. The trauma of the broken trunk may have made the tree susceptible to disease or drought. However, recent regrowth on the branches indicates that the tree was alive. Most of the oak trees in the study were considered healthy and did not have evidence of fungal disease or insect pests.

As shown in Table 1, DBH for trees in the study area ranged from 5 to 74 inches. A total of 26 trees are “multi-trunk” trees, and DBH was recorded for each trunk and then combined and reported as one DBH, as described in Table 1. No Resource Conservation District-identified trees were observed in the study area. However, 13 oak trees are considered heritage trees based on their DBH (36 inches or greater).

4. Evaluation of Project Impacts

The proposed project was designed to avoid impacts to native trees. Figure 1 illustrates the native trees that were recorded in the Native Tree Survey, Figure 2 illustrates the protection zones as defined in the LIP, and Figure 3 shows the impacts of the design elements of the bridge, road, and creek elements. Twenty-four trees have a portion of their tree protected zone overlapping with the LOD, while 10 of those trees are located within the LOD. Trees located within the LOD include seven *Quercus agrifolia*, two *Quercus lobata*, and one *Salix lasiolepis*. However, construction plans do not call for the removal of these trees. In addition, the plans do not call for the trimming of any tree canopy. The proposed bridge and road would replace existing structures.

The Santa Monica Mountains LIP prohibits excavation within the protected zone of any native tree. Therefore, removing the existing road and bridge, recontouring the stream banks, and installation of new road and bridge would impact the protected zone of some native trees within the Survey Area. Figure 3 and Table 1 describe the impacts to native tree protected zones. Of the 24 trees 18 are oak trees. Of the 18 oak trees, nine trees could have impacts to 30 percent or more of their tree protected zones; seven trees could have impacts between 10 to 30 percent; and two trees could have less than 10 percent of their protected zone impacted by project activities.

However, Measure BIO-5 requires that a qualified arborist monitor construction to delineate approved work areas to maximize native tree protection during construction and minimize excavation for tree root protection. Measure BIO-6 requires replacement and restoration for temporary impacts to oak tree protected zones.

5. Avoidance, Minimization, and Mitigation Measures

The following avoidance, minimization and mitigation measures specific to tree protection shall be implemented to offset project related impacts. Note measures Bio-1 through 4 are not related to trees and are therefore not included herein.

Bio-5 Where trees occur within or adjacent to the construction disturbance zone, the following measures shall be adhered to:

a. Prior to any surface-disturbing work, temporary fencing shall be installed around the protected zones of native trees within/near the project area to prevent disturbance from construction-

related activities. Fencing shall be maintained in place for the duration of work. Any breach in the protective fencing that occurs during construction shall be promptly repaired or replaced.

b. No staging or storage of materials shall be allowed within the fenced exclusion areas or within the protected zones of any on-site native trees. Additionally, no grading or construction shall occur in the fenced/protected zones, unless otherwise indicated in the project plans.

c. The services of a certified/qualified arborist shall be retained to monitor native trees that are within or adjacent to the work area.

d. Any construction, including grading or excavation, which requires encroachment into the protected zone of a native tree shall be monitored by the certified arborist to minimize impacts to a tree's root system.

BIO-6 Restore temporary impacts to 0.20 acre of jurisdictional waters and valley oak woodland understory and mitigate for impacts to native tree protected zones. In accordance with the Santa Monica Mountains LCP, greater than 30 percent encroachment into tree protected zones and encroachment that extends within 3 feet of a tree trunk will be mitigated at a ratio of 10:1. Encroachment of 10 to 30 percent into tree protected zones and trimming branches over 11 inches in diameter will be mitigated at a ratio of 5:1. For trees with less than 10 percent encroachment into protected zones, no mitigation is required, but monitoring is required.

Tree Type	Percentage Impacted	Number of Trees	Mitigation Ratio	Total Trees to be Mitigated
Quercus agrifolia	Less than or equal to 10% of Tree Protected Zone	2	NA	Monitor Trees
Quercus agrifolia	Greater than 30% of Tree Protected Zone	9	10:1	90
Quercus agrifolia	Between 10–30% of Tree Protected Zone	4	5:1	20
Quercus lobata	Greater than 30% of Tree Protected Zone	1	10:1	10
Quercus lobata	Between 10–30% of Tree Protected Zone	2	5:1	10

For impacts to trees requiring mitigation and on-site restoration of temporary impacts, the following measures shall be implemented:

a. The CDPR will prepare a habitat restoration plan that outlines the methods by which impacts to habitat/trees shall be addressed. The plan will be prepared by a qualified biologist with experience/knowledge of native vegetation communities within southern California. At a minimum, the restoration plan shall include information on: 1) the purpose and objectives, 2) existing conditions, 3) methods of implementation, 4) a planting plan, 5) maintenance program, and 6) monitoring plan, including success criteria.

b. Restoration shall occur in appropriate/suitable habitat within Malibu Creek State Park, and as close to the project site, as feasible.

6. References

County of Los Angeles. 2014. Santa Monica Mountains Local Implementation Program, A Component of the Santa Monica Mountain Local Coastal Program. August.

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Table

Table 1. Native Tree Inventory Data

Tree Tag	Tagged	DBH-(Inches)	Species	Canopy Radius (Feet)	Protected Zone Diameter (Feet)*	% of Tree Protected Zone in LOD	Health	Observations	Heritage Tree
1-16	Tagged	74	*Quercus lobata*	70	150	0	Healthy		Heritage
2-16	Tagged	6.5	*Quercus agrifolia*	15	30	0	Healthy		
3-16	Tagged	5.75	*Quercus agrifolia*	15	30	53%	Healthy		
4-16	Tagged	42.25	*Quercus lobata*	48	106	22%	Healthy		Heritage
5-16	Tagged	8.75	*Quercus agrifolia*	15	30	6%	Healthy	Tree healthy but seriously undercut	
6-16	Untagged	15	*Quercus agrifolia*	32	74	0	Healthy	Untagged due to poison oak; DBH estimated.	
7-16	Tagged	8.25	*Platanus racemosa*	15	30	0	Healthy		
8-16	Untagged	36	*Quercus agrifolia*	48	106	0	Healthy	Untagged due to poison oak. DBH estimated. Healthy but root exposure due to bank erosion.	Heritage
9-16	Untagged	12	*Quercus agrifolia*	40	90	0	Healthy	Untagged due to poison oak; DBH estimated.	
10-16	Untagged	24	*Quercus agrifolia*	50	110	0	Healthy	Untagged due to poison oak. Tree position estimated from offset point 7 feet southwest of tree. DBH estimated.	
11-16	Untagged	24	*Quercus agrifolia*	40	90	0	Healthy	Untagged tree. Tree position estimated from point offset 15 feet south of tree. DBH estimated.	
12-16	Tagged	46.5	*Quercus agrifolia*	50	110	49%	Healthy		Heritage
13-16	Tagged	7	*Quercus agrifolia*	15	30	0	Healthy		
14-16	Tagged	8	*Quercus agrifolia*	15	30	0	Healthy	Multi-trunk: 5.5 inch and 6 inch	
15-16	Tagged	6.5	*Quercus agrifolia*	15	30	0	Healthy		
16-16	Tagged	8	*Quercus agrifolia*	15	30	0	Healthy		
17-16	Tagged	6	*Quercus agrifolia*	15	30	0	Healthy		

Tree Tag	Tagged	DBH- (Inches)	Species	Canopy Radius (Feet)	Protected Zone Diameter (Feet)*	% of Tree Protected Zone in LOD	Health	Observations	Heritage Tree
18-16[1]	Tagged	18.5	*Quercus agrifolia*	20	50	0	Healthy	Multi–trunk: 11.5 inch and 14.5 inch	
19-16	Tagged	30	*Quercus agrifolia*	35	80	10%	Healthy		
20-16	Tagged	32.5	*Quercus agrifolia*	45	100	55%	Healthy		
21-16	Tagged	17.5	*Quercus agrifolia*	37	84	43%	Healthy		
22-16	Tagged	22.5	*Quercus agrifolia*	38	86	19%	Healthy		
23-16	Tagged	22.25	*Quercus agrifolia*	45	100	28%	Healthy	Northwest lean	
24-16	Tagged	18.25	*Quercus agrifolia*	42	94	14%	Healthy	South lean	
25-16	Tagged	25.5	*Quercus agrifolia*	40	90	26%	Healthy	Stick nest; possibly squirrel. Tree healthy but being undercut by streambank.	
26-16	Tagged	22	*Quercus agrifolia*	40	90	45%	Healthy	West lean	
27-16	Untagged	8	*Quercus agrifolia*	15	30	0	Healthy	Untagged due to poison oak; DBH estimated.	
28-16	Tagged	8	*Quercus agrifolia*	15	30	0	Healthy		
29-16	Tagged	27	*Quercus lobata*	34	78	58%	Healthy		
30-16	Tagged	28.5	*Quercus agrifolia*	50	110	60%	Healthy	West lean	
31-16	Tagged	16.5	*Quercus agrifolia*	35	80	61%	Healthy	West lean	
32-16	Tagged	15.75	*Quercus agrifolia*	35	80	51%	Healthy		
33-16	Tagged	22.5	*Quercus lobata*	45	100	29%	Healthy	Multi–trunk: 17 inch and 11.5 inch	
34-16	Tagged	5.5	*Quercus agrifolia*	15	30	0	Healthy		
35-16	Tagged	15.25	*Quercus agrifolia*	15	30	0	Healthy	Multi-trunk: 7.75 inch, 9.5 inch, and 10 inch	
36-16	Tagged	11.75	*Quercus agrifolia*	15	30	0	Healthy	Stick nest in branches	
37-16	Tagged	10.5	*Quercus agrifolia*	15	30	0	Healthy		
38-16	Tagged	7.5	*Quercus lobata*	15	30	0	Healthy	Multi-trunk: 5.75 inch and 4.75 inch	

[1] Tree tagged 18-16 location could not be verified, due to GPS error and is not depicted on maps. However, field notes indicate that it is outside of any impact areas and within the Project Buffer.

Tree Tag	Tagged	DBH- (Inches)	Species	Canopy Radius (Feet)	Protected Zone Diameter (Feet)*	% of Tree Protected Zone in LOD	Health	Observations	Heritage Tree
39-16	Tagged	9.75	*Quercus lobata*	20	50	0	Healthy	Multi-trunk: 8.5 inch, 4.5 inch, and 2.5 inch	
40-16	Tagged	5.5	*Quercus agrifolia*	15	30	0	Healthy		
41-16	Tagged	6.5	*Quercus agrifolia*	20	50	0	Healthy		
42-16	Tagged	5.5	*Quercus agrifolia*	15	30	0	Healthy		
43-16	Tagged	46	*Quercus lobata*	65	140	0	Healthy		Heritage
44-16	Tagged	5.5	*Quercus agrifolia*	15	30	0	Healthy		
45-16	Tagged	6.5	*Quercus agrifolia*	15	30	0	Healthy		
46-16	Tagged	12.5	*Quercus agrifolia*	22	54	0	Healthy		
47-16	Tagged	6.5	*Quercus agrifolia*	15	30	0	Healthy		
48-16	Tagged	9	*Quercus agrifolia*	20	50	0	Healthy	Nest in tree	
49-16	Tagged	8.5	*Quercus agrifolia*	20	50	0	Healthy		
50-16	Tagged	8.25	*Quercus agrifolia*	15	30	0	Healthy		
51-16	Tagged	5	*Quercus agrifolia*	15	30	0	Healthy		
52-16	Tagged	10.5	*Juglans californica* var. *californica*	25	50	0	Healthy	Multi-trunk: 5 inch and 9.5 inch	
53-16	Tagged	6.5	*Quercus agrifolia*	15	30	0	Healthy		
54-16	Tagged	5	*Quercus agrifolia*	15	30	0	Healthy		
55-16	Tagged	11.5	*Juglans californica* var. *californica*	25	50	0	Healthy		
56-16	Tagged	13	*Juglans californica* var. *californica*	25	50	0	Healthy		
57-16	Tagged	7	*Juglans californica* var. *californica*	15	30	0	Healthy		
58-16	Tagged	12	*Juglans californica* var. *californica*	20	40	0	Healthy	Multi-trunk: 8.5 inch and 8.5 inch	
59-16	Tagged	13.75	*Juglans californica* var. *californica*	25	50	0	Healthy		
60-16	Tagged	12.5	*Quercus agrifolia*	20	50	0	Healthy		
61-16	Tagged	7.75	*Quercus agrifolia*	20	50	0	Healthy		
62-16	Tagged	6.5	*Quercus agrifolia*	15	30	0	Healthy		

Tree Tag	Tagged	DBH- (Inches)	Species	Canopy Radius (Feet)	Protected Zone Diameter (Feet)*	% of Tree Protected Zone in LOD	Health	Observations	Heritage Tree
63-16	Tagged	5.75	*Quercus agrifolia*	15	30	0	Healthy		
64-16	Tagged	6	*Quercus agrifolia*	15	30	0	Healthy		
65-16	Tagged	11	*Quercus agrifolia*	15	30	0	Healthy	Multi-trunk: 9 inch and 6.25 inch	
66-16	Tagged	11.25	*Quercus agrifolia*	20	50	0	Healthy	Large nest in tree	
67-16	Tagged	7.75	*Quercus agrifolia*	15	30	0	Healthy		
68-16	Tagged	11.5	*Quercus agrifolia*	16	42	0	Healthy		
69-16	Tagged	41.5	*Quercus lobata*	60	130	0	Healthy		Heritage
70-16	Tagged	14	*Quercus agrifolia*	20	50	0	Healthy	Multi-trunk: 9.5 inch and 10 inch	
71-16	Tagged	20.5	*Quercus agrifolia*	34	78	0	Healthy	Multi-trunk: 14 inch and 15 inch	
72-16	Tagged	32.5	*Quercus agrifolia*	65	140	0	Healthy		
73-16	Tagged	36	*Quercus agrifolia*	65	140	0	Healthy		Heritage
74-16	Tagged	19.5	*Quercus agrifolia*	45	100	0	Healthy		
75-16	Tagged	18	*Quercus agrifolia*	30	70	0	Healthy		
76-16	Tagged	11	*Quercus agrifolia*	16	42	0	Healthy		
77-16	Tagged	12	*Quercus agrifolia*	35	80	0	Healthy	South lean.	
78-16	Untagged	7	*Quercus agrifolia*	15	30	0	Healthy	Untagged due to poison oak. DBH estimated.	
79-16	Untagged	18	*Quercus agrifolia*	35	80	0	Other	Untagged due to poison oak. Tree is 15 feet southwest of point. Extensive limb breakage. Nest in canopy. DBH estimated.	
80-16	Untagged	34	*Quercus agrifolia*	30	70	0	Healthy	Untagged due to poison oak. DBH estimated.	

Tree Tag	Tagged	DBH- (Inches)	Species	Canopy Radius (Feet)	Protected Zone Diameter (Feet)*	% of Tree Protected Zone in LOD	Health	Observations	Heritage Tree
81-16	Untagged	5.5	*Quercus agrifolia*	15	30	0	Diseased	Untagged due to poison oak. Tree broken at 6 feet. DBH estimated. No evidence of pests and regrowth appeared healthy. Initial recommendation for improved tree health is monitoring. Tree may recover without further intervention.	
82-16	Tagged	12.75	*Quercus agrifolia*	14	38	0	Healthy		
83-16	Tagged	8.25	*Quercus agrifolia*	15	30	0	Healthy		
84-16	Tagged	8	*Quercus agrifolia*	15	30	56%	Healthy		
85-16	Tagged	7.75	*Quercus agrifolia*	15	30	0	Healthy	Multi-trunk: 7 inch, 2.5 inch, and 1 inch.	
86-16	Tagged	15	*Quercus agrifolia*	16	42	0	Healthy		
87-16	Tagged	15.25	*Quercus agrifolia*	20	50	0	Healthy	Multi-trunk: 10.75 inch and 11 inch	
88-16	Tagged	12	*Quercus agrifolia*	16	42	0	Healthy	Multi-trunk: 9.5 inch and 7.25 inch. Nest in tree.	
89-16	Tagged	8	*Quercus agrifolia*	15	30	0	Healthy		
90-16	Tagged	13	*Quercus agrifolia*	16	42	0	Healthy		
91-16	Tagged	8.25	*Quercus lobata*	15	30	0	Healthy	Multi-trunk: 5.5 inch and 6 inch	
92-16	Tagged	40	*Quercus lobata*	50	110	0	Healthy		Heritage
93-16	Tagged	14.75	*Quercus lobata*	16	42	0	Healthy	Multi-trunk: 10 inch and 11 inch	
94-16	Tagged	14.25	*Quercus agrifolia*	15	30	0	Healthy	Multi-trunk: 9.75 inch and 10.5 inch	
95-16	Tagged	12.5	*Quercus agrifolia*	16	42	0	Healthy		
96-16	Tagged	11.25	*Quercus agrifolia*	16	42	0	Healthy	Multi-trunk: 4.25 inch and 10.5 inch	
97-16	Tagged	8.25	*Quercus agrifolia*	16	42	0	Healthy		

Tree Tag	Tagged	DBH- (Inches)	Species	Canopy Radius (Feet)	Protected Zone Diameter (Feet)*	% of Tree Protected Zone in LOD	Health	Observations	Heritage Tree
98-16	Tagged	10	*Quercus agrifolia*	15	30	0	Healthy	Multi-trunk: 6.5 inch, 7.5 inch, and 2 inch	
99-16	Tagged	8.75	*Quercus agrifolia*	18	46	0	Healthy		
100-16	Tagged	5.5	*Quercus agrifolia*	15	30	0	Healthy		
101-16	Tagged	22.75	*Quercus agrifolia*	25	60	0	Healthy	Multi-trunk: 15.25 inch, 15.25 inch, 7.5 inch	
102-16	Tagged	13.5	*Quercus agrifolia*	16	42	0	Healthy	Multi-trunk: 10 inch, 2 inch 7.5 inch, 3.5 inch, and 3 inch	
103-16	Tagged	11	*Quercus agrifolia*	20	50	0	Healthy	Large nest in tree	
104-16	Tagged	9	*Quercus agrifolia*	15	30	0	Healthy		
105-16	Tagged	13.5	*Quercus agrifolia*	15	30	0	Healthy	Multi-trunk: 2 inch, 7 inch, and 11.25 inch	
106-16	Tagged	8.5	*Quercus agrifolia*	16	42	0	Healthy	Multi-trunk: 5.5 inch and 6.5 inch	
107-16	Tagged	7.5	*Quercus agrifolia*	15	30	0	Healthy		
108-16	Tagged	8	*Quercus agrifolia*	15	30	0	Healthy		
109-16	Tagged	6	*Quercus agrifolia*	15	30	0	Healthy	Multi-trunk: 2.5 inch and 5.5 inch	
110-16	Tagged	10.5	*Quercus agrifolia*	16	42	0	Healthy		
111-16	Tagged	11.5	*Quercus agrifolia*	16	42	0	Healthy		
112-16	Tagged	6.75	*Quercus agrifolia*	15	30	0	Healthy		
113-16	Tagged	6.75	*Quercus agrifolia*	15	30	0	Healthy		
114-16	Tagged	31.5	*Quercus lobata*	55	120	0	Healthy		
115-16	Tagged	33.5	*Quercus agrifolia*	30	70	0	Healthy		
116-16	Tagged	40	*Quercus lobata*	55	120	0	Healthy		Heritage
117-16	Tagged	10.5	*Quercus agrifolia*	18	46	0	Healthy		
118-16	Tagged	9	*Quercus agrifolia*	25	60	0	Healthy		
119-16	Tagged	18.5	*Quercus agrifolia*	20	50	0	Healthy	Multi-trunk: 12.5 inch and 14 inch	
120-16	Tagged	12.5	*Quercus agrifolia*	16	42	0	Healthy		

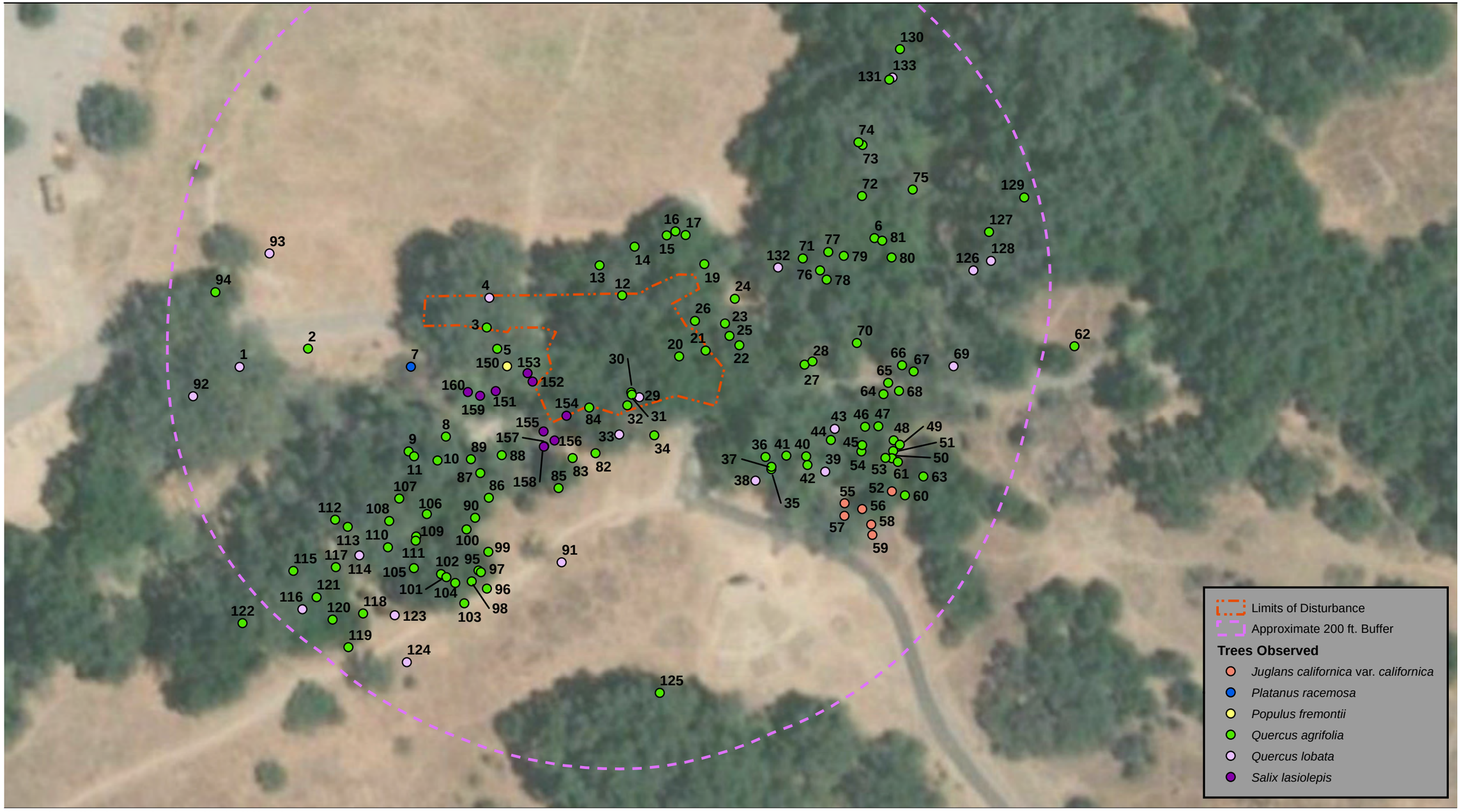
Tree Tag	Tagged	DBH- (Inches)	Species	Canopy Radius (Feet)	Protected Zone Diameter (Feet)*	% of Tree Protected Zone in LOD	Health	Observations	Heritage Tree
121-16	Tagged	19.25	*Quercus agrifolia*	22	54	0	Healthy	Multi-trunk: 8.5 inch, 9.5 inch, 12 inch, and 8 inch	
122-16	Tagged	32.5	*Quercus agrifolia*	45	100	0	Healthy		
123-16	Tagged	6	*Quercus lobata*	15	30	0	Healthy		
124-16	Tagged	11	*Quercus lobata*	16	42	0	Healthy		
125-16	Untagged	50	*Quercus agrifolia*	55	120	0	Healthy	Untagged due to poison oak. DBH estimated. Tree position estimated from point 10 feet west.	Heritage
126-16	Tagged	62	*Quercus lobata*	80	170	0	Healthy		Heritage
127-16	Tagged	30.5	*Quercus agrifolia*	65	140	0	Healthy		
128-16	Tagged	40	*Quercus lobata*	70	150	0	Healthy	Leaning on tree 127-16 (*Quercus Agrifolia*).	Heritage
129-16	Untagged	13	*Quercus agrifolia*	30	70	0	Other	Untagged due to poison oak. Nest in tree. Tree appears healthy. Laden w/ poison oak. DBH estimated.	
130-16	Tagged	16	*Quercus agrifolia*	15	40	0	Healthy		
131-16	Tagged	41	*Quercus agrifolia*	30	70	0	Healthy	Tree nearly connected to adjacent tree tag 133-16 (*Quercus lobata*).	Heritage
132-16	Untagged	30	*Quercus lobata*	35	80	0	Other	Untagged due to poison oak. Canopy loss and root exposure due to undercut bank. DBH estimated. Recommendations for improved health could include bank repair/stabilization.	
133-16	Tagged	31	*Quercus lobata*	25	60	0	Healthy	Tree nearly connected to adjacent tree tag 131-16 (*Quercus agrifolia*).	

Tree Tag	Tagged	DBH- (Inches)	Species	Canopy Radius (Feet)	Protected Zone Diameter (Feet)*	% of Tree Protected Zone in LOD	Health	Observations	Heritage Tree
150-18	Tagged	20	*Populus fremontii*	25	50	3%	Unhealthy	Narrow canopy. Unhealthy appearance. No evidence of pests. Initial recommendation for improved tree health is monitoring. Tree may continue to thrive with a narrow canopy/unhealthy appearance.	
151-18	Tagged	21	*Salix lasiolepis*	15	30	0	Unhealthy	Main stem broken and bent.	
152-18	Tagged	20	*Salix lasiolepis*	15	30	25%	Unhealthy	Main stem broken.	
153-18	Tagged	7.5	*Salix lasiolepis*	5	30	11%	Unhealthy	Main stem broken.	
154-18	Tagged	14.5	*Salix lasiolepis*	10	30	44%	Unhealthy	Main stem broken; Many basal sprouts.	
155-18	Untagged	10	*Salix lasiolepis*	15	30	8%	Unhealthy	Untagged due to poison oak. Main stem broken. Basal sprouts. DBH estimated. Tree position estimated from point 5 feet north.	
156-18	Untagged	20	*Salix lasiolepis*	20	40	6%	Unhealthy	Untagged due to poison oak. Two trunks near the base but canopy sparse. DBH estimated. Tree position estimated from point 15 feet north.	
157-18	Untagged	10	*Salix lasiolepis*	10	30	0	Unhealthy	Untagged due to poison oak. Very few branches. DBH estimated. Tree position estimated from point 17 feet north.	
158-18	Untagged	10	*Salix lasiolepis*	10	30	0	Unhealthy	Untagged due to poison oak. Very few branches. DBH estimated. Tree position estimated from point 18 feet north.	

Tree Tag	Tagged	DBH- (Inches)	Species	Canopy Radius (Feet)	Protected Zone Diameter (Feet)*	% of Tree Protected Zone in LOD	Health	Observations	Heritage Tree
159-18	Tagged	15	*Salix lasiolepis*	25	50	0	Unhealthy	Broken branches	
160-18	Tagged	11.5	*Salix lasiolepis*	10	30	0	Unhealthy	Broken tree	

*The protected zone is the diameter of the trees' canopy, plus 5 feet, or 15 feet from the trunk of the tree, whichever was greater.

Figures



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA

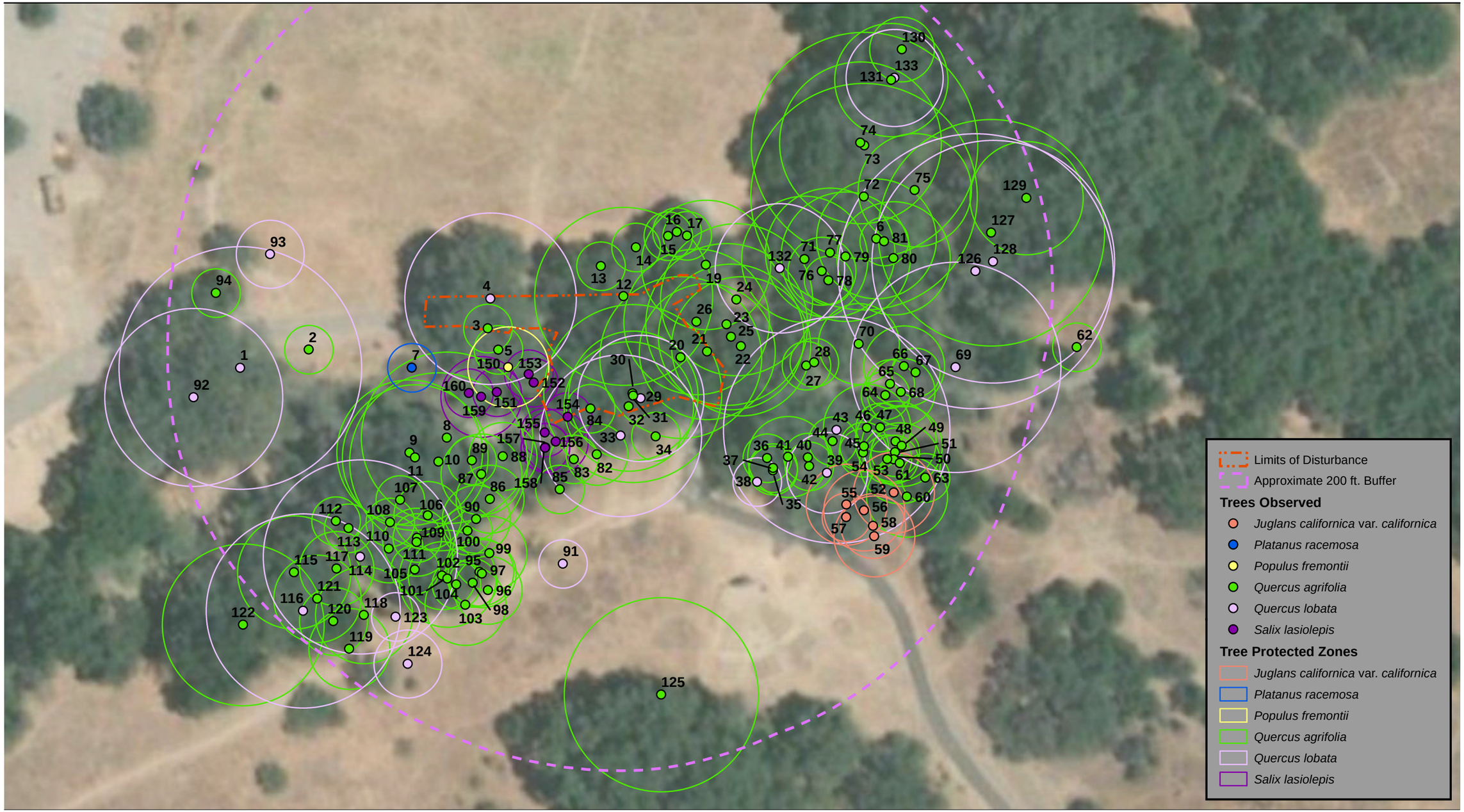
60 30 0 60 Feet

Scale: 1:720; 1 inch = 60 feet

Figure 1
Trees Observed

Malibu Creek State Park: New Stokes Creek Bridge Project

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\Tree_report.mxd, 9/13/2018, augellop



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA

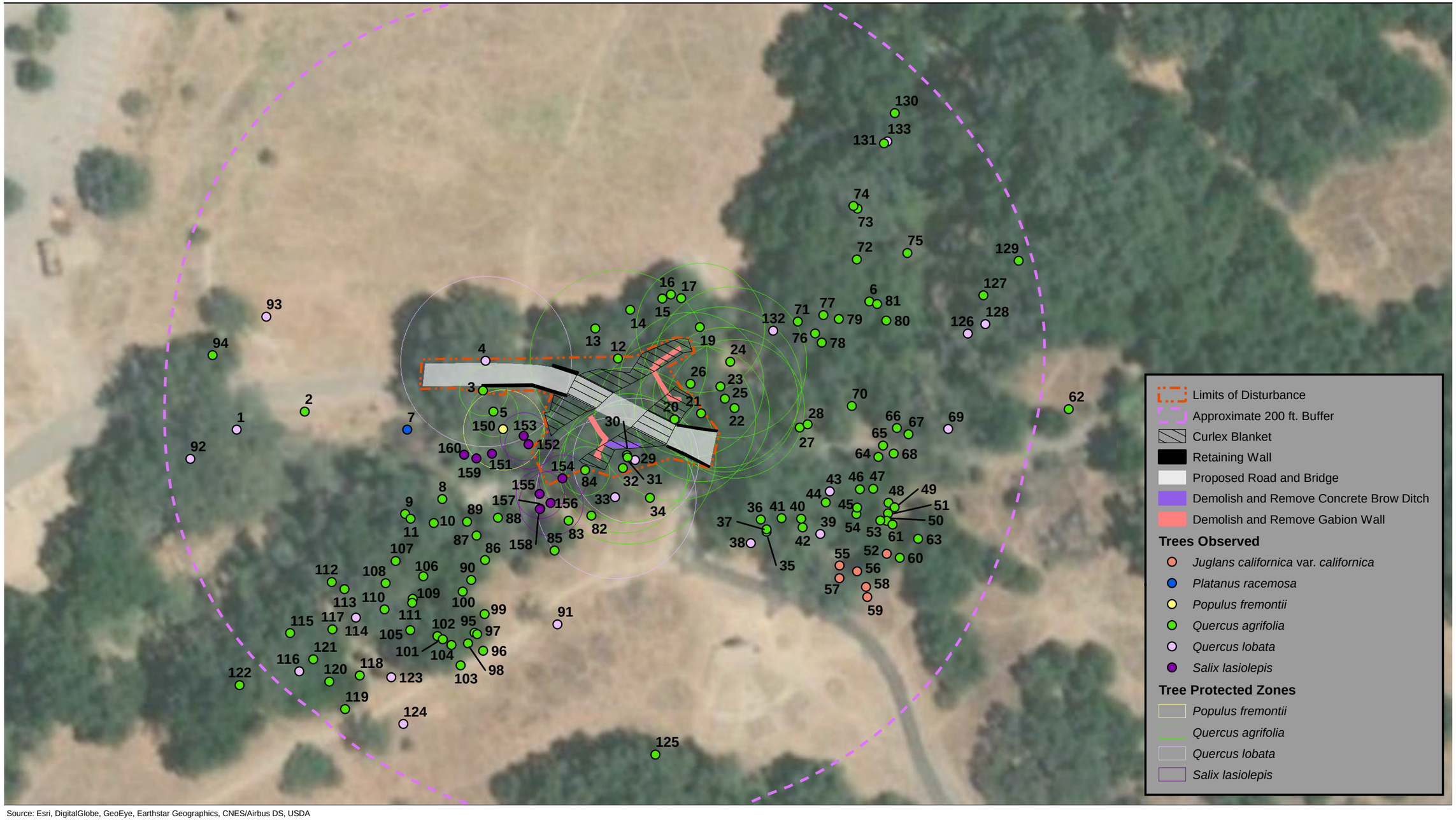
60 30 0 60 Feet

Scale: 1:720; 1 inch = 60 feet

Figure 2
Tree Protection Zones

Malibu Creek State Park: New Stokes Creek Bridge Project

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\Tree_Protected_Zones.mxd, 9/13/2018, augellop



Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA

60 30 0 60 Feet

Scale: 1:720; 1 inch = 60 feet

Figure 3
Tree Protection Zones Impacts

Path: P:_6052\60520813_StokesCreek\900-CAD-GIS\920-929 GIS-Graphics\922_Maps\Figure\Tree_Figure_Impacts2.mxd, 8/13/2018, augellop

Appendix E

Special-status Species Not Observed but with Potential To Occur Within the Study Area and Buffer

Table E-1. Special-Status Plant Species Not Observed but with Potential to Occur within the Study Area

Common Name	Scientific Name	Regulatory Status[1, 2]	Blooming Period[1]	Habitat Requirements	Probability of Occurrence
Braunton's milk-vetch	*Astragalus brauntonii*	FE, 1B.1	Mar-Jul	Recent burned or disturbed areas, usually sandstone soils with carbonate layers in chaparral, coastal scrub, and valley and foothill grassland habitats at elevations less than 2,120 feet (CNPS 2017, Jepson 2017).	Low. Potentially suitable valley and foothill grassland is present, however the Study Area lacks recently burned or disturbed areas and suitable sandstone soils. Nearest record is approximately 4.4 miles south of the Study Area (CDFW 2017a).
Malibu baccharis	*Baccharis malibuensis*	1B.1	Aug-Sept	Chaparral, cismontane woodland, coastal scrub, riparian woodland and grassy opening in such habitats at elevations of 164–985 feet (CNPS 2017, Jepson 2017).	Low. Suitable woodland habitat is present, however this species is known from fewer than 10 occurrences, none of which occur within the Study Area. Nearest record is approximately 0.47 miles east of the Study Area (CDFW 2017a). Species is a perennial deciduous shrub that would have been recognizable, but was not observed, during the survey.
Round-leaved filaree	*California macrophylla*	1B.2	Mar-Jul	Open sites, cismontane woodland and valley and foothill grassland on clay or occasionally serpentine soils at elevations up to 3,900 feet (CNPS 2017, Jepson 2017).	Moderate. Suitable clay or serpentine soils do not occur within the Study Area, although suitable habitat types do occur. Nearest record is approximately 0.9 miles northwest of the Study Area (CDFW 2017a).
Slender mariposa lily	*Calochortus clavatus* var. *gracilis*	1B.2	Mar-Nov	Shaded foothill canyons in chaparral, coastal scrub, and valley and foothill grassland habitats at elevations up to 3,280 feet (CNPS 2017, Jepson 2017).	Low. Potentially suitable shaded areas are present within the Study Area, but oak woodland is the dominant habitat in these areas. Records for this species in the vicinity are more than 50 years old, dating from 1959 and 1960. Nearest record is approximately 0.97 miles northeast of the Study Area (CDFW 2017a).

Common Name	Scientific Name	Regulatory Status[1, 2]	Blooming Period[1]	Habitat Requirements	Probability of Occurrence
Plummer's mariposa lily	*Calochortus plummerae*	4.2	May-Jul	Dry, granitic, rocky soils in chaparral, yellow pine forest, cismontane woodland, coastal scrub, lower montane coniferous forest, and valley and foothill grassland habitats at elevations up to 5,580 feet (CNPS 2017, Jepson 2017).	Low. Suitable granitic, rocky soils are not present within the Study Area, although suitable habitat types do occur. Nearest record is approximately 1.5 miles northeast of the Study Area (2017a).
Blochman's dudleya	*Dudleya blochmaniae* ssp. *blochmaniae*	1B.1	Apr-Jun	Open slopes on rocky, often clay or serpentine soils in coastal bluff scrub, chaparral, coastal scrub, and valley and foothill grassland at elevations up to 1,476 feet (CNPS 2017, Jepson 2017).	Low. Suitable rocky, clay or serpentine soils are not present within the Study Area, although suitable habitat types do occur. Nearest record is approximately 3.8 miles south of the Study Area (CDFW 2017a).
Marcescent dudleya	*Dudleya cymosa* ssp. *marcescens*	FT, SR, 1B.2	May-Jun	Shaded, rocky volcanic outcrops and slopes in chaparral and cismontane woodland at elevations of 492–1,706 feet (CNPS 2017, Jepson 2017).	Low. Suitable rocky volcanic soils and chaparral habitats are not present within the Study Area. Species is known from fewer than 10 occurrences in the Santa Monica Mountains (CNPS 2017). Nearest record is approximately 1.4 miles northwest of the Study Area (CDFW 2017a).
Santa Monica dudleya	*Dudleya cymosa* ssp. *ovatifolia*	FT, 1B.1	May-Jun	Shaded, rocky outcrops and slopes on volcanic or sedimentary/rocky soils in chaparral and coastal scrub habitats at elevations of 492-1,640 feet (CNPS 2017, Jepson 2017).	Low. Suitable habitats are not present within the Study Area and suitable soils are limited. Species known from fewer than 10 occurrences (CNPS 2017). Nearest record is approximately 1.86 miles south of the Study Area (CDFW 2017a).

Common Name	Scientific Name	Regulatory Status[1, 2]	Blooming Period[1]	Habitat Requirements	Probability of Occurrence
Decumbent goldenbush	*Isocoma menziesii* var. *decumbens*	1B.2	Jul-Nov	Sandy soils in chaparral, coastal scrub habitats, especially on the landward sides of dunes, hillsides and arroyos, at elevations up to 656 feet. Often within disturbed areas (CNPS 2017, Jepson 2017).	Low. Suitable sandy soils are limited within the Study Area and suitable habitat types do not occur. This species is a perennial that would have been recognizable, but was not observed, during surveys. Nearest record is approximately 4.45 miles south of the Study Area (CDFW 2017a).
White-veined monardella	*Monardella hypoleuca* ssp. *hypoleuca*	1B.3	May-Oct	Oak woodland, cismontane woodland, and chaparral habitats at elevations up to 4,920 feet (CNPS 2017, Jepson 2017).	Low. Potentially suitable oak woodland habitat occurs within the Study Area. Only record within 5-mile radius was recorded in 1898 approximately 1.0 miles south of the Study Area (CDFW 2017a). Species not likely to occur based on lack of within the last 100 years.
Lyon's pentachaeta	*Pentachaeta lyonii*	FE, SE, 1B.1	Mar-Aug	Openings in coastal scrub, valley and foothill grassland, and chaparral habitats where rocky or clay soils occur, at elevations up to 1,312 feet (CNPS 2017, Jepson 2017).	Moderate. Potentially suitable grassland habitats are present, although these habitats are dominated by non-native grasses and forbs which are a serious threat to this species. Suitable clay or rocky soils do not occur. Nearest record is approximately 1.68 miles west of the Study Area (CDFW 2017a).
Sensitive Habitats and Vegetation Communities					
Southern California Steelhead Stream		USFWS Environmentally Sensitive Habitat	-	-	Habitat does not occur within the Study Area, but does occur approximately 3.8 downstream of the Study Area within Malibu Creek.

[1] Source: CDFW 2017d, Jepson 2017.

[2] Sensitivity Status Key
FE = Federally Endangered.
FT = Federally Threatened.
SE = State Endangered.
ST = State Threatened.
SR = State Rare

CNPS: California Native Plant Society's California Rare Plant Rank:
1B: Considered rare, threatened, or endangered in California and elsewhere
2: Plants rare, threatened, or endangered in California, but more common elsewhere
3: Plants for which we need more information – review list and taxonomically problematic
4: Plants of limited distribution; a watch list
Decimal notations: .1 – Seriously endangered in California, .2 – Fairly endangered in California, .3 – Not very endangered in California

Table E-2. Special-Status Wildlife Species with Potential to Occur in the Study Area

Common Name	Scientific Name	Regulatory Status[1]	Breeding Season	Habitat Requirements	Probability of Occurrence
Fish					
Arroyo chub	*Gila orcuttii*	SSC	Mar-Apr	Occurs in warm, seasonally fluctuating streams, especially favoring slower moving portions of waterways, where sandy or muddy substrates occur (Moyle 1976).	None. The Study Area does not contain suitable aquatic habitat for this species. However, species may occur downstream of the Study Area. Nearest record is approximately 2.5 miles downstream of the Study Area in Malibu Creek (CDFW 2017a).
Steelhead – Southern California Coast DPS	*Oncorhynchus mykiss irideus*	FE, SSC	-	Found in cool, slow-moving, freshwater coastal streams and rivers during early development, with mix of riffles and ponds, and overhanging vegetation for shade. Sensitive to sedimentation and channel scouring, as gravel beds are required for egg-laying. Adults migrate to ocean (Animal Diversity Web 2017).	None. Study Area does not contain suitable permanent or semi-permanent waters with sufficient depth to maintain species. Species may occur downstream of the Study Area. Nearest record is approximately 3.8 miles downstream in Malibu Creek (CDFW 2017a).
Tidewater goby	*Eucyclogobius newberryi*	FE, SSC	-	Found in cool (16–25°C) brackish water in lagoons and estuaries created by coastal streams. Favorable habitat includes shallow open water with emergent vegetation. Aquatic vegetation important for cover during feeding. Water salinity less than 10ppt is optimal, but can survive levels up to 40ppt (University of California 2017).	None. Suitable brackish waters do not occur within the Study Area. Species may occur downstream of the Study Area. Nearest record is approximately 5.1 miles downstream of the Study Area in Malibu Creek (CDFW 2017a).

Common Name	Scientific Name	Regulatory Status[1]	Breeding Season	Habitat Requirements	Probability of Occurrence
Reptiles					
Western pond turtle	*Emys marmorata*	SSC	--	Inhabits permanent and nearly permanent waters at elevations up to 4,700 feet. Associated with ponds, streams, irrigation ditches, or permanent pools along intermittent streams in a variety of habitats. Require vegetation and open water for cover and basking sites, including partially submerged logs, rocks, and floating vegetation mats (CDFW 2017d).	None. Suitable permanent or semi-permanent aquatic habitat does not occur within the Study Area. However, species may occur downstream in Malibu Creek. Nearest record is approximately 0.34 miles downstream of the Study Area (CDFW 2017a).
Coastal whiptail	*Aspidoscelis tigris stejnegeri*	SSC	-	Diurnal, wary, very active. Inhabits a variety of habitats, typically hot, dry, open areas with sparse foliage. Occurs in chaparral, woodland, and riparian habitats. Elevation from sea level to 7,000 feet (CalHerps 2017).	Low. Study Area does not contain suitable open, hot, dry habitat. Nearest record is approximately 4.2 miles northwest of the Study Area (CDFW 2017a).
Coast horned lizard	*Phrynosoma blainvillii*	SSC	-	Inhabits open country, especially sandy areas, washes, flood plains, and wind-blown deposits, chiefly below 2,950 feet. Occurs is valley-foothill hardwood, conifer, and riparian, pine-cypress, and juniper habitats, and annual grasslands. Ants an important food source, but other insects are also consumed (CDFW 2017d).	Low. Suitable open habitats are uncommon within the Study Area, although potentially suitable scrub habitats do occur in the vicinity. Nearest record is approximately 0.7 miles south of the Study Area (CDFW 2017a).
Birds					
American peregrine falcon	*Falco peregrinus anatum*	Federally and state delisted; FP, BCC	Mar-Aug	Very uncommon breeding resident and uncommon migrant. Breeds near wetlands and waters on high cliffs, banks, dunes, and mounds. May nest on manmade structures. Typically hunts near or over water, specializing in taking birds in flight (CDFW 2017d).	Transient and possibly foraging only. No suitable breeding habitat occurs within the Study Area, and the Study Area contains low quality foraging habitat for this species. Nearest record is approximately 1.2 miles southeast of the Study Area (CDFW 2017a).

Common Name	Scientific Name	Regulatory Status[1]	Breeding Season	Habitat Requirements	Probability of Occurrence
Golden eagle	*Aquila chrysaetos*	FP, WL, BCC	Jan-Aug	Uncommon permanent resident and migrant in California. Occurs in rolling hills and mountainous areas, sage-juniper flats, and desert habitats from sea level up to 11,500 feet. Feeds on lagomorphs and rodents, other small mammals, birds, reptiles, and some carrion. Requires open terrain for hunting, including grasslands, deserts, savannahs, and early successional forest and shrub habitats. Nests on cliffs; may use large trees in otherwise open areas (CDFW 2017d).	Foraging only. Study Area does not provide suitable breeding habitat, but may support foraging in the grassland areas to the north and south. Nearest record is approximately 1.5 miles south of the Study Area (CDFW 2017a).
Mammals					
Spotted bat	*Euderma maculatum*	SSC	-	Rare in California. Solitary. Found in a wide variety of habitats including grassland, arid deserts, and mixed conifer forests from sea level up to 9,845 feet. Roosts in rock crevices, especially cliff faces. A moth specialist and late flyer, feeds in flight over water and open ground, using echolocation to find prey (CDFW 2017d).	Low. The Study Area lacks suitable roosting habitat for this species, although potentially suitable foraging habitat may occur within the grassland area north and south of the Study Area. Nearest record is approximately 0.76 miles west of the Study Area (CDFW 2017a).
Western mastiff bat	*Eumops perotis californicus*	SSC	-	Year-round resident. Occurs in open, semi-arid to arid habitats with suitable vertical faces for roosting. Inhabits coastal and desert scrublands, annual grasslands, conifer and deciduous woodlands, and palm oases. Requires a vertical drop from the roosting site to obtain flight speed. Forages for small, low-flying, weak-flying insects, including moths, bees, beetles, true bugs, ants, and wasps, typically from ground- to tree-level (Animal Diversity Web 2017).	Low. Suitable roosting habitat with a vertical drop does not occur in the Study Area or immediate vicinity. Nearest record is approximately 0.76 miles west of the Study Area (CDFW 2017a).

Common Name	Scientific Name	Regulatory Status[1]	Breeding Season	Habitat Requirements	Probability of Occurrence
Western red bat	*Lasiurus blossevillii*	SSC	-	Foliage-dwelling species that roosts in forest and woodland habitats from sea level up through mixed conifer forests, with preference for trees and shrubs located along edge habitats adjacent to streams and open fields. Foraging habitat includes grasslands, shrublands, open woodlands and forests, and croplands. Feeds mostly on moths, crickets, beetles, and cicadas (CDFW 2017d).	Moderate. Suitable woodland roosting habitat and foraging habitats are present. Nearest record is approximately 2.7 miles northwest of the Study Area (CDFW 2017a).

[1] Regulatory Status (CDFW 2017c):
FE = Federally Endangered
FT = Federally Threatened
SE = State Endangered
ST = State Threatened
FP = State Fully Protected
SSC = State Species of Special Concern

Appendix F

Special-status Species with CNDDB Records within 5 Miles of the Study Area

TABLE F-1: Special-Status Plant Species and Vegetation Communities with Recorded Occurrences Within a 5-Mile Radius of the Study Area but not Expected to Occur within the Study Area

Common Name	Scientific Name	Status		
		Federal	State	CA RPR
Coulter's saltbush	*Atriplex coulteri*			1B.2
Coulter's goldfields	*Lasthenia glabrata* ssp. *coulteri*			1B.1
Agoura Hills dudleya	*Dudleya cymosa* ssp. *agourensis*	FT		1B.2
Davidson's saltscale	*Atriplex serenana* var. *davidsonii*			1B.2
Parry's spineflower	*Chorizanthe parryi* var. *parryi*			1B.1
Santa Susana tarplant	*Deinandra minthornii*		Rare	1B.2
Mesa horkelia	*Horkelia cuneata* var. *puberula*			1B.1
Vegetation Communities				
Southern California Coastal Lagoon				
Southern Coastal Salt Marsh				
California Walnut Woodland				
Southern Coast Live Oak Riparian Forest				
Southern Sycamore Alder Riparian Woodland				

Source: CDFW 2016b.

Status Definitions:

CA RPR = California Rare Plant Rank (CNPS 2017)

1A = Presumed extinct/extirpated in California

1B = Plants that are rare, threatened, or endangered in California and elsewhere

2 = Rare, threatened, and endangered in California but more common elsewhere

3 = Plants about which more information is needed

4 = A watch list of plants of limited distribution

.1 = Seriously endangered in California

.2 = Fairly endangered in California

.3 = Not very endangered in California

TABLE F-2: Special-Status Wildlife Species with Recorded Occurrences Within a 5-Mile Radius of the Study Area but Not Expected to Occur within the Study Area

Common Name	Scientific Name	Status			
		Federal	State	CDFW	Other
Amphibians and Reptiles					
Two-striped garter snake	*Thamnophis hammondii*			SSC	
Birds					
Coastal California gnatcatcher	*Polioptila californica californica*	FT		SSC, WL	
Mammals					
San Diego desert woodrat	*Neotoma lepida intermedia*			SSC	

Source: CDFW 2016c.

Status Definitions:

SSC = California Species of Special Concern.

SA = Special Animal.

WL = Watch List.

BCC = Bird of Conservation Concern.

Appendix G

Qualifications of Preparers

Wynter Dawson
Biologist

Professional History

AECOM (URS) (2014-Present)

Education

BS, Biology, Oakland University, Rochester Hills, MI, 2006
BA, English, Oakland University, Rochester Hills, MI, 2006

Training and Certifications

California Tiger Salamander Terrestrial Ecology Workshop (2015)
Rare Pond Species Aquatic Survey Techniques Workshop (2015)
OSHA 40-hour HAZWOPER, OSHA 10 Hour Construction Program
Adult first Aid/CPR/AED Certified
National Safety Council Defensive Driving
Behavior-Based Safety

Years of Experience

With AECOM: 3.5 Years

Technical Specialties

Monitoring sensitive, threatened and endangered reptiles, amphibians, birds, mammals and plants of California
Wildlife surveys
Compliance monitoring
Wildlife rehabilitation – pinnipeds
Wildlife rehabilitation – Mammals and raptors

Affiliations

The Wildlife Society
The Wildlife Society California Central Coast Chapter

Ms. Dawson is a field biologist with three and a half years of professional experience working in Central Coast and Central Valley California. Her field work has included conducting wildlife and botanical surveys for a variety of sensitive-status species in coastal scrub and desert habitats, and environmental compliance monitoring for pipeline maintenance and solar power projects. She has conducted wildlife surveys for nesting birds, burrowing owl, Swainson's hawks, San Joaquin and desert kit fox, California red-legged frog, and steelhead trout, as well as providing assistance during survey and mapping efforts for sensitive botanical species including Vandenberg monkeyflower and Gaviota tarplant and monitoring for oak tree revegetation projects.

Biological Resources

First Solar North Star Solar Project, Fresno County, California, September 2014–present. Conducted pre-construction transect surveys for special-status species of 60-megawatt, 640-acre solar power plant project. Target species included western burrowing owl, San Joaquin kit fox, and Swainson's hawk. Conducted nesting bird surveys and ensured protection of nesting birds protected under the Migratory Bird Treaty Act during active construction phase of project. Conducted biological monitoring of construction activities associated with the installation of project and monitored site for potential biological issues, including pest management and presence of target species.

Antelope Valley-East Kern Water District Westside Water Phase 2, Los Angeles County, California, August 2015–September 2015. Conducted pre-construction biological surveys and worker environmental education program for groundwater recharge project. Target species included desert kit fox, western burrowing owl, Swainson's hawk, and nesting birds.

Freeport-McMoran Oil & Gas Arroyo Grande Oil Field, San Luis Obispo County, California, 2014. Conducted surveys for presence of South-Central California Coast steelhead trout in Pismo Creek during maintenance activities on site water discharge system.

Point Pedernales Pipeline, Vandenberg Air Force Base and Lompoc Oil Field, Santa Barbara County, California, 2014. Conducted botanical surveys for special-status plant species including Gaviota tarplant and Vandenberg monkeyflower along the Point Pedernales pipeline corridor. Mapped individuals and populations for reference during pipeline maintenance activities. Other non-listed sensitive species included black-

flowered figwort and seaside bird's beak.

Santa Maria Energy Careaga Lease, Orcutt Oil Field, Santa Barbara County, California, 2014. Conducted inventory and mapping of coast live oak trees occurring within potential impact zone throughout the proposed 64-acre oilfield development project. Inventory included documenting GPS location and size and health assessment data for each tree, as well as photographic documentation.

Other Professional Experience

Wildlife Rehabilitator, Channel Islands Marine & Wildlife Institute, Santa Barbara County, California, 2012-2014. Assisted with the rehabilitation and release of ill, injured, and abandoned pinnipeds, including California sea lions and harbor seals.

Wildlife Rehabilitator, Animal Rescue Team, Inc., Santa Barbara County, California, 2011-2013. Assisted with the capture, rehabilitation, and release of injured adult or abandoned juvenile raptors and owls, including great horned owl, western screech owl, barn owl, Cooper's hawk, and red-tailed hawk, and ill, injured, and abandoned large and small mammals including bobcat, coyote, gray fox, mule deer, and raccoon.

Michelle Fehrensen
Project Manager

Technical Specialties

CEQA (ND/MND/ EIRs)
NEPA (EA/EISs)
Preliminary Environmental Assessments (PEAs)
Infrastructure Planning
Biological Resource Evaluation and Permitting
Coastal Permitting

Education

BS, Biology , San Diego State University

Years of Experience

With AECOM: over 12
With other firms: 0

Regstrtions

American Red Cross CPR/First Aid Certified

Professional Association

Association of Environmental Professionals (AEP), California

Michelle Fehrensen is a senior environmental project manager with a diverse background in CEQA, NEPA, and permit processing. She has 11 years of experience in CEQA/NEPA project management, wetland permitting, storm water compliance, and native habitat restoration planning and construction. Ms. Fehrensen's extensive background in utility project planning and implementation crosses all spectrums of the development process, including conceptual planning, design, permitting, and construction monitoring. Her background in both biology and CEQA/NEPA compliance offers a unique balance between specialization and general planning.

Experience

San Diego Gas & Electric, Proponent's Environmental Assessment for the Salt Creek Substation Project, Chula Vista, CA. Project manager for the preparation of a PEA for the proposed Salt Creek Substation Project. The project proposed a 120-megavolt ampere 69/12-kV substation, a 5-mile 69-kV power line (TL 6965) from an existing substation, an underground 69—kV power line loop-in (TL 6910), and modifications to the existing Miguel Substation. The PEA included information required by the California Public Utilities Commission (CPUC). As project manager oversaw preparation of technical studies, the PEA, mitigation plans, field surveys, and preparation of data requests for the CPUC.

San Diego Gas & Electric, RGP and Programmatic Permits for Operation and Maintenance and Minor New Construction Activities, San Diego, CA. As project manager, overseeing permit processing and negotiation for operation and maintenance activities and minor new construction activities within jurisdictional waters. Accomplishments include obtaining Federal Coastal Consistency, obtaining informal Section 7 Consultation, obtaining e-mail commitment to use of NCCP Mitigation Credits for SAA Applications, and completion of the draft EA. on behalf of USACE. Prepared permit applications and is currently assisting SDG&E in obtaining programmatic permits from USACE, CDFW, and SWRCB. These programmatic permits are intended to complement SDG&E's approved NCCP and provide a streamlined permit process for minor routine activities. As the project manager, coordinates regularly with regulatory staff.

Basilone Substation CEQA Checklist, Project Manager for the Basilone Substation CEQA Checklist, Camp Pendleton, CA. AECOM prepared an EIS for MCAS Camp Pendleton utility infrastructure improvements associated with the Marine Corps 202,000 Plus Up initiate (also known as Grow the Force) under a contract with the military. A component of this NEPA evaluation was the Basilone Substation. Under this SDG&E contract, AECOM assisted SDG&E in preparing a CEQA checklist relying on the EIS for the project, supporting justification for an Advice Letter from the CPUC. As project manager, oversaw contract management, checklist preparation, and attended meetings with military, legal, and the CPUC.

San Diego Gas & Electric, Focused Environmental Impact Assessments – Wood to Steel Pole Replacements, San Diego County, CA. Senior

environmental analyst and coauthor of three focused environmental impact assessments prepared for this project. The project involved the one-for-one replacement of existing wood transmission poles with steel transmission poles along three existing transmission utility lines. Prepared/reviewed CEQA-based initial study checklists

San Diego Gas & Electric, Firestorm 2007 Emergency Activities Data Compilation and Reporting, San Diego, CA. As project coordinator, oversaw preparation of after-the-fact reports to the resource agencies, documenting impacts associated with emergency activities that occurred during and directly after the San Diego County wildfires in October 2007. Emergency reporting included biological and cultural report oversight for reporting to the US Army Corps of Engineers under Regional General Permit 63, preparation of pre-activity survey reports per SDG&E's NCCP, and preparation of report documenting erosion and sediment control measures installed post-fires..

Jonathan Appelbaum
Biologist - Wetland Scientist/Restoration Ecologist

Education

Master of Environmental Science & Management, University of California at Santa Barbara
BS, Environmental Studies, University of California at Santa Barbara

Professional History

09/2016 – 03/2018, AECOM Wetland Scientist/Restoration Ecologist

Years of Experience

With AECOM: 1.5
With other Firms: 10

Affiliations

Society for Wetland Sciences, California Chapter

Certifications

Wetlands Training Institute – Basic Wetland Delineation
California Department of Pesticide Regulation – Qualified Applicator Licensee (QAL)

Trainings

California Anostraca and Notostraca Identification Class (Mary Belk)
San Diego's Sensitive Butterfly Workshop
24-hour SWPPP Preparation Course
SERCAL Restoration of Highly Degraded Soils

Jonathan Appelbaum is a consulting biologist with a variety of skills and specializations including wetland sciences, regulatory permitting, restoration ecology, wildlife biology, plant ecology, and stormwater pollution prevention planning. His project experience includes state and federal regulatory permitting, biological assessment, threatened and endangered species "take" permitting, CEQA/NEPA, compensatory mitigation, and habitat restoration planning. Mr. Appelbaum has worked for a variety of public and private sector clients on a wide range of development projects. Much of Mr. Appelbaum's experience has been focused on utilities and public works projects and has involved new development or expansion of existing linear infrastructure such as electrical transmission lines, petroleum/natural gas/water/wastewater pipelines, roads and railroads, and flood control projects.

Representative Projects

- Crestridge Ecological Reserve MSCP Preserve Habitat Management
- SDMMP Management Strategic Plan Rare Plant Surveys
- Del Dios Open Space Preserve Baseline Biological Conditions
- Hellhole Canyon Preserve Baseline Biological Conditions
- Santa Ysabel Open Space Preserve Resource Management Plan
- San Diego Vector Control Vector Habitat Remediation Program
- SDG&E Transmission Line Access Road Water Crossing QA/QC.

Project Experience

California Department of Fish and Wildlife / Endangered Habitats Conservancy (EHC)'s, Crestridge Ecological Reserve Multiple Species Conservation Plan (MSCP) Preserve Habitat Management. San Diego County, CA. Served as land manager and biologist for EHC Crestridge Ecological Reserve responsible for coordinating management and monitoring efforts for 2000+ acre Crestridge Ecological Reserve in accordance with MSCP guidelines and CDFW-prescribed management requirements. Management activities included coordinating public access, land acquisition, trail network planning and maintenance, research coordination, rare plant monitoring, invasive species control, grant writing, habitat maintenance and enhancement, volunteer coordination, and environmental education.

Endangered Habitats Conservancy (EHC)'s, South Crest Preserve Multiple Species Conservation Plan (MSCP) Preserve Habitat Management. San Diego County, CA. Served as land manager and biologist for EHC South Crest Preserve Complex responsible for coordinating management and monitoring efforts for 900 South Crest Complex in accordance with MSCP guidelines Management activities included coordinating public access, land acquisition, trail network planning and maintenance, research coordination, rare plant monitoring, invasive species control, grant writing & grant management, habitat maintenance and enhancement, and volunteer coordination.

San Diego Mitigation and Monitoring Program Management Strategic Plan Rare Plant Surveys, San Diego County, CA. As a land manager / biologist performed focused plant surveys following the San Diego Mitigation Monitoring Program (SDMMP) Management Specific Plan (MSP) Rare Plant Survey Protocols for Dehesa nolina, San Diego thornmint, variegated dudleya, Nuttall's acmispon, San Diego goldenstar, and San Diego ambrosia on preserved lands in eastern, central, and southern San Diego County.

San Diego County Vector Control Vector Habitat Remediation Program Technical Advisory Committee and Stakeholder Committee Program Administration, San Diego County, CA. As staff biologist coordinated County of San County Department of Public Health Vector Control Program's Vector Habitat Remediation Program Technical Advisory Committee and Stakeholder Committee. Tasks included identification and recruitment of TAG and Stakeholder Committee members, public meeting facilitation, and presentation of monthly program updates.

County of San Diego Hellhole Canyon Preserve Baseline Biological Conditions Report, San Diego County, CA. As staff biologist conducted rare plant surveys and vegetation community mapping of County of San Diego's Hellhole Canyon Preserve and prepared Baseline Biological Conditions Report in support of development of Area Specific Management Directives (ASMDs).

County of San Diego Department of Parks and Recreation Santa Ysabel Open Space Preserve Resource Management Plan, Santa Ysabel, San Diego County, CA. As a staff biologist, prepared Adaptive Habitat Management and Livestock Grazing Plan for 5,000+ acre open space preserve in north eastern San Diego County. Document was designed to serve as a rangeland resource management plan for the conservation and enhancement of Stephen's Kangaroo Rat habitat.

County of San Diego Department of Parks and Recreation Del Dios Preserve Baseline Biological Conditions Report, San Diego County, CA. As staff biologist conducted rare plant surveys and vegetation community mapping of County of San Diego's Del Dios Preserve and prepared Baseline Biological Conditions Report in support of development of Area Specific Management Directives (ASMDs)

SDG&E Access Road Water Crossing QA/QC, San Diego, CA. As staff biologist conducted quality assurance / quality control survey of SDG&E transmission line access road water crossings throughout entire service grid in San Diego, Riverside, and south Orange County to determine jurisdictional status and regulatory permitting requirements for biannual TCM road grading operations and potential major repair activities.

Tracy Development Project Biological Assessment and Regulatory Permitting, Rancho Cucamonga, San Bernardino County, CA. As Project Manager and staff biologist, conducted formal jurisdictional delineation survey for the Tracy Development Project in Rancho Cucamonga area, Los Angeles County, CA and prepared formal jurisdictional delineation report. Prepared regulatory permit applications for authorization by USACE & RWQCB under Section 404 and 401 of the

Clean Water Act (respectively) and CDFW pursuant to Section 1602 of the California Fish and Game Code. Coordinated protocol-level focused surveys for coastal California gnatcatcher (Polioptila californica californica) and listed plant species including Plummer's mariposa lily (Calochortus plummerii). Prepared Biological Assessment (BA) in support of an Endangered Species Act (ESA) Section 7 consultation with USACE and USFWS. Section 7 Consultation included development of a compensatory mitigation strategy via in-lieu fee / mitigation credit purchase from North Etiwanda Open Space Habitat Preserve.

County of San Diego Department of Public Works, Rancho Santa Fe Roundabouts Biological Resource Technical Study and Jurisdictional Delineation Survey, San Diego County, CA. As staff biologist was responsible for the preparation of baseline biological resources technical studies including formal jurisdictional delineation survey to identify impacts associated with the construction of three traffic roundabouts in the community of Rancho Santa Fe in San Diego County.

San Dieguito River Park Joint Powers Authority. Heritage Trail Connector, Poway/Escondido, CA. As a staff biologist, conducted biological reconnaissance survey and jurisdictional delineation survey of approximately 20 acre Heritage Trail Connector Project study area. Mapped vegetation communities and jurisdictional waters and wetlands within study area. Prepared Biological Technical Report of Findings and Jurisdictional Delineation Report.

Otay Water District San Miguel Habitat Management Area, Ricci Pond Wetland Creation and Enhancement Program, San Diego, San Diego County, CA. As a field supervisor, led crews of four to eight laborers in the restoration of coastal sage scrub, native grassland, riparian woodland, and palustrine wetland habitat areas. The restoration activities included the manual and mechanical removal of non-native upland weed species such as black mustard, fennel (Foeniculum sp.), yellow star thistle, and artichoke thistle (Cynara cardunculus), as well as treatment involving chemical herbicides. Wetland creation and enhancement activities included the mechanical removal of a significant amount of invasive tamarisk, followed by the application of chemical herbicides. After the tamarisk had been removed, minor to moderate grading was conducted, followed by the propagation of native freshwater marsh and riparian wetland species via container planting and broadcast seeding. In addition, a temporary irrigation system was established to support these plantings. Native grassland restoration activities included the maintenance and monitoring of created/artificial burrowing owl (Athene cunicularia) burrows.

Otay Water District Interconnect Pipeline, San Diego County, CA. As a field supervisor, led crews of four to eight laborers in the restoration of coastal sage scrub, native grassland, and riparian woodland habitat areas. The restoration activities included the manual and mechanical removal of non-native upland weed species, including tamarisk (Tamarisk ramosissima), black mustard (Brassica nigra), yellow star thistle (Centaurea solstitialis), and sweet clover (Melilotus sp.), and the broadcast dispersal of native grassland and coastal sage scrub species seed material.

San Diego Gas and Electric Nobel Dr. Natural Gas Booster Plant MHPA

Boundary Line Adjustment Survey and Report, San Diego, CA. Conducted biological reconnaissance field survey and prepared a City of San Diego Multiple Habitat Planning Area (MHPA) Boundary Line Adjustment (BLA) memorandum report for the proposed San Diego Gas and Electric (SDG&E) Nobel Dr. Natural Gas Booster Plant Project.

County of San Diego Department of Public Works Valley Center Road Stormwater Best Management Practice (BMP) Inspection Project, Escondido, San Diego County, CA. As a Regulatory Specialist, assisted with the inspection of Stormwater Pollution Prevention Program (SWPPP) prescribed BMP implementation and maintenance. Generated weekly inspection reports of compliance/non-compliance. Conducted monthly quality assurance audits for compliance with the Storm Water Pollution Prevention Plan during construction of road improvements. Reviewed the project SWPPP for compliance with Caltrans requirements including documentation and record keeping. Monthly construction site inspections to verify proper implementation of the SWPPP mitigation measures and proper record keeping. Results were reported to the County of San Diego each month.

County of San Diego Department of Public Works Valley Center Road Orcutt's Brodiaea Salvage and Translocation Project, Valley Center, San Diego County, CA. As restoration ecologist, performed salvage of Orcutt's Brodiaea (Brodiaea orcuttii) from the permanent impact footprint of the County of San Diego Department of Public Works' (DPWs') Valley Center Road widening project and translocation to the County of San Diego Department of Parks & Recreation's (DPR's) Boden Canyon Preserve in the San Pasqual Valley.

County of San Diego Engineering and Capital Projects San Marcos Landfill Restoration Project, San Marcos, San Diego County, CA. As restoration ecologist prepared and monitored implementation of habitat restoration plan for County of San Diego Engineering and Capital Projects (ECP) San Marcos Landfill Restoration Project. Monitored project construction for compliance with the provisions of approved Stormwater Pollution Preventions Plan (SWPPP).

County of San Diego (Sub to Aspen Environmental) Otay Watershed Special Area Management Plan (SAMP) Restoration Planning Project. - Southern San Diego County, CA. As a restoration ecologist, prepared a watershed-wide Framework Conceptual Mitigation Plan prescribing guidelines and specifications for the design, development, and implementation of wetland creation and enhancement throughout the Otay River Watershed. Assisted in the development of a GIS-based model for evaluating site suitability for wetland creation and enhancement throughout the watershed and prioritizing potential restoration based on anticipated benefits to wetland functions and values. Modified and refined the wetland creation and enhancement suitability model based on observations gleaned from site surveys and photographic analysis.

County of San Diego Department of Public Works. Gillespie Field Expansion Project. Santee, CA. As a staff biologist, conducted reconnaissance survey of proposed acquisition and avigation parcels in support of Gillespie Filed Airport Expansion Project. Updated and finalized

Biological Technical Report of Findings for Gillespie Field Airport Expansion Project. Tasks included conducting assessment of donor and potential receptor sites for translocation of San Diego ambrosia (Ambrosia pumilla) including floristic surveys of donor site (Gillespie Field) and baseline habitat suitability assessment of potential receptor sites (e.g. Mission Trails Regional Park) in central San Diego County.

Michelle Maloney
Biologist/Regulatory Specialist

Professional History

6/2015 - Present, AECOM: Biologist/Regulatory Specialist

2/2014-3/2015, Louisiana Wildlife Federation: Coastal Resources Coordinator

6/2013-11/2013, Scripps Institution of Oceanography: Staff Research Associate

4/2011-5/2013, UC Davis Coastal Resources Program: Program Associate

12/2010-4/2011, California Department of Fish and Game: Scientific Aide

5/2010-11/2010, Pacific States Marine Fisheries Commission: Fisheries Technician

10/2009-5/2010, Oceana: Fisheries Science Intern

Education

MAS, Marine Biodiversity and Conservation, Scripps Institution of Oceanography, UCSD, 2009

BA, Biological Sciences, Wellesley College, Wellesley, MA, 2006

Years of Experience

With AECOM: 2

Total: 7

Michelle Maloney is a biologist/regulatory specialist specializing in coastal and marine natural resources management. She has several years of experience working on a range of environmental planning, compliance, restoration, and conservation projects for the private, public, and non-profit sectors. Her key project experience includes coastal and marine resource management and restoration, CEQA/NEPA documents, technical reports, and regulatory permit applications. Michelle is a certified Marine Mammal Observer, and has spent extended time at sea. She has experience identifying marine species in the field, conducting fisheries surveys, marine mammal and protected species observation, and analyzing data. Michelle exhibits strong leadership ability, knowledge of pertinent state and federal environmental laws, policies, and regulations, strong written and oral communication skills including public speaking experience, technical understanding of local natural resources, and experience coordinating with agencies and jurisdictions in southern California.

Selected Experience Coastal Projects

Multiple Lagoon Restoration Projects, San Diego County, CA: Acting as project biologist for three lagoon restoration efforts: San Elijo Lagoon Restoration EIR/EIS, San Dieguito Lagoon W-19 Restoration EIR, and Buena Vista Lagoon Enhancement EIR. The San Dieguito lagoon project is approximately 140 acres in size, to be restored with a mix of wetlands and uplands. Project involves routine coordination with SANDAG, Caltrans, the San Dieguito River Park JPA, US Army Corps of Engineers, and City of San Diego. The EIR is now in the 45 day public review period. Depending upon the final Corp permitting approach (nationwide or individual) the NEPA document will be prepared using technical information in the EIR. The San Elijo Lagoon effort involves restoration planning and environmental evaluation of the 700+ acre study area. The Final EIR/EIS was certified in 2016 and extensive permitting coordination continues. The Buena Vista Lagoon Draft EIR has been released for public review and responses are currently being prepared. The EIR addresses freshwater, saltwater and a hybrid alternative. In all three efforts, some materials placement will occur on beaches so coordination is ongoing with California State Parks and State Lands Commission.

San Diego Unified Port District, Port Master Plan Update, San Diego, CA. Analyzed natural resources existing conditions within and surrounding San Diego Bay under the jurisdiction of the Unified Port District. Produced a natural resources existing conditions element and key natural resource policies for the Master Plan update.

California Coastal Conservancy, In Lieu Fee Program Development, Southern CA. Conducted an extensive literature review on threats to wetland resources, current condition of wetland resources, and historical ecology of wetland resources to support the preparation of an In Lieu Fee mitigation instrument for the California Coastal Conservancy. Extensive

research on the historical and current status of various natural resources, as well as the habitat conservation plans in southern California that regulate their use.

City of Carlsbad, Terramar Coastal Bluff Improvements Project, Carlsbad, CA. Assisted with the Jurisdictional Delineation to determine the status of jurisdictional wetlands. Authored the Biological Resources Technical Report to evaluate restoration and revegetation impacts on the natural resources occurring in the project area. Assisting with the drafting of a Mitigated Negative Declaration for the project.

Ponto State Beach Emergency Slope Repair Project, Carlsbad, CA. Evaluated natural resources on site and prepared Biological Resourced Technical Report, and Coastal Development permit application for emergency slope repairs needed in the coastal zone.

Lowe Enterprises, Town and Country Project, San Diego, California. Supported the preparation of the project EIR, including responses to public comment following the public review period. The City of San Diego is acting as the lead CEQA agency, and as such the project involves utilizing City Biology Guidelines and significance thresholds, and coordination with the City.

City of San Diego, Otay Truck Trail Improvement Project, Otay Mesa, CA. Preparing regulatory permit applications and supporting documents to be submitted to the Regional Water Quality Control Board, the Army Corps of Engineers, and the California Department of Fish and Wildlife for the widening of the road to facilitate queuing of trucks that the Otay Mesa international border crossing.

1122 4th Avenue LLC, California Theatre Supplemental Environmental Impact Report, San Diego, California. Prepared the Draft Supplemental Environmental Impact Report for the 1122 4th Avenue Project and 7th Addendum to the Downtown Final Environmental Impact Report. Responded to public comment following the public review period. Finalized SEIR based on public comment and input from City of San Diego Attorney, and Civic San Diego.

California State Parks Department, Stokes Creek Bridge Replacement Project, Malibu State Park, California. Led the completion a jurisdictional delineation, native tree survey, and biological assessment of bridge replacement project in Malibu State Park.

California State Parks Department, Pt. Dume Staircase Replacement Project, Pt. Dume State Beach, California. Assisted with the completion of a biological resources technical report to evaluate project impacts. Led the completion of biological resources CEQA document section, and assisted with the preparation of a coastal development permit application.

Julie Niceswanger Hickman
Senior Biologist/ Deputy Project Manager

Technical Specialties

Federal Consultations-Section 7 & 10
CEQA Documentation
Sensitive Plant and Wildlife Surveys
Nesting Bird Surveys
Clean Water Act Section 404/401
CDFW Section 1600 Streambed Alteration Agreement Permitting
Constraints/Impacts Analyses
Comprehensive Mitigation and Monitoring Programs
Mitigation Implementation/Monitoring

Education

MA, Psychology, University of Santa Monica, Santa Monica, CA
BS, Biology California Polytechnic State University, San Luis Obispo, CA

Years of Experience

With AECOM: over 10
With other firms: 12

Permits

USFWS-California Red-legged Frog Recovery Permit
CDFW-Scientific Collecting Permit

Professional Association

The Wildlife Society
The Surfrider Foundation

Ms. Julie Hickman has over 20 years of natural resource management, regulatory permitting, and terrestrial ecosystem monitoring and analysis experience throughout California. Her project experience includes developing presence/absence survey protocols, monitoring protocols, and management plans for State and federally listed species, planning and conducting biological resource investigations, working with project proponents to evaluate and minimize impacts, and supervising and training project staff. She has broad knowledge of land use regulations and has worked extensively implementing the Endangered Species Act (ESA), including coordination and consultation under Sections 7 and 10.
Ms. Hickman has also prepared technical reports and permits, including California Environmental Quality Act (CEQA)/National Environmental Policy Act (NEPA) documents, U.S. Fish and Wildlife Service (USFWS) biological opinions, California Department of Fish and Wildlife (CDFW) Incidental Take Permits, and Federal and State waters permitting.

Experience

Biological and Permitting Services for the Laguna Sanitation District Recycled Waterline, Santa Maria, California. 2010-2013 Assisted in the development of the permitting strategy for a 10-mile waterline project. The project involved both federally and state-listed species, special-status plants, and jurisdictional waters and wetlands. Ms. Hickman assisted in writing the federal permit applications, coordinating with the agencies, and mitigation strategies. Additionally, Ms. Hickman conducted species inventory surveys, nesting bird surveys, and assessments for California red-legged frog, California tiger salamander, and vernal pool fairy shrimp.

Biological and Permitting Services for the Santa Maria Airport Landfill, Santa Barbara County, California. 2011-2012 Developed a permitting strategy for a closed landfill at the Santa Maria Airport. The landfill is within occupied habitat for federally and state-listed species and requires permits from USFWS and CDFW to complete repairs on the site. She conducted site assessments, nesting bird surveys, and surveys for listed amphibians.

Biological & Permitting Services for Tajiguas Landfill Reconfiguration, Santa Barbara County, California. 2007-2011 As Project Manager, Ms. Hickman developed the permitting strategy for a landfill reconfiguration project involving impacts to federally listed species, and federal and state waters and wetlands. She coordinated the completion of the biological assessment, a restoration plan, and the biological analysis to support CEQA. She also coordinated the 404 permit with the U.S. Army Corps of Engineers and USFWS Section 7 consultation and completed a LEDPA analysis to support the NEPA EA for the 404 permit; the 401 Certification with RWQCB; and with CDFW for a Streambed Alteration Agreement. The project included a wetland delineation and sensitive wildlife and plant surveys. She conducted surveys; wrote the California red-legged frog habitat assessments and management plans for the project site and the restoration site; and managed and implemented the plans. In addition, Ms. Hickman conducted daily nesting bird

California Native Plant Society

Training

Wetland Delineation
Conservation Partnerships
Habitat Conservation Planning
Wildlife Restraint and Handling

surveys and California red-legged frog surveys for the project prior to the initiation of each days work activities over two nesting bird seasons and two wet winters.

Biological Services for the Malibu Creek State Park Stokes Creek Bridge Replacement, California State Parks, Calabasas, California. 2014-present Lead for permitting and biological investigations for the replacement of an undersized culvert with a new bridge. The project involved wetland, vegetation, rare plant and wildlife surveys to support a Wetland Delineation Report and a Biological Technical Report; federal and state permitting under sections 404/401 and 1600 and restoration implementation and monitoring will also be required but final design of the new bridge has not been completed.

Permitting and Biological Services for the Point Dume State Beach Stair Replacement, California State Parks, Malibu, California. 2014 – 2016 Lead for permitting and biological investigations for the replacement of a staircase for beach access from the Point Dume Nature Preserve. The project involved biological investigations to support a Biological Technical Report and the CEQA biological resources sections, as well as the preparation of a Coastal Development Permit under a local CDP.

Compliance Studies for the Aliso Canyon Turbine Replacement Project, Southern California Gas Company, Porter Ranch, California. 2009 – Present Lead avian biologist. Organized and conducted avian nest surveys, coordinated results with agencies, and completed compliance documentation and weekly reporting while coordinating staff. In addition, Ms. Hickman is the lead investigator for the invasive plant monitoring program. She also coordinated, conducted, and documented, the pre-construction investigations for sensitive species and vegetation communities.

Permitting Services for ExxonMobile Pipeline Investigation in the Angeles National Forest, Santa Clarita, California. 2011-2012 Part of the team that developed the permitting strategy for a pipeline investigation dig that crossed a regulated drainage. She developed and wrote the Biological Assessment/Biological Evaluation suitable for the U.S. Forest Service, USFWS, and CDFW and developed and wrote the CWA 401/404 permits as well as the CDFW 1600 Permit.

Biological and Permitting Services for the Los Angeles County of Public Works Commerce Boulevard Interchange at State Route 126 Project, Santa Clarita, California. 2012-2014 Conducted inventory and clearance surveys for sensitive species for a large freeway interchange construction project which included auditory and nest clearance surveys for birds. Additionally, she conducted daily nesting bird clearance surveys and monitored construction activities for compliance with multiple permits and worked with construction operators to ensure daily activities followed mitigation requirements.

Biological Compliance Reporting for a Large-Scale Transmission Project (EITP), Southern California Edison, California and Nevada. 2012 -2014 Lead Subject Matter Expert reviewer for environmental documentation for a large scale power project to ensure consistency with environmental permits and oversight for report submission to permitting agencies. Ms. Hickman communicated effectively with a large field team and management and field staff to complete the review process scheduling and coordinating review staff, reconciling conflicts, and developing reporting processes to streamline the submittal of several types of compliance reports to meet regulatory requirements.

CEQA Services for Multiple EIR's for a Confidential Client, San Joaquin Valley, California. 2013-2014 Wrote the biological sections for several EIR's on large tracks of land in the southern region of the San Joaquin Valley. Each of the EIRs involved a large list of potentially occurring species and combined several

land use owners and regional planning processes.

U.S. Fish & Wildlife Service Office, Ventura, California. 2003-2007 Fish and Wildlife Biologist, responsible for implementation of ESA and review of actions which would affect federally listed species in Monterey, Santa Cruz, and San Benito Counties. Ms. Hickman conducted ESA Section 7 consultations, both informal and formal. Projects included a Federal Aviation Administration (FAA) project on the Monterey Airport for construction projects and dune restoration; Pacific Grove Municipal Golf Course property transfer and dune restoration; Caltrans and Federal Highways for various highway improvement projects; FAA and Marina Airport for radar tower installation; and State Parks, Hollister Hills State Vehicular Recreation Area for a park expansion project. Ms. Hickman also reviewed and conducted analysis of ESA section 10 permit requests for HCPs. She was Lead Biologist for a Section 10 HCP with California State Parks, Hollister Hills State Vehicular Recreation Area for continued operation of their off-road vehicle park.

Wildlife Biologist, California Department of Fish and Wildlife, Bay Delta Branch. 2000-2003 Ms. Hickman was part of the project team for several large water projects for the California Delta, Los Vaqueros reservoir, and the Suisun Marsh and reviewed projects submitted to the CDFW. She organized and conducted vegetation surveys to update vegetation mapping under the Sawyer/Keeler-Wolf Vegetation Classification System utilizing ArcView, GPS, and aerial photos. She also reviewed planning documents for CEQA compliance and participated in planning efforts for the Los Vaqueros Reservoir expansion project.

Wildlife Biologist for the Environmental Division, Fort Hunter Liggett Military Installation, Monterey County, California.1993-2000 Prepared Draft Conservation Agreement for endemic plants (purple amole and Santa Lucia Mint) on Fort Hunter Liggett Military Installation (FHL). Endangered Species Management Plan for endangered arroyo toad on FHL. Lead Coordinator for threatened and endangered species compliance distribution/abundance surveys for rare plants (purple amole, Santa Lucia mint, *Calycadenia villosa*) and arroyo southwestern toad. Conducted wildlife investigations as per ESA protocols and NEPA compliance; managed database of all collected data; and graphically documented sites using ArcView. Conducted bald eagle surveys and nest monitoring, auditory bird surveys targeting the least Bell's vireo, California tiger salamander and vernal pool fairy shrimp surveys/ documentation, San Joaquin kit fox spotlighting, and wood duck nest box monitoring and banding. Prepared and presented endangered species educational compliance briefings to personnel stationed on FHL and to all new contractors. Contractor coordination and report review for threatened and endangered species surveys. Prepared annual USFWS reports for threatened and endangered species and participated in survey protocol development in coordination with the USFWS. Assisted in preparation of Biological Assessments for pre-construction/project review and informal consultations through the USFWS. Reviewed NEPA documents for new projects and participated in the conceptual and developmental phases of environmental assessment preparation including preliminary site assessments and draft review. Prepared the rare plants section of the Integrated Natural Resource Management Plan for FHL.