SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN – PHASE II

FINAL MITIGATED NEGATIVE DECLARATION

STATE CLEARINGHOUSE NUMBER 2017111009

VOLUME II
APPENDICES A–C

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AUGUST 22, 2018

Appendix A

2017 Aesthetics Technical Report

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN – PHASE II

Aesthetics Technical Report

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EXECUTIVE SUMMARY

This Aesthetics Technical Report documents the results of the aesthetics evaluation that was undertaken in support of the proposed Santa Susana Mountains Trails Master Plan – Phase II (SSMTMP-PII, or proposed project). Based on two site visits, viewshed analysis, and map review, the construction, recreational use, and maintenance activities associated with the proposed project would have the potential to result in impacts to aesthetics that would be mitigated to below the level of significance with mitigation measures.

SCENIC VISTAS. The proposed project would not result in impacts to aesthetics in regard to a substantial adverse effect on a scenic vista because there are no designated scenic vista points within the SSMTMP-PII area; nor is the SSMTMP-PII area visible from scenic vistas designated within the Los Angeles County General Plan 2035 or by Caltrans.

REGIONAL RIDING AND HIKING TRAILS. The proposed project would result in less than significant impacts to aesthetics regarding visibility from a regional riding or hiking trail because, although the proposed project may be visible from nearby existing regional trails, it would not be expected to obstruct views due to intervening topography, trees, and shrubs, as well as the small scale of the proposed facilities. A viewshed analysis was conducted that determined that, based on topography, up to 65.1 percent of the SSMTMP-PII area would potentially be visible from the existing regional riding and hiking trails with clear atmospheric conditions and no intervening trees or shrubs.

SCENIC RESOURCES WITHIN STATE SCENIC HIGHWAY CORRIDORS. The proposed project would result in significant impacts to aesthetics in regard to substantial damage to scenic resources within a state scenic highway corridor. The proposed project would have the potential to be visible from one Officially Designated State Scenic Highway (SR-27) and up to six Eligible State Scenic Highway corridors. Implementation of Mitigation Measures AES-1 and AES-2 is required to reduce impacts to scenic resources within the state scenic highway corridors to less than significant.

VISUAL CHARACTER AND QUALITY. The proposed project would result in less than significant impacts to aesthetics in regard to substantial degradation of the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features. Trails and related supporting facilities would generally not be expected to substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, or character because they would be low to the ground, spaced and designed in a pattern that follows the natural topography and existing paved and dirt roads, and be consistent with the scale and character of the rural SSMTMP-PII area that already contains several dirt access roads and fire roads throughout the mountainous and hilly terrain.

SHADOWS, LIGHT, AND GLARE. The proposed project would result in less than significant impacts to aesthetics in relation to the creation of a new source of substantial shadows, light or glare. Typical hours of operation for Los Angeles County trails are from dawn to dusk (County Code 17.04.330). Where lighting features are provided for safety and wayfinding reasons, lighting would be installed in a manner to be nonintrusive to adjacent uses, avoid detracting from a natural outdoors experience for trail users, and directed downward to avoid light pollution or spillover in general, in accordance with the guidelines of the County Trails Manual. [1]

[1] County of Los Angeles Department of Parks and Recreation. Adopted 17 May 2011. Revised June 2013. *County of Los Angeles Trails Manual*. Available at: https://trails.lacounty.gov/Files/Documents/69/LA%20County%20Trails%20Manual%20%28Revised%2006-20-13%29.compressed.pdf

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SECTION 1.0
INTRODUCTION

This Aesthetics Technical Report (ATR) provides the County of Los Angeles (County) with the substantial evidence used to make a determination that anticipated significant impacts to aesthetics related to the construction, operation, or maintenance of the proposed Santa Susana Mountains Trails Master Plan – Phase II (SSMTMP-PII or proposed project) would be reduced to below the level of significance with the implementation of mitigation measures.

1.1 CEQA COMPLIANCE

The County of Los Angeles Department of Parks and Recreation (DPR) proposes to complete the SSMTMP-PII, ultimately to amend the Parks and Recreation Element of the Los Angeles County General Plan 2035 (County General Plan) to include the SSMTMP-PII, which would guide future trail development and recommend improvements to existing trails. The proposed project would ultimately result in the construction and use of trails in public and private lands, some of which may involve the expenditure of public funds, and thus constitutes a project pursuant to the California Environmental Quality Act (CEQA). These trails would be located in the unincorporated territory of Los Angeles County; therefore, the County would be the Lead Agency pursuant to CEQA.

1.2 PURPOSE

The purpose of the ATR is to support the County in development of a Master Plan that would minimize the impacts on the surrounding community. It is understood that the County expects to move forward with Phase II of the Trails Master Plan and seeks funding for construction, operation, and maintenance of the Trails Master Plan. This ATR provides the requisite information related to aesthetics to support the County's decision-making process in relation to the Trails Master Plan. The evaluation of the proposed project's potential to result in significant impacts to aesthetics was undertaken in accordance with Appendix G of the CEQA Guidelines, the County DPR Environmental Checklist Form, and the County General Plan. The analysis contained herein for Phase II can be extrapolated to assess the potential for the larger Trails Master Plan to result in significant impacts to aesthetics as currently conceived by the County.

1.3 INTENDED AUDIENCE

This ATR provides information for consideration by DPR and the design team, Alta Planning + Design, engaged in the development of the proposed project. The substantial evidence will be available for the responsible and trustee agencies, and the public, including property owners, during circulation of the draft environmental document for public review. Ultimately, the ATR will be used by the County Board of Supervisors to support their decision-making process related to the proposed project. The ATR will also inform the County and private parties in the ultimate development, operation, and maintenance of trails in the plan area.

1.4 SCOPE

In May 2015, the County adopted the first phase of the Santa Susana Mountains Final Trails Master Plan (SSMFTMP), which involved the extension of the 35.7 miles of existing County-, City-, and

Conservancy-managed trails in the Phase I and Phase II study areas by approximately 35.9 miles with 22 proposed trail segments, for a total of approximately 71.6 miles of trails. In 2017, the County initiated planning efforts for further development of the Phase II study area, which has been expanded to Phase II.a and II.b. This technical report provides the requisite information related to aesthetics to support the County's decision-making process in relation to the proposed project: regulatory framework; methods; existing conditions; thresholds of significance; and the consideration of the potential for direct, indirect, and cumulative impacts. The scope of analysis considered the potential for impacts on aesthetics from the proposed project in relation to scenic vistas; views from existing regional trails; scenic resources within a scenic highway corridor; visual character and quality of the site and its surroundings; and shadows, light, and glare. The County of Los Angeles Trails Manual was consulted for ability of the proposed project to meet the County's objectives related to the visual and aesthetic experience of recreation users and adjacent land uses. As the proposed project is a plan, the analysis was conducted a programmatic level of detail, consistent with the provisions of the State CEQA Guidelines.

1.5 DEFINITIONS

Contrast: The opposition or unlikeness of different forms, lines, colors, or textures in a landscape.

Glare: Perceived glare is the unwanted and potentially objectionable sensation as observed by a person looking directly into the light source (e.g., the sun, the sun's reflection, automobile headlights, or other light fixtures). Reflective surfaces on existing buildings, car windshields, etc., can expose people and property to varying levels of glare.

Key Observation Point (KOP): One or a series of points on a travel route or at a use area or potential use area where the view of a management activity (action) would be the most revealing.

Scenic Resources: Significant visual resources identified by local planning documents that can be maintained and enhanced to promote a positive image in the community, such as natural open spaces, topographic formations, and landscapes that contribute to a high level of visual quality. Natural landforms and landscapes are often established as scenic resources, such as lakes, rivers and streams, mountain meadows, and oak woodlands. However, scenic resources can also include man-made open spaces and the built environment, such as parks, trails, nature preserves, sculpture gardens, and similar features.

Shadow Sensitive Uses: Shadow sensitive uses are land uses that are considered sensitive to the effects of new light-blocking structures casting shadows because sunlight is important to the function, physical comfort, or commerce of the land use. Facilities and operations that are considered sensitive to the effects of shadows include: routinely useable outdoor spaces associated with residential, recreational, or institutional (e.g., schools, convalescent homes) land uses; commercial uses such as pedestrian-oriented outdoor spaces or restaurants with outdoor eating areas; nurseries; and existing solar collectors.[2]

Viewshed: The landscape that can be directly seen under favorable atmospheric conditions, from a viewpoint or along a transportation corridor.

[2] City of Los Angeles. 2006. *L.A. CEQA Thresholds Guide*. Chapter A, Aesthetics and Visual Resources. Available at: http://environmentla.com/programs/Thresholds/A-Aesthetics%20and%20Visual%20Resources.pdf

SECTION 2.0
PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The County adopted the SSMFTMP in May 2015, which proposed trails within a Phase I study area in the San Fernando Valley and a Phase II study area in the Santa Clarita Valley.[3] Phase II is the northerly part of the plan area. In 2017, the County initiated planning efforts for further development of the Phase II study area, which has been expanded to Phase II.a and II.b. The Trails Master Plan (approximately 49 square miles, inclusive of Phase I) is located north and west of the San Fernando Valley in the Santa Susana Mountains, in the western portion of the unincorporated area of the County of Los Angeles (Figure 2.1-1, *Regional Vicinity Map*). The Santa Susana Mountains are centrally located in the Transverse Ranges, a group of east-west trending mountains paralleling the Pacific Ocean between Santa Barbara and San Diego Counties.

2.2 TRAILS MASTER PLAN STUDY AREA

The SSMTMP-PII is the second phase of the previously approved SSMFTMP. The Trails Master Plan is located in the U.S. Geological Survey (USGS) 7.5-minute series, Newhall, Oat Mountain, Simi Valley East, and Val Verde, California, topographic quadrangles. The Trails Master Plan has elevations that range from approximately 946 to 3,430 feet above mean sea level (msl).

Phase I Area. Phase I of the Trails Master Plan is located on the USGS 7.5-minute series Simi Valley East and Oat Mountain topographic quadrangles. The northern boundary of the Trails Master Plan – Phase I, as described in the SSMFTMP approved in May 2015, is defined by the southern limits of the County's Newhall Ranch Specific Plan Area and the northern limits of the proposed Santa Susana Mountains / Simi Hills Significant Ecological Area (SEA). The southern boundary is defined by the northern limit of the City of Los Angeles. The eastern boundary is defined by U.S. Interstate 5 (I-5). The western boundary is defined by the corporate boundary between Los Angeles and Ventura Counties (Figure 2.2-1, *Trails Master Plan Location*). The SSMFTMP is divided into two subareas or phases (see Figure 2.2-1). Phase I is the Northwest San Fernando Valley Study Area, and Phase II is the Southwest Santa Clarita Valley Study Area. Phase I includes 16,038.1 acres (25.1 square miles); the northern boundary is defined by the northern limits of the Los Angeles County Oat Mountain Planning Area, the southern boundary is defined by the northern limit of the City of Los Angeles, the eastern boundary is defined by the I-5 freeway, and the western boundary is defined by the boundary between Los Angeles and Ventura Counties.

Phase II Area. Phase II from the SSMFTMP includes 8,084.4 acres (12.6 square miles). The northern boundary is defined by the northern limits of the proposed Santa Susana Mountains / Simi Hills SEA. The southern boundary is defined by the southern limits of the proposed Santa Susana Mountains / Simi Hills SEA. The eastern boundary is defined by the I-5 freeway. The western boundary is defined by the southern and eastern boundaries of the Newhall Ranch Specific Plan area.

[3] County of Los Angeles Department of Parks and Recreation. May 2015. *Santa Susana Mountains Final Trails Master Plan*. Available at: https://trails.lacounty.gov/Documents

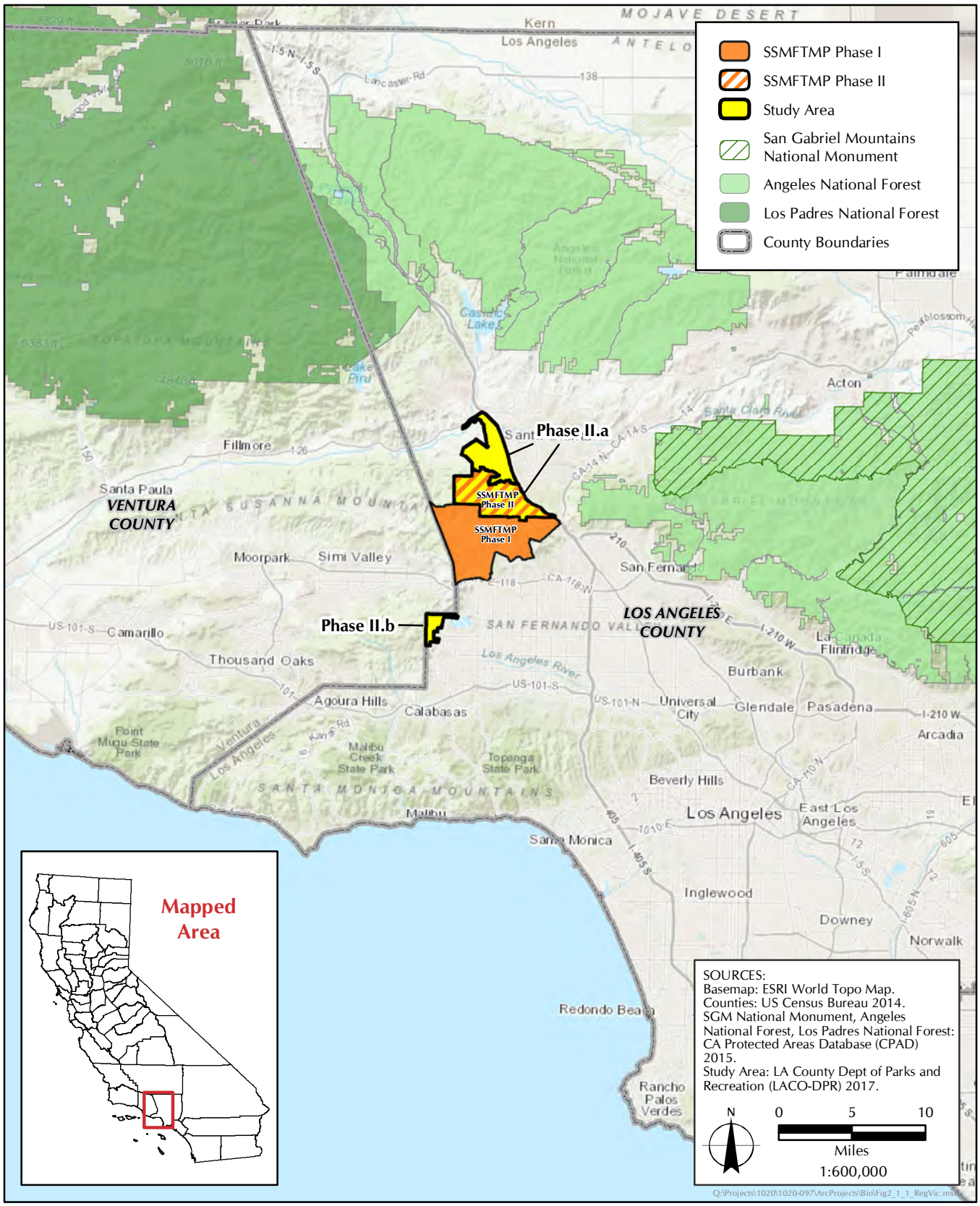

FIGURE 2.1-1

Regional Vicinity Map

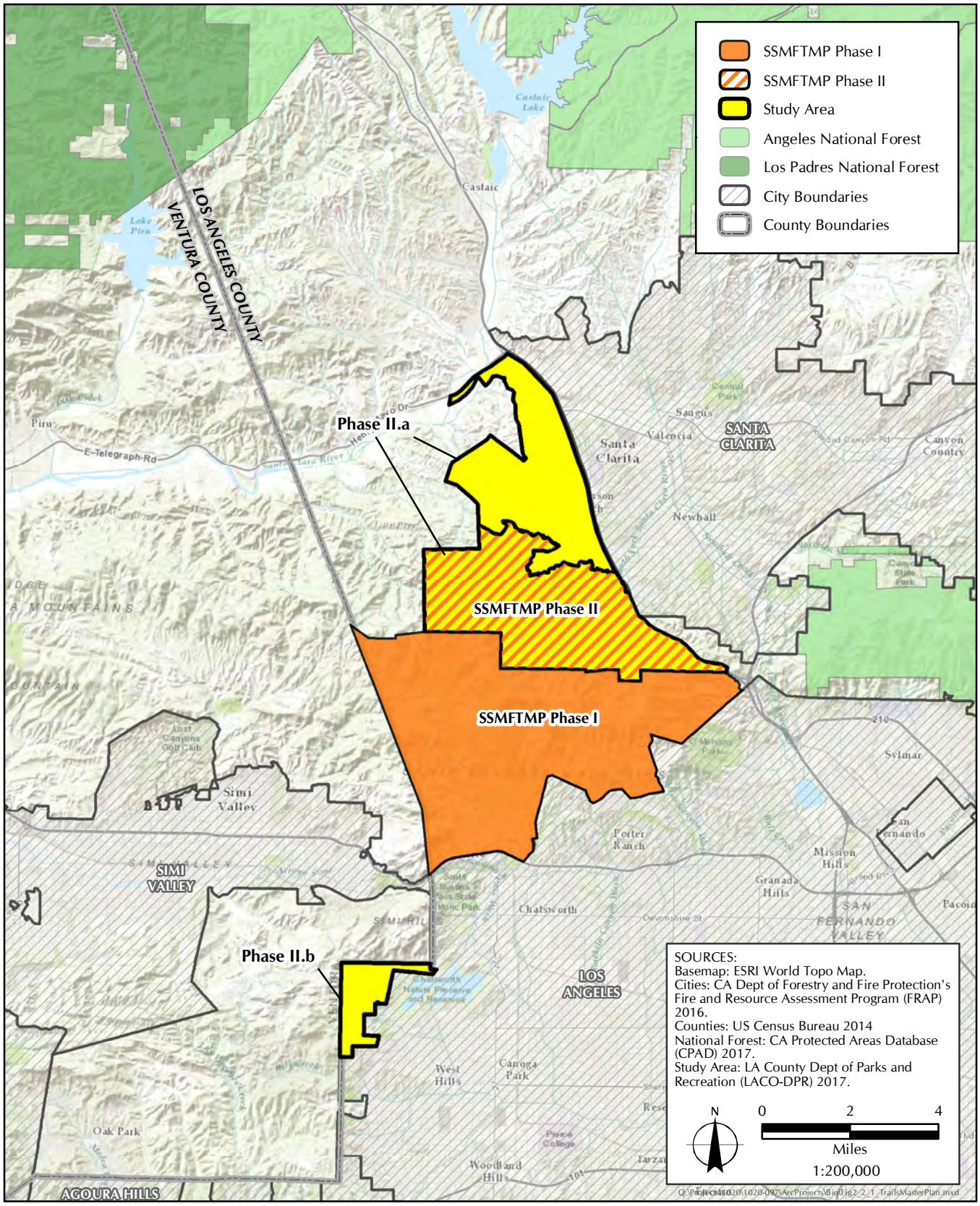

FIGURE 2.2-1

Trails Master Plan Location

The Trails Master Plan – Phase II has been expanded beyond the spatial extents of Phase II in the SSMFTMP and divided into two subareas. The Phase II.a area is an approximately 22-square-mile area located in the north-facing slopes of the Santa Susana Mountains and the Santa Clarita Valley that is bound by Henry Mayo Drive (State Route [SR] 126) to the north, the I-5 freeway to the east, Phase I of the adopted SSMFTMP Area to the south, and the Newhall Ranch Specific Plan Area to the west. The Phase II.b area is an approximately 2-square-mile area located in the foothills of the Santa Monica Mountains, including Bell Canyon, Dayton Canyon, and Woolsey Canyon, west of the San Fernando Valley, which is bound by Ventura County to the north and west and the city of Los Angeles to the east and south. The expanded Phase II of the Trails Master Plan is located on the Val Verde, Newhall, Simi Valley East (Santa Susana), Oat Mountain, and Calabasas topographic quadrangles (Figure 2.2-2, *Topographic Map with USGS 7.5-minute Quadrangle Index*). Situated along the southern flanks of the Santa Susana Mountains, the topography of the Trails Master Plan is characterized by a series of southwest draining canyons that are separated by steep-sloped and narrow ridge tops.

2.3 PROJECT SUMMARY

The overall work efforts include a trails master plan and associated CEQA documentation. Individual trail alignments would be developed at a later phase of this project, which is intended to provide a trail planning framework for the study area.

Project Goals and Objectives

The SSMTMP-PII would guide future trail development and recommend improvements to existing trails. The Trails Master Plan would provide trail users and local populations with seamless transitions throughout the proposed study area to trails of adjacent jurisdictions and prime destinations within and adjacent to the study area. The plan seeks to accomplish two primary goals:

1. Develop a complete multi-use trail system connecting user groups and local populations to desired recreation destinations and experiences, with seamless transitions to the trails of adjacent jurisdictions, compatibility with adjacent land uses and environmental resources, and a safe and sustainable design that is consistent with the County of Los Angeles Trails Manual.

2. Develop a recreational trail system that supports low-intensity use, including mountain biking, equestrian use, and hiking, to accommodate the population increase anticipated in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area through the 2035 planning horizon consistent with the Parks and Recreation Element of the County General Plan.

Project Elements

The SSMTMP-PII involves approximately 70 miles of proposed new multi-use trails in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area (Figure 2.3-1, *Existing and Proposed Trails*). The trails would be multi-use and range from 3 to 11 feet wide based on site conditions, with adequate space for combined pedestrian, equestrian, and mountain biking use, in accordance with the County Trails Manual guidelines.

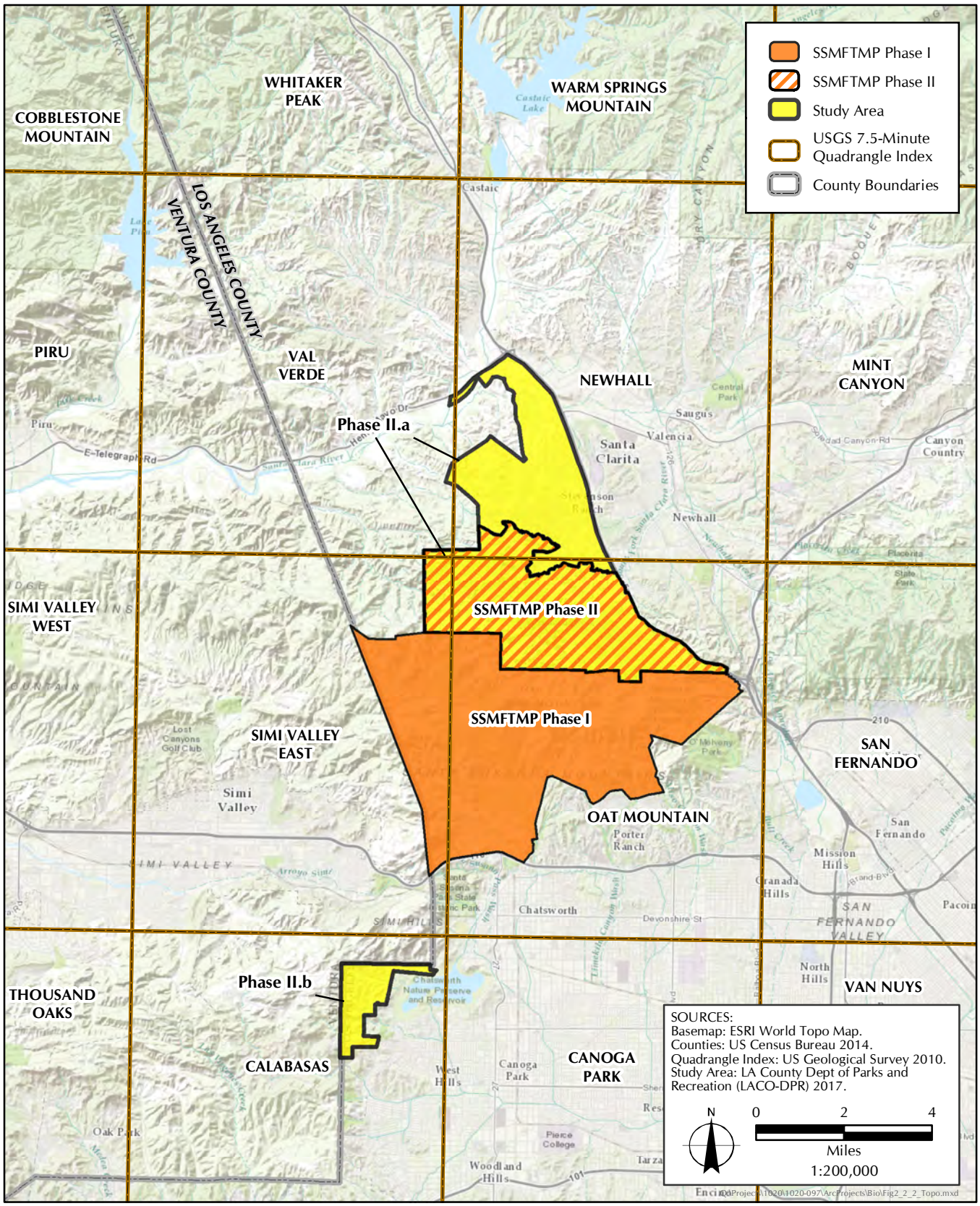

FIGURE 2.2-2

Topographic Map with USGS 7.5 Minute Quadrangle Index

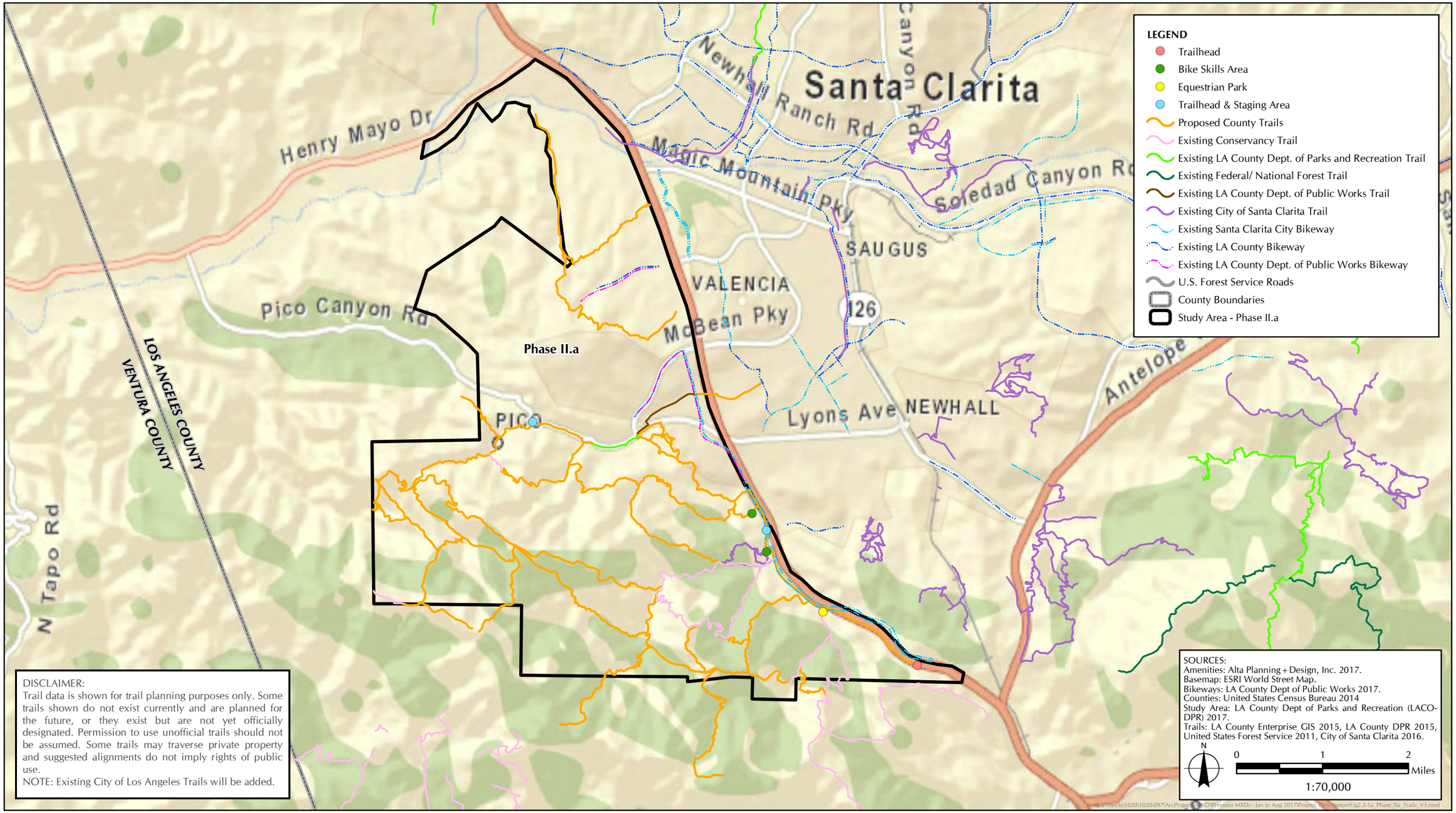

FIGURE 2.3-1a

Existing and Proposed Trails (Phase II.a)

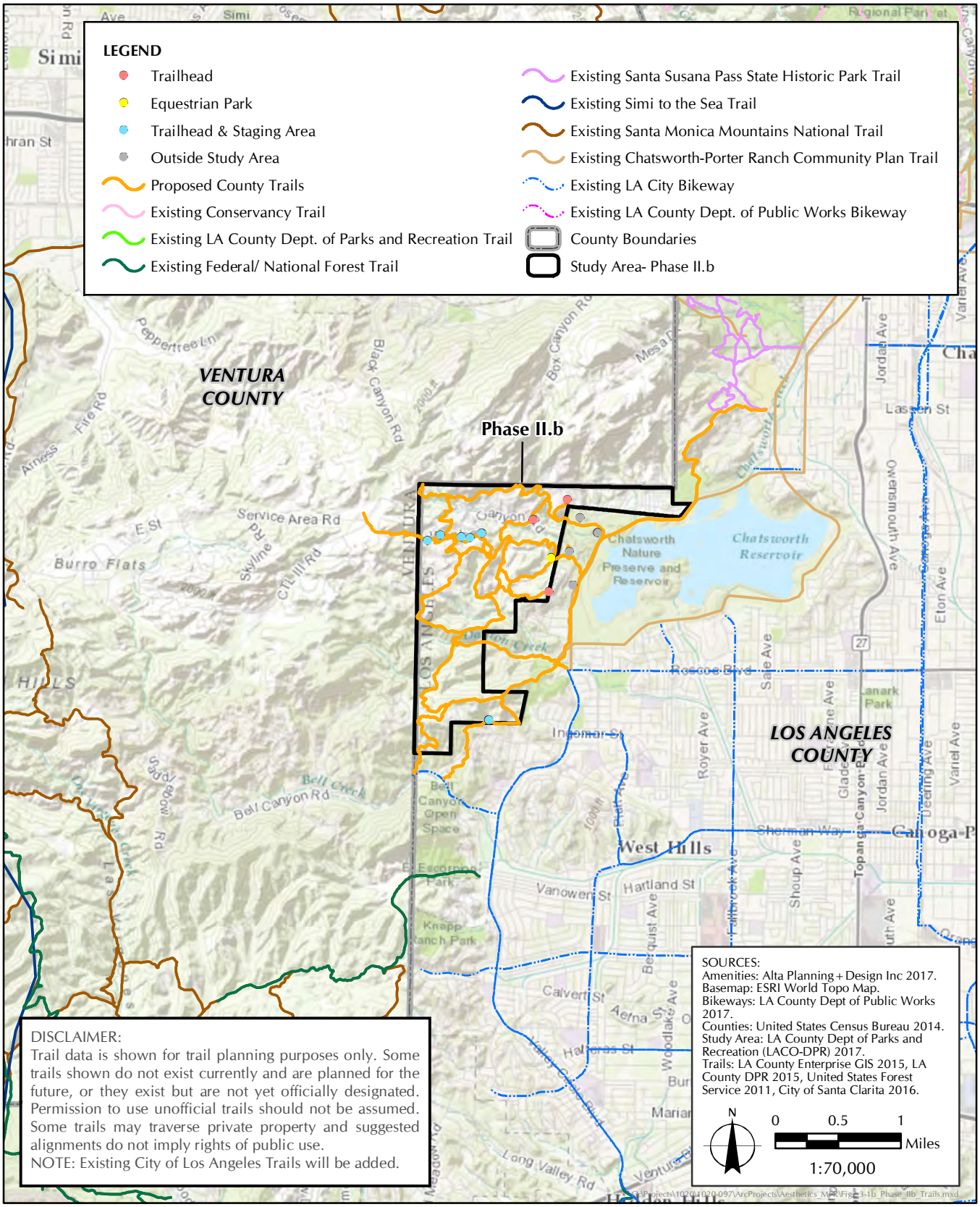

FIGURE 2.3-1b

Existing and Proposed Trails (Phase II.b)

The proposed trails would provide connections to the proposed Rim of the Valley Trail, trails in the City of Los Angeles, trails in the City of Santa Clarita, trails in the Newhall Ranch Specific Plan area, and trails within other jurisdictions as identified in the Trails Master Plan. The SSMTMP-PII identifies up to 20 potential locations for proposed facilities, including 4 trailheads, 2 bike skills areas, 2 equestrian parks, 8 trailhead and staging areas, and 4 trailheads outside the study area within the City of Los Angeles that would need to be developed by the City of Los Angeles. As the recommended City of Los Angeles trailheads would not be developed under jurisdiction of the County, this Report considers the 16 proposed facilities located within the SSMTMP-PII study area.

Trails and supporting facilities within a one-mile radius of officially designated and eligible State scenic highways would be designed, constructed, and maintained (where construction equipment is involved) to preserve scenic resources, including but not limited to trees, rock outcroppings, and historic buildings, within the scenic highway corridor. Where construction of trails or related supporting facilities requires cuts into the slope (which can be seen from a far distance), the visual character of the slope would be restored by planting locally native vegetation as a visual screen. Similarly, restrooms and other supporting structures would be constructed of materials that blend into the landscape, with locally native vegetative screening. As stated in the County Trails Manual, the hours for operation for County trails are typically from dawn to dusk (County Code 17.04.330). In accordance with the guidelines in Section 4.3.18, *Lighting*, of the County Trails Manual, where lighting features are provided for safety and wayfinding reasons, lighting would installed in a manner to be non-intrusive to adjacent uses, avoid detracting from a natural outdoors experience for trail users, and directed downward to avoid light pollution or spillover in general.[4]

[4] County of Los Angeles Department of Parks and Recreation. Adopted by the Board of Supervisors on May 17, 2011. Revised June 2013. *County of Los Angeles Trails Manual*. Available at: https://trails.lacounty.gov/Documents

SECTION 3.0
REGULATORY FRAMEWORK

3.1 FEDERAL

Federal Land Policy and Management Act of 1976

A portion of the Phase II.a area is administered by the U.S. Department of the Interior Bureau of Land Management (BLM).[5] Under the Federal Land Policy and Management Act of 1976, public lands administered by the BLM shall be managed in a manner that will protect the quality of resources including scenic values,[6] and the Secretary of the Interior shall prepare and maintain an inventory of all public lands and their resources and other values, including outdoor recreation and scenic values,[7] to reflect changes in conditions. The BLM utilizes the Visual Resource Management (VRM) system to classify the visual value (quality) of visual resources to determine the appropriate level of management for BLM-administered lands.[8] The contrast rating process (Manual Section 8431) provides BLM managers with a systematic means to evaluate proposed projects for conformance with VRM objectives and identify mitigating measures to minimize adverse visual impacts, and the visual resource inventory (VRI) process (Manual Section 8410) provides BLM managers with a means for determining visual values. The VRI process consists of a scenic quality evaluation, sensitivity level analysis, and a delineation of distance zones for classification into four VRI classes based on management objectives: Class I and II (most valued; preserve or retain existing character of the landscape), Class III (moderate value; partially retain existing character), and Class IV (least value; modify the existing character).[9]

National Environmental Policy Act

The National Environmental Policy Act (NEPA) of 1969 requires measures to be taken to assure aesthetically pleasing surroundings and the integration of Environmental Design Arts in the planning and decision-making for federal agency projects.[10] In the absence of a Memorandum of Agreement, the County does not have the authority to plan trails on lands administered by the BLM. Should the desire to link to or cross-through lands administered by the BLM be identified, it is understood that coordination would need to be undertaken with the BLM. Trail development on lands administered by the BLM would be subject to the NEPA.

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[5] County of Los Angeles. 2012. *Santa Clarita Valley Area Plan*. Figure CO-8: Recreation and Open Space. Available at: http://planning.lacounty.gov/assets/upl/data/pd_santa-clarita-area-plan-2012.pdf Appendix II, Page 281.

[6] U.S. Department of the Interior Bureau of Land Management. September 2016. *The Federal Land Policy and Management Act of 1976 As Amended*. Section 102 (a)(8), Section 103(c). Available at: https://www.blm.gov/documents/national-office/public-room/report/federal-land-policy-and-management-act-1976

[7] U.S. Department of the Interior Bureau of Land Management. September 2016. The Federal Land Policy and Management Act of 1976 As Amended. Section 201(a).azq Available at: https://www.blm.gov/documents/national-office/public-room/report/federal-land-policy-and-management-act-1976

[8] U.S. Department of the Interior Bureau of Land Management. 5 April 1984. *Manual 8400 – Visual Resource Management*. Available at: https://www.blm.gov/programs/recreation/recreation-programs/visual-resource-management

[9] U.S. Department of the Interior Bureau of Land Management. 17 January 1986. *Manual H-8410-1 - Visual Resource Inventory*. Available at: https://www.blm.gov/programs/recreation/recreation-programs/visual-resource-management

[10] U.S. Department of the Interior Bureau of Land Management. 5 April 1984. *Manual 8400 – Visual Resource Management*. Available at: https://www.blm.gov/programs/recreation/recreation-programs/visual-resource-management

3.2 STATE

California Department of Transportation (Caltrans) California Scenic Highways Program

The California Scenic Highways Program was created in 1963 under Senate Bill 1467, which added Sections 260 through 263 to the Streets and Highways Code, to preserve and protect scenic highway corridors from change that would reduce the aesthetic value of lands adjacent to highways.[11] According to Caltrans' Scenic Highway Guidelines, scenic highway corridors consist of land that is visible from, adjacent to, and outside the highway right-of-way, and is composed primarily of scenic and natural features. Topography, vegetation, viewing distance, and/or jurisdictional lines determine the corridor boundaries.[12] To be included in the state program, the highways proposed for designation must meet Caltrans' eligibility requirements and have visual merit. County highways and roads that meet the Caltrans Scenic Highways Program standards may also be officially designated. The state laws governing the Scenic Highway Program are provided in the California Streets and Highways Code, Sections 260 through 263. The State Scenic Highway System includes a list of highways that have been designated by Caltrans as scenic highways or are eligible for designation as scenic highways. These highways are designated in Section 263 of the Streets and Highways Code. A scenic corridor is the land generally adjacent to and visible from the highway and is identified by using a motorist's line of vision. A reasonable boundary is selected when the view extends to the distant horizon. Caltrans outlines the following minimum requirements for scenic corridor protection (Section 261 of the Streets and Highways Code): (1) regulation of land use and intensity (density) of development, (2) detailed land and site planning, (3) control of outdoor advertising, (4) careful attention to and control of earthmoving and landscaping, and (5) the design and appearance of structures and equipment. Caltrans defines noncompliance for a Corridor Protection Program as a program that: (1) no longer complies with the five legislatively required elements under Section 261 of the Street and Highways Code, (2) no longer affords protection because required elements have been amended or changed, or (3) no longer is being enforced by the local governing body. Caltrans also maintains approximately 135 vista points along state highways where motorists can safely view scenery or park and relax.[13]

3.3 COUNTY

County of Los Angeles General Plan

The entire SSMTMP area, including Phase I, Phase II.a, and Phase II.b, is located within the County of Los Angeles and subject to the provisions of the County General Plan. The Land Use Element of the County General Plan provides strategies and planning tools to facilitate and guide future development and revitalization efforts.[14] The County recognizes that scenic features in the region, such as the coastline and mountain vistas, are significant natural resources for the County. The Land Use Element includes land use policies that protect the visual quality of scenic resources,

[11] California Department of Transportation. Accessed 1 August 2017. Frequently Asked Questions. Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/faq.htm

[12] California Department of Transportation. October 2008. *Scenic Highway Guidelines*. Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/guidelines/scenic_hwy_guidelines_04-12-2012.pdf

[13] California Department of Transportation (Caltrans). Updated 30 September 2016. *Vista Point Planning and Design*. Available at: http://www.dot.ca.gov/design/lap/livability/vista-points.html

[14] County of Los Angeles Department of Regional Planning. Adopted 6 October 2015. *Los Angeles County General Plan 2035*. Chapter 6: Land Use Element. Available at: http://planning.lacounty.gov/assets/upl/project/gp_final-general-plan-ch6.pdf

including Hillside Management Areas (HMAs), ridgelines, scenic viewsheds, and areas along scenic highways. The purpose of the Conservation (OS-C) land use category is to preserve open space and scenic resources in perpetuity.

The Conservation and Natural Resources Element of the County General Plan serves as the policy guide for conservation of scenic resources in Los Angeles County.[15] The Conservation and Natural Resources Element identifies the three official State Scenic Highways in the County, describes scenic viewsheds, and identifies significant ridgelines that need to be protected and preserved. According to **County Policy C/NR 13.10**, significant ridgelines are identified by five criteria: (1) topographic complexity, (2) uniqueness of character and location, (3) presence of cultural or historic landmarks, (4) visual dominance on the skyline or viewshed [e.g., height and elevation of a ridgeline], and (5) environmental significance to natural ecosystems, parks, and trail systems. The Conservation and Natural Resources Element has established **Goal C/NR 13: Protected visual and scenic resources**, supported by six policies relevant to aesthetics in consideration of the proposed project:

- **Policy C/NR 13.1:** Protect scenic resources through land use regulations that mitigate development impacts.
- **Policy C/NR 13.2:** Protect ridgelines from incompatible development that diminishes their scenic value.
- **Policy C/NR 13.3:** Reduce light trespass, light pollution, and other threats to scenic resources.
- **Policy C/NR 13.5:** Encourage required grading to be compatible with the existing terrain.
- **Policy C/NR 13.7:** Encourage the incorporation of roadside rest stops, vista points, and interpretive displaces into projects in scenic areas.
- **Policy C/NR 13.9:** Consider the following in the design of a project that is located within an HMA, to the greatest extent feasible:
    - Public safety and the protection of hillside resources through the application of safety and conservation design standards;
    - Maintenance of large contiguous open areas that limit exposure to landslide, liquefaction and fire hazard and protect natural features, such as significant ridgelines, watercourses, and SEAs.

Significant Ecological Areas

The Conservation and Natural Resources Element contains a planning overlay called the Significant Ecological Area (SEA) Program, which designates ecologically important land and water systems to preserve valuable habitat for rare, threatened, or endangered plant and animal species and

[15] County of Los Angeles Department of Regional Planning. Adopted 6 October 2015. *Los Angeles County General Plan 2035*. Chapter 9: Conservation and Natural Resources Element. Available at: http://planning.lacounty.gov/assets/upl/project/gp_final-general-plan-ch9.pdf

conserve biological diversity in Los Angeles County. It also limits development in unincorporated regions of the County through requirement of a SEA Conditional Use permit for project review by biologists on the SEA Technical Advisory Committee (SEATAC).[16] According to the SEA Program, SEA designations provide an informational basis for review of private projects subject to CEQA requirements, which means that public trails do not fall under SEATAC review.[17]

Rural Outdoor Lighting District Ordinance

Approximately 50 percent of the SSMTMP-PII area is located within the County's Rural Outdoor Lighting District (Lighting District) and subject to restrictions in terms of light and glare at night (see Figure 3.3-1, *Significant Ecological Reas and Special Districts*).[18] The Rural Outdoor Lighting District Ordinance, adopted in November 2012, is an amendment to Title 22 (Planning and Zoning of the Los Angeles County Code), which establishes a a supplemental district for the rural areas of the County within which outdoor lighting is regulated to maintain dark skies at night for the residents and wildlife in the district.[19] The ordinance also modifies the community standards districts located within the district to be consistent with the dark skies ordinance. Under the ordinance, outdoor lighting shall be fully shielded on properties located in residential, agricultural, open space, or watershed zones. Drop-down lenses, mercury vapor light, ultraviolet lights, searchlights, laser lights, and other lighting that flashes, blinks, alternates, or moves are prohibited within the rural outdoor lighting district.

3.4 LOCAL

Santa Clarita Valley Area Plan (One Valley One Vision)

The entire Phase II.a area is located within the Planning Area of the County's Santa Clarita Valley Area Plan, which comprises the entire Santa Clarita Valley and provides goals, policies, and maps to establish zoning regulations and guide new development proposals.[20] The Area Plan has designated Significant Ridgelines as valuable scenic resources to be protected during development and trail planning and construction.[21] Relevant guiding principles regarding Environmental Resources stated in the Santa Clarita Valley Area Plan include:

[16] County of Los Department of Regional Planning. Accessed 1 August 2017. SEA Program. Available at: http://planning.lacounty.gov/sea

[17] Male, Laura, Sapphos Environmental, Inc., Pasadena, CA. 9 July 2013. Telephone conversation with Emma Howard, Los Angeles County, CA. Subject: SEA Program Exemptions.

[18] County of Los Angeles Department of Regional Planning. Accessed 1 August 2017. *GIS-NET3 Public*. Planning & Zoning Information for Unincorporated LA County. Available at: http://gis.planning.lacounty

.gov/GIS-NET3_Public/Viewer.html

[19] County of Los Angeles Department of Regional Planning. 28 September 2012. Ordinance No. 2012-0047. Available at: http://planning.lacounty.gov/assets/upl/data/ord_outdoor-lighting.pdf Main website: http://planning.lacounty.gov/view/rural_outdoor_lighting_district_ordinance/

[20] County of Los Angeles. 2012. *Santa Clarita Valley Area Plan: One Valley One Vision*. Available at: http://planning.lacounty.gov/view/santa_clarita_valley_area_plan/

[21] County of Los Angeles. 2012. *Santa Clarita Valley Area Plan: One Valley One Vision*. Appendix II, Page 280. "Figure CO-7: Santa Clarita Valley Area Plan: Scenic Resources." Available at: http://planning.lacounty.gov/assets/upl/data/pd_santa-clarita-area-plan-2012.pdf

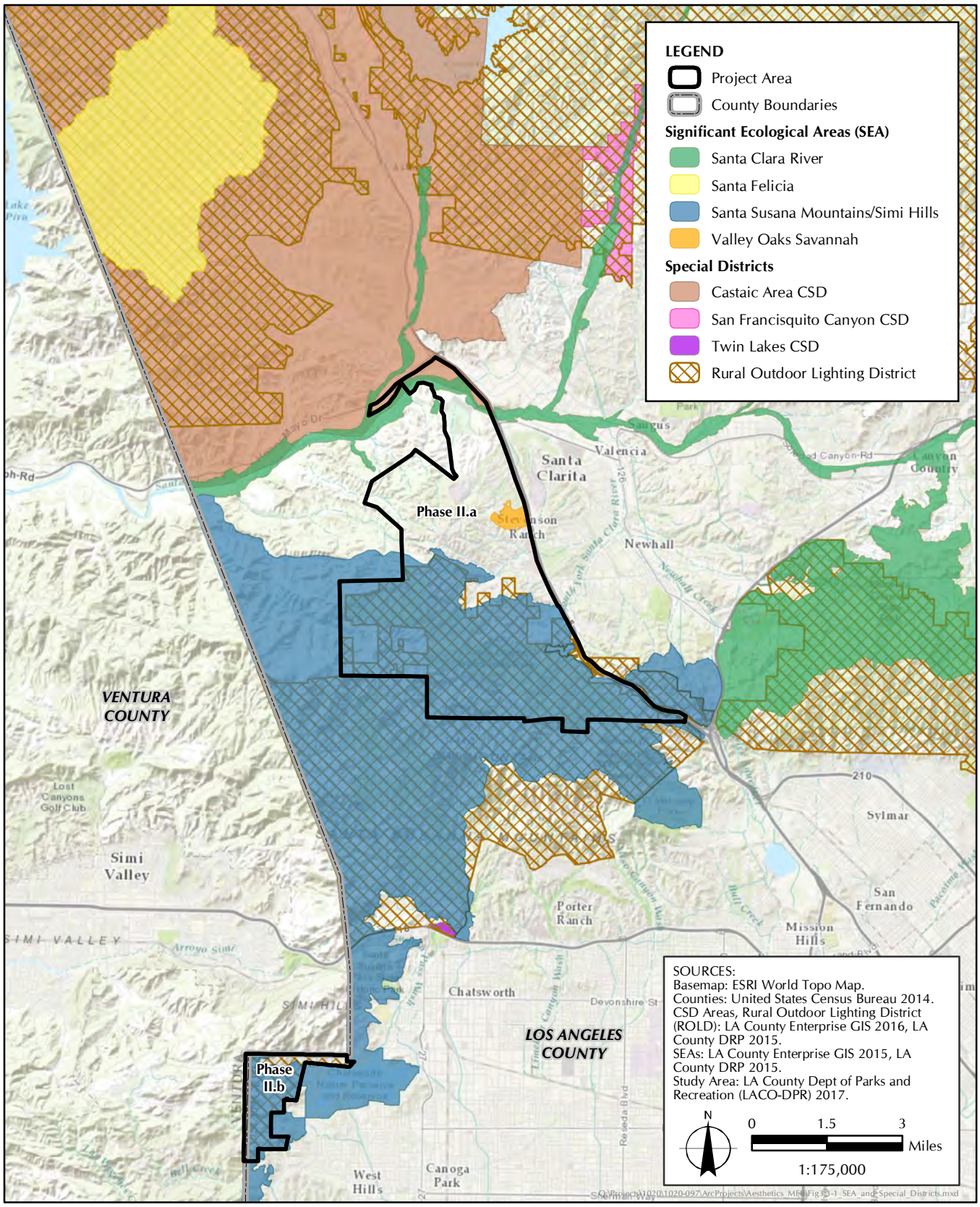

FIGURE 3.3-1

Significant Ecological Areas (SEAs) and Special Districts

- **5.** The natural buffer area surrounding the entire Valley, which includes the Angeles National Forest, Santa Susana, San Gabriel, Sierra Pelona, and Del Sur mountains, shall be preserved as a regional recreational, ecological, and aesthetic resource.

- **7.** The Santa Clarita Valley's prominent ridgelines shall be preserved and hillside development shall be limited to protect their valuable aesthetic and visual qualities intrinsic to the Valley landscape.

The Land Use Element of the Santa Clarita Valley Area Plan has established two goals, four objectives, and four policies relevant to aesthetics in consideration of the proposed project:

- **Goal LU-1:** Urban Form - An interconnected Valley of Villages providing diverse lifestyles, surrounded by a greenbelt of natural open space.

    - **Objective LU-1.1:** Maintain an urban form for the Santa Clarita Valley that preserves an open space greenbelt around the developed portions of the Valley, protects significant resources from development, and directs growth to urbanized areas served with infrastructure.

        - **Policy LU-1.1.4:** Preserve community character by maintaining natural features that act as natural boundaries between developed areas, including significant ridgelines, canyons, rivers and drainage courses, riparian areas, topographical features, habitat preserves, or other similar features, where appropriate.

    - **Objective LU 1.3:** Plan for density and intensity of development that respects and is reflective of the natural terrain.

        - **Policy LU-1.3.2:** Substantially retain the integrity and natural grade elevations of significant natural ridgelines and prominent landforms that form the Valley's skyline backdrop.

- **Goal LU-6:** Community Appearance - A scenic and beautiful urban environment that builds on the community's history and natural setting.

    - **Objective LU-6.1:** Maintain the natural beauty of the Santa Clarita Valley's hillsides, significant ridgelines, canyons, oak woodlands, rivers, and streams.

        - **Policy LU-6.1.1:** Designate ridgelines throughout the planning area, and preserve these ridgelines from development by encouraging a minimum distance for grading and development from these ridgelines of 50 feet, or more if determined preferable by the reviewing authority based on site conditions.

    - **Objective LU-6.2:** Provide attractive public and open spaces in places visited by residents and visitors, where feasible and appropriate.

        - **Policy LU-6.2.2:** Provide and enhance trail heads where appropriate with landscaping, seating, trash receptacles, and information kiosks.

The Conservation Element provides four goals, nine objectives, and fourteen policies relevant to aesthetics in consideration of the proposed project:

- **Goal CO-2:** Geologic Resources - Conserve the Santa Clarita Valley's hillsides, canyons, ridgelines, soils, and minerals, which provide the physical setting for the natural and built environments.
    - **Objective CO-2.2:** Preserve the Santa Clarita Valley's prominent ridgelines and limit hillside development to protect the valuable aesthetic and visual qualities intrinsic to the Santa Clarita Valley landscape. (Guiding Principle #7)
        - **Policy CO-2.2.2:** Ensure that graded slopes in hillside areas are revegetated with native drought tolerant plants or other approved vegetation to blend manufactured slopes with adjacent natural hillsides, in consideration of fi re safety and slope stability requirements.
        - **Policy CO-2.2.3:** Preserve designated natural ridgelines from development by ensuring a minimum distance for grading and development from these ridgelines of 50 feet, or more if determined appropriate by the reviewing authority based on site conditions, to maintain the Santa Clarita Valley's distinctive community character and preserve the scenic setting.
        - **Policy CO-2.2.6:** Encourage building and grading designs that conform to the natural grade, avoiding the use of large retaining walls and build-up walls that are visible from off site, to the extent feasible and practicable.
- **Goal CO-3:** Biological Resources - Conservation of biological resources and ecosystems, including sensitive habitats and species.
    - **Objective CO-3.6:** Minimize impacts of human activity and the built environment on natural plant and wildlife communities.
    - **Policy CO-3.6.1:** Minimize light trespass, sky-glow, glare, and other adverse impacts on the nocturnal ecosystem by limiting exterior lighting to the level needed for safety and comfort; reduce unnecessary lighting for landscaping and architectural purposes, and encourage reduction of lighting levels during non-business nighttime hours.
    - **Policy CO-3.6.5:** Ensure revegetation of graded areas and slopes adjacent to natural open space areas with native plants (consistent with fire prevention requirements).
- **Goal CO-6:** Scenic Resources - Preservation of scenic features that keep the Santa Clarita Valley beautiful and enhance quality of life, community identity, and property values.

- **Objective CO-6.1:** Protect the scenic character of local topographic features.

    - **Policy CO-6.1.1:** Protect scenic canyons from overdevelopment and environmental degradation.
    - **Policy CO-6.1.2:** Preserve significant ridgelines as a scenic backdrop throughout the community by maintaining natural grades and vegetation.

    - **Policy CO-6.1.3:** Protect the scenic quality of unique geologic features throughout the planning area, such as Vasquez Rocks, by including these features within park and open space land where possible.

- **Objective CO-6.2:** Protect the scenic character of view corridors.

- **Objective CO-6.3:** Protect the scenic character of major water bodies.

    - **Policy CO-6.3.2:** Protect the banks of the Santa Clara River and its major tributaries through open space designations and property acquisitions, where feasible, to protect and enhance the scenic character of the river valley.

- **Objective CO-6.4:** Protect the scenic character of oak woodlands, coastal sage, and other habitats unique to the Santa Clarita Valley.

    - **Policy 6.4.1:** Preserve scenic habitat areas within designated open space or parkland, wherever possible.

- **Objective CO-6.5:** Maintain the scenic character of designated routes, gateways, and vista points along roadways.

- **Objective CO-6.6:** Limit adverse impacts by humans on the scenic environment.

    - **Policy CO-6.6.1:** Enhance views of the night sky by reducing light pollution through use of light screens, downward directed lights, minimized reflective paving surfaces, and reduced lighting levels, as deemed appropriate by the reviewing authority.

- **Goal CO-10:** Open Space - Preservation of open space to meet the community's multiple objectives for resource preservation.

    - **Objective CO-10.1:** Identify areas throughout the Santa Clarita Valley which should be preserved as open space in order to conserve significant resources for long-term community benefit.

        - **Policy CO-10.1.1:** Provide and protect a natural greenbelt buffer area surrounding the entire Santa Clarita Valley, which includes the

Angeles National Forest, Santa Susana, San Gabriel, and Sierra Pelona Mountains, as a regional recreational, ecological, and aesthetic resource. (Guiding Principle #5)

- **Policy CO-10.1.2:** The Santa Clara River corridor and its major tributaries shall be preserved as open space to accommodate storm water flows and protect critical plant and animal species, as follows: (Guiding Principle #6)
  - Uses and improvements within the corridor shall be limited to those that benefit the community's use of the river in its natural state.
- **Policy CO-10.1.5:** Maintain open space corridors along canyons and ridgelines as a way of delineating and defining communities and neighborhoods, providing residents with access to natural areas, and preserving scenic beauty."

LACMC 22.44.137 – Castaic Area Community Standards District, 200419

Community Standard Districts (CSDs) are supplemental districts that are established to provide a means of implementing special development standards for neighborhoods and communities within the unincorporated areas of Los Angeles County or to provide a means of addressing special problems which are unique to certain geographic areas within the County (Ord. 93-0047 § 1, 1993: Ord. 87-0130 § 1, 1987: Ord. 83-0065 § 5, 1983: Ord. 1494 Ch. 9 Art. 5 § 905.1, 1927.).[22] CSD regulations supplement the Countywide zoning and subdivision regulations.[23] The northern portion of the Phase II.a area, near the Santa Clara River, is located within the Castaic Area CSD (see Figure 3.3-1). The purpose of the Castaic Area CSD is to protect rural character, unique appearance, and natural resources of the Castaic Area communities. The Castaic Area CSD requires that outdoor lighting shall be provided in accordance with the applicable provisions of the Rural Outdoor Lighting District and establishes the following significant ridgeline protection standards:

> For purposes of this CSD, significant ridgelines shall consist of primary and secondary ridgelines. Except as provided below, no development, grading, construction, or improvements shall be allowed on a significant ridgeline within a 50-foot radius from every point on the crest of a primary ridgeline or within a 25-foot radius from every point on the crest of a secondary ridgeline.
>
> **Significant Ridgeline Exemptions**
>
> Provided an approval is obtained for an exemption as described below, the following structures or uses may be permitted on significant ridgelines, or within

[22] County of Los Angeles Department of Regional Planning. Accessed 1 August 2017. Community Standards Districts. Available at: http://planning.lacounty.gov/view/community_standards_districts

[23] County of Los Angeles. n.d. Los Angeles County, California, Code of Ordinances: Title 22 – Planning and Zoning: Division 1 – Planning and Zoning: Chapter 22.44 – Supplemental Districts: Part 2 Community Standards Districts.. Available at: https://library.municode.com/HTML/16274/level4/TIT22PLZO_DIV1PLZO_CH22.44SUDI_PT2COSTDI.html#TIT22PLZO_DIV1PLZO_CH22.44SUDI_PT2COSTDI_22.44.126ACCOSTDI

the respective 50-foot and 25-foot restricted areas surrounding such significant ridgelines:

i. Accessory buildings or structures;

ii. Additions and/or modifications to an existing single-family residence;

iii. New single-family residences where not more than one such residence is proposed to be built by the same person on contiguous parcels of land;

iv. Open spaces, conservation areas, parks, recreation areas, and/or trails;

v. Water tanks or transmission facilities;

vi. Architecturally superior structures, other than new single-family residences, which maximize the aesthetic appeal of the hillsides and significant ridgelines, and minimize the disturbance of the natural setting; and

vii. Roads providing access to any of the structures or uses described above.

Significant Ridgeline Exemption Approval

No exemption shall be allowed unless the applicant obtains:

(A) A director's review and approval pursuant to subsection G, below, for structures or uses described in subsection i, ii, and iii; or

(B) A conditional use permit, as provided in Part 1, Chapter 22.56, for structures or uses described in subsections iv, v, or vi. The application for the conditional use permit must contain the information either required by or described in Sections 22.56.030, 22.56.040 and, where applicable, subsections D and E of Section 22.56.215.

ii. In addition to any information required for the director's approval and the conditional use permit, an application for a significant ridgeline exemption approval shall also demonstrate that the proposed use:

(A) Is compatible with adjacent uses, the character of the neighboring community, and the goals and policies of the general plan;

(B) Will leave the crest of the significant ridgeline in its natural state;

(C) Is designed to minimize the amount of grading necessary and will use landscaping to minimize the visual impact of the project;

(D) Will not be materially detrimental to the visual character of the neighborhood or the Castaic communities;

(E) Will not impede the normal and orderly development of surrounding properties and will not promote encroachments on significant ridgelines; and

(F) Will not degrade the visual integrity of the significant ridgeline, as verified through submission of a precise illustration and depiction."

General Plans of Adjacent Jurisdictions

The Phase II.a area is adjacent to the City of Santa Clarita. The Phase II.b area is adjacent to Ventura County and the City of Los Angeles.

City of Santa Clarita General Plan

The City of Santa Clarita General Plan identifies the same scenic resources in Exhibit CO-7 of the Conservation and Open Space Element to be maintained to preserve visual character that are described in the Santa Clarita Valley Area Plan (see description in Section 5.1.4, *Visual Character*).

Ventura County General Plan

The Resources Appendix of the Ventura County General Plan identifies the viewsheds of County lakes and State and County designated scenic highway corridors as scenic resources to be preserved (see description in Section 5.1.3, *Scenic* Highways, regarding officially designated and eligible State scenic highways).[24] The Phase II.b area is located outside the viewshed of the nearest County scenic lake, Lake Piru. Area-specific scenic resources are protected by Area Plans. The Phase II.b area is not located near an Area Plan.[25] Protection of Scenic Resources Areas is accomplished through the Scenic Resources Protection (SRP) Overlay Zone of the Non-Coastal Zoning Ordinance.[26] The purposes of this zone are to preserve and protect the visual quality within the viewshed of selected County lakes, County adopted scenic highways, and other locations determined by an area plan; minimize development that conflicts with the value of scenic resources; and provide notice to landowners and the general public of the location and value of scenic resources which are of significance to Ventura County. The Phase II.b area is not located near a SRP Overlay Zone.[27]

[24] Ventura County. June 2011. *Ventura County General Plan*. Resources Appendix. Available at: http://vcrma.org/planning/pdf/plans/General-Plan-Resources-Appendix-6-28-11.pdf

[25] Ventura County. September 2008. *Location Map of Area Plans in Unincorporated Ventura County*. Available at: http://vcrma.org/planning/pdf/plans/Area_Plans.pdf

[26] Ventura County. April 18, 2017. *Ventura County Non-Coastal Zoning Ordinance*. Scenic Resource Protection Overlay Zone. Available at: http://vcrma.org/planning/pdf/ordinances/zoning/VCNCZO.pdf Sec. 8109-4.1 -

[27] Ventura County. Accessed 1 August 2017. *View Ventura County, California*. Available at: http://gis.ventura.org/CountyViewNew/

City of Los Angeles General Plan

The Citywide General Plan Framework Element of the City of Los Angeles General Plan establishes the following policies in response to Open Space and Conservation Objective 6.2: "*Maximize the use of the City's existing open space network and recreation facilities by enhancing those facilities and providing connections, particularly from targeted growth areas, to the existing regional and community open space system,"* relevant to the adjacent Phase II.b area of the Trails Master Plan:[28]

- **Policy 6.2.1:** Establish, where feasible, the linear open space system represented in the Citywide Greenways Network map, to provide additional open space for active and passive recreational uses and to connect adjoining neighborhoods to one another and to regional open space resources.[29] This Citywide Greenways Network is hierarchical and is composed of three levels: regional, community, and local/neighborhood. While these levels are of equal importance, they vary in scale and the degree to which they impact the City at large. Additionally, while these levels overlap one another, they can still be differentiated and broken down as follows:

    a. The regional component of the network is composed of the beaches, the mountains, and the Los Angeles River system - the three most continuous natural features of the urban region and thus the primary elements of the network; river tributaries, arroyos and washes that take storm water to the ocean; rail lines and utility corridors, where feasible without compromising public safety or facility security, that may serve multiple purposes to become connectors to the beaches and the river and link adjacent districts to each other through the network; and all regional parks made accessible from the network. While considering open space improvements of the River and drainages, their primary purpose for flood control shall be considered.

    b. The community component is composed of parks and civic open spaces connected to the network, including elements such as community and neighborhood parks, connected by linear, non-motorized transportation linkages such as walking and hiking trails and local bike paths

    c. The local/neighborhood components include pedestrian-supporting streets, open space associated with public facilities such as schools, small parks, and community gardens.

- **Policy 6.2.2:** Protect and expand equestrian resources, where feasible, and maintain safe links in major public open space areas such as Hansen Dam, Sepulveda Basin,

[28] Los Angeles City Planning Department. Re-adopted August 8, 2001. *The Citywide General Plan Framework: An Element of the City of Los Angeles General Plan*. Chapter 6: Open Space and Conservation. Available at: http://cityplanning.lacity.org/cwd/framwk/contents.htm

[29] City of Los Angeles Department of City Planning. April 1996. *Figure 6-1: Citywide Greenways Network Map*. Available at: http://cityplanning.lacity.org/cwd/framwk/chapters/06/fig61.htm

Griffith Park, and the San Gabriel, Santa Monica, Santa Susanna Mountains and the Simi Hills.

a. Maintain the equestrian facilities on publicly owned lands, such as Hansen Dam and the Los Angeles Equestrian Center.

b. Preserve, where feasible, the "Horsekeeping Supplemental Use District" ("K" District), with links to major open areas.

c. Support the policies and objectives of the Rim of the Valley Trail Corridor Master Plan, the Urban Greenways Plan, and the Major Equestrian and Hiking Trails Plan (and all amendments) as a foundation for promoting and maintaining a trail system within the City.

The Citywide Greenways Network Map includes existing/recommended greenways for Chatsworth Reservoir and the surrounding land adjacent to the northeastern portion of the Phase II.b Area, leading northeast towards the Phase I area and southeast to the Los Angeles River near De Soto Avenue.

The Conservation Element of the General Plan establishes equine areas in the San Fernando Valley and Santa Monica Mountains as a valuable unique feature of highly urbanized Los Angeles to be protected and encouraged in the K Supplemental Use District, or 'K' Equinekeeping District, of the Zoning Ordinance.[30] The City of Los Angeles contains over 90 miles of equine trails, especially near the Phase II.b area around the northern rim of the San Fernando Valley and around the Santa Monica Mountains; new K Districts are typically required by decision makers to provide equestrian trails as part of the City's objective to retain equine oriented uses as a part of the city's heritage, and community plans such as the Chatsworth-Porter Ranch Community Plan (described below) have identified equine areas and trails and policies.[31] The nearest City recreation resources to the Phase II.b area are discussed in the City of Los Angeles Chatsworth-Porter Ranch Community Plan.

Chatsworth-Porter Ranch Community Plan, 1993 (amended 2003)[32]

The Chatsworth-Porter Ranch Community Plan Area encompasses approximately 15,500 acres directly south of the Trails Master Plan Area, from the County line on the western side to Beaufait Avenue on the eastern side.[33] The community plan provides an official guide to the future development of the community for the use of local governmental agencies, residents, property owners, businessmen, and private organizations. The community plan was designed in 2010 in anticipation of population and employment growth, with the intent to preserve low density single-family residential areas, conserve open space lands, and preserve and strengthen the Chatsworth Community Business District during the anticipated growth. The community plan encourages the preservation and expansion of "K" Equine Keeping Districts along the western edge of the

[30] City of Los Angeles. September 2001. *City of Los Angeles General Plan Conservation Element.* Section 7: Equine Areas, Pages II-14 to II-19. Available at: http://cityplanning.lacity.org/cwd/gnlpln/consvelt.pdf

[31] City of Los Angeles. September 2001. *City of Los Angeles General Plan Conservation Element.* Section 7: Equine Areas, Pages II-14 to II-19. Available at: http://cityplanning.lacity.org/cwd/gnlpln/consvelt.pdf

[32] City of Los Angeles. 1993. *Chatsworth-Porter Ranch Community Plan*. Available at: http://cityplanning.lacity.org/complan/pdf/chtcptxt.pdf

[33] City of Los Angeles. 1993. *Chatsworth-Porter Ranch Community Plan.* Available online at: http://cityplanning.lacity.org/complan/valley/chtpage.htm

Community Plan Area, especially where horsekeeping areas are proposed north of Chatsworth Street and west of De Soto Avenue (including the eastern side of De Soto Avenue) to the City/County line, and along the open space within the Porter Ranch Specific Plan Boundary along the boundary of the SSMTMP Phase I area.[34]

As Chatsworth-Porter Ranch supports a substantial equestrian-oriented population, the Community Plan emphasizes the preservation of this equestrian lifestyle through preservation of natural topography and wooded areas (consistent with fire safety); proposed utilization and development of County flood control channel and power line rights-of-way for open space purposes and/or hiking, bicycle and equestrian trails where appropriate; and designation of the area north of Stoney Point, east of Topanga Canyon Boulevard and south of State Route (SR) 118 (Simi Freeway) as a cultural/scenic landmark due to its geological, visual, and historic characteristics.[35] Additionally, the community plan incorporates the Major Equestrian and Hiking Trails Plan and Bicycle Plan, two elements of the City General Plan, and it incorporates the *Guide to Existing and Potential Equestrian Trails, Twelfth Council District*.[36]

Recreation resources within the Chatsworth-Porter Ranch Community Plan Area include the Chatsworth Reservoir Department of Water and Power Preserve (adjacent to the Phase II.b area), Santa Susana Pass State Park (approximately 0.6 mile north of the Phase II.b area) and a network of proposed equestrian and hiking trails, a number of which have been realized since the Community Plan was adopted in 1993. The Community Plan identifies Chatsworth Reservoir as a Nature Preserve with regional park, equestrian trail stop and assembly areas, and horsekeeping areas; Valley Circle Boulevard is designated as a scenic corridor near the Phase II.b area from the southwestern corner of the Chatsworth Reservoir open space northeast to State Route 27, paralleled by an existing equestrian and hiking trail on the eastern/southern side of Valley Circle Boulevard.[37]

[34] City of Los Angeles. 1993. *Chatsworth-Porter Ranch Community Plan.* Equestrian Areas and Trails map. http://cityplanning.lacity.org/complan/pdf/cht_horse_2.pdf

[35] City of Los Angeles. 1993. *Chatsworth-Porter Ranch Community Plan.* Page 11-12: Features. Available at: http://cityplanning.lacity.org/complan/pdf/chtcptxt.pdf

[36] City of Los Angeles. 1993. *Chatsworth-Porter Ranch Community Plan.* Page 13: Programs: Public Improvements PDF Available at: http://cityplanning.lacity.org/complan/pdf/chtcptxt.pdf

[37] City of Los Angeles Department of City Planning. August 20, 2014. *General Plan Land Use Map: Chatsworth – Porter Ranch Community Plan.* Available at: https://planning.lacity.org/complan/valley/PDF/chtplanmap.pdf

SECTION 4.0
METHODS

The evaluation of the potential for the proposed project to result in impacts to aesthetics was undertaken in accordance with the County of Los Angeles Department of Parks and Recreation's Environmental Checklist Form and Appendix G of the State CEQA Guidelines, thus considering five key variables: scenic vistas; views from existing regional trails; scenic resources within a scenic highway corridor; visual character and quality of the site and its surroundings; and shadows, light, and glare.

4.1 LITERATURE AND MAP REVIEW

The Los Angeles County General Plan 2035 (County General Plan)[38] and County of Los Angeles zoning designations[39,40] were reviewed to characterize allowable land uses within the SSMTMP-PII area. The County General Plan was also reviewed for descriptions of SEAs and associated allowable land uses. The County General Plan, including the Santa Clarita Valley Area Plan, was reviewed to determine if there were any designated scenic vistas within the SSMTMP-PII area. The California Department of Transportation (Caltrans) website[41] was reviewed to determine the location of the nearest proposed and designated scenic highways and Caltrans-designated scenic vista points. USGS 7.5-minute series topographic quadrangles and aerial photograph imagery available through Google Earth maps were reviewed to delineate existing potential sensitive visual receptor locations where the proposed trail alignments and other facilities might be visible within and adjacent to the SSMTMP-PII area. The County Manual was referenced for trail planning and construction standards and recommendations.[42] The Cultural Resources Technical Report for the SSSMTMP-PII project was reviewed for an understanding of the location of historic resources within the SSMTMP-PII area.

4.2 SITE SURVEY

Two site surveys were conducted on June 17, 2017 and June 28, 2017 to evaluate and document the visual character of publicly accessible portions of the SSMTMP-PII area, with a focus on views from designated and eligible scenic resources. The El Camino Nuevo Trail[43] within Santa Susana State Historic Park, Bell Ranch Road and Thompson Avenue near the rock formation identified as "Twelve Apostles" by local residents, and Browns Canyon Road north of SR-118 leading towards Oat Mountain were observed during the site visit to be closed to public access. Nineteen KOPs

[38] County of Los Angeles Department of Regional Planning. 6 October 2015. *Los Angeles County General Plan 2035*. Available at: http://planning.lacounty.gov/generalplan/generalplan

[39] County of Los Angeles Department of Regional Planning. Accessed 1 August 2017. *GIS-NET3 Public*. Planning & Zoning Information for Unincorporated LA County. Available at: http://gis.planning.lacounty.gov/GIS-NET3_Public/Viewer.html

[40] County of Los Angeles. Accessed 1 August 2017. *Los Angeles County, California Code of Ordinances*. Title 22 – Planning and Zoning, Division 1 – Planning and Zoning, Chapter 22.12 Zones and Districts. Available at: http://library.municode.com/HTML/16274/level3/TIT22PLZO_DIV1PLZO_CH22.12ZODI.html

[41] California Department of Transportation. Accessed 1 August 2017. Officially Designated State Scenic Highways. Available at: http://www.dot.ca.gov/hq/LandArch/16_livability/scenic_highways/scenic_hwy.htm

[42] County of Los Angeles Department of Parks and Recreation. [17 May 2011]. June 2013. *County of Los Angeles Trails Manual*. Available at: https://trails.lacounty.gov/Documents

[43] California State Parks. Accessed 1 August 2017. *Santa Susana Pass State Historic Park Brochure*. Available at: https://www.parks.ca.gov/pages/611/files/SantaSusanaPassSHPWeb2016.pdf

were established to document the visual character of the existing SSMTMP-PII area. The KOPs were selected to characterize a range of public vantage points: Eligible State Scenic Highways, existing trail segments, designated scenic canyons and significant ridgelines, and views from adjacent property. Data was recorded for each KOP: location, direction, visual character, and photographic documentation. Several roads provided limited public access to the SSMTMP-PII area; the publicly accessible portions of the SSMTMP-PII area were photographically documented and spatially analyzed for possible views of the trail using Google Earth Street View.

4.3 SPATIAL AND VIEWSHED ANALYSIS

A viewshed analysis was conducted using ArcGIS to evaluate the visibility level of the proposed trail alignments and other related facilities based on terrain analysis from Eligible and Officially Designated State Scenic Highways, County-designated Scenic Drives, City-Designated Scenic Highways, and existing regional trails within a 15-mile (visible) radius of the SSMTMP-PII area. Caltrans' visual impact assessment training module for visual character was used to define the viewshed analysis criteria.[44] As for a traveler on a highway, viewsheds are directional (the viewshed for a traveler moving in one direction can be quite different than a traveler moving in the opposite direction on the same highway, and the viewshed for a driver is more constrained by direction than it is for a passenger who has more discretion to look to the side or even backward), a traditional viewshed is static and is defined as what can be seen in 360 degrees from a single view point. What a person can see from a single spot is limited by objects—such as hills, trees, buildings—that obscure what he or she can see. A five-foot viewer elevation was established to identify the visibility level of trail alignments and related facilities from scenic resources by both pedestrians and vehicle occupants, and a 15-mile buffer was established around each scenic resource to define the atmospheric visual limits of the viewshed. Station points were established at every 1,000 feet along the designated scenic routes located within a 15-mile radius of the SSMTMP-PII area. The viewshed was then established from each station point, based on a 10-foot digital elevation model (DEM). As part of the spatial analysis, particular emphasis was placed on the proximity of the project elements to designated significant ridgelines (analysis based on proposed elements within a 50-foot radius of significant ridgelines) and within the viewshed of scenic highway corridors, scenic resources identified in the Santa Clarita Valley Area Plan, and existing regional trails. As the viewshed is defined as if the earth had a lunar landscape and only addresses landform, Google Earth was then used to verify the visibility level of the subject parcels using Street View and Ground View to identify major vegetative or development visual obstructions and identify potential visibility between the station points.

4.3.1 Construction Scenario

This ATR is based on an evaluation of the construction that would be required to build out the proposed trails in the general configurations of the conceptual plan. Proposed trail alignments are conceptual and will require additional survey, design, and engineering work to support dedication of easements and ultimately trail construction, operation, and maintenance. The final trail alignments are subject to refinement in relation to environmental, geologic, hydrologic, ownership, topology, and other factors, as specified in the County Trails Manual. The County Trails Manual outlines various issues affecting trail experience (Section 2.4.3.3) and trail feasibility (Section 2.5), including aesthetics. The Trails Manual recommends that a visibility analysis be performed in a

[44] California Department of Transportation. Accessed 1 August 2017. *Visual Impact Assessment Training*. Module 2: Visual Character. Lesson 8: Labeling the Landscape. Available at: http://www.dot.ca.gov/hq/LandArch/16_la_design/via/training/mod_2/mod_02_less_08.htm

three-dimensional modeling program to determine if a proposed trail would be visible by the surrounding area residences using vantage points placed at important visual points of interest, known scenic vistas, or individual residences to determine the percentage of the trail that would be visible from the vantage points. Additionally, cross-sections depicting the distance and the elevation of the trails from adjacent residences are recommended to provide a representation of the visibility of proposed trails by incorporating the landscape and vegetation.

The environmental analysis for the proposed project is based on a potential worst-case scenario for construction activities, including improvements to existing trails, construction of new trails, site grading for facilities and access roads, and delivery and hauling of construction materials and equipment. Construction activities associated with the proposed project, as currently conceived, would entail construction of approximately 70 miles of trails. Construction equipment would be limited to mini-dozers; graders; small tractors; a water truck; and hand tools including picks, hoes, shovels, and wheelbarrows. Construction would be conducted in accordance with the guidelines specified in the County Trails Manual.[45] The County Trails Manual contains specific methods for building trails in areas with steep slopes and riparian crossings. The County Trails Manual should be referenced for further information to determine the constructability of trail segments. Construction activities may include excavation, grading, and construction of trails and small structures at trailheads, rest areas, parking, equestrian facilities, bicycle facilities, and trail staging areas. The County would require preparation of a trail site plan, site-specific geotechnical investigation, survey for biological and cultural resources, and a Categorical Exemption or Initial Study (the appropriate CEQA document) in support of each trail segment before project approval and construction can commence.

[45] County of Los Angeles Department of Parks and Recreation. [May 2011]. June 2013. *County of Los Angeles Trails Manual*. Available at: https://trails.lacounty.gov/Documents

SECTION 5.0
RESULTS

5.1 EXISTING CONDITIONS

5.1.1 Scenic Vistas

No Caltrans- or County-designated scenic vista points are located within a 15-mile radius of the SSMTMP-PII area (Figure 5.1.1-1, *Scenic Vistas*). There are no other officially designated County scenic vistas in the Los Angeles County General Plan 2035. The General Plan programs include Program No. C/NR-6 for the preparation of a Scenic Resources Ordinance that creates a scenic corridor, scenic viewshed, and significant ridgeline program and/or ordinance to protect remaining scenic resources, that may include scenic resources from the County's 1965 Regional Recreation Areas Plan.[46] However, there is no time commitment or timeframe for an actual project at this time.

Ventura County and the City of Los Angeles have no designated scenic vistas in the vicinity of the SSMTMP-PII area.

State Designated Vista Points

Caltrans has designated one vista point within Los Angeles County, Lamont Odett Vista Point, which is located at Post Mile 57.8 along the northbound side of SR-14 and overlooks the Aerospace Valley, Lake Palmdale, and the California Aqueduct toward the north and northeast.[47] This vista point is located approximately 26.4 miles northeast of the Phase II.a area and approximately 35.9 miles northeast of the Phase II.b area, on the opposite side of the San Gabriel Mountains. The SSMTMP-PII area is not visible from this vista point due to distance, an intended directional vista towards the north, and intervening topography.

County Designated Public Viewing Areas

The County has designated 30 Public Viewing Areas in the Santa Monica Local Coastal Program, which are located approximately 7.5 to 17.3 miles south of the Phase II.b area (see Figure 5.1.1-1).[48] The Santa Monica Mountains Local Coastal Program Land Use Plan establishes Land Use Policy LU-54 for protection of Public Viewing Areas from visual blight as a result of the telecommunications network.[49] The Santa Monica Mountains Local Implementation Program establishes that Public Viewing Areas are intended to reduce visual impacts as a result of new buildings, water tanks, telecommunication facilities, and all projects for which applications for a Coastal Development Permit are required from identified Public Viewing Areas.[50] As the SSMTMP-

[46] County of Los Angeles Department of Regional Planning. Adopted 6 October 2015. *County of Los Angeles General Plan – Chapter 16: General Plan Implementation Programs*. Program, C/NR-6. Available at: http://planning.lacounty.gov/assets/upl/project/gp_final-general-plan-ch16.pdf

[47] California Department of Transportation. 2016. *2015 Named Freeways, Highways, Structures and Other Appurtenances in California*. Available at: http://www.dot.ca.gov/hq/tsip/hseb/products/Named_Freeways_Final.pdf

[48] County of Los Angeles Department of Regional Planning. November 2013. Santa Monica Mountains Local Coastal Program map with public viewing areas available at: http://planning.lacounty.gov/assets/upl/project/coastal_adopted-map3.pdf

[49] County of Los Angeles Department of Regional Planning. August 2014. *Santa Monica Mountains Local Coastal Program: Land Use Plan*. Available at: http://planning.lacounty.gov/assets/upl/project/coastal_adopted-LUP.pdf

[50] County of Los Angeles Department of Regional Planning. Adopted 2014. *Santa Monica Mountains Local*

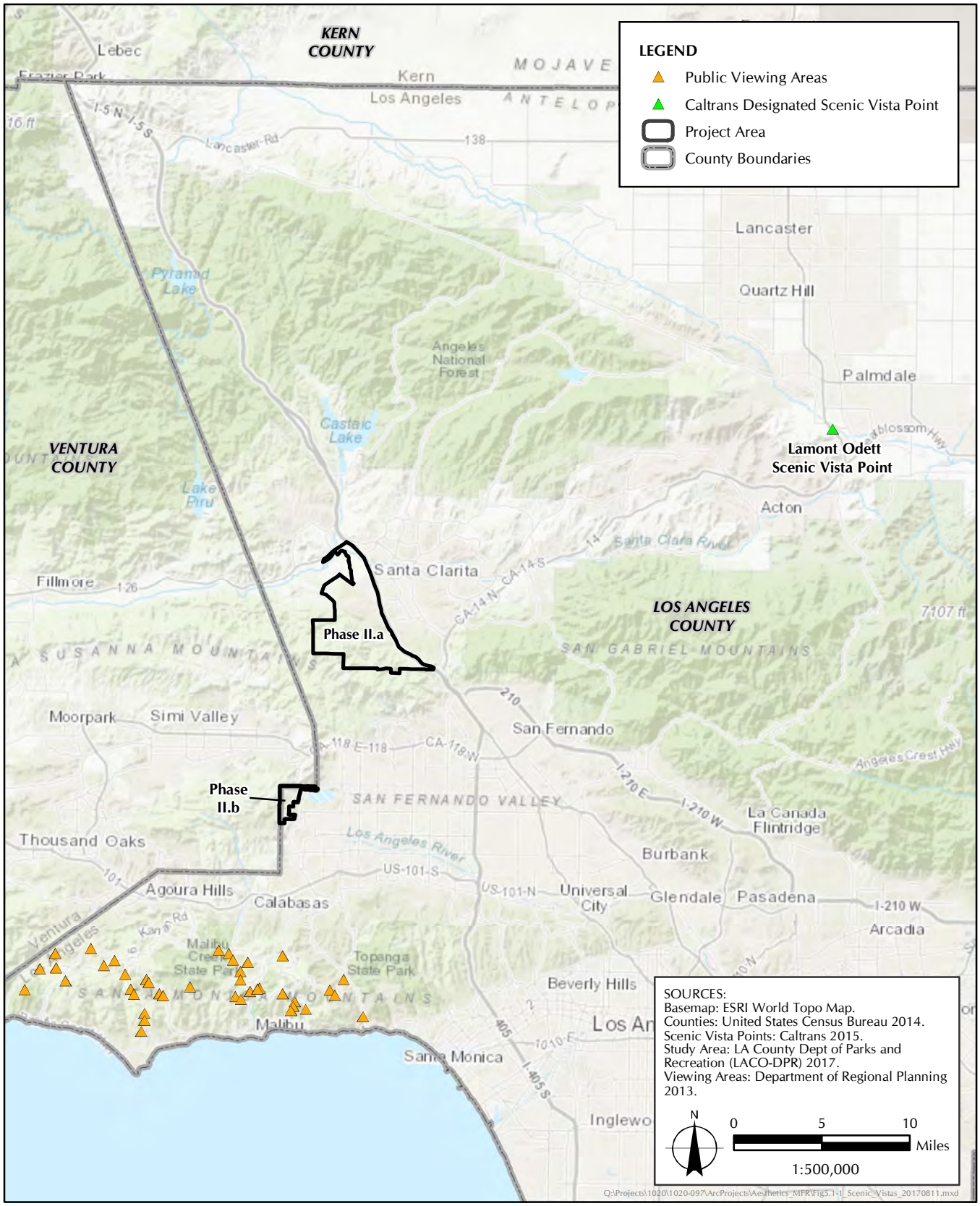

FIGURE 5.1.1-1

Scenic Vistas

PII area is not located within a Coastal Zone and the proposed project would not require a Coastal Development Permit, the Santa Monica Local Coastal Program is not applicable to the proposed project. Due to distance and intervening topography of the Santa Monica Mountains, the SSMTMP-PII area is not visible from the Public Viewing Areas.

5.1.2 Regional Riding and Hiking Trails

A viewshed analysis was conducted using ArcGIS to evaluate the potential visibility level of the SSMTMP-PII area from existing Federal, Conservancy, County, and State trails located within a 15-mile radius of the SSMPTMP-PII area.[51] (See Figure 5.1.2-1, *Existing Regional Trails*). As the Pacific Crest National Scenic Trail (PCT) is located approximately 14.9 miles northeast of the SSMTMP-PII area along a north-facing slope at the nearest point, it is not anticipated that the SSMTMP-PII area would be visible from the PCT due to distance and intervening topography. It was determined that approximately 65.1 percent of the SSMTMP-PII area (approximately 63.1 percent of the Phase II.a area and approximately 86.6 percent of the Phase II.b area) would be visible from regional trails. It should be noted that a viewshed analysis evaluates visibility based solely on topographic data, and the presence of large trees, large shrubs, buildings, and infrastructure between the regional trails and the SSMTMP-PII area would be expected to reduce the potential visibility level further than this estimate.

5.1.3 Scenic Resources within State Scenic Highway Corridors

The nearest officially designated State scenic highway is the recently designated SR-27, which was officially designated on March 22, 2017 and is located approximately 5.1 miles southeast of the SSMTMP-PII area. A viewshed analysis was conducted using ArcGIS to evaluate the potential visibility level of the SSMTMP-PII area from SR-27 and the six eligible state scenic highways located within a 15-mile visible radius of the SSMTMP-PII area.[52] Approximately 48.1 percent of the SSMTMP-PII area was calculated to be potentially visible from officially designated and eligible State scenic highways. It was determined that approximately 45.3 percent of the Phase II.a area, comprised of the northeast-facing slopes and ridges of the Santa Susana Mountains along Rice Canyon, Leaming Canyon, Wiley Canyon, Towsley Canyon, Dewitt Canyon, Wiley Canyon, Lyon Canyon, Pico Canyon, and the community of Stevenson Ranch; Six Flags Magic Mountain; the north-facing slopes of the community of Stevenson Ranch; and the majority of the Santa Clara River corridor would be visible from officially designated and eligible State scenic highways. The lower elevations and southwest-facing slopes of Rice Canyon, Leaming Canyon, Towsley Canyon, Dewitt Canyon, Pico Canyon, and the Community of Stevenson Ranch, would not be visible from scenic highways. Approximately 78.9 percent of the Phase II.b area, comprised of the rolling hills and developed areas within Chatsworth Lake Manor and Woolsey Canyon, would be visible from officially designated and eligible State scenic highways. It should be noted that a viewshed analysis evaluates visibility based solely on topographic data, and the presence of large trees, large shrubs, buildings, and infrastructure between these highways and the study area would be expected to reduce the potential visibility level further than this estimate. These highway corridors contain trees, rock outcroppings, and the potential to have historic structures.

Implementation Program: Land Use Plan. Available at: http://planning.lacounty.gov/assets/upl/project/coastal_adopted-LIP.pdf

[51] Sapphos Environmental, Inc. August 2017. Viewshed analysis calculated using 10-foot DEM data in ArcGIS.

[52] Sapphos Environmental, Inc. August 2017. Viewshed analysis calculated using 10-foot DEM data in ArcGIS.

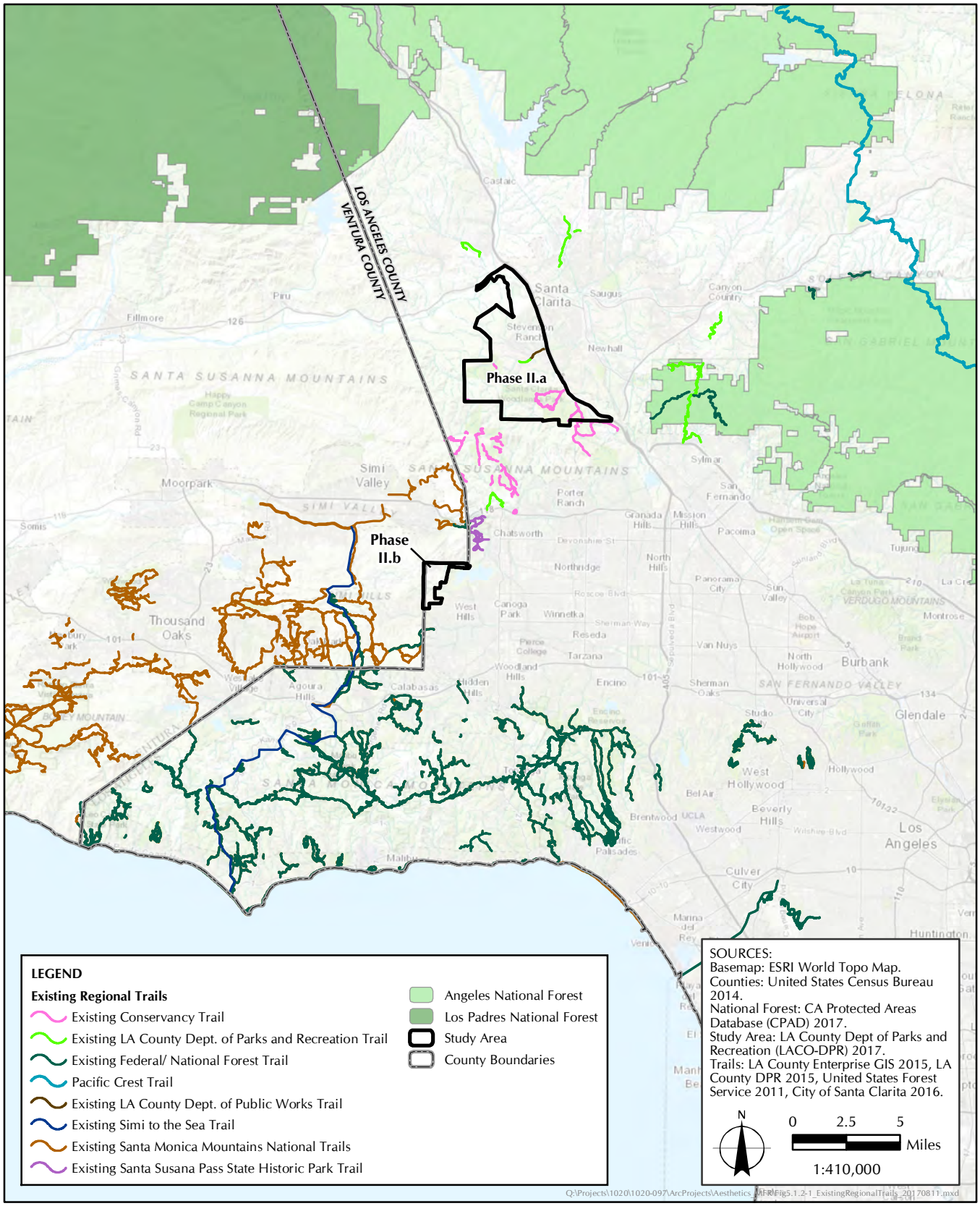

FIGURE 5.1.2-1

Existing Regional Trails

Due to distance (over 15 miles) and intervening topography, the SSMTMP-PII area would not be visible from two of the three nearest officially designated state scenic highways (Table 5.1.3-1, *State Scenic Highways*; Figure 5.1.3-1, *Designated and Eligible California Scenic Highways*).[53] There are six eligible state scenic highways within a 15-mile visible radius of the SSMTMP-PII area. There are two officially designated County scenic highways within Southern California, both of which are located within a 15-mile visible radius of the SSMTMP-PII area.

TABLE 5.1.3-1
STATE SCENIC HIGHWAYS

Route	Route Description	Proximity to Phase II.a Area	Proximity to Phase II.b Area
Officially Designated State Scenic Highway			
SR-27	From SR-1 north to Mulholland Drive	**12.9** miles south	**5.1** miles southeast
SR-2	Within Los Angeles County, from 2.7 miles north of SR-210 at the National Forest Boundary in Los Angeles County east to the San Bernardino County Line	19.2 miles southeast	24.8 miles east
SR-33	Within Ventura County, from 6.4 miles north of SR-150 north to the Santa Barbara County Line	38.7 miles northwest	38.3 miles northwest
Eligible State Scenic Highway			
SR-126	From SR-150 near Santa Paula east to I-5 near Castaic	**adjacent** to the northern edge	**11.5** miles north
I-5	From Interstate 210 North Tunnel Station in Pasadena east to SR-126 near Castaic	**adjacent** to the eastern edge	**9.4** miles northeast
Interstate 210	From I-5 near Tunnel Station east to SR-134	**2.2** miles southeast	**9.7** miles northeast
SR-118	From SR-23 south to Desoto Avenue near Browns Canyon	**4.2** miles south	**1.8** miles north
State Route 101	From SR-27 / Topanga Canyon Boulevard west and northwest to SR-46 near Paso Robles	**11.5** miles south	**3.8** miles southeast
State Route 1	From SR-187 near Santa Monica west to SR-101 near El Rio	20.6 miles south	**11.7** miles south
Officially Designated County Scenic Highway			
Malibu Canyon-Las Virgenes Rd	from SR-1 to Lost Hills Road	15.7 miles southwest	**6.2** miles southwest
Mulholland Highway[a]	from SR-1 to S. Kanan Dume Road and from Malibu Lake to 0.5 mile west of Cold Canyon Road	20.2 miles southwest	**11.3** miles southwest

NOTE:
[a] Mulholland Highway is also a designated Scenic Corridor, from SR-1 east to SR-101.[2]
SOURCES:
[1] California Department of Transportation. Accessed 1 August 2017. *Scenic Highways*. Available at: http://www.dot.ca.gov/design/lap/livability/scenic-highways/index.html
[2] National Park Service. 2012. *Santa Monica Mountains National Recreation Area Map*. Available at: https://www.nps.gov/samo/planyourvisit/maps.htm

[53] California Department of Transportation. Accessed 1 August 2017. *Scenic Highways*. Available at: http://www.dot.ca.gov/design/lap/livability/scenic-highways/index.html

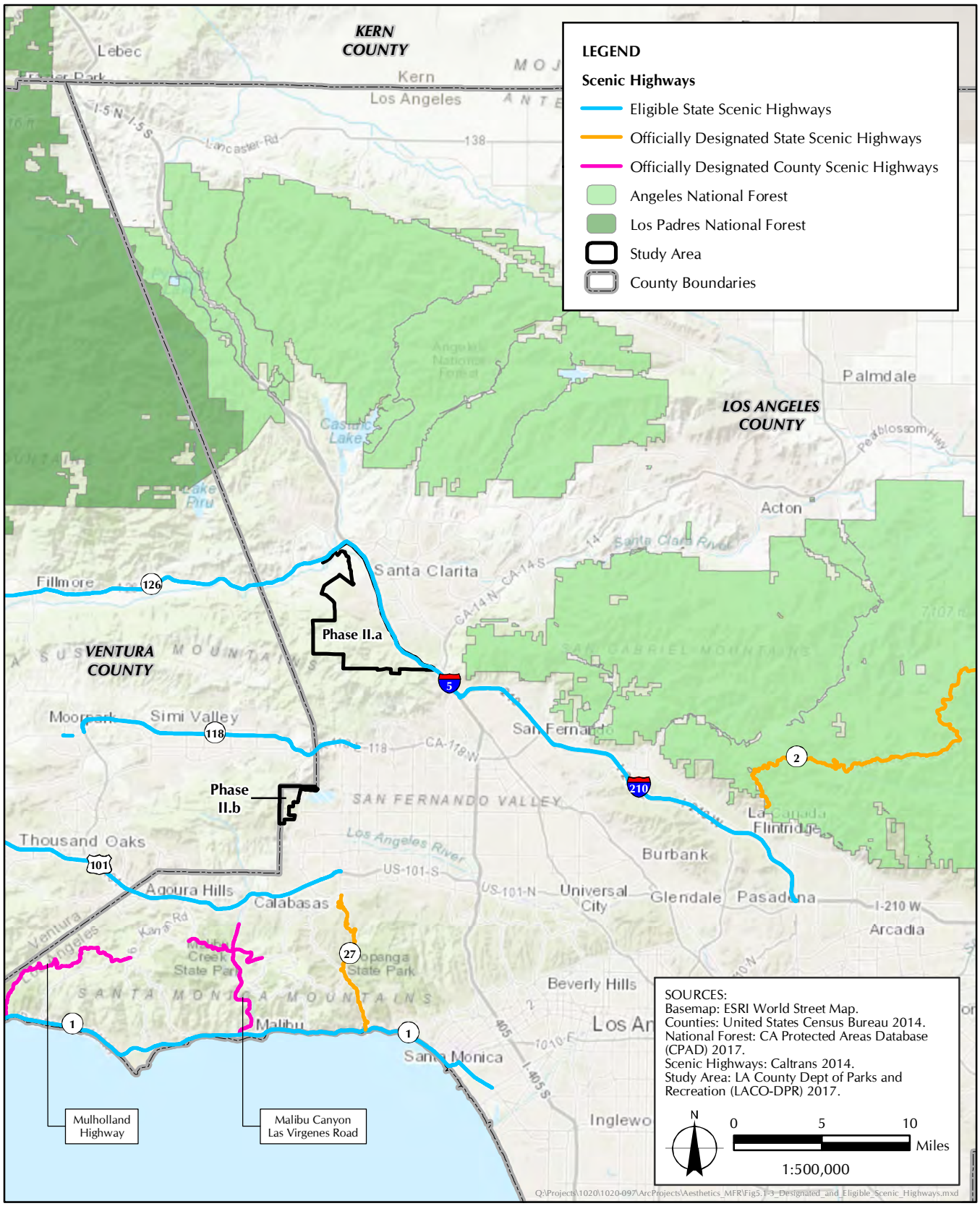

FIGURE 5.1.3-1

Designated and Eligible California Scenic Highways

Based on a review of major visual obstructions using Google Earth Street View and Ground View, there is potential for the SSMTMP-PII area to be visible from SR-27. Due to intervening topography (including the Santa Susana Mountains ridgeline), ornamental trees/shrubs, and development, neither the Phase II.a area nor the Phase II.b area can be seen from the intersection of SR-27 and Mulholland Drive; however, both the Phase II.a area and Phase II.b area have the potential to be visible in the distance from SR-27 from higher elevations. It is unlikely that the SSMTMP-PII area would be visible from Malibu Canyon - Las Virgenes Road, as the scenic route is located within and along the coast-facing slopes of Malibu Canyon. Similarly, the scenic Mulholland Highway route is unlikely to provide vistas of the SSMTMP-PII area as it follows lower elevations within the canyons at the base of the Santa Monica Mountains.

5.1.4 Visual Character and Quality

The SSMTMP-PII area is generally considered rural and includes the existing communities of Stevenson Ranch in the Phase II.a area and Chatsworth Lake Manor in the Phase II.b area. Similar to the Phase I area described in the SSMFTMP, the Phase II.a area is characterized by rugged topography, steep ridges, deep canyons with wide creek beds that are tributaries to the Santa Clara River, and several ridgeline and canyon trails and fire roads. The Phase II.a area contains several ridges and canyons and approximately 0.6 miles of existing County trails (Pico Canyon Trail) managed by County DPR. Additionally, there are approximately 15.0 miles of existing Conservancy trails (managed by the Mountains Recreation and Conservation Authority [MRCA]), approximately 0.9 mile of landscaped trail along Pico Canyon Channel (managed by the Los Angeles County Flood Control District) and approximately 5.0 miles of existing City trails (managed by the City of Santa Clarita). The Phase II.b area contains several ridges and canyons and no existing Federal, State, County, or City trails.

Land Use Designation and Zoning

The County land use designations for the SSMTMP-PII area are predominantly Rural Land 20 (RL20), Parks and Recreation (OS-PR). Trails are compatible with all of the County's land use designations for the SSMTMP-PII area.[54,55] The County zoning designations for the SSMTMP-PII area are predominantly Open Space (OS), Light Agricultural (A-1), Heavy Agricultural, (A-2), and Single-Family Residence (R-1), with other residential zones, manufacturing zones, commercial zones, and institutional zones also comprising portions of the project study area.[56] The Heavy Agricultural Zone, Light Manufacturing Zone, Unlimited Commercial Zone, Commercial Manufacturing Zone, Commercial Recreation Zone, Restricted Heavy Manufacturing Zone, and Neighborhood Business Zone permit riding and hiking trails; the Open Space Zone, Light Agricultural Zone, Manufacturing – Industrial Planned Zone, and residential zones in the SSMTMP-PII area allow for riding and hiking trails if they have been approved by the Director of the County of Los Angeles Department of Regional Planning (Director); and riding and hiking trails may be allowed in the Institutional Zone upon approval of a Conditional Use Permit (CUP).

[54] County of Los Angeles Department of Regional Planning. Adopted 6 October 2015. County of Los Angeles General Plan 2035. Chapter 6: Land Use Element. Available at: http://planning.lacounty.gov/assets/upl/project/gp_final-general-plan-ch6.pdf

[55] County of Los Angeles Department of Regional Planning. Adopted 27 November 2012. Santa Clarita Valley Area Plan. Chapter 2: Land Use. Available at: http://planning.lacounty.gov/assets/upl/project/ovov_2012-ch-02-landuse.pdf

[56] County of Los Angeles Department of Regional Planning. n.d. GIS-NET3 Public Mapping Application. Planning & Zoning Information for Unincorporated LA County. Available at: http://rpgis.isd.lacounty.gov/GIS-NET3_Public/Viewer.html

Santa Clarita Valley Area Plan Scenic Resources

The Conservation Element of the Santa Clarita Valley Area Plan has identified four types of scenic resources as significant resources to be maintained to preserve the visual character of the valley that are located within the Phase II.a area (Figure 5.1.4-1, *Santa Clarita Valley Area Plan Designated Scenic Resources*):[57]

- **Scenic Canyons,** which have remained undeveloped and support a variety of natural habitats. One of the seven scenic canyons identified by the Santa Clarita Valley Area Plan is located within the study area: Pico Canyon

- **Scenic Woodlands,** which contribute to rural and scenic character. The Santa Clarita Valley Area Plan strives to protect existing oak woodland and cottonwood-willow riparian forest areas, several areas of which have been adopted by the County as Significant Ecological Areas. These woodlands include:
    - Southern Coast Live Oak Riparian Forest
    - Southern Cottonwood Willow Riparian Forest
    - California Walnut Woodland
    - Valley Oak Woodland

- **Scenic Water Bodies,** which provide scenic visual relief from urbanization as well as habitat for wildlife. Two of the 11 scenic water bodies identified by the Santa Clarita Valley Area Plan are located within the Phase II.a area: Castaic Creek and the South Fork of the Santa Clara River

- **Significant Ridgelines,** which create a sense of place for each neighborhood

Key Observation Points

The existing visual character of the SSMTMP-PII area was documented in the vicinity of scenic resources and existing trail segments for each of the 19 established Key Observation Points (Figure 5.1.4-2, *Key Observation Points Map*; see Appendix A.1: *Key Observation Points*).

KOP 1: Phase II.a Area from SR-126 Facing East – View from eligible State scenic highway SR-126 facing east towards the northern portion of the Phase II.a area at the confluence of Castaic Creek and the Santa Clara River. The view is characterized by native and non-native riparian and scrub vegetation to the north and south of SR-126, as well as Southern Cottonwood Willow Riparian Forest (a scenic woodland plant community), then Valencia Travel Village in the foreground; mountainous terrain within the Newhall Ranch Specific Plan in the foreground to middleground; and the top of Six Flags Magic Mountain's 415-foot tall *Superman™: Escape from Krypton* ride[58] and iconic 384-foot tall red Sky Tower[59] in the background. To the north of SR-126, an electrical transmission corridor parallels SR-126 then Castaic Creek, and does not enter the Phase II.a area.

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[57] County of Los Angeles. 2012. *Santa Clarita Valley Area Plan.* Available at: http://planning.lacounty.gov/view/santa_clarita_valley_area_plan/

[58] Six Flags. Accessed 1 August 2017. *SUPERMAN: Escape from Krypton.* Available at: https://www.sixflags.com/magicmountain/attractions/superman-escape-krypton

[59] Worden, Leon. 2012. *Sky Tower Construction: Magic Mountain.* Available at: http://scvhistory.com/scvhistory/mm0100.htm

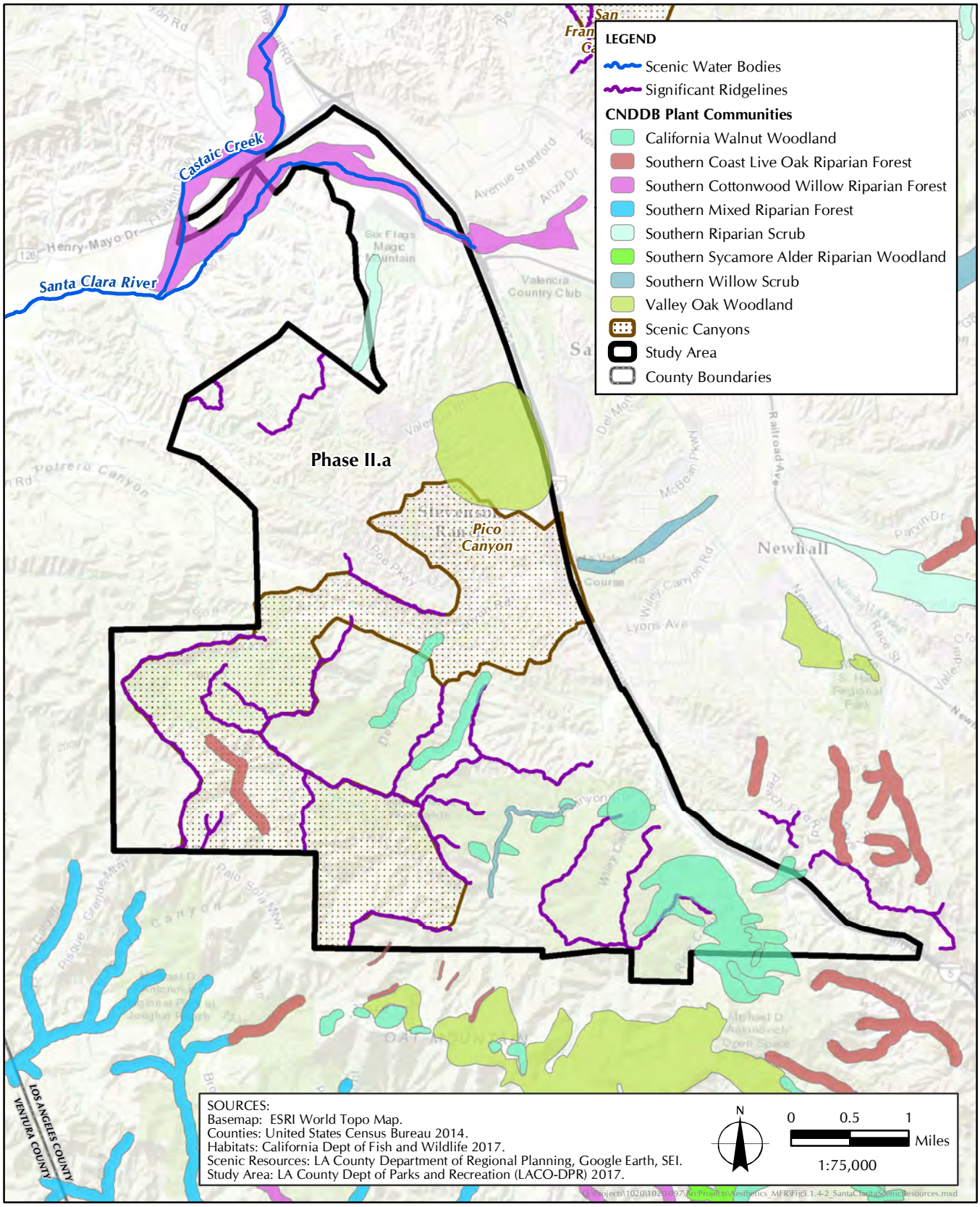

FIGURE 5.1.4-1

Santa Clarita Valley Area Plan Designated Scenic Resources

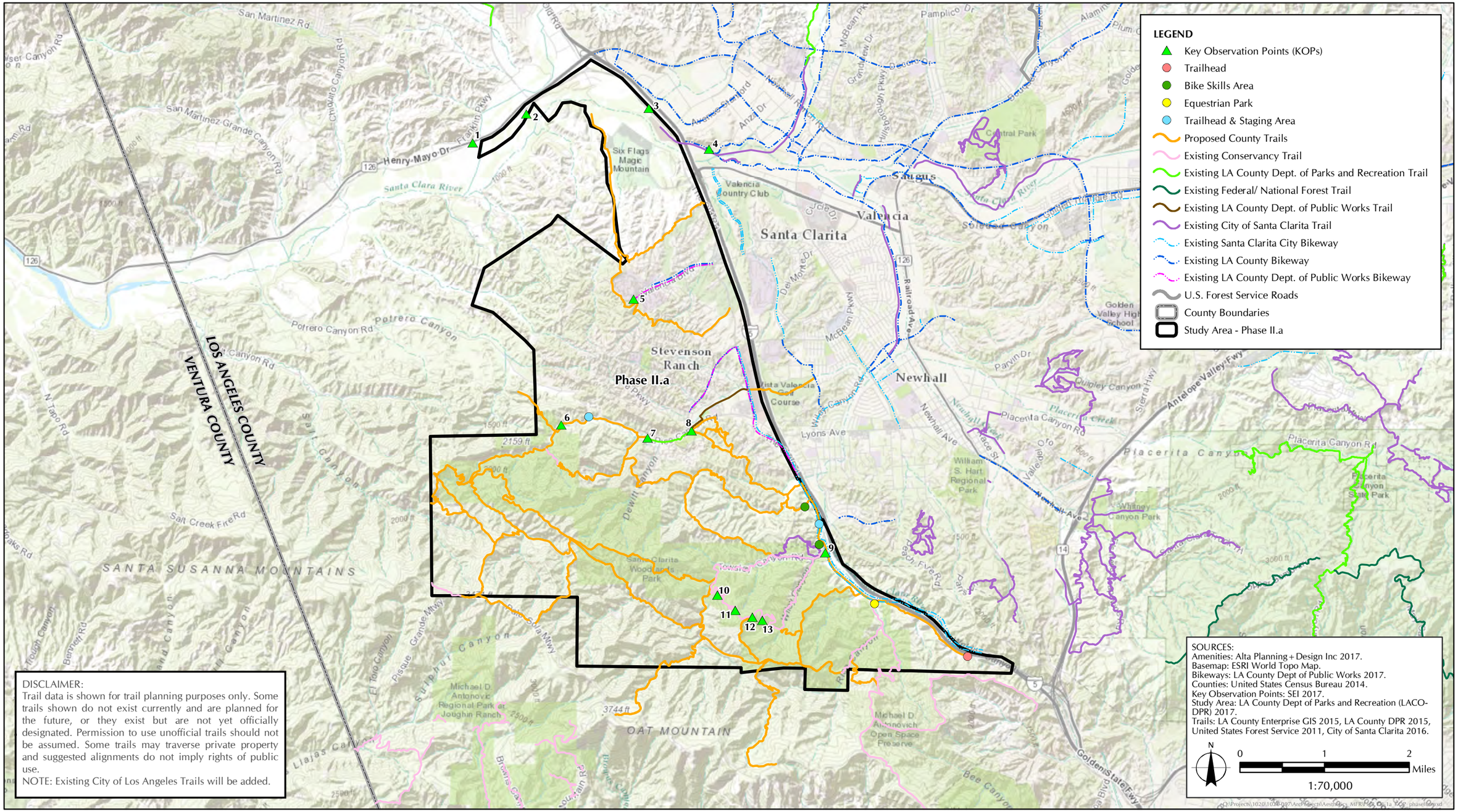

FIGURE 5.1.4-2a

Key Observation Points Map (Phase II.a)

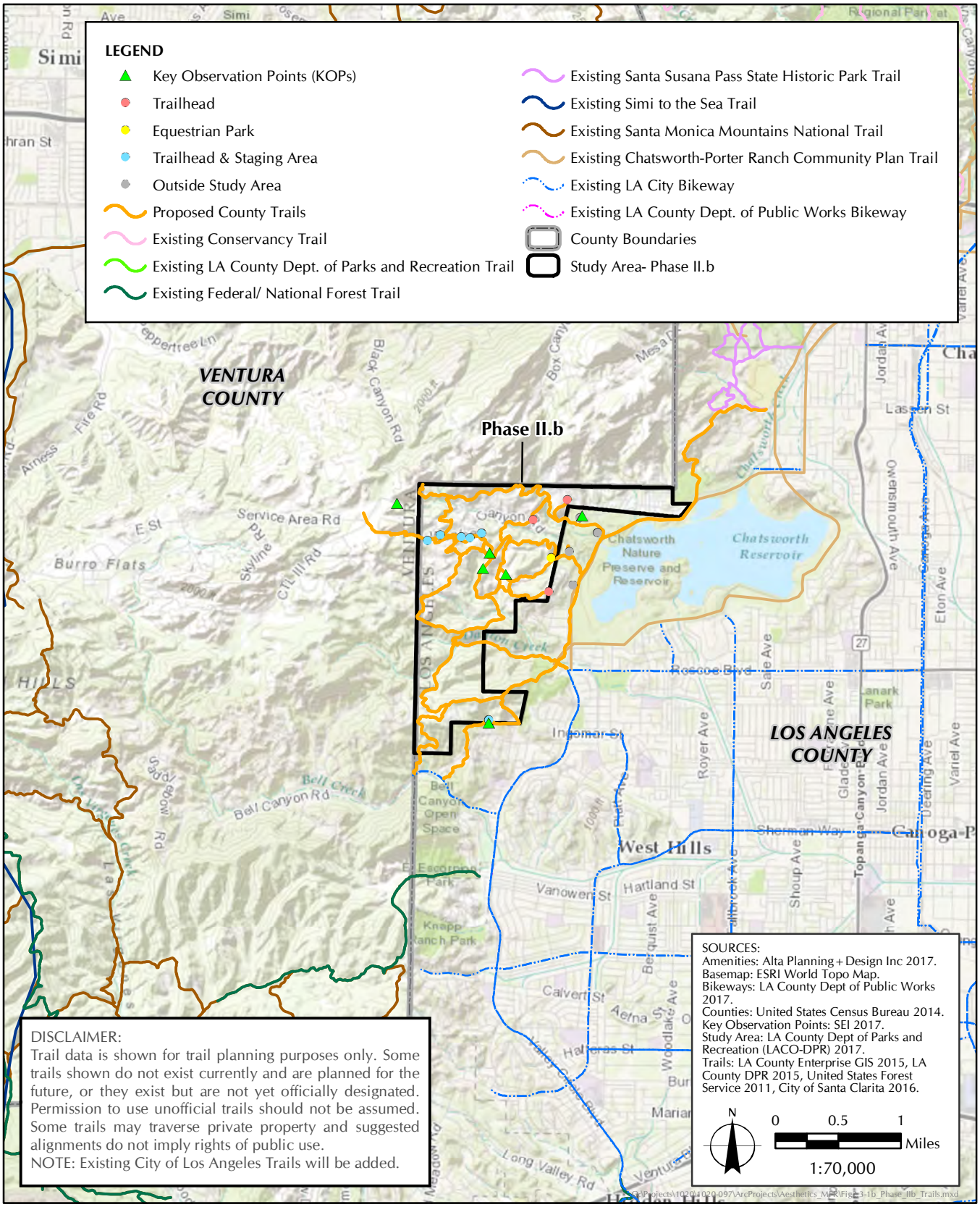

FIGURE 5.1.4-2b

Key Observation Points Map (Phase II.b)

KOP 2: Phase II.a Area from Henry Mayo Drive Facing East – View from Henry Mayo Drive in Phase II.a area Near Valencia Travel Village facing east towards the Santa Clara River floodplain. The view is characterized by a private road or driveway which parallels Henry Mayo Drive, non-native and native riparian and scrub vegetation, as well as Southern Cottonwood Willow Riparian Forest (a scenic woodland plant community), in the foreground; mountainous terrain within the Newhall Ranch Specific Plan in the foreground to middleground; and the top of Six Flags Magic Mountain's 384-foot tall red Sky Tower in the background. Chain-link fences and overhead street lights along the concrete sidewalk contrast with the Santa Clarita Valley Area Plan designated scenic woodland in the Santa Clara River floodplain.

KOP 3: Phase II.a Area from I-5 and The Old Road Facing Southwest – View from The Old Road near eligible State scenic highway I-5 at the eastern edge of the Phase II.a area southwest towards the Phase II.a area. The view is characterized by The Old Road, non-native and native riparian and scrub vegetation, as well as Southern Cottonwood Willow Riparian Forest (a scenic woodland plant community), in the foreground; and the top of Six Flags Magic Mountain's 415-foot tall S*uperman™: Escape from Krypton* ride, 384-foot tall red Sky Tower, and roller coasters in the middleground; and mountainous terrain within the Newhall Ranch Specific Plan in the middleground and background. An overhead electrical transmission corridor, paved and gravel road shoulders, chain-link fences, and overhead street lights along the paved road contrast with the Santa Clarita Valley Area Plan designated scenic woodland in the Santa Clara River floodplain.

KOP 4: Santa Clara River Trail in Santa Clarita Facing West Towards Phase II.a Area – View from the existing paved South Fork of the City of Santa Clarita's Santa Clara River Trail within the Santa Clara River floodplain west towards eligible State scenic highway I-5 and development along the eastern edge of the Phase II.a area. The view is characterized by non-native and native riparian and scrub vegetation, as well as Southern Cottonwood Willow Riparian Forest (a scenic woodland plant community), in the foreground; development along I-5 and The Old Road including water storage tanks, two electrical transmission corridors, office buildings, the Six Flags California sign along Magic Mountain Parkway, and the top of Six Flags Magic Mountain's 415-foot tall S*uperman™: Escape from Krypton* ride, 384-foot tall red Sky Tower, and roller coasters in the foreground to middleground; and the top of Six Flags Magic Mountain's 415-foot tall S*uperman™: Escape from Krypton* ride, 384-foot tall red Sky Tower, and roller coasters in the middleground; and single-family residential development of the community of Stevenson Ranch and mountainous terrain within the Newhall Ranch Specific Plan in the middleground and background. The overhead electrical transmission corridors, buildings, signs, and water storage tanks near I-5, as well as the roller coasters at Six Flags Magic Mountain, contrast with the Santa Clarita Valley Area Plan designated scenic woodland in the Santa Clara River floodplain.

KOP 5: Edge of Stevenson Ranch Development in Phase II.a Area Facing Southwest – View of the western edge of development near three K-12 schools on Valencia Boulevard in the community of Stevenson Ranch. Within the unincorporated community of Stevenson Ranch, there are several culs-de-sac such as this terminus that dead-end as the edge of development and either non-graded hills or slopes that have been graded for erosion/runoff control as part of the development. The view is characterized by a six-lane paved road with median, sidewalks, and overhead street lamps; planted native shrubs and trees maintained to meet fuel modification requirements; and native scrub and scattered non-native scrub/grassland vegetation on the hills outside the developed area. The ridgeline on the hills is softened by the scrub vegetation. The proposed Entrada trail corridor would be visible from KOP 5.

KOP 6: Mentryville in Phase II.a Area Facing Southeast – View of the Mentryville site historic landmark[60] within Pico Canyon in Santa Clarita Woodlands Park, including four remaining historic buildings, the road with bridge across a drainage leading to a paid parking lot (behind the structures) and Pico Canyon Road.[61] Mentryville was an 1880-1930's oil boom town building around oil well Pico No. 4,[62,] the site of the first commercially successful oil well in the western United States.[63,64] Mentryville is maintained by the Santa Monica Mountains Conservancy and open to the public. The view is characterized by paved roads bordered on the south side by an existing narrow dirt trail with fence, an electrical transmission corridor, historic Mentryville structures with ornamental/shade trees near the parking lot, and a mix of native riparian and scrub vegetation and non-native scrub/grassland within the drainage, near the historic structures, and on the surrounding hills of Pico Canyon. The existing trail indicated on a map, which from the intersection of Pico Canyon Road and Potrero Canyon Road along Pico Canyon Road, through Mentryville and Johnson Park via the Pico Canyon Service Road, is not well-delineated as a trail within Pico Canyon. The proposed Pico Canyon trail corridor (comprised of a previously adopted proposed County trail alignment and Pico Canyon Service Road) would be visible from KOP 6.

KOP 7: Western End of Pico Canyon Trail in Phase II.a Area Facing Northeast – View of the western end of the existing Pico Canyon Trail, which is managed by DPR. This 0.6-mile decomposed granite trail parallels the south side of Pico Canyon Road and terminates at the location of a debris basin enclosed by a chain-link fence. The view is characterized by the concrete sidewalk adjacent to the trail, the debris basin, an electrical transmission corridor, the paved Pico Canyon Road, and steep topography vegetated with a mix of native scrub and non-native scrub/grassland. The utility and transportation infrastructure contrast with the vegetated mountainous terrain. The proposed Pico Canyon trail corridor would be extended to the west (left) of the view from KOP 7.

KOP 8: Eastern Edge of Pico Canyon Trail in Phase II.a Area Facing South – View of the eastern end of the existing Pico Canyon Trail, which is managed by DPR. This view is characterized by the decomposed granite trail, non-native grassland and native coast live oak/scrub vegetation, and the suburban residential development within Pico Canyon. The proposed Pico Canyon trail corridor would be extended to the east along Pico Canyon Road and be visible from KOP 8.

KOP 9: Towsley Canyon Trail Parking in Phase II.a Area Facing West – View from the first of two parking lots within Ed Davis Park in Towsley Canyon, which contains existing trails managed by the City of Santa Clarita and the MRCA. This view is characterized by a paved parking lot and driveway leading to the next parking lot, consistent green and white signs directing trail users, an electrical transmission corridor, non-native ornamental shade trees and grassland in the foreground,

[60] National Register of Historic Places. State Historic Landmark #516-2

[61] City of Santa Clarita. May 2011. *City of Santa Clarita General Plan. Conservation and Open Space Element.* Available at: http://www.codepublishing.com/CA/SantaClarita/html/SantaClaritaGP/6%20-%20Conservation%20and%20Open%20Space%20Element.pdf

[62] National Register of Historic Places. State Historic Landmark #516

[63] Santa Monica Mountains Conservancy. Accessed 1 August 2017. *Mentryville.* Available at: http://www.lamountains.com/parks.asp?parkid=35 Map available at: http://www.lamountains.com/maps/mentryville_Pico.pdf

[64] City of Santa Clarita. May 2011. *City of Santa Clarita General Plan. Conservation and Open Space Element.* Available at: http://www.codepublishing.com/CA/SantaClarita/html/SantaClaritaGP/6%20-%20Conservation%20and%20Open%20Space%20Element.pdf

and native scrub vegetation on the hills further in the canyon. The proposed Pico Canyon trail corridor would parallel The Old Road behind KOP 9.

KOP 10: Towsley Canyon Trail in Phase II.a Area Facing Southwest – View of ridgelines within the southern portion of the Phase II.a study area, with Oat Mountain, Rocky Peak and Sand Rock peak against the skyline. This view is characterized by steep slopes with visible rock outcrops, prominent peaks, and a mix of non-native grassland and native coast live oak/scrub vegetation. Proposed trail corridors may be visible from this vista facing down into the canyon.

KOP 11: Towsley Canyon Trail in Phase II.a Area Facing Northwest – View of ridgelines within the southern portion of the Phase II.a study area, with Oat Mountain and Sand Rock peak against the skyline. This view is characterized by a mix of non-native grassland and native coast live oak/scrub vegetation along the trail and on adjacent slopes in the foreground, one ridgetop utility structure, and a vista of the Santa Clarita Valley beyond the mountainous Phase II.a area. Proposed trail corridors may be visible from this vista facing down into the canyon.

KOP 12: Towsley Canyon Trail in Phase II.a Area Facing Southeast – View from a County-designated significant ridgeline along the existing Towsley Canyon Trail of ridgelines within the southwestern portion of the Phase II.a study area. This view is characterized by a mix of non-native grassland and native coast live oak/scrub vegetation along the trail and on adjacent slopes in the foreground, with Oat Mountain against the skyline, the I-5 freeway in the middleground, and the San Gabriel Mountains in the distance. A proposed trail corridor would extend from near KOP 12 towards the west.

KOP 13: Towsley Canyon Trail in Phase II.a Area Facing Southwest – View from along the existing Towsley Canyon Trail of Wiley Canyon. This view is characterized by a mix of non-native grassland and native coast live oak/scrub vegetation along the trail and on adjacent slopes in the foreground, with clearly defined ridgelines obstructing any distant views. The proposed Rice Canyon trail corridor would be visible from KOP 13.

KOP 14: Woolsey Canyon Road Facing East Towards Phase II.b Area – Elevated view from a boulder adjacent to Woolsey Canyon Road of the Phase II.b area from the west and the San Fernando Valley in the background. The view is characterized by native scrub and non-native grassland vegetation, an electrical transmission corridor, one residence located within the Phase II.b area, and the narrow paved Woolsey Canyon Road. No proposed trail corridors would be visible from KOP 14.

KOP 15: Lake Manor Drive Facing North Towards Phase II.b Area – View of single-family residences with the community of Chatsworth Lake Manor and the rock formation (in Ventura County) referred to by locals as the "Twelve Apostles" in the background. The view is characterized by non-native grassland, ornamental trees, and native scrub vegetation; a gated open space area; Box Canyon Road; and one electrical transmission corridor. Proposed trail corridors would be located to the west of KOP 15 (potentially visible on the left side of the vista) and to the south of KOP 15 (behind this vista). One access area facility would be located northwest of KOP 15 (potentially visible on the left side of this vista). The Trails Master Plan recommends that the City of Los Angeles develop a trailhead facility at the location of KOP 15.

KOP 16: Woolsey Canyon in Phase II.b Area Facing East – View of non-native grassland and native scrub vegetation within Phase II.b area in the foreground, the San Fernando Valley including

Chatsworth Reservoir in the middleground, and the San Gabriel Mountains in the background. Proposed trail corridors would be visible from this KOP.

KOP 17: Woolsey Canyon in Phase II.b Area Facing Northwest – View of non-native grassland and native scrub vegetation within Phase II.b area in the foreground, with scattered residences, existing dirt paths, and dramatic rock formations characteristic of the Phase II.b area. Proposed trail corridors would be visible from this KOP.

KOP 18: Woolsey Canyon in Phase II.b Area Facing North – View of non-native grassland and native scrub and riparian vegetation within Phase II.b area in the foreground, with scattered residences, existing dirt paths, and dramatic rock formations characteristic of the Phase II.b area. Proposed trail corridors would be visible from this KOP.

KOP 19: Edge of Residential Development Facing North Towards Phase II.b Area – View of southern edge of Phase II.b area from residential neighborhood in City of Los Angeles. The proposed RIVA trail corridor would be visible from this KOP. A proposed trailhead and staging area would be located in front of KOP 19.

County Designated Significant Ridgelines

The 2012 Santa Clarita Valley Area Plan has designated Significant Ridgelines in the Phase II.a area to be preserved (see Figure 5.1.4-2).[65] These ridgelines should be carefully considered during the planning, designation, and construction of trails in the Trails Master Plan.

County Designated Town and Country Scenic Drives

There are nine County-designated Town and Country Scenic Drives located within a 15-mile radius of the Phase II.a area, none of which are located within the SSMTMP-PII area:

1) Northern segment of Golden State Freeway/I-5 (north of Phase II.a area)
2) Old Ridge Route Road (north of Phase II.a area)
3) Lake Hughes Road (north of Phase II.a area)
4) San Francisquito Canyon Road (northeast of Phase II.a area)
5) Bouquet Canyon Road (northeast of Phase II.a area)
6) Antelope Valley Freeway (east of Phase II.a area)
7) Soledad Canyon Road (east of Phase II.a area)
8) Little Tujunga Road (east of Phase II.a area)
9) Big Tujunga Canyon Road (east of Phase II.b area)

There is one Town and Country Scenic Drive located within a 15-mile radius of the Phase II.b area: Little Tujunga Road. A viewshed analysis was conducted using ArcGIS to evaluate the potential visibility level of the SSMTMP-PII area from these nine (9) designated Town and Country Scenic Drives.[66] It was determined that approximately 48.1 percent of the SSMTMP-PII area would be visible from designated Town and Country Scenic Drives. It should be noted that a viewshed analysis evaluates visibility based solely on topographic data, and the presence of large trees, large shrubs, buildings, and infrastructure between these designated Town and Country Scenic Drives

[65] These have been incorporated into the County General Plan 2035 Inventory of Significant Ridgelines.

[66] Sapphos Environmental, Inc. 17 February 2016. Viewshed analysis calculated using 10-foot DEM data in ArcGIS.

and the study area would be expected to reduce the potential visibility level further than this estimate.

Significant Ecological Areas

Three adopted SEAs are located within the SSMTMP-PII area: the Santa Clara River SEA (#20), which is located within the Phase II.a area along Castaic Creek and the Santa Clara River; the Santa Susana Mountains / Simi Hills SEA (#23), which is located in the southern half of the Phase II.a area and the undeveloped southern portion of the Phase II.b area within the Santa Susana mountains and the Simi Hills; and the Valley Oaks Savannah SEA (#26), which is located within the unincorporated community of Stevenson Ranch in the Phase II.a area (Figure 3.3-1).

5.1.5 Shadows, Light, and Glare

The SSMTMP-PII area is generally rural, with suburban areas typically containing single-story to two-story residences, except for the developed community of Stevenson Ranch and the Six Flags Magic Mountain property. Commercial and industrial buildings within the northern and eastern portions of the Phase II.a area, are generally surrounded by parking lots and landscaping that provide a buffer between the buildings and potential shadow sensitive land uses. Approximately 50 percent of the SSMTMP-PII area (10.1 square miles of the Phase II.a area and the entire 2 square-mile Phase II.b area) is located within the County's Rural Outdoor Lighting District and subject to restrictions in terms of light and glare at night (see Figure 3.3-1).

Within Los Angeles County, the major sources of nighttime sky glow are cities, transportation corridors, and established communities. According to Earth at Night 2012 data, a composite of city light data acquired by the SuomiNPP satellite over nine days in April 2012 and 13 days in October 2012, within the vicinity of the SSMTMP-PII area, as with the nearby cities of Santa Clarita, Simi Valley, Thousand Oaks, and Los Angeles; the unincorporated communities of Stevenson Ranch (in northeastern portion of Phase II.a area) and Castaic (near Castaic Lake); and the industrial Castaic Junction area in the northeastern portion of the Phase II.a area experience a high level of existing nighttime sky glow (Figure 5.1.5-1, *Existing Light Levels at Night*).[67] In April 2017, NASA scientists released the first new global map of Earth at Night since 2012, comprised of a composite of 2016 images, which show a slight expansion of nighttime light from the 2012 data for Los Angeles County; however, this 2016 data is not yet available to the public in ArcGIS. Light levels at night within the SSMTMP-PII area range from low in the southwestern portion of the Phase II.a area (southwest of Sand Rock Peak and near the undeveloped Newhall Ranch Specific Plan area), to moderate in the northwestern portion of the Phase II.b area (near sage Ranch Park), to high in the northeastern portion of the Phase II.a area (surrounding Stevenson Ranch, Six Flags Magic Mountain, and the City of Santa Clarita) and the southeastern portions of the Phase II.b area, adjacent to the City of Los Angeles.[68]

[67] NASA Earth Observatory/NOAA NGDC. April and October 2012. *Earth at Night 2012*. Available from Google Earth.

[68] NASA Earth Observatory. 2016. *Composite image of Continental U.S. at Night*. Images by Joshua Stevens, using Suomi NPP VIIRS data from Miguel Román, NASA's Goddard Space Flight Center. Available at: City of Santa Clarita. May 2011.

https://www.nasa.gov/sites/default/files/thumbnails/image/2016-north-america-usa.jpg. Main website: https://www.nasa.gov/feature/goddard/2017/new-night-lights-maps-open-up-possible-real-time-applications

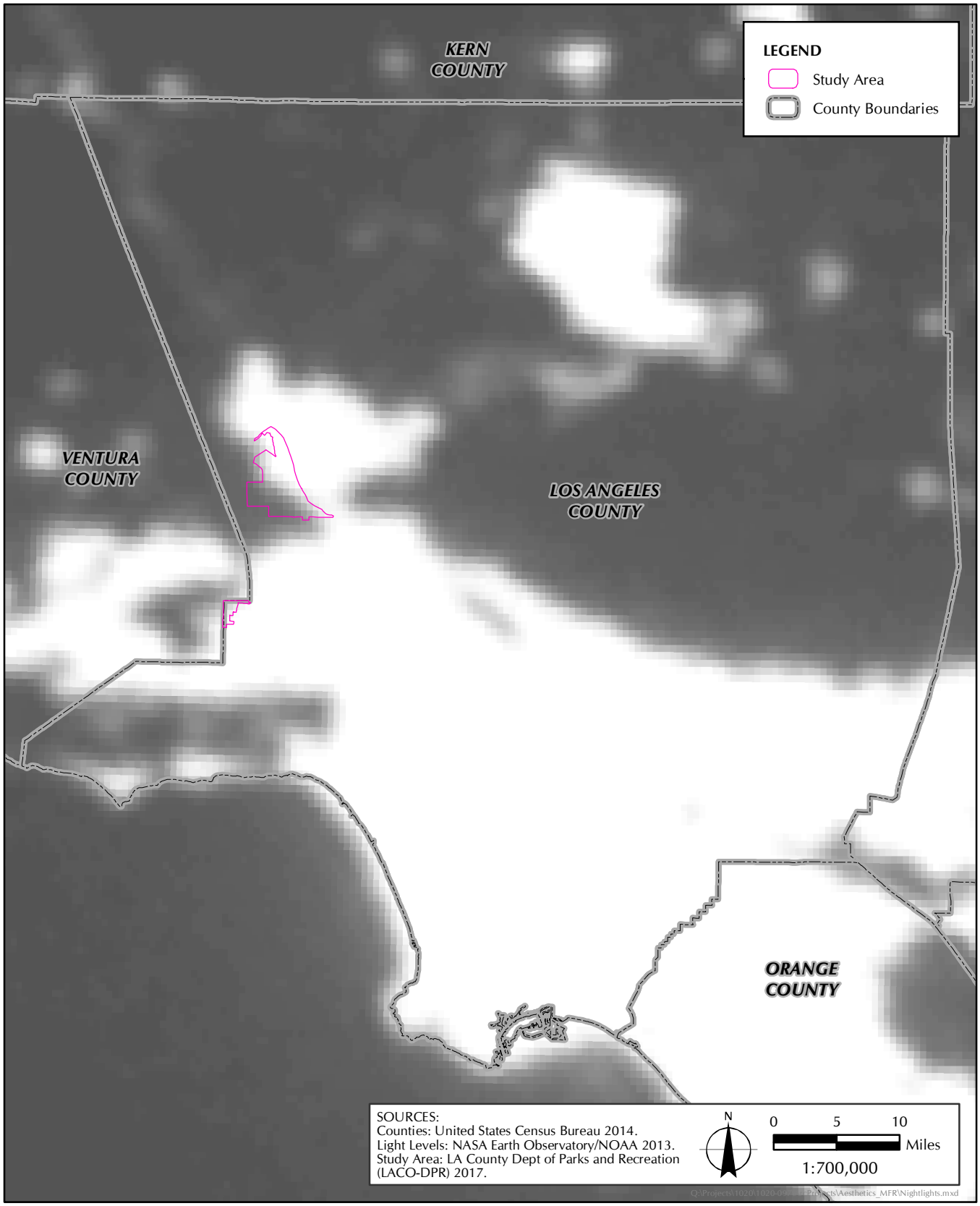

FIGURE 5.1.5-1

Existing Light Levels at Night

5.2 IMPACT ANALYSIS

The potential for trails constructed within the SSMTMP-PII area, including related facilities, to result in impacts related to aesthetics was analyzed in relation to the questions in the County of Los Angeles Department of Parks and Recreation's Environmental Checklist Form and Appendix G of the State CEQA Guidelines.[69] Trails and related facilities constructed within the SSMTMP-PII area would be considered to have a significant impact to aesthetics when the potential for any one of the following five thresholds occurs:

Would the project:

a) Have a substantial adverse effect on a scenic vista?
b) Be visible from or obstruct views from a regional riding or hiking trail?
c) Substantially damages scenic resources, including but not limited to trees, rock outcroppings, and historic buildings within a state scenic highway?
d) Substantially degrades the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features?
e) Create a new source of substantial shadows, light or glare that would adversely affect day or nighttime views in the area?

5.2.1 Scenic Vistas

The proposed project would result in no impacts to aesthetics in regard to a substantial adverse effect on a scenic vista. There are no designated scenic vista points within the SSMTMP-PII area; nor is the SSMTMP-PII area visible from scenic vista points designated within the Los Angeles County General Plan 2035 or by Caltrans.[70,71] Therefore, there would be no impacts to scenic vistas as a result of the proposed project, and no mitigation would be required.

5.2.2 Regional Riding and Hiking Trails

The proposed project would result in less than significant impacts to aesthetics in regard to visibility or obstructing views from a regional riding or hiking trail. Although the proposed project would potentially be visible from nearby existing regional trails, it would not be expected to obstruct views due to intervening topography, trees, and shrubs, as well as the small scale of the proposed facilities. A viewshed analysis was conducted that determined that, based on topography, up to 65.1 percent of the SSMTMP-PII area would potentially be visible from the existing regional riding and hiking trails with clear atmospheric conditions and no intervening trees or shrubs Figure 5.2.2-1, *Viewshed Map – Existing Regional Trails*). As the Pacific Crest National Scenic Trail (PCT) is located approximately 14.9 miles northeast of the SSMTMP-PII area at the nearest point, it is not anticipated that the proposed trails would be visible from the PCT due to distance and intervening topography.

[69] *California Code of Regulations,* Title 14, Division 6, Chapter 3, Sections 15000–15387, Appendix G.

[70] The County has designated Public Viewing Areas in the Santa Monica Mountains Land Use Plans, which are located more than 15 miles south of the Castaic project area.

[71] Male, Laura, Sapphos Environmental, Inc. Pasadena, CA. 3 July 2015. Communication with Daniel Kitowski, Transportation Manager (GIS), California Department of Transportation.

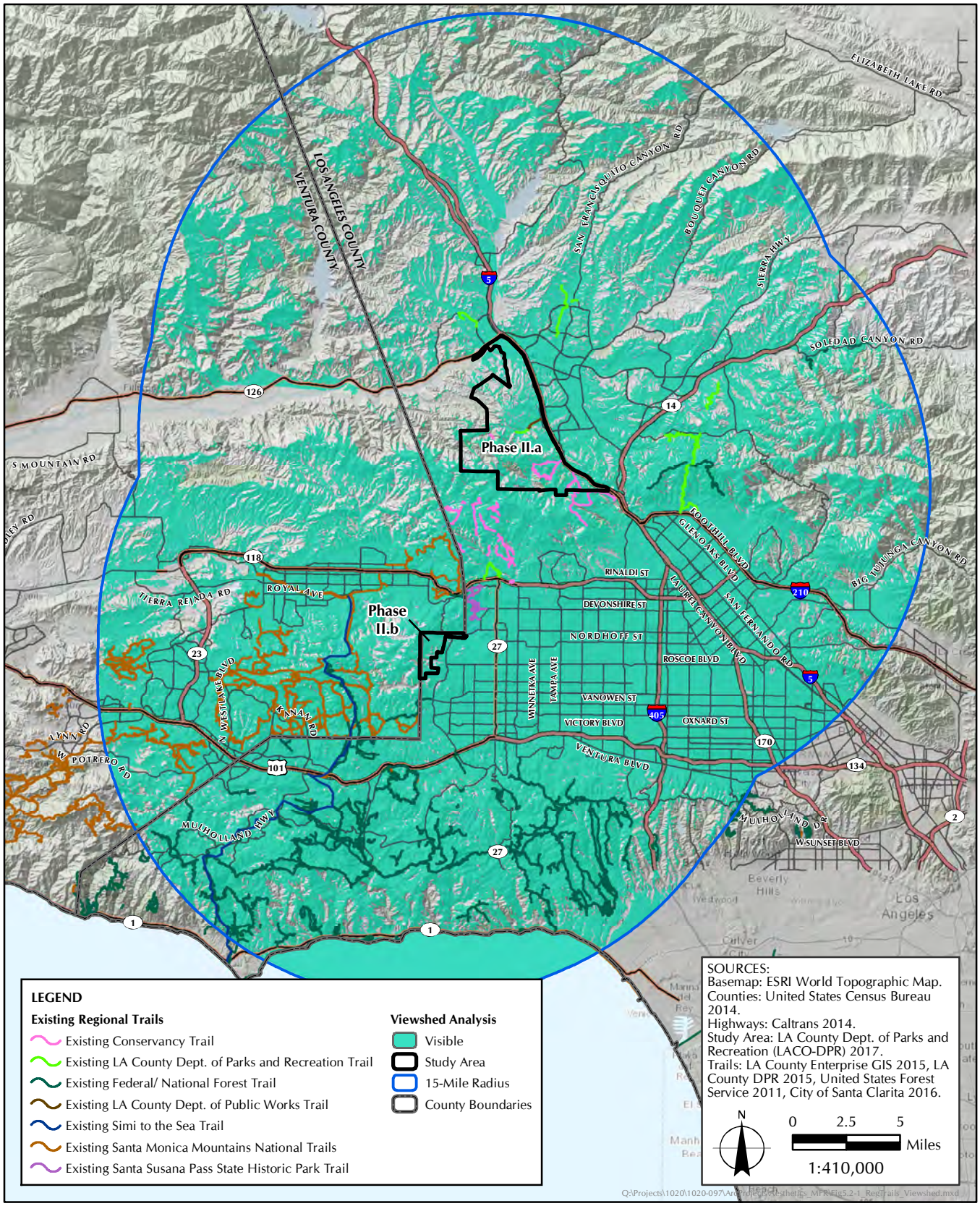

FIGURE 5.2.2-1

Viewshed Map – Existing Regional Trails

According to the viewshed analysis based on topography, approximately 70.5 percent (49.5 miles of 70.3 miles) of proposed trails have the potential to be visible from existing regional trails with clear atmospheric conditions and no intervening trees or shrubs. It should be noted that several of the proposed trail corridors follow existing dirt roads and de facto trails (unofficial routes where a path has already been cleared), a viewshed analysis evaluates visibility based solely on topographic data, and the presence of large trees, large shrubs, buildings, and infrastructure between regional trails and the SSMTMP-PII area would be expected to reduce the potential visibility level further than this estimate. Furthermore, trails and supporting facility structures would not be expected to dramatically alter the form of ridgelines within the study area and would therefore not be likely to be visible from, or obstruct views from, regional trails.

There is one existing trail segment within the SSMTMP-PII area that is part of the County's Regional Trail System: Pico Canyon Trail (0.6 miles), within the Phase II.a area. Although the proposed project would be visible from these existing regional trail segments because new trail segments would be located adjacent to or within a mile of the existing segments, it would enhance the existing recreational experience and trail system by providing connections between the existing trail segments that would be visible from these trails. The proposed project, which would involve new trails, staging areas, bike skills areas, restrooms, parking lots, and other related trail facilities, would be designed to enhance views from recreational trails and would not be expected to obstruct views from existing regional trails. Therefore, there would be less-than-significant impacts to regional riding or hiking trails as a result of the proposed project, and no mitigation would be required.

5.2.3 Scenic Resources within State Scenic Highway Corridors

The proposed project would result in significant impacts to aesthetics in regard to substantial damage to scenic resources within a state scenic highway corridor. The proposed project would be located within the scenic highway corridor of the two nearest eligible state scenic highways—Henry Mayo Drive (SR-126) and the Golden State Highway (I-5)—because the Phase II.a area is adjacent to these routes and proposed trail corridors would be located a one-mile corridor foreground radius of SR-126 and I-5, including one proposed trail which would cross under I-5 to connect to existing bikeways in the City of Santa Clarita. The nearest officially designated State scenic highway is the recently designated SR-27, which was officially designated on March 22, 2017 and is located approximately 5.1 miles southeast of the SSMTMP-PII area; the proposed project has the potential to be visible from SR-27 in the middleground or background. The proposed project would not be visible from Angeles Crest Highway (SR-2) and Maricopa Highway (SR-33)—due to distance and intervening topography. Angeles Crest Highway is located over 24 miles east of the Castaic project area, and Maricopa Highway is located over 28 miles west of the study area.

Based on viewshed analysis, approximately 24.2 miles located on all of the proposed trail corridors within the Phase II.a area would have the potential to be visible in the foreground to middleground from officially designated and eligible State scenic highways (Figure 5.2.3-1, *Viewshed Map – Designated and Eligible State Scenic Highways*). KOPs 1, 2, and 3 are representative of potential views from SR-126 and I-5 (see Appendix A.1). Approximately 39.4 miles (56.1 percent) of the 70.3 miles of proposed trail corridors have the potential to be visible, based solely on topographic data. As the Phase II.a area is adjacent to SR-126 and I-5, implementation of mitigation measures would be required to reduce the potential for significant impacts to scenic resources within a state scenic highway corridor to below the level of significance.

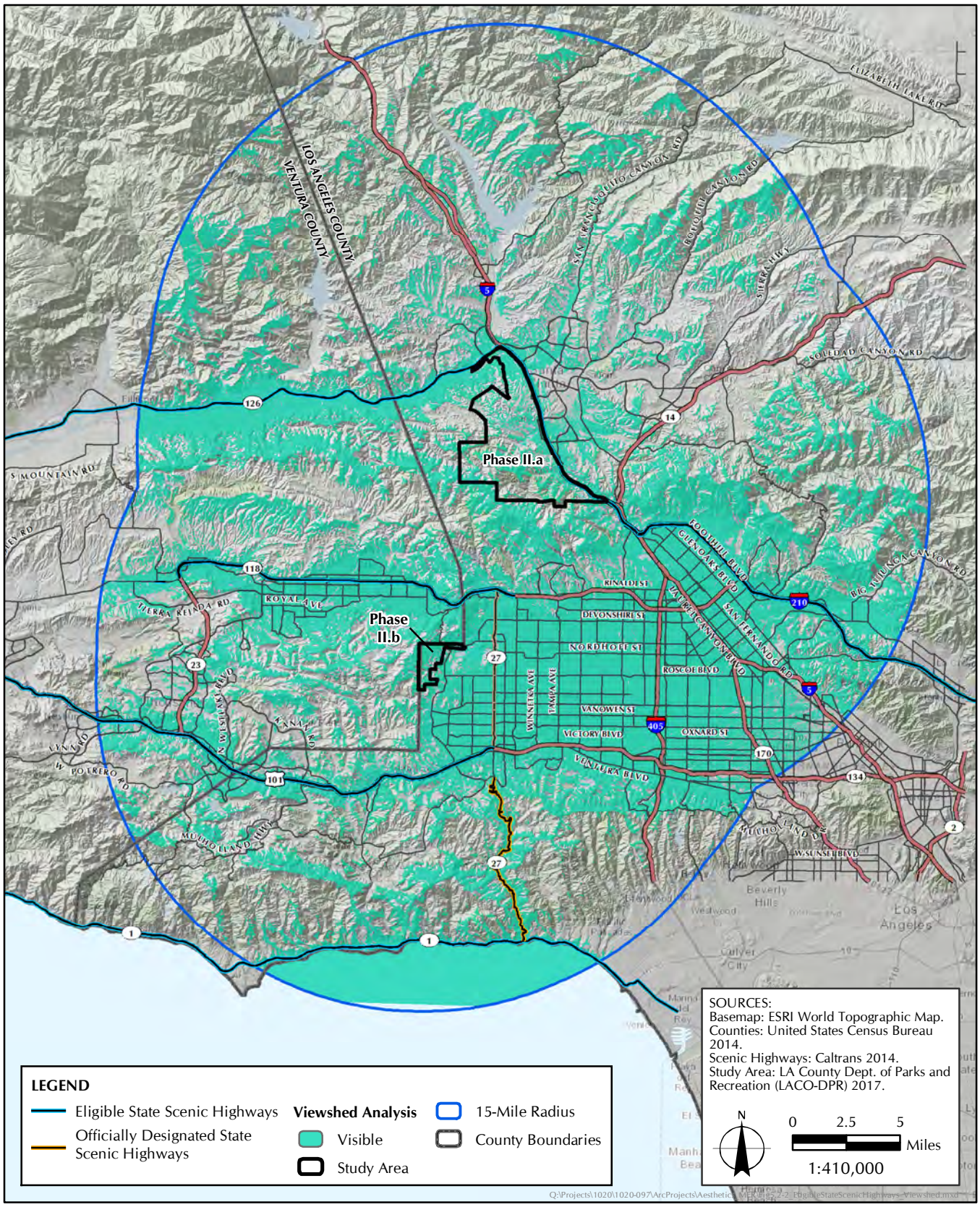

FIGURE 5.2.3-1

Viewshed Map – Designated and Eligible State Scenic Highways

Based on viewshed analysis, approximately 15.1 miles located on all of the proposed trail corridors within the Phase II.b area would have the potential to be visible in the middleground to background from officially designated and state scenic highways (see Figure 5.2.3-1). As the Phase II.b area is located over one mile from the nearest state scenic highway (SR-118), impacts to scenic resources within state scenic highway corridors as a result of proposed trails within the Phase II.b area would be less than potential impacts within the Phase II.a area.

There is a potential for the proposed project to affect the health of existing coast live oak trees and other protected trees that are located along the proposed trail alignments and supporting facilities that are important to the character of the scenic highway corridors. The proposed project involves trail segments within scenic Pico Canyon, along scenic water bodies including the Santa Clara River, and through scenic forests/woodlands (see Figure 5.1.4-1). Although the construction of trails within these scenic resource areas and sensitive woodland areas would not result in significant impacts to visual character because trail construction can be conducted in a low-impact manner in accordance with the County Trails Manual, there is a potential for significant impacts to occur if scenic trees are removed. Therefore, there would be a potential for significant impacts to scenic resources within a state scenic highway as a result of the proposed project, and mitigation would be required.

5.2.4 Visual Character and Quality

The proposed project would result in less than significant impacts to aesthetics in regard to substantial degradation of the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features. Trails and related supporting facilities would generally not be expected to substantially degrade the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, or character because they would be low to the ground, spaced and designed in a pattern that follows the natural topography and existing paved and dirt roads, and be consistent with the scale and character of the rural SSMTMP-PII area that already contains several dirt access roads and fire roads throughout the mountainous and hilly terrain.

Trails and related supporting facilities are generally consistent with the existing visual character of the SSMTMP-PII area and surrounding areas. Although the Santa Clarita Valley Area Plan only directly mentions trails within the Parks and Recreation land use designation, the land use policy defers to the specific allowable uses and development standards determined by underlying zoning designations and adopted Specific Plans. The County zoning designations for the SSMTMP-PII area are predominantly open space and light agricultural, with land designated in the County General Plan for open space, rural land, single-family residential, major commercial, and other uses which are compatible with trails.[72,73] The Heavy Agricultural Zone, Light Manufacturing Zone, Unlimited Commercial Zone, Commercial Manufacturing Zone, Commercial Recreation Zone, Restricted Heavy Manufacturing Zone, and Neighborhood Business Zone permit riding and hiking trails; the Open Space Zone, Light Agricultural Zone, Manufacturing – Industrial Planned Zone, and residential zones in the project study area allow for riding and hiking trails if they have been approved by the Director of the County of Los Angeles Department of Regional Planning

[72] County of Los Angeles Department of Regional Planning. Adopted 6 October 2015. *County of Los Angeles General Plan 2035*. Chapter 6: Land Use Element. Available at: http://planning.lacounty.gov/assets/upl/project/gp_final-general-plan-ch6.pdf

[73] County of Los Angeles Department of Regional Planning. Adopted 27 November 2012. *Santa Clarita Valley Area Plan*. Chapter 2: Land Use. Available at: http://planning.lacounty.gov/assets/upl/project/ovov_2012-ch-02-landuse.pdf

(Director); and riding and hiking trails may be allowed in the Institutional Zone upon approval of a Conditional Use Permit (CUP).

Consistent with planning guidelines provided by the County Trails Manual, conceptual trail alignments have been planned to maintain the characteristic rugged aesthetic of the trail. The proposed project has the potential to enhance the trail's visual quality through clarified trail designation, maintenance, and revegetation along constructed portions of the trail with native plants that may not have survived construction of subdivisions. The experience of recreation users would be enhanced through the incorporation of informational signs at trail intersections to provide orientation. The County Trail Manual specifies desired minimum trail widths for multi-use trails (accommodating bicyclists, hikers, and equestrians) at 5 feet, wherever possible, with 6- to 10-foot-wide turn outs in high-traffic areas.[31] Where trails of up to 10 feet wide are developed or existing trials are expanded up to 10 feet wide, impacts to the visual character of the viewshed from surrounding residences can be avoided through the incorporation of native vegetation as a screening material. Restoration of native vegetation along conceptual trail alignments would have the potential to enhance the visual character within the SSMTMP-PII area. Preserving existing native vegetation adjacent to the trail would protect the aesthetic quality of the SSMTMP-PII area.[74]

Trails proposed as a result of the proposed project would be consistent with the visual character of the SSMTMP-PII area and surrounding areas. The visual nature of the SSMTMP-PII area is dominated by native and non-native vegetation, transmission corridors, roads, isolated structures, suburban and industrial/commercial developed areas, and trails (see Appendix A.1). The proposed trail improvements are compatible with the existing visual character of the SSMTMP-PII area. Several official trails and many unofficial trail segments currently traverse the SSMTMP-PII area. Hiking and riding are passive recreation activities that are compatible with the land use allowed within the three adopted SEAs that encompass small portions of the SSMTMP-PII area. The proposed trail alignments would not substantially degrade or alter the existing visual character of the SSMTMP-PII area. As the majority of trail designations in the proposed project already exist as access roads, fire roads, right-of-ways, and desire line trails (unofficial trails created where a significant number of people want to travel), trail construction would be relatively minor, predominantly consisting of realignments, improvements, and signage. Therefore, future trails anticipated in the proposed project would not be expected to result in significant impacts to aesthetics related to substantial degradation of the existing visual character of the site and its surroundings.

According to the viewshed analysis conducted using ArcGIS to evaluate the potential visibility level of the SSMTMP-PII area from County-designated Town and Country Scenic Drives based on topography, approximately 48 percent (approximately 33.7 miles of a total of 70.3 miles) of the proposed trails would visible from Town and Country Scenic Drives located within a 15-mile radius of the Castaic project area (Figure 5.2.4-1, *Viewshed Map – County Designated Town and Country Scenic Drives*). It should be noted that a viewshed analysis evaluates visibility based solely on topographic data, and the presence of large trees, large shrubs, buildings, and infrastructure between the Town and Country Scenic Drives and the study area would be expected to reduce the potential visibility level significantly from this estimate. Furthermore, trails and supporting facility structures would not be expected to dramatically alter the form of ridgelines within the study area,

[74] County of Los Angeles Department of Parks and Recreation. [May 2011] June 2013. *County of Los Angeles Trails Manual*. Available at: https://trails.lacounty.gov/Files/Documents/69/LA%20County%20Trails%20Manual%20%28Revised%2006-20-13%29.compressed.pdf

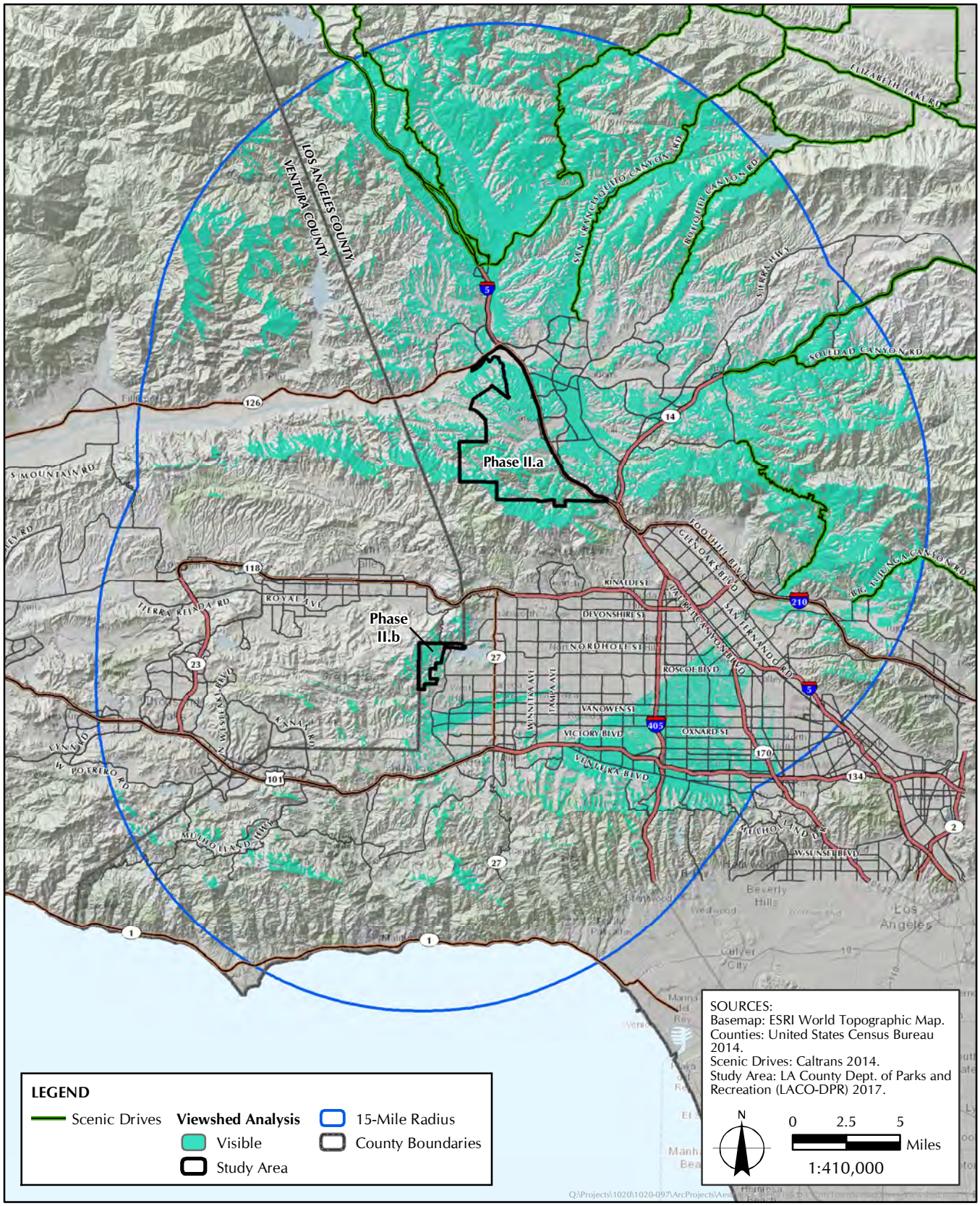

FIGURE 5.2.4-1

Viewshed Map – County-Designated Town and Country Scenic Drives

and would therefore not be likely to be substantially visible from Town and Country Scenic Drives over 5 miles (foreground view) from the study area.

Trails are normally considered a compatible use within a SEA. Trail development within a SEA would likely require preparation of a SEATAC Biota Report to demonstrate that the trail could be constructed, operated, and maintained in a manner that avoids significant impacts to the properties for which the SEA was designated, inclusive of the visual character of the area. Therefore, the proposed project would result in less-than-significant impacts in regard to degradation of the existing visual character or quality of the site and its surroundings because of height, bulk, pattern, scale, character, or other features as a result of the proposed project, and no mitigation would be required.

5.2.5 Shadows, Light, and Glare

The proposed project would result in less-than-significant impacts to aesthetics in relation to the creation of a new source of substantial shadows, light or glare. As the SSMTMP-PII area is generally rural, with suburban areas typically containing single-story to two-story residences and commercial and industrial buildings generally surrounded by parking lots and landscaping that provide a buffer between the buildings and potential shadow sensitive land uses, the structures considered within the proposed project would not be expected to create a new source of substantial shadows. Facilities such as restrooms, shade structures, and parking lots in support of the proposed trails would not be expected to be taller than a two-story building. Where buildings included in the plan are part of subdivision agreements, they would be designed to avoid creating substantial shadows on the new residences.

Approximately 50 percent of the SSMTMP-PII area is located within the County's Rural Outdoor Lighting District and subject to restrictions in terms of light and glare at night to maintain dark skies at night for the residents and wildlife in the district (see Figure 3.3-1).[75] Under the ordinance, outdoor lighting shall be fully shielded on properties located in residential, agricultural, open space, or watershed zones.[76] Exterior lighting on restrooms and other trail related supporting facilities would be required to conform to the ordinance. As shown in Figure 3.3-1, the remaining 50 percent of the SSMTMP-PII area (12 square miles in the Phase II.a area) that is not located within the County's Rural Outdoor Lighting District is predominantly characterized by a high level of existing nighttime sky glow, including Six Flags Magic Mountain, the nearby City of Santa Clarita, the community of Stevenson Ranch, and the industrial Castaic Junction area in the northeastern portion of the SSMTMP-PII area. Due to the high level of existing nighttime sky glow, impacts from exterior lighting on restrooms and other trail related supporting facilities, would be less than significant.

The hours of operation for Los Angeles County trails are typically from dawn to dusk (County Code 17.04.330). Therefore, the SSMTMP-PII does not include installation of nighttime lighting along the proposed trails; nor would the trails include nighttime safety lights that may affect nighttime views or add an additional source of light to the surrounding area. For safety purposes and to avoid disturbing the neighborhood from which the site is accessed, construction would not be conducted

[75] County of Los Angeles Department of Regional Planning. Accessed 16 February 2016. *GIS-NET3 Public*. Planning & Zoning Information for Unincorporated LA County. Available at: http://gis.planning.lacounty.gov/GIS-NET3_Public/Viewer.html

[76] Los Angeles County Department of Regional Planning. 28 September 2012. *Ordinance No. 2012-0047*. Available at: http://planning.lacounty.gov/assets/upl/data/ord_outdoor-lighting.pdf

at night. In accordance with the guidelines in Section 4.3.18, *Lighting*, of the County Trails Manual, where lighting features are provided for safety and wayfinding reasons, lighting would be installed in a manner to be non-intrusive to adjacent uses, avoid detracting from a natural outdoors experience for trail users, and directed downward to avoid light pollution or spillover in general.[77] As this guideline is independent of whether the trail segment or related supporting facility is located within the County's Rural Outdoor Lighting District, the proposed project, which must comply with the County Trails Manual, would not be expected to result in a significant new source of nighttime light.

The trail alignments under the SSMTMP-PII would be predominantly natural surface trails that would not create a new source of substantial glare. The proposed project would also include interpretive signage, small structures, new parking lots, and other related supporting facilities which would have the potential to create a source of daytime glare where glass, metal, asphalt, and additional vehicles are involved. However, these facilities would be small and are anticipated to be constructed in the areas with an existing moderate to high daytime glare level, towards the City of Santa Clarita, Los Angeles, and the I-5 freeway, which contain paved roads; commercial, industrial, and residential development and infrastructure; moderate to high vehicle traffic levels on major roads and freeways; and the presence of reflective water bodies. Therefore, the supporting facilities would not be expected to create a new source of substantial glare. Therefore, the proposed project would result in less-than-significant impacts to shadows, light and glare, and no mitigation would be required.

5.3 MITIGATION RECOMMENDATIONS

Mitigation Measures

Mitigation Measure AES-1: Trails and supporting facilities within a one-mile radius of officially designated and eligible state scenic highways shall be designed, constructed, and maintained (where construction equipment is involved) to avoid damaging or removal of scenic resources, including but not limited to trees, rock outcroppings, and historic buildings, within the scenic highway corridor. If any mature trees must be removed that would alter the viewshed, they shall be replaced at a minimum of a 1:1 ratio. Implementation of the Cultural Resources mitigation measures shall be conducted to avoid, minimize, or substantially reduce impacts to cultural resources such as historic buildings and Native American sacred sites. If any new structures or buildings are constructed within a one-mile radius of officially designated and eligible state scenic highways, landscape screening of the structures and buildings shall be installed on the side(s) of the structure facing the scenic highway(s) to reduce visual impacts to the scenic highway corridor.

Mitigation Measure AES-2: Trails and supporting facilities shall be designed, constructed, and maintained to avoid the drip line of any coast live oak trees and other protected trees that are located along the proposed trail alignments, in order to maintain the visual character of the area. Best Management Practices shall be used during construction and trails maintenance activities to protect the root structures of protected trees:

[77] County of Los Angeles Department of Parks and Recreation. [May 2011] Revised June 2013. *County of Los Angeles Trails Manual*. Available at: https://trails.lacounty.gov/Files/Documents/69/LA%20County%20Trails%20Manual%20%28Revised%2006-20-13%29.compressed.pdf

- A Worker Education and Awareness Program (WEAP) shall inform all construction workers of County Ordinances protecting oak trees and the sensitivity of roots to damage from compaction or excessive water.

- Drip line of oak trees shall be designated as off-limits during construction on all construction drawings and diagrams.

- Fencing and/or flagging shall be used to delineate the drip line of the trees as off-limits during trail construction.

- On-site monitors shall be utilized for periods when trail construction will be undertaken within 100 feet of the drip line of the oak trees.

- If a protected tree must be removed, the same species shall be replaced at a minimum of a 1:1 ratio.

Impacts to aesthetics in regard to scenic resources within a state scenic highway corridor would be less than significant after implementation of mitigation measures.

SECTION 6.0
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APPENDIX A.1
KEY OBSERVATION POINTS

KOP 1
Phase II.a Area from SR-126 Facing East

KOP 2
Phase II.a Area from Henry Mayo Drive Facing East

KOP 3
Phase II.a Area from SR-126 Facing Southwest

KOP 4
Santa Clara River Trail in Santa Clarita Facing West Towards Phase II.a Area

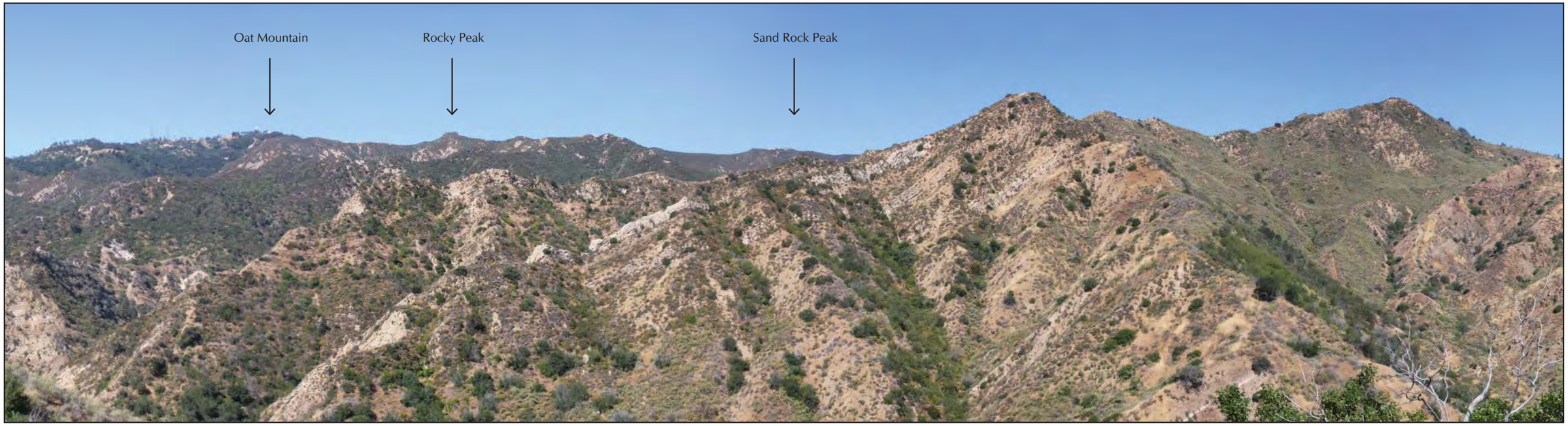
KOP 5
Edge of Stevenson Ranch Development in Phase II.a Area Facing Southwest

KOP 6
Mentryville in Phase II.a Area Facing Southeast

KOP 7
Western End of Pico Canyon Trail in Phase II.a Area Facing Northeast

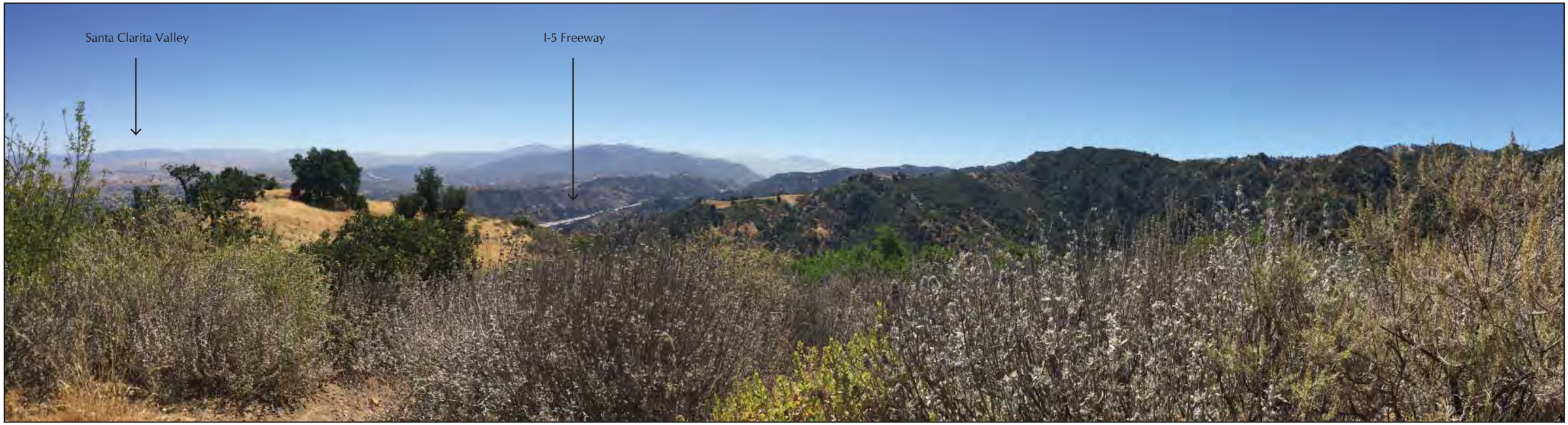
KOP 8
Eastern Edge of Pico Canyon Trail in Phase II.a Area Facing South

KOP 9
Towsley Canyon Trail Parking in Phase II.a Area Facing West



KOP 10
Towsley Canyon Trail in Phase II.a Area Facing Southwest

KOP 11
Towsley Canyon Trail in Phase II.a Area Facing Northwest

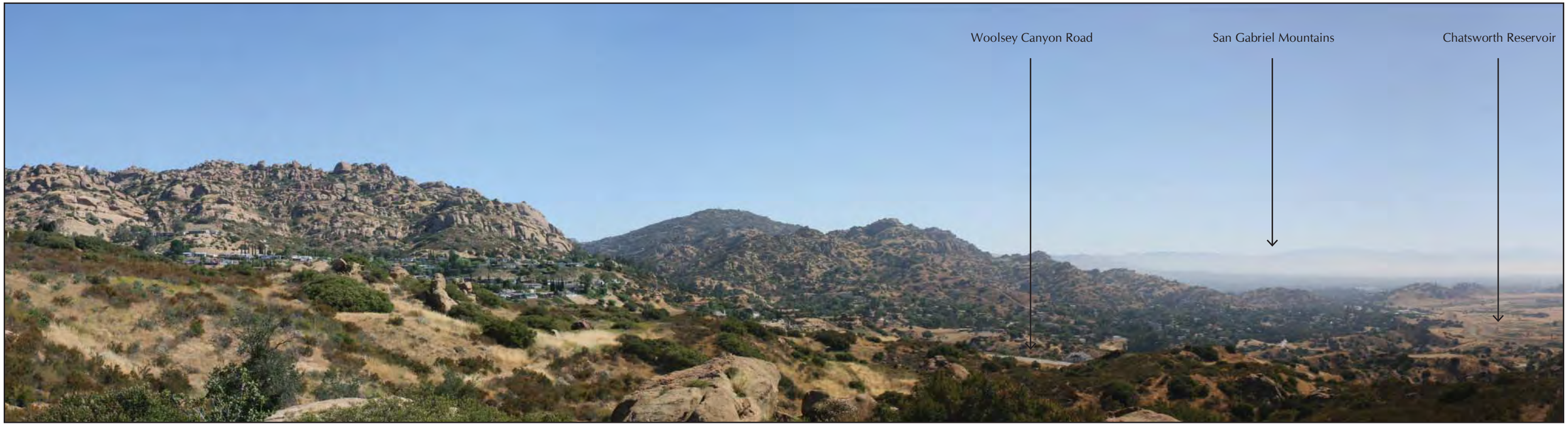


KOP 12
Towsley Canyon Trail in Phase II.a Area Facing Southeast

KOP 13
Towsley Canyon Trail in Phase II.a Area Facing Southwest

KOP 14
Woolsey Canyon Road Facing East Towards Phase II.b Area

KOP 15
Box Canyon Road Facing North Towards Phase II.b Area



KOP 16
Woolsey Canyon in Phase II.b Area Facing East

KOP 17
Woolsey Canyon in Phase II.b Area Facing Northwest

KOP 18
Woolsey Canyon in Phase II.b Area Facing North

KOP 19
Edge of Residential Development Facing Northwest Towards Phase II.b Area

Appendix B

2017 Air Quality and Greenhouse Gas Emissions Technical Report

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN – PHASE II

Air Quality and Greenhouse Gas Emissions Technical Report

Prepared for:

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November 2, 2017

EXECUTIVE SUMMARY

This Air Quality and Greenhouse Gas Emissions Technical Report addresses potential impacts to air quality and greenhouse gas emissions that could result from proposed work associated with the Santa Susana Mountains Trails Master Plan – Phase II (SSMTMP-PII, or proposed project), located within unincorporated Los Angeles County, California.

Adopted Air Quality Plan and County of Los Angeles 2035 General Plan

The construction, operation, and maintenance of the proposed project would not violate any air quality standard or contribute substantially to an existing or projected air quality violation in the South Coast Air Basin. Therefore, it would not conflict with the South Coast Air Quality Management District's Air Quality Management Plan. The proposed project is consistent with the Air Quality Element of the Los Angeles County General Plan 2035. The proposed project would implement strategies to reduce per capita vehicle miles traveled and, thus, would not contribute to cumulative impacts on air quality in the South Coast Air Basin.

Criteria Air Pollutants

The proposed project area is a non-attainment area for three criteria pollutants. However, the construction, operation, and maintenance of the proposed project would not exceed thresholds of significance for criteria pollutants established by the South Coast Air Quality Management District.

Sensitive Receptors

There would be no significant impacts to the approximately 10,000 sensitive receptors (primarily single-family residences) within a 0.5-mile radius of the proposed project. Based on the CalEEMod results, construction, operation, and maintenance of the proposed project would not expose sensitive receptors to criteria pollutants in excess of Federal and State standards.

Objectionable Odors

There would be no direct, indirect, or cumulative impacts to air quality related to objectionable odors resulting from the construction, operation, or maintenance of the proposed project.

Direct or Indirect Generation of Greenhouse Gas Emissions

There would be less than significant impacts in regard to generating GHG emissions, either directly or indirectly, that would have a significant impact on the environment.

Plans, Policies, and Regulation Related to Regional Greenhouse Gas Emissions

Providing improved recreation opportunities to the approximately 29,000 residents that live in the vicinity of the study area is consistent with the goals, policies, and strategies specified in the Southern California Association of Governments 2016 Regional Transportation Plan/Sustainable Communities Strategy and the Los Angeles County General Plan 2035.

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SECTION 1.0
INTRODUCTION

This Air Quality and Greenhouse Gas Emissions Technical Report (Report) has been prepared to support the County of Los Angeles (County) Department of Parks and Recreation (DPR) in the development of Phase II of the Santa Susana Mountains Trails Master Plan (SSMTMP-PII or proposed project), located within unincorporated Los Angeles County, California.

1.1 CEQA COMPLIANCE

DPR proposes to complete the SSMTMP-PII, ultimately to amend the Parks and Recreation Element of the Los Angeles County General Plan 2035 (County General Plan) to include the SSMTMP-PII, which would guide future trail development and recommend improvements to existing trails. The proposed project would ultimately result in the construction and use of trails in public and private lands, some of which may involve the expenditure of public funds, and thus constitutes a project pursuant to the California Environmental Quality Act (CEQA). These trails would be located in the unincorporated territory of Los Angeles County; therefore, the County would be the Lead Agency pursuant to CEQA.

1.2 PURPOSE

This Report serves two purposes: (1) to provide information regarding air quality and greenhouse gas (GHG) emissions to inform the planning process; and (2) to provide the substantial evidence required with respect to air quality and GHG emissions for consideration of the potential for environmental effects under CEQA. This Report provides information in relation to the air quality and GHG emissions areas identified in Appendix G of the State CEQA Guidelines.

1.3 INTENDED AUDIENCE

This Report provides information for consideration by DPR and the design team, Alta Planning + Design, engaged in the development of the SSMTMP-PII. The substantial evidence will be available for the responsible and trustee agencies, and the public, including property owners, during circulation of the draft environmental document for public review. Ultimately, the Report will be used by the County Board of Supervisors to support their decision-making process related to the SSMTMP-PII. The Report will also inform the County and private parties in the ultimate development, operation, and maintenance of trails in the plan area.

1.4 SCOPE

In May 2015, the County adopted the first phase of the Santa Susana Mountains Trails Master Plan (SSMFTMP), which involved the extension of the 35.7 miles of existing County-, City-, and Conservancy-managed trails in the Phase I and Phase II study areas by approximately 35.9 miles with 22 proposed trail segments, for a total of approximately 71.5 miles of trails. In 2017, the County initiated planning efforts for further development of the Phase II study area, which has been expanded to Phase II.a and II.b. This Report covers an assessment of local, regional, state, and federal level air quality and greenhouse gas emissions regulations, baseline conditions, impact analysis, and mitigation measures, as applicable.

1.5 SOURCES OF RELEVANT INFORMATION

Information used in the preparation of this Report was derived from the South Coast Air Quality Management Plan (AQMP), Air Quality Element of the County General Plan, and Community Climate Action Plan. Sources of relevant information are cited in footnotes and compiled in Section 6, *References*.

1.6 WORKING DEFINITIONS

There are a number of technical terms used in the characterization of baseline conditions and assessment of the potential for the project to affect air quality and greenhouse gas emissions.

Carbon Dioxide (CO_2): Enters the atmosphere through the burning of fossil fuels (oil, natural gas, and coal), solid waste, trees and wood products, and respiration, and as a result of other chemical reactions (e.g., manufacture of cement). Carbon dioxide is removed from the atmosphere (sequestered) when it is absorbed by plants as part of the biological carbon cycle.

Carbon Dioxide-Equivalent (CO_2e): The standard unit to measure the amount of GHGs in terms of the amount of CO_2 that would cause the same amount of warming. CO_2e is based on the GWP ratios between the various GHGs relative to CO_2.

Climate Change: Climate change is the variation of earth's climate over time, whether due to natural variability or as a result of human activities. Scientists have concluded that human activities are contributing to global climate change by adding large amounts of heat-trapping gases, known as GHGs, to the atmosphere. The primary source of these GHGs is fossil fuel use.

Criteria Pollutants: Health-based air quality standards have been established by California and the federal government for the following criteria pollutants: carbon monoxide (CO), ozone (O_3), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), fine particulate matter ($PM_{2.5}$), respirable particulate matter (PM_{10}), and lead (Pb). California also includes standards for hydrogen sulfide, vinyl chloride, sulfates, and visibility.

The following describes the criteria pollutants and summarizes the health and welfare effects of each criteria pollutant:[1]

Carbon Monoxide (CO): CO is a colorless, odorless, relatively inert gas. The major source of CO in urban areas is incomplete combustion of carbon containing fuels, mainly gasoline. CO concentrations are generally highest in the vicinity of major concentrations of vehicular traffic. Health effects include: (1) aggravation of angina pectoris and other aspects of coronary heart disease; (2) decreased exercise tolerance in persons with peripheral vascular disease and lung disease; (3) possible impairment of central nervous system functions; (4) possible increased risk to fetuses.

Ozone (O_3): Ozone, a colorless gas with a sharp odor, is a highly reactive form of oxygen. Health effects include: (1) pulmonary function decrements and localized lung injury in humans and animals; (2) risk to public health implied by alterations in pulmonary morphology and host defense

[1] South Coast Air Quality Management District. March 2017. *Final 2016 Air Quality Management Plan*. Available at: http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2016-aqmp

in animals; (3) increased mortality risk; (4) increased respiratory related hospital admissions and emergency room visits; (5) vegetation damage; (6) property damage.

Nitrogen dioxide (NO_2): NO_2 is a reddish-brown gas with a bleach-like odor. NO_2 is responsible for the brownish tinge of polluted air. Health effects include: (1) potential to aggravate chronic respiratory disease and respiratory symptoms in children with asthma; (2) increased airway responsiveness in asthmatics.

Sulfur Dioxide (SO_2): SO_2 is a colorless gas with a sharp odor. Health effects include respiratory symptoms (bronchoconstriction, possible wheezing or shortness of breath) during exercise or physical activity in persons with asthma.

Fine Particulate Matter ($PM_{2.5}$): Sources of fine particulate matter (particulate matter less than about 2.5 micrometers in diameter) include fuel combustion from automobiles, power plants, wood burning, industrial processes, and diesel-powered vehicles such as buses and trucks. These fine particles are also formed in the atmosphere when gases such as sulfur dioxide and NO_X are transformed in the air by chemical reactions. Studies have reported an association between long-term exposure to air pollution dominated by fine particles ($PM_{2.5}$) and increased mortality, reduction in lifespan, and an increased mortality from lung cancer.

Respirable Particulate Matter (PM_{10}): Respirable particles consist of suspended particles or droplets 10 micrometers or smaller in diameter. In populated areas, most PM_{10} is caused by road dust, diesel soot, combustion products, abrasion of tires and brakes, and construction activities. Health effects include: (1) exacerbation of symptoms in sensitive patients with respiratory or cardiovascular disease; (2) decline in pulmonary function or growth in children; (3) increased risk of premature death; (4) increased risk of lung cancer; (5) increased asthma-related hospital admissions; (6) increased school absences and lost work days; (7) possible link to reproductive effects; (8) visibility reduction.

Lead (Pb): Lead in the atmosphere is present as a mixture of a number of lead compounds. Health effects include: (1) learning disabilities; (2) impairment of blood formation and nerve conduction; (3) cardiovascular effects, including coronary heart disease and hypertension.

Global Warming Potential (GWP): Metric used to describe how much heat a molecule of a GHG absorbs relative to a molecule of carbon dioxide (CO_2) over a given period of time (20, 100, and 500 years). CO_2 has a GWP of 1.

Greenhouse Gases (GHGs): GHGs are those compounds in the earth's atmosphere that play a critical role in determining the earth's surface temperature. Specifically, these gases allow high-frequency solar radiation to enter the earth's atmosphere but retain the low-frequency energy, which is radiated back from the earth to space, resulting in a warming of the atmosphere. This phenomenon is known as the greenhouse effect. Increased concentrations of GHGs in the earth's atmosphere are thought to be linked to global climate change, such as rising surface temperatures, melting icebergs and snowpack, rising sea levels, and the increasing frequency and magnitude of severe weather.

SECTION 2.0
PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The Trails Master Plan (approximately 49 square miles) is located north and west of the San Fernando Valley in the Santa Susana Mountains, in the western portion of the unincorporated area of the County of Los Angeles (Figure 2.1-1, *Regional Vicinity Map*). The Santa Susana Mountains are centrally located in the Transverse Ranges, a group of east-west trending mountains paralleling the Pacific Ocean between Santa Barbara and San Diego Counties. The proposed designation and improvement of a portion of the Johnson Motorway Trail is an element of the first phase of the Trails Master Plan (SSMFTMP).

2.2 TRAILS MASTER PLAN STUDY AREA

Phase I Area. The northern boundary of the Trails Master Plan – Phase I is defined by the southern limits of the Newhall Ranch Specific Plan Area and the northern limits of the proposed Santa Susana Mountains / Simi Hills Significant Ecological Area (SEA). The southern boundary is defined by the northern limit of the City of Los Angeles. The eastern boundary is defined by U.S. Interstate 5 (I-5). The western boundary is defined by the corporate boundary between Los Angeles and Ventura Counties (Figure 2.2-1, *Trails Master Plan Location*). The SSMFTMP is divided into two subareas or phases (see Figure 2.2-1). Phase I is the Northwest San Fernando Valley Study Area, and Phase II is the Southwest Santa Clarita Valley Study Area. Phase I includes 16,038.1 acres (25.1 square miles); the northern boundary is defined by the northern limits of the Los Angeles County Oat Mountain Planning Area, the southern boundary is defined by the northern limit of the City of Los Angeles, the eastern boundary is defined by the I-5 freeway, and the western boundary is defined by the boundary between Los Angeles and Ventura Counties.

Phase II Area. Phase II includes 8,084.4 acres (12.6 square miles). The northern boundary is defined by the northern limits of the proposed Santa Susana Mountains / Simi Hills SEA. The southern boundary is defined by the southern limits of the proposed Santa Susana Mountains / Simi Hills SEA. The eastern boundary is defined by the I-5 freeway. The western boundary is defined by the southern and eastern boundaries of the Newhall Ranch Specific Plan area.

The Trails Master Plan – Phase II has been expanded beyond the spatial extents of Phase II in the SSMFTMP and also divided into two subareas. The Phase II.a area is an approximately 22-square-mile area located in the north-facing slopes of the Santa Susana Mountains and the Santa Clarita Valley that is bound by Henry Mayo Drive (State Route [SR] 126) to the north, the I-5 freeway to the east, Phase I of the adopted SSMFTMP Area to the south, and the Newhall Ranch Specific Plan Area to the west. The Phase II.b area is an approximately 2-square-mile area located in the foothills of the Santa Monica Mountains, including Bell Canyon, Dayton Canyon, and Woolsey Canyon, west of the San Fernando Valley, that is bound by Ventura County to the north and west and the city of Los Angeles to the east and south.

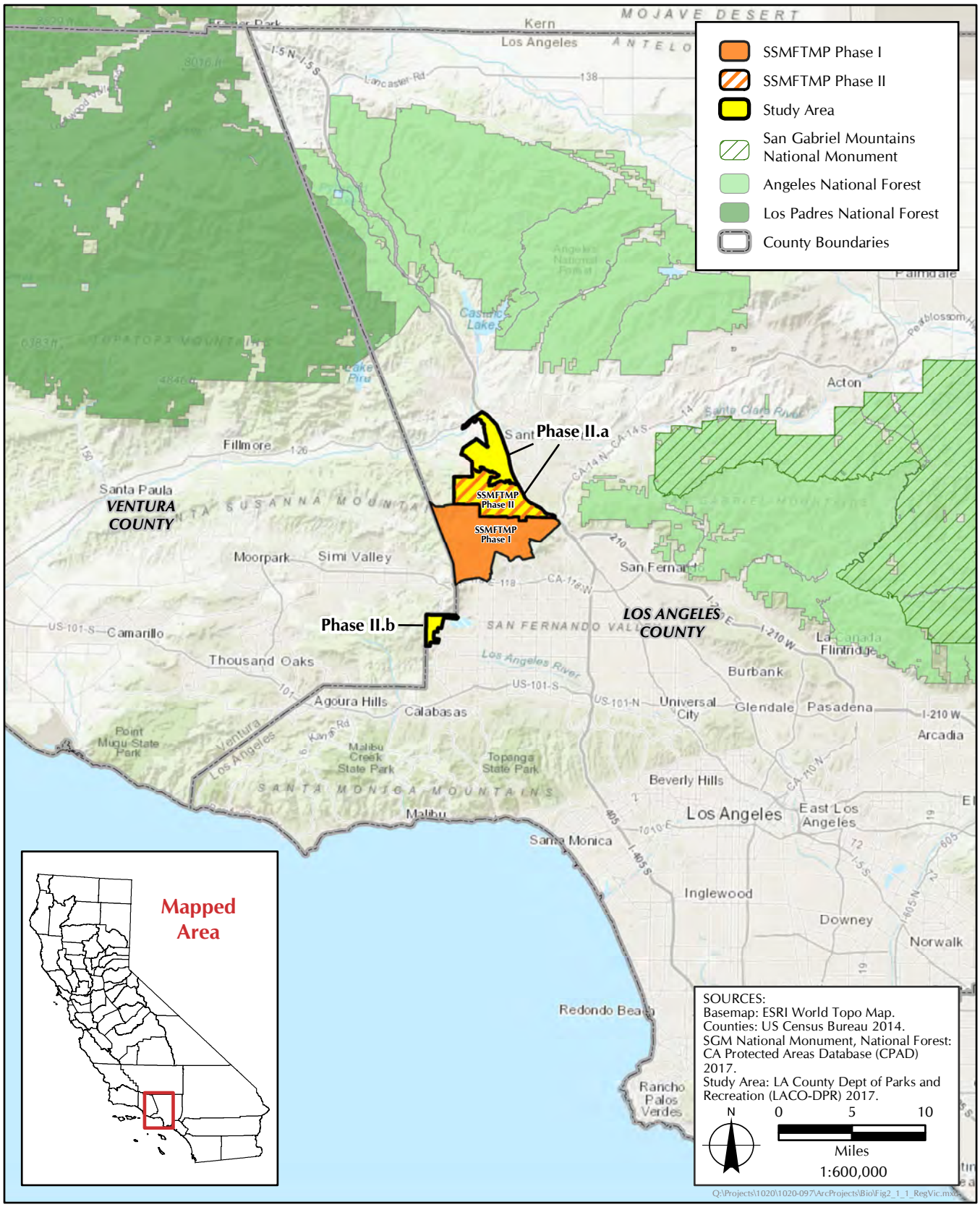

FIGURE 2.1-1

Regional Vicinity Map

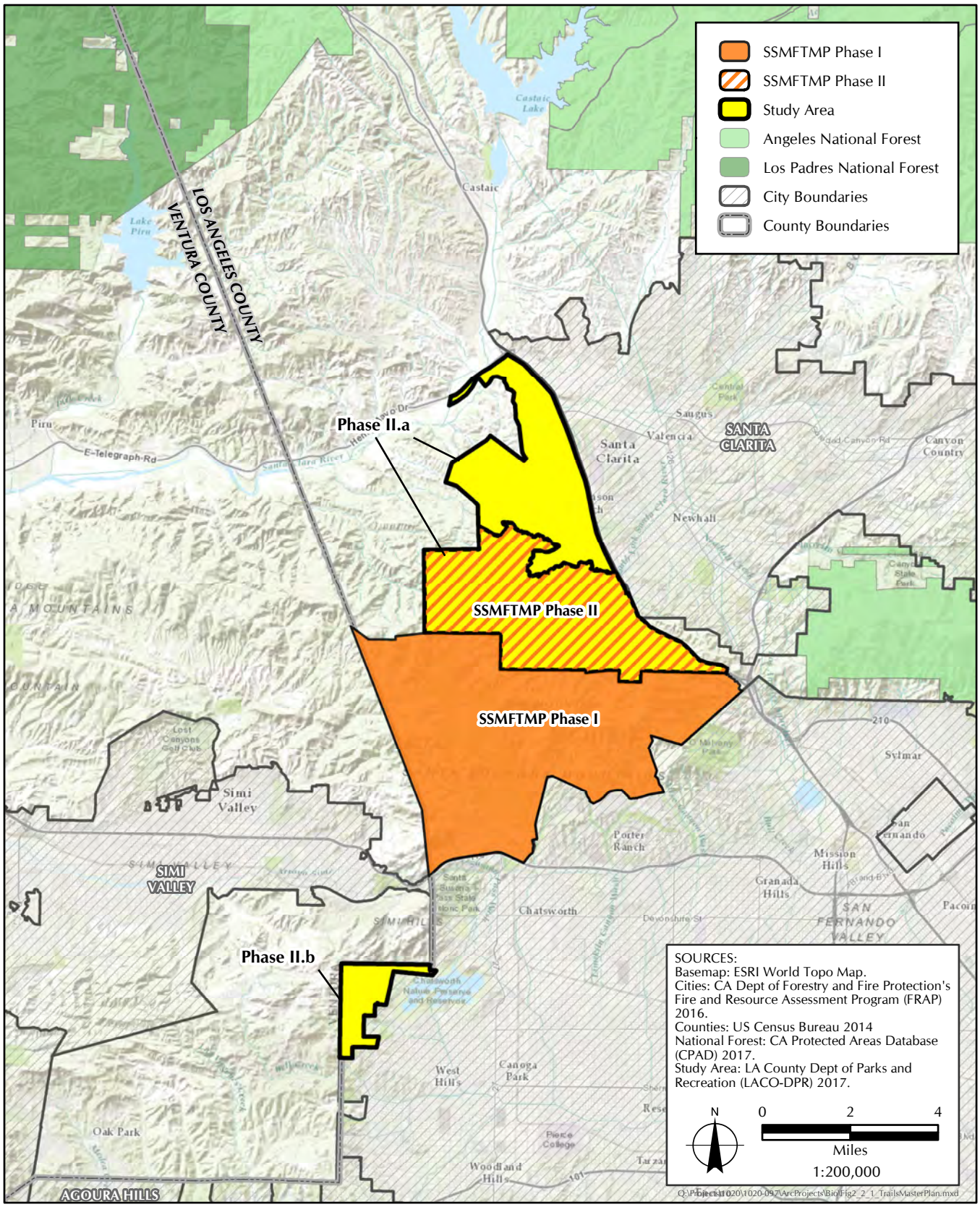

FIGURE 2.2-1

Trails Master Plan Location

Topography. The Trails Master Plan is located in the U.S. Geological Survey (USGS) 7.5-minute series, Newhall, Oat Mountain, Simi Valley East, and Val Verde, California, topographic quadrangles[2,3] and includes portions of Township 2 North, Range 16 West (San Bernardino Baseline and Meridian [SBB&M]); Sections 6 and 7, Township 2 North, Range 17 West (SBB&M), Sections 1, 2, 11, and 12; Township 3 North, Range 16 West (SBB&M), Sections 4–10, 13–24, and 26–34; and Township 3 North, Range 17 West (SBB&M), Sections 1, 2, 11–15, 22–27, and 34–36 (Figure 2.2-2, *Topographic Map with USGS 7.5-minute Quadrangle Index*). Phase I of the Trails Master Plan is located on the USGS 7.5-minute series Simi Valley East and Oat Mountain topographic quadrangles. Phase II of the Trails Master Plan is located on the Val Verde, Newhall, Simi Valley East (Santa Susana), Oat Mountain, and Calabasas topographic quadrangles. Situated along the southern flanks of the Santa Susana Mountains, the topography of the Trails Master Plan is characterized by a series of southwest draining canyons that are separated by steep-sloped and narrow ridge tops. The Trails Master Plan has elevations that range from 946 to 3,400 feet above mean sea level (msl). Vegetation in the area is characterized by a Sage and Chaparral plant communities with scattered yucca plants. Although small areas of exposed bedrock are seen along the trail corridor, much of the proposed project area is characterized by thick vegetative coverage, which is particularly dense in the canyon bottoms and at lower elevations.

2.3 PROJECT SUMMARY

The SSMTMP-PII will guide future trail development and recommend improvements to existing trails. The Trails Master Plan will provide trail users and local populations with seamless transitions throughout the proposed study area to trails of adjacent jurisdictions and prime destinations within and adjacent to the study area. The goals of the plan are to:

1. Develop a complete multi-use trail system connecting user groups and local populations to desired recreation destinations and experiences, with seamless transitions to the trails of adjacent jurisdictions, compatibility with adjacent land uses and environmental resources, and a safe and sustainable design that is consistent with the County of Los Angeles Trails Manual.

2. Develop a recreational trail system that supports low-intensity use, including mountain biking, equestrian use, and hiking, to accommodate the population increase anticipated in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area through the 2035 planning horizon consistent with the Parks and Recreation Element of the Los Angeles County General Plan 2035.

The overall work efforts will include a trails master plan and associated CEQA documentation. Individual trail alignments would be developed at a later phase of this project, which is intended to provide a trail planning framework for the study area.

[2] U.S. Geological Survey. 1969. 7.5-Minute Series, Oat Mountain, California, Topographic Quadrangle. Scale 1:24,000. Reston, VA.

[3] U.S. Geological Survey. 1969. 7.5-Minute Series, Willow Springs, California, Topographic Quadrangle. Reston, VA.

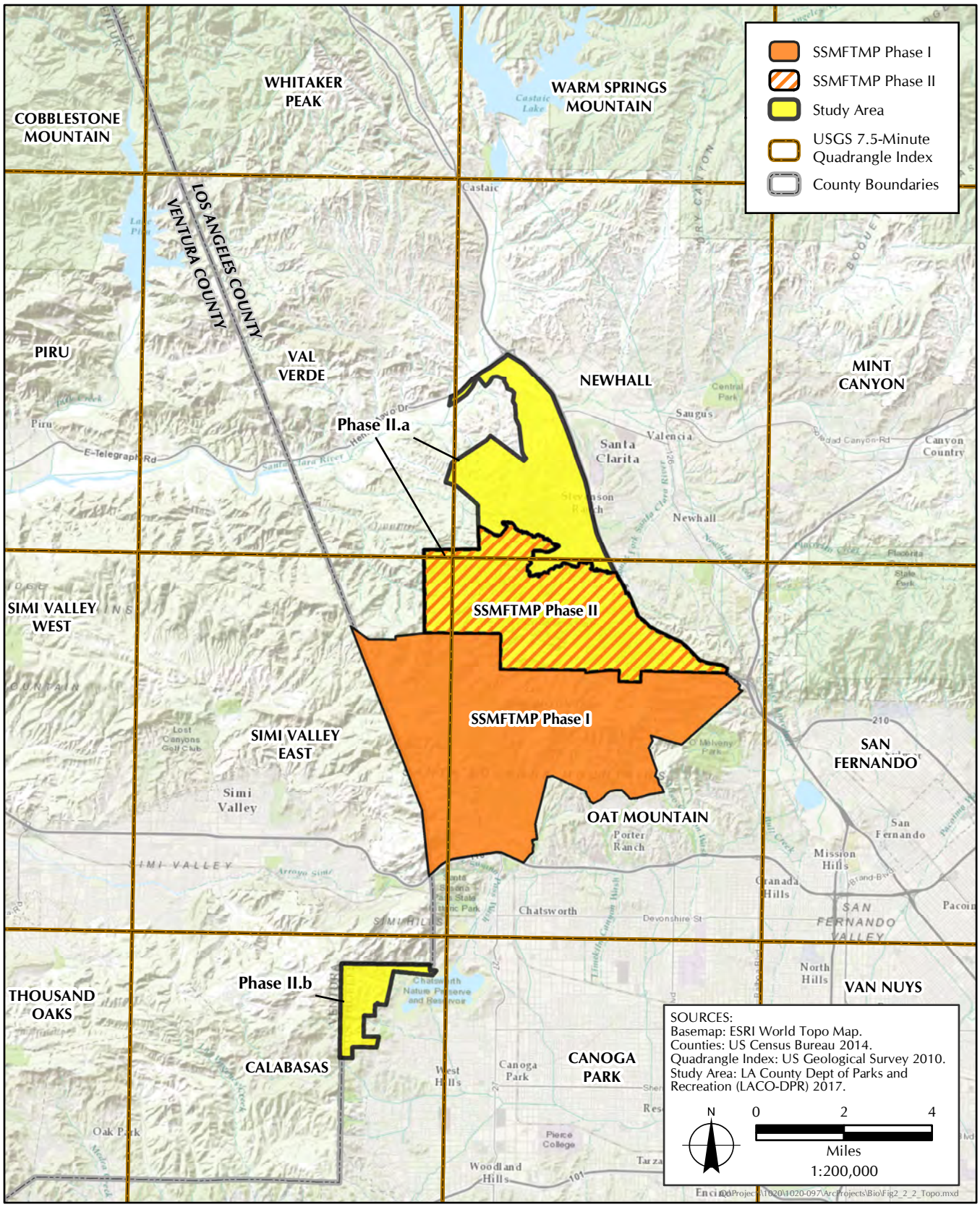

FIGURE 2.2-2

Topographic Map with USGS 7.5 Minute Quadrangle Index

The SSMTMP-PII involves approximately 70 miles of proposed new multi-use trails in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area (Figure 2.3-1, *Existing and Proposed Trails*). The trails would be multi-use and range from 3 to 12 feet wide based on site conditions, with adequate space for combined pedestrian, equestrian, and mountain biking use, in accordance with the County Trails Manual guidelines. The proposed trails would provide connections to the proposed Rim of the Valley Trail, trails in the City of Los Angeles, trails in the City of Santa Clarita, and trails in the Newhall Ranch Specific Plan, and trails within other jurisdictions as identified in the Trails Master Plan. The SSMTMP-PII identifies up to 20 potential locations for proposed facilities, including 4 trailheads, 2 bike skills areas, 2 equestrian parks, 8 trailhead and staging areas, and 4 additional trailheads within the City of Los Angeles that would need to be developed by the City of Los Angeles (Figure 2.3-1). As the recommended City of Los Angeles trailheads would not be developed under jurisdiction of the County, this Report considers the 16 proposed facilities located within the SSMTMP-PII study area.

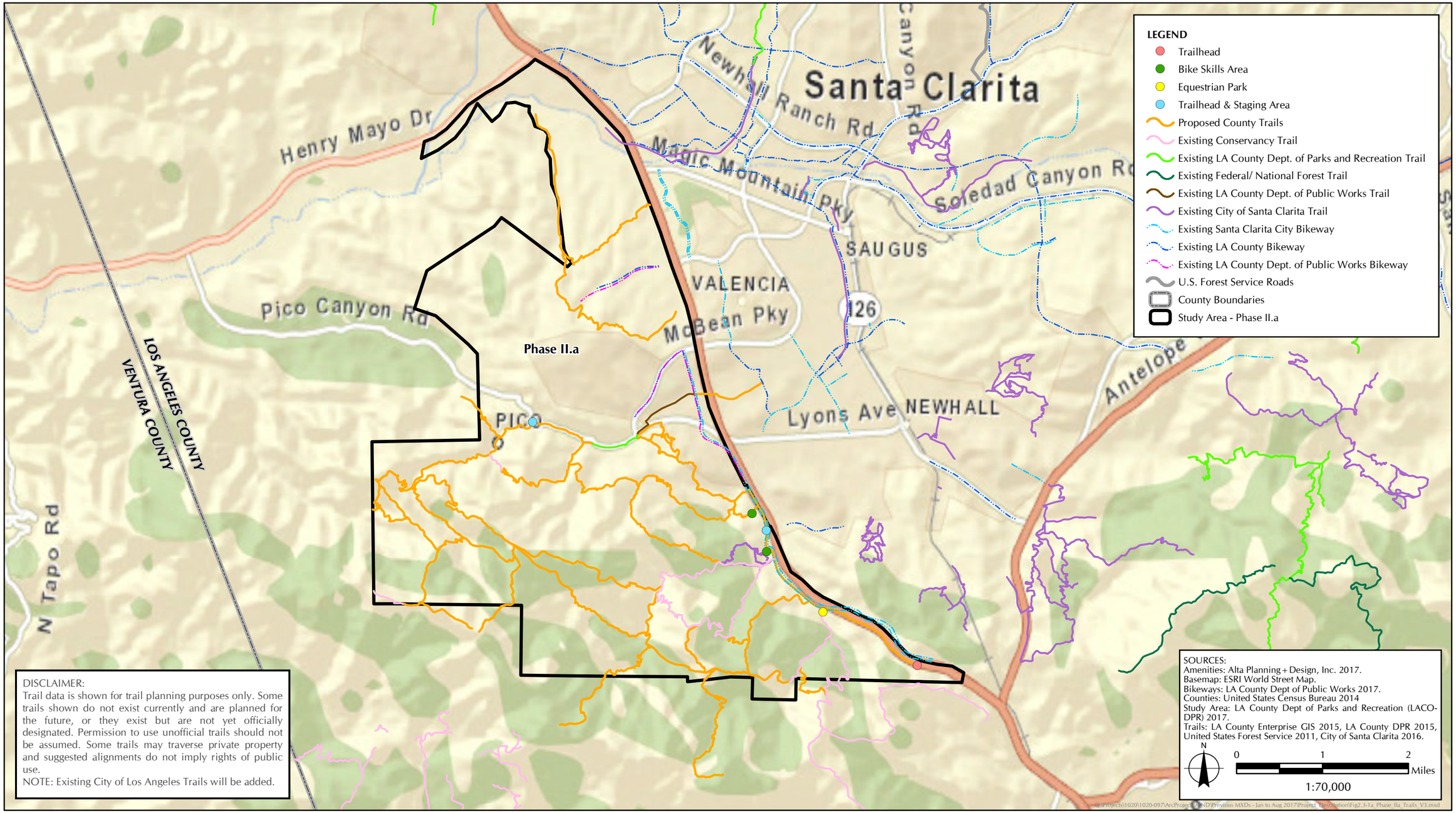

FIGURE 2.3-1a

Existing and Proposed Trails (Phase II.a)

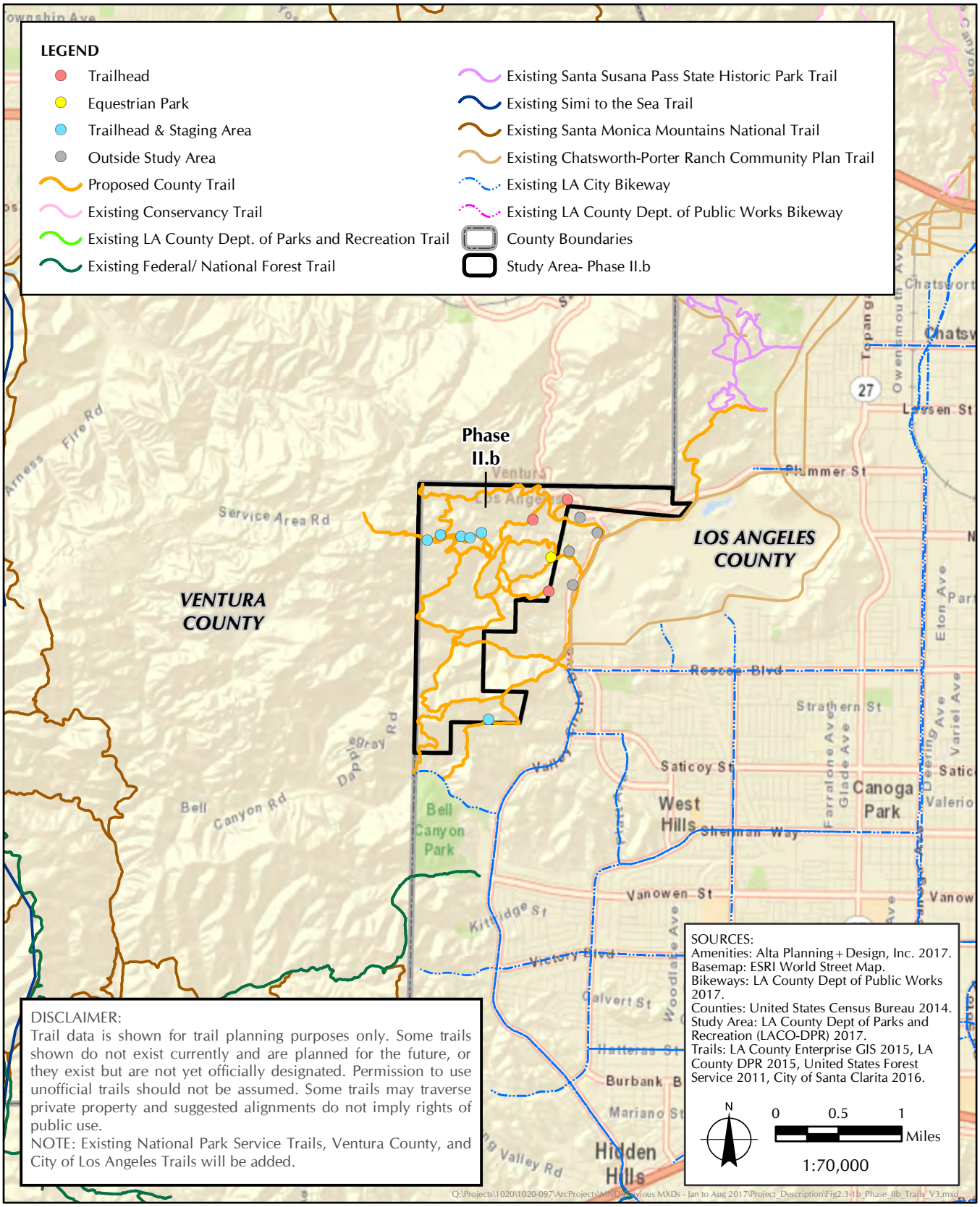

FIGURE 2.3-1b

Existing and Proposed Trails (Phase II.b)

SECTION 3.0
REGULATORY FRAMEWORK

3.1 FEDERAL

Federal Clean Air Act

Congress passed the first major Clean Air Act (CAA) in 1970 (42 U.S. Code [USC] Sections 7401 et seq.). This Act gives the U.S. Environmental Protection Agency (EPA) broad responsibility for regulating emissions from many sources of air pollution from mobile to stationary sources. Pursuant to the CAA, the EPA is authorized to regulate air emissions from mobile sources like heavy-duty trucks, agricultural and construction equipment, locomotives, lawn and garden equipment, and marine engines; and stationary sources such as power plants, industrial plants, and other facilities. The CAA sets National Ambient Air Quality Standards (NAAQS) for the six most common air pollutants to protect public health and public welfare. These pollutants include particulate matter, ozone, carbon monoxide, sulfur oxides, nitrogen oxides, and lead. For each pollutant, the EPA designates an area as attainment for meeting the standard or nonattainment for not meeting the standard. A maintenance designation entails an area that was previously designated as nonattainment but is currently designated as attainment. The CAA directs states to develop state implementation plans (SIPs) in order to achieve these standards. New Source Performance Standards (NSPS), described in Section 111 of the Clean Air Act and 40 CFR Part 60, are technology based standards that apply to specific categories of stationary sources. These standards are intended to promote use of the best air pollution control technologies, taking into account the cost of such technology and any other non-air quality, health, and environmental impact and energy requirements.

National Ambient Air Quality Standards

The federal CAA required the EPA to establish NAAQS. The NAAQS set primary standards and secondary standards for specific air pollutants (Table 3.1-1, *National Ambient Air Quality Standards*). Primary standards define limits for the intention of protecting public health, which include sensitive populations such as asthmatics, children, and the elderly. Secondary Standards define limits to protect public welfare to include protection against decreased visibility, damage to animals, crops, vegetation, and buildings.

TABLE 3.1-1
NATIONAL AMBIENT AIR QUALITY STANDARDS

Pollutant		Primary/Secondary	Averaging Time	Level
Carbon monoxide		Primary	8 hours	9 ppm
			1 hour	35 ppm
Lead		Primary and secondary	Rolling 3-month average	0.15 $\mu g/m^3$
Nitrogen dioxide		Primary	1 hour	100 ppb
		Primary and secondary	Annual	53 ppb
Ozone		Primary and secondary	8 hours	0.070 ppm
Particulate matter	$PM_{2.5}$	Primary	Annual	12 $\mu g/m^3$
		Secondary	Annual	15 $\mu g/m^3$
		Primary and secondary	24 hours	35 $\mu g/m^3$
	PM_{10}	Primary and secondary	24 hours	150 $\mu g/m^3$
Sulfur dioxide		Primary	1 hour	75 ppb
		Secondary	3 hours	0.5 ppm

NOTE: ppm = parts per million by volume; ppb = parts per billion by volume; $\mu g/m^3$ = micrograms per cubic meter.
SOURCE: California Air Resources Board. 4 May 2016. *Ambient Air Quality Standards*. Available at: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

State Implementation Plan / Air Quality Management Plans

A SIP is required by the EPA to ensure compliance with the NAAQS. States must develop a general plan to maintain air quality in areas of attainment and a specific plan to improve air quality for areas of nonattainment. SIPs are a compilation of new and previously submitted plans, programs (such as monitoring, modeling, permitting, etc.), district rules, state regulations, and federal controls. The SIP verifies that the state has a proper air quality management program that adheres to or strives to reach the most up to date emissions requirements. The 1990 amendments to the federal CAA set deadlines for attainment based on the severity of an area's air pollution problem. In adherence to CAA Section 172, states must adopt additional regulatory programs for nonattainment areas. Particularly in California, the SIP not only complies with NAAQS, but also the more stringent CAAQS.

AQMPs, developed by the air districts, are required to ensure compliance with the state and federal requirements. AQMPs contain scientific information and use analytical tools to demonstrate a pathway towards achieving attainment for the criteria air pollutants. The approval process begins when the regional air districts submit their AQMPs to the California Air Resources Board (CARB). CARB is the lead agency and responsible agency for submitting the SIP to the EPA. CARB forwards SIP revisions to the EPA for approval and publication in the *Federal Register*. The Code of Federal Regulations Title 40, Chapter I, Part 52, Subpart F, Section 52.220, lists all of the items included in the California SIP.

3.2 STATE

California Clean Air Act of 1988

The California CAA of 1988 (Chapter 1568, Statutes of 1988) requires all air pollution control districts in the state to aim to achieve and maintain state ambient air quality standards for ozone, carbon monoxide, and nitrogen dioxide by the earliest practicable date and to develop plans and regulations specifying how the districts will meet this goal. There are no planning requirements for the state PM_{10} standard. The CARB, which became part of the California Environmental Protection Agency (Cal/EPA) in 1991, is responsible for meeting state requirements of the federal CAA, administrating the California CAA, and establishing the CAAQS. The California CAA, amended in 1992, requires all AQMDs in the state to achieve and maintain the CAAQS. The CAAQS are generally stricter than national standards for the same pollutants, but there is no penalty for nonattainment. California has also established state standards for sulfates, hydrogen sulfide, vinyl chloride, and visibility-reducing particles, for which there are no national standards.

California Ambient Air Quality Standards

The federal CAA permits states to adopt additional or more protective air quality standards if needed. California has set standards for certain pollutants, such as particulate matter and ozone, which are more protective of public health than respective federal standards (Table 3.2-1, *California Ambient Air Quality Standards*). California has also set standards for some pollutants that are not addressed by federal standards.

CARB Air Quality and Land Use Handbook

In April 2005, the California Air Resources Board published the Air Quality and Land Use Handbook as an informational and advisory guide for evaluating and reducing air pollution impacts associated with new projects that go through the land use decision-making process. Studies have shown that diesel exhaust and other cancer-causing chemicals emitted from cars and trucks are responsible for much of the overall cancer risk from airborne toxics in California. Reducing diesel particulate emissions is one of CARB's highest public health priorities and the focus of a comprehensive statewide control program that is reducing diesel PM emissions each year. This document highlights the potential health impacts associated with proximity to air pollution sources so planners explicitly consider this issue in planning processes.[4]

[4] California Air Resources Board. April 2005. *Air Quality and Land Use Handbook: A Community Health Perspective*. Available at: http://www.arb.ca.gov/ch/handbook.pdf

TABLE 3.2-1
CALIFORNIA AMBIENT AIR QUALITY STANDARDS

Pollutant		Averaging Time	Level
Carbon monoxide		8 hours	9 ppm
		1 hour	20 ppm
Lead		30-day average	1.5 $\mu g/m^3$
Nitrogen dioxide		1 hour	0.18 ppm
		Annual	0.03 ppm
Ozone		8 hours	0.07 ppm
		1 hour	0.09 ppm
Particulate matter	$PM_{2.5}$	Annual	12 $\mu g/m^3$
	PM_{10}	24 hours	50 μ/m^3
		Annual	20 μ/m^3
Sulfur dioxide		1 hour	0.25 ppm
		24 hours	0.04 ppm
Sulfates		24 hours	25 μ/m^3
Hydrogen sulfide		1 hour	0.03 ppm
Vinyl chloride		24 hours	0.01 ppm
Visibility Reducing Particles		Extinction coefficient of 0.23 per km – visibility of 10 miles or more due to particles when relative humidity is less than 70 percent[5]	

NOTE: ppm = parts per million by volume; ppb = parts per billion by volume; $\mu g/m^3$ = micrograms per cubic meter.
SOURCE:
California Air Resources Board. 4 May 2016. *Ambient Air Quality Standards*. Available at: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf

Assembly Bill 32

Assembly Bill 32 (AB 32), also known as the Global Warming Solutions Act of 2006, is a California State Law that addresses climate change by establishing a comprehensive program to reduce GHG emissions from all sources throughout the state. AB 32 requires that the CARB develop regulations and market mechanisms to reduce California's GHG emissions to 1990 levels by 2020. To achieve this goal, AB 32 mandates that CARB establish a quantified emissions cap; institute a schedule to meet the cap; implement regulations to reduce statewide GHG emissions from stationary sources; and develop tracking, reporting, and enforcement mechanisms to ensure that reductions are achieved.

Senate Bill 32

Senate Bill 32 (SB 32) modifies AB 32 to include a GHG emission reduction goal for 2030. Approved on September 8, 2016, SB 32 requires CARB to ensure that the statewide greenhouse gas emissions are reduced to 40 percent below the 1990 level by 2030. This goal was set with the intent to keep global temperature rise to below 2 degrees Celsius. It became effective January 2017.

[5] South Coast Air Quality Management District. February 2013. *Final 2012 AQMP*. Available at: http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-2012-air-quality-management-plan

2017 Climate Change Scoping Plan Update[6]

The 2017 Climate Change Scoping Plan Update establishes the GHG reduction target for 40 percent below 1990 levels by 2030 and details GHG reduction strategies for all sectors with the newly included agriculture and forestry sectors. The 2017 Climate Change Scoping Plan Update is designed to reduce California's dependency on fossil fuels while maintaining a strong economy and providing environmental benefits. The first Climate Change Scoping Plan was required by AB 32, while the 2017 Update acknowledges the commitment made in SB 32. The framework for the 2017 Update focuses on renewable energy, low carbon fuel standard, mobile source strategy, the sustainable freight action plan, short-lived climate pollutant reduction strategy, SB 375 Sustainable Communities Strategy, Cap and Trade, refineries, and developing a Natural and Working Lands Action Plan.

3.3 REGIONAL

2016–2040 Southern California Association of Governments (SCAG) Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS)

The RTP/SCS is a long-range transportation plan that is developed and updated by SCAG every four years. The RTP provides a vision for transportation investments throughout the region. Using growth forecasts and economic trends that project out over a 20-year period, the RTP considers the role of transportation in the broader context of economic, environmental, and quality-of-life goals for the future, identifying regional transportation strategies to address our mobility needs. The 2016–2040 RTP/SCS includes a strong commitment to reduce emissions from transportation sources to comply with SB 375, improve public health, and meet the National Ambient Air Quality Standards as set forth by the federal Clean Air Act. Under SB 375, the CARB established per capita targets for GHG reduction for cars and light trucks for the SCS. The GHG reduction targets for the SCAG region are 8 percent in 2020 and 13 percent in 2035.

SCAQMD Air Quality Management Plans

The 2016 AQMP was adopted by the Governing Board of the South Coast Air Quality Management District (SCAQMD) on March 3, 2017. The Plan is a regional and multiagency effort (SCAQMD, CARB, SCAG, and EPA). State and federal planning requirements include developing control strategies, attainment demonstrations, reasonable further progress, and maintenance plans. The 2016 AQMP incorporates the latest scientific and technical information and planning assumptions, including the latest applicable growth assumptions, transportation control measures and strategies, and updated emission inventory methodologies for various source categories.[7]

The 2016 AQMP details integrated strategies and measures to meet the following NAAQS:

- 2008 8-hour Ozone (75 parts per billion [ppb]) by 2031
- 2012 Annual $PM_{2.5}$ (12 micrograms per cubic meter [$\mu g/m^3$]) by 2021 (moderate) and 2025 (serious)

[6] California Air Resources Board. January 20, 2017. *The 2017 Climate Change Scoping Plan Update.* https://www.arb.ca.gov/cc/scopingplan/2030sp_pp_final.pdf

[7] South Coast Air Quality Management District. 2016. *Draft Final 2016 AQMP (December 2016).* Available at: http://www.aqmd.gov/home/library/clean-air-plans/air-quality-mgt-plan/final-draft-2016-aqmp

- 2006 24-hour $PM_{2.5}$ (35 $\mu g/m^3$) by 2019
- 1997 8-hour Ozone (80 ppb) by 2023

Los Angeles County General Plan 2035

The project area is located within the County of Los Angeles and subject to the provisions of the Los Angeles County General Plan 2035. The Air Quality Element of the General Plan 2035 has established three goals and 16 policies related to air quality:[8]

Goal AQ 1: Protection from exposure to harmful air pollutants.

- Policy AQ 1.1: Minimize health risks to people from industrial toxic or hazardous air pollutant emissions, with an emphasis on local hot spots, such as existing point sources affecting immediate sensitive receptors.
- Policy AQ 1.2: Encourage the use of low or no volatile organic compound (VOC) emitting materials.
- Policy AQ 1.3: Reduce particulate inorganic and biological emissions from construction, grading, excavation, and demolition to the maximum extent feasible.
- Policy AQ 1.4: Work with local air quality management districts to publicize air quality warnings, and to track potential sources of airborne toxics from identified mobile and stationary sources.

Goal AQ 2: The reduction of air pollution and mobile source emissions through coordinated land use, transportation and air quality planning.

- Policy AQ 2.1: Encourage the application of design and other appropriate measures when siting sensitive uses, such as residences, schools, senior centers, daycare centers, medical facilities, or parks with active recreational facilities within proximity to major sources of air pollution, such as freeways.
- Policy AQ 2.2: Participate in, and effectively coordinate the development and implementation of community and regional air quality programs.
- Policy AQ 2.3: Support the conservation of natural resources and vegetation to reduce and mitigate air pollution impacts.
- Policy AQ 2.4: Coordinate with different agencies to minimize fugitive dust from different sources, activities, and uses.

Goal AQ 3: Implementation of plans and programs to address the impacts of climate change.

- Policy AQ 3.1: Facilitate the implementation and maintenance of the Community Climate Action Plan to ensure that the County reaches its climate change and greenhouse gas emission reduction goals.
- Policy AQ 3.2: Reduce energy consumption in County operations by 20 percent by 2015.
- Policy AQ 3.3: Reduce water consumption in County operations.

[8] County of Los Angeles Department of Regional Planning. Adopted 6 October 2015. Los Angeles County 2035 General Plan: Chapter 8: Air Quality Element. Available online at: http://planning.lacounty.gov/assets/upl/project/gp_final-general-plan-ch8.pdf

- Policy AQ 3.4: Participate in local, regional and state programs to reduce greenhouse gas emissions.
- Policy AQ 3.5: Encourage energy conservation in new development and municipal operations.
- Policy AQ 3.6: Support rooftop solar facilities on new and existing buildings.
- Policy AQ 3.7: Support and expand urban forest programs within the unincorporated areas.
- Policy AQ 3.8: Develop, implement, and maintain countywide climate change adaptation strategies to ensure that the community and public services are resilient to climate change impacts.

Community Climate Action Plan

The Trails Master Plan Study Area is located within the unincorporated portion of Los Angeles County. The Community Climate Action Plan, which is part of the Los Angeles County General Plan, was adopted in 2015 and sets the goal to reduce GHG emissions from the unincorporated areas of Los Angeles County by 11 percent below 2010 levels by 2020. This would equate to an avoidance of 1.9 million metric tons of CO_2e. The Community Climate Action Plan identifies strategies by major emissions sectors to achieve the necessary reductions by 2020.[9]

Santa Clarita Valley Area Plan

The Trails Master Plan Study Area is located within the Santa Clarita Valley and is subject to the 2012 Santa Clarita Valley Area Plan. While there are no specific air quality related goals, the Safety Element of the Santa Clarita Valley Area Plan describes the potential for severe weather conditions including extreme heat and high-velocity winds. Extreme heat can lead to health risks, excessive demands on the grid for energy through air conditioning use, flash floods, wildfires, and increased ozone. High-velocity winds can overturn trees, create dangerous driving conditions, damage utility lines, and spread wildfires.

City of Los Angeles General Plan Air Quality Element[10]

While the County is not subject to the City General Plan, this information has been included based on the Phase II.b recommended connections to the immediately adjacent City of Los Angeles trails.

The City of Los Angeles General Plan Air Quality Element outlines the goals, objectives, and policies to guide the City in its implementation of its air quality improvement programs and strategies. The following policies are applicable to the proposed project:

- Policy 4.2.2. Improve accessibilities for the City's residents to places of employment, shopping centers, and other establishments.
- Policy 4.2.5. Emphasize trip reduction, alternative transit and congestion management measures for discretionary projects.

[9] County of Los Angeles Department of Regional Planning. Adopted August 2015. Unincorporated Los Angeles County Community Climate Action Plan 2020. Available at: http://planning.lacounty.gov/assets/upl/project/ccap_final-august2015.pdf

[10] City of Los Angeles General Plan. 1991. *Air Quality Element*. Available at: https://planning.lacity.org/cwd/gnlpln/aqltyelt.pdf

SECTION 4.0
METHODS AND ASSUMPTIONS

Construction activities would include construction of new trails, site grading, and delivery and hauling of construction materials and equipment. Construction activities associated with the proposed project, as currently conceived, would entail construction of approximately 70 miles of trails and up to 12 off-street parking areas with a maximum total of 220 parking spaces. No buildings were included in the analysis. Construction equipment would be limited to dozers; graders; small tractors; water trucks; and hand tools including picks, hoes, shovels, and wheelbarrows.

The development of Phase II of the Trails Master Plan is assumed to occur sporadically between 2018 and 2035. Construction of the trails would be scheduled in compliance with the County Noise Control Ordinance, which limits construction to the hours between 7:00 a.m. and 8:00 p.m. on weekdays and Saturdays.

CalEEMod Version 2016.3.1 was used to estimate construction emissions from the proposed project (Appendix A, *CalEEMod Output for the Santa Susana Mountains Trails Master Plan – Phase II*). Additionally, CalEEMod was used to estimate emissions from the operation of proposed trails that would be likely to result from additional vehicle trips traveling to and from the proposed project study area by trail users. The following assumptions were made:

1. The "recreational" land use category was designated for the air quality analysis to account for the trails, bike skills areas, and equestrian parks. The "parking" land use category was used to account for the 220 parking spaces.

2. Construction would be conducted in accordance with the guidelines specified in the County Trails Manual. The County Trails Manual contains specific methods for building trails in areas with steep slopes and riparian crossings. The County Trails Manual should be referenced for further information to determine the constructability of trail segments.

3. The trail corridor width was assumed to be 12 feet. Actual trail widths range from 2 feet to 11 feet in width, so 12 feet is used as a conservative estimate.

4. The area of disturbance was assumed to be approximately 140 acres. Site preparation and grading were the only construction phases included in the model.

   Calculations for acres of disturbance:

   71.5 miles trail = 377,520 feet (ft)
   Trails area of disturbance = 377,520 ft × 12 ft wide = 4,530,240 ft^2 = 104 acres
   Bike skills areas, area of disturbance: 15 acres × 2 parks = 30 acres
   Trailing and staging area of disturbance: 0.5 acre × 8 locations = 4 acres
   Equestrian parks area of disturbance: 0.5 acre × 2 locations = 1 acre
   Trailheads area of disturbance = 500 ft^2 × 4 locations = 0.05 acre

   Total area of disturbance = 104 + 30 + 4 + 1 + 0.05 = 139.05 acres, ~ 140 acres

5. The derived empirical parking trip rate was 4.0 trips per mile of trail per hour. Default values for other trip characteristics were used.

6. Although the trails and related appurtenant facilities are expected be constructed through 2035 planning horizon in the Los Angeles County General Plan. For the purpose of this analysis, the construction phase was assumed to take 16 years from June 1, 2018, to June 1, 2034. The breakdown of construction was 12 years of site preparation and 4 years of grading to distribute the work efforts. The operational year for the proposed project was assumed to be 2035. This would be a reasonable worst-case scenario provided that funding became available for completion of all proposed trails.

7. To prevent the need for importing/exporting soil from off-site for the proposed project, utilization of "cut-and-fill" best management practices were assumed to be implemented into the construction phase. Default values of zero were used for material exported/imported.

8. The equipment listed in Table 4-1, *Construction Equipment List*, was assumed to calculate construction emissions for the proposed project:

TABLE 4-1
CONSTRUCTION EQUIPMENT LIST

Equipment	Horsepower Rating	Hours of Operation/Day
Site Preparation		
Two tractor/loader/backhoe	97	2
One water truck	400	4
Grading		
Four rubber-tired dozers	255	2
Two graders	174	2
One water truck	400	4

NOTE: A load factor indicates the average proportion of rated power used.

One tractor/loader/backhoe operating 8 hours/day for 260 days a year was included as operational off-road equipment for trail maintenance.

9. No area air emissions sources were selected, assuming that area sources in the vicinity of the proposed project would be negligible. While there are oil wells within the study area, many attempts to find oil in the early 1900s were unsuccessful, and many wells were abandoned. There are four (4) active oil wells on the western edge of the Phase IIa project area. These oil/gas wells were not accounted for in the air emission modeling. Operational energy, waste, and water sources were not considered at this programmatic level. Emissions from construction and operation of any buildings or structures within the study area will need to be considered on the project level.

10. Two recommended measures were selected for the construction phase of the proposed project: Reduce vehicular speed on unpaved roads to less than 15 miles per hour (mph). Water exposed areas three times a day. Use low VOC paint for parking.

The analysis of air impacts from construction is based on potential worst-case scenario for construction activities, including the site preparation and grading of trails.

Emissions from construction activities are represented in the model through off-road construction equipment and worker/vendor trips. These sources represent the majority of the construction emissions. All construction activities of the proposed project would be in accordance with all federal, state, and County building codes and the County Trails Manual. The County would require preparation of a trail site plan, site-specific geotechnical investigation, survey for biological and cultural resources, and an appropriate CEQA document in support of each trail segment before project approval and construction can commence.

Construction best management practices would be used. Construction equipment would be turned off when not in use. The construction contractor would ensure that all construction and grading equipment is properly maintained. All vehicles and compressors would utilize exhaust mufflers and engine enclosure covers (as designed by the manufacturer) at all times.

CARB EMFAC 2014 model, which is embedded in CalEEMod, was used to evaluate the proposed project's emissions from mobile sources, such as passenger cars and maintenance vehicles, based on the expected vehicle fleet mix, vehicle speeds, commute distances, and temperature conditions for the estimated start date of the proposed project.

SECTION 5.0
RESULTS

This section provides the characterization and evaluation of the potential for the proposed project to affect air quality and GHG emissions within the Trails Master Plan Study Area. The results described in this section provide the substantial evidence required to address the CEQA scope of analysis related to air quality and GHG emissions.

5.1 EXISTING CONDITIONS

Regional Climate

The SCAQMD governs the air quality in the South Coast Air Quality Basin (Basin), where the proposed project is located (Figure 5.1-1, *Air Districts in the Vicinity of the Project Site*; Figure 5.1-2, *Air Basins in the Vicinity of the Project Site*). Temperature, wind, humidity, precipitation, and the amount of sunshine influence the quality of the air. In addition, the Basin is frequently subjected to an inversion layer that traps air pollutants. Temperature has an important influence on Basin wind flow, pollutant dispersion, vertical mixing, and photochemistry.

Annual average temperatures throughout the Basin vary from the low to middle 60 degrees Fahrenheit (° F). However, due to decreased marine influence, the eastern portion of the Basin shows greater variability in average annual minimum and maximum temperatures. January is the coldest month throughout the Basin, with average minimum temperatures of 47° F in downtown Los Angeles and 36° F in San Bernardino. All portions of the Basin have recorded maximum temperatures above 100° F.

Although the climate of the Basin can be characterized as semi-arid, the air near the land surface is quite moist on most days because of the presence of a marine layer. This shallow layer of sea air is an important modifier of Basin climate. Humidity restricts visibility in the Basin, and the conversion of SO_2 to SO_4 is heightened in air with high relative humidity. The marine layer is an excellent environment for that conversion process, especially during the spring and summer months. The annual average relative humidity is 71 percent along the coast and 59 percent inland. Because the ocean effect is dominant, periods of heavy early morning fog are frequent and low stratus clouds are a characteristic feature. These effects decrease with distance from the coast.

More than 90 percent of the Basin's rainfall occurs from November through April. Annual average rainfall varies from approximately 9 inches in Riverside to 14 inches in downtown Los Angeles. Monthly and yearly rainfall totals are extremely variable. Summer rainfall usually consists of widely scattered thundershowers near the coast and slightly heavier shower activity in the eastern portion of the region and near the mountains. Rainy days comprise 5 to 10 percent of all days in the Basin, with the frequency being higher near the coast. The influence of rainfall on the contaminant levels in the Basin is minimal. Although some washout of pollution would be expected with winter rains, air masses that bring precipitation of consequence are very unstable and provide excellent dispersion that masks wash-out effects. Summer thunderstorm activity affects pollution only to a limited degree. If the inversion is not broken by a major weather system, high contaminant levels can persist even in areas of light showers.

FIGURE 5.1-1

Air Districts in the Vicinity of the Project Site

FIGURE 5.1-2

Air Basins in the Vicinity of the Project Site

Temperature Inversion

The vertical dispersion of air pollutants in the Basin is frequently restricted by the presence of a persistent temperature inversion in the atmospheric layers near the earth's surface. Normally, the temperature of the atmosphere decreases with altitude. However, when the temperature of the atmosphere increases with altitude, the phenomenon is termed an inversion. An inversion condition can exist at the surface or at any height above the ground. The bottom of the inversion, known as the mixing height, is the height of the base of the inversion.

In general, inversions in the Basin are lower before sunrise than during the daylight hours. As the day progresses, the mixing height normally increases as the warming of the ground heats the surface air layer. As this heating continues, the temperature of the surface layer approaches the temperature of the base of the inversion layer. When these temperatures become equal, the inversion layer's lower edge begins to erode and, if enough warming occurs, the layer breaks up. The surface layers are gradually mixed upward, diluting the previously trapped pollutants. The breakup of inversion layers frequently occurs during mid to late afternoon on hot summer days. Winter inversions usually break up by mid-morning.

Regional Air Quality

The air quality in Southern California does not meet the state and federal standards. The American Lung Association consistently gives the County of Los Angeles failing grades in the amount of ozone and particulate pollution in the air. Although smog levels are impacted by seasons and weather patterns, smog is visible in the air on most days.

The County is a large basin with the Pacific Ocean to the west and several mountain ranges with 11,000-foot peaks to the east and south. Frequent sunny days and low rainfall contribute to ozone formation, as well as high levels of fine particles and dust. In addition, the County is home to many diverse industries and the largest goods movement hub on the West Coast. In spite of emission controls that are among the most stringent in the county, power generation and petroleum refining continue to be among the County's largest stationary sources of air pollution.

The determination of whether a region's air quality is healthy or unhealthy is determined by comparing contaminant levels in ambient air samples to national and state standards. These standards were established to protect exposed sensitive receptors from adverse health effects with a margin of safety. Air quality of a region is considered to be in attainment/nonattainment of the state standards.

The South Coast Air Basin is in federal non-attainment for O_3 and $PM_{2.5}$ (Table 5.1-1, *NAAQS and CAAQS Attainment Statuses, South Coast Basin*). The Health and Safety Code section 39607(e) requires CARB to periodically review area designation criteria for CAAQS. These designation criteria provide the basis for CARB to designate areas of California as attainment, nonattainment, or unclassified for the State standards. CARB made the first area designations for CAAQS in 1989, and since then it has reviewed the designations each year, making changed as needed. As of February 2016, the County has been designated as nonattainment for O_3, $PM_{2.5}$, and PM_{10}.

TABLE 5.1-1
NAAQS AND CAAQS ATTAINMENT STATUSES, SOUTH COAST AIR BASIN

Criteria Pollutant	Standard	Averaging Time	Designation	Attainment Date
1-Hour Ozone	NAAQS	1979 1-Hour (0.12 ppm)	Nonattainment (Extreme)	2/6/2023 Originally 11/15/2010 (not attained)
	CAAQS	1-Hour (0.12 ppm)	Nonattainment	N/A
8-Hour Ozone	NAAQS	1997 8-Hour (0.08 ppm)	Nonattainment (Extreme)	6/15/2024
	NAAQS	2008 8-Hour (0.075 ppm)	Nonattainment (Extreme)	7/20/2032
	NAAQS	2015 8-Hour (0.070 ppm)	Designations Pending	~ 2037
	CAAQS	8-Hour (0.070 ppm)	Nonattainment	Beyond 2032
Carbon Monoxide	NAAQS	1-Hour (35 ppm) 8-Hour (9 ppm)	Attainment (Maintenance)	6/11/2007 (attained)
	CAAQS	1-Hour (20 ppm) 8-Hour (9 ppm)	Attainment	6/11/2007 (attained)
Nitrogen Dioxide	NAAQS	1-Hour (0.10 ppm)	Unclassifiable/Attainment	N/A (attained)
	NAAQS	Annual (0.053 ppm)	Attainment (Maintenance)	9/22/1998 (attained)
	CAAQS	1-Hour (0.18 ppm) Annual (0.030 ppm)	Attainment	—
Sulfur Dioxide	NAAQS	1-Hour (75 ppb)	Designations Pending (expect Unclassifiable/Attainment)	N/A (attained)
	NAAQS	24-Hour (0.14 ppm) Annual (0.03 ppm)	Unclassifiable/Attainment	3/19/1979 (attained)
PM_{10}	NAAQS	1987 24-Hour (150 $\mu g/m^3$)	Attainment (Maintenance)	7/26/2013 (attained)
	CAAQS	24-hour (50 $\mu g/m^3$) Annual (20 $\mu g/m^3$)	Nonattainment	N/A
$PM_{2.5}$	NAAQS	2006 24-Hour (35 $\mu g/m^3$)	Nonattainment (Serious)	12/31/2019
	NAAQS	1997 Annual (15.0 $\mu g/m^3$)	Nonattainment	4/5/2015
	NAAQS	2012 Annual (12.0 $\mu g/m^3$)	Nonattainment (Serious)	12/31/2025
	CAAQS	Annual (12.0 $\mu g/m^3$)	Nonattainment	N/A
Lead	NAAQS	3-Months Rolling (0.15 $\mu g/m^3$)	Nonattainment (Partial)	12/31/2015
Hydrogen Sulfide (H_2S)	CAAQS	1-Hour (0.03 ppm/42 $\mu g/m^3$)	Attainment	—
Sulfates	CAAQS	24-Hour (25 $\mu g/m^3$)	Attainment	—
Vinyl Chloride	CAAQS	1-Hour (0.01 ppm/ 26 $\mu g/m^3$)	Attainment	—

NOTE: ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter.
SOURCE: South Coast Air Quality Management District. February 2016. *Air Quality Management Plan (AQMP).* Available at: http://www.aqmd.gov/docs/default-source/clean-air-plans/air-quality-management-plans/naaqs-caaqs-feb2016.pdf?sfvrsn=2

Air Quality Monitoring Stations

The SCAQMD monitors air quality through a network of 39 permanent, multi-pollutant monitoring stations and 4 additional single-pollutant source impact Lead (Pb) monitoring stations in the Basin and a portion of the Salton Sea Air Basin in Coachella Valley. The closest monitoring station to study area of the proposed project is the Santa Clarita-Placerita Monitoring Station, located approximately 2.3 miles to the east of the project boundary at 22224 Placerita Canyon, Santa Clarita, California 91321. Santa Clarita Monitoring Station measures carbon monoxide, nitrogen dioxide, ozone, PM_{10}, and $PM_{2.5}$. The nearest monitoring station that records measurements of sulfur dioxide is the Los Angeles-North Main Street Monitoring Station, located approximately 25 miles to the southeast of the project boundary at 1630 North Main Street, Los Angeles California 90012.

Ambient air quality data for the proposed project vicinity recorded at the two monitoring stations from 2014 to 2016 indicated exceedances for the applicable federal standards for 1-hour ozone, 8-hour ozone and the state standards for annual PM10 (Table 5.1-2, *Summary of 2012–2014 Ambient Air Quality Data in the Trails Master Plan Vicinity*).

TABLE 5.1-2
SUMMARY OF 2014–2016 AMBIENT AIR QUALITY DATA IN THE TRAILS MASTER PLAN VICINITY

Pollutant		Pollutant Concentration and Standards	Average and Exceedances		
			2014	2015	2016
Ozone*		Maximum 1-hr concentration (ppm)	0.137	0.126	0.130
		Days above state 1-hr standard	32	23	29
		Maximum 8-hr concentration (ppm)	0.110	0.108	0.115
		Days above state 8-hr 2015 standard	64	52	57
Carbon Monoxide**		Maximum 1-hr concentration (ppm)	—	—	—
		Days above state 1-hr standard	—	—	—
		Maximum 8-hr concentration (ppm)	—	—	—
		Days above state 8-hr standard	—	—	—
Nitrogen Dioxide*		Maximum 1-hr concentration (ppm)	0.057	0.064	0.046
		Days above state 1-hr standard	0	0	0
		Annual average concentration (ppm)	.012	.011	.010
		Exceed 0.03 ppm (state annual standard)?	No	No	No
Particulate Matter	$PM_{2.5}$*	Maximum 24-hr concentration ($\mu g/m^3$)	28.9	34.4	33.9
		Days above federal 24-hr standard	—	—	—
		Annual standard designation value ($\mu g/m^3$)	10	10	9
		Exceed 12 $\mu g/m^3$ (state annual standard)?	No	No	No
	PM_{10}*	Maximum 24-hr concentration ($\mu g/m^3$)	47.0	41.0	96.0
		Days above federal 24-hr standard	0	0	0
		3-year maximum annual concentration ($\mu g/m^3$)	22	22	—
		Exceed 20 $\mu g/m^3$ (state annual standard)?	Yes	Yes	—
Sulfur Dioxide**		Maximum 24-hr concentration (ppm)	—	—	—
		Maximum 1-hr concentration (ppm)	—	—	—
		Exceed 0.04 ppm (State 24-hr standard)?	—	—	—
		Exceed 0.25 ppm (State 1-hr standard)	—	—	—

NOTE: ppm = parts per million; $\mu g/m^3$ = micrograms per cubic meter; — = insufficient (or no) data available to determine the value

* Data for ozone, nitrogen dioxide, and $PM_{2.5}$, were taken from the Santa Clarita-Placerita Monitoring Station.

**No Data available for carbon monoxide or sulfur dioxide in Los Angeles County

SOURCE: California Air Resources Board. Accessed 26 July 2017. *Air Quality Data Statistics*. Available at: http://www.arb.ca.gov/adam/

Sensitive Receptors

Land uses identified to be sensitive receptors by SCAQMD in the Air Quality Handbook include residences, schools, playgrounds, child care centers, athletic facilities, long-term health care facilities, rehabilitation centers, convalescent centers, and retirement homes. People with compromised immune systems may be exposed to emissions released from the construction and operation of the proposed project. The greatest potential for exposure of sensitive receptors to air contaminants would occur during the temporary construction phase.

The proposed project is situated in a rural community with approximately 29,000 residents in the unincorporated communities of Castaic, Castaic Junction, Val Verde, Hasley Canyon, Hillcrest, and Paradise Ranch. Other destinations of note are Castaic Lake; the canyons of Charlie, Tapia, Romero, Sloan, and Violin; the Valencia Commerce Center; and the Peter Pitchess Detention Center. There are 6,681 known sensitive receptors (6,666 residential areas, 6 parks, 9 schools) within the Santa Susana project area. There are an additional 2,966 known sensitive receptors (2,953 residential areas, 1 senior day care center, 4 homes for aged and others, 3 parks, 1 health center, 4 schools) within a 0.5-mile radius of the Santa Susana project area (Figure 5.1-3, *Sensitive Receptors within 0.5 Miles of the Project Site*).

Exposure of sensitive receptors to potential emissions would vary from day to day, depending on the amount of work being conducted, the weather/wind conditions, the location of receptors, and the length of time that receptors would be exposed to air emissions.

Due to the short-term and segmented nature of project construction on this programmatic level, sensitive receptors would not be expected to be significantly affected by the proposed project. In addition, although off-site residents, both adults and children, would have a longer potential duration of exposure to the project's constructional air emissions, exposure is reduced with distance.

Odors

Objectionable odors are typical of agriculture, chemical plants, composting operations, dairies, fiberglass molding, landfills, refineries, rendering plants, rail yards, and wastewater treatment plants.[11] The impact from odors varies with wind direction and speed, distance from the source and sensitive receptors, and release height of odor. Identification of sources of odors is necessary during the planning stages to reduce the impact of odors. These sources of odors are regulated by SCAQMD Rule 402 Nuisance with the exception of agriculture.

Air Quality Significance Thresholds

The impacts to air quality were evaluated in accordance with the most recent SCAQMD significance thresholds for criteria pollutants (Table 5.1-3, *SCAQMD Air Quality Significance Thresholds*).

[11] South Coast Air Quality Management District. Chapter 2 Land Use – Guidance Document for Air Quality in Local Plans. Available at: http://www.aqmd.gov/docs/default-source/planning/air-quality-guidance/chapter-2---air-quality-issues-regarding-land-use.pdf

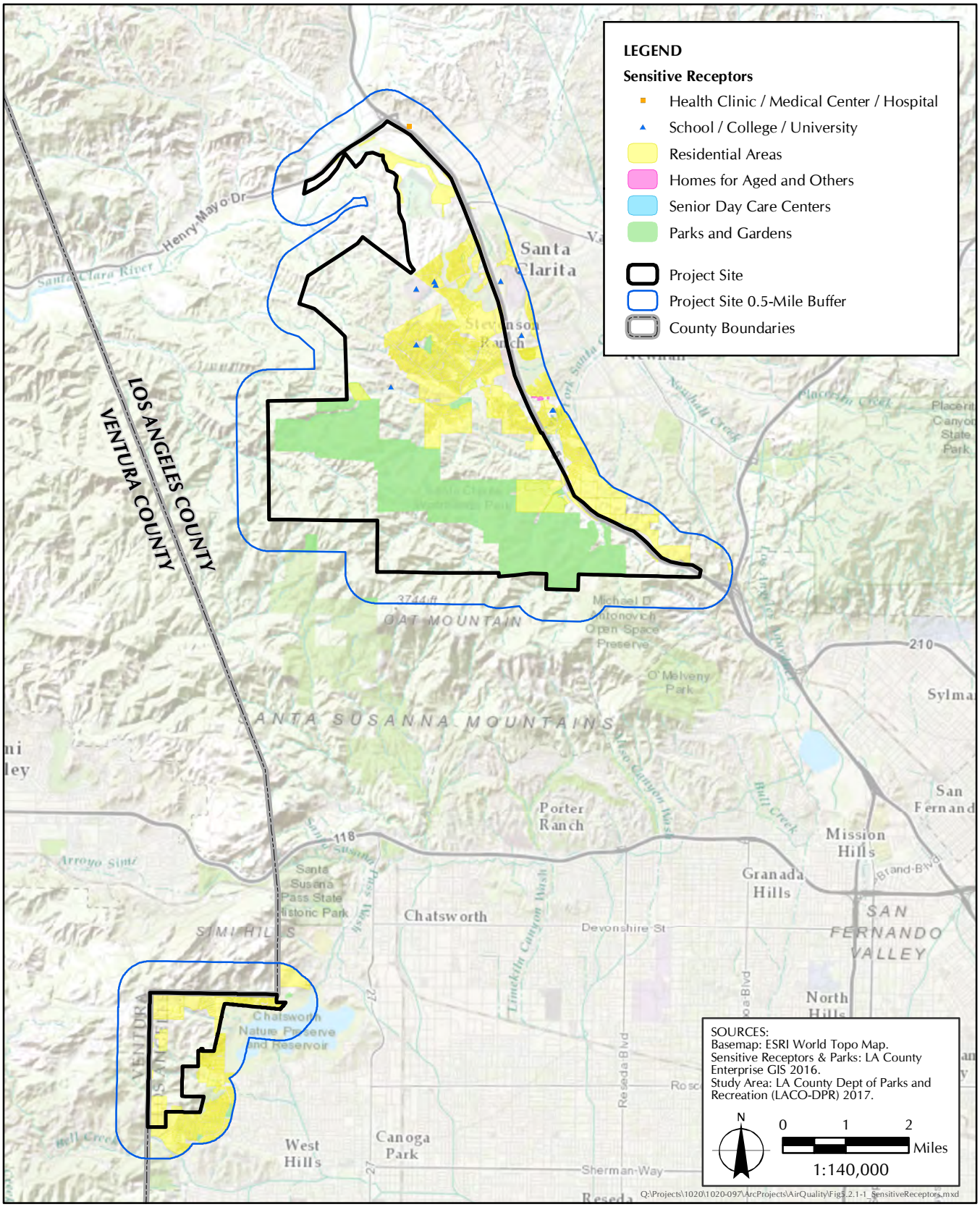

FIGURE 5.1-3

Sensitive Receptors within 0.5 Miles of the Project Site

TABLE 5.1-3
SCAQMD AIR QUALITY SIGNIFICANCE THRESHOLDS

Pollutant	Construction (pounds/day)	Operation (pounds/day)
Nitrogen Oxides	100	55
Volatile organic compounds (VOC)	75	55
PM_{10}	150	150
$PM_{2.5}$	55	55
Sulfur Oxides	150	150
Carbon Monoxide	550	550

SOURCE: South Coast Air Quality Management District. 1993. *CEQA Handbook*.

Greenhouse Gas Emissions

The principal anthropogenic GHGs that enter the atmosphere consist of carbon dioxide (CO_2), methane (CH_4), nitrogen oxides (NOx), hydrofluorocarbons (CFCs), perfluorocarbons (HCFCs), and sulfur hexafluoride (SF_6). Among these GHGs, CO_2 emissions are considered to be the most abundant type of GHG emissions contributing to global climate change. In order to establish a reference point for future GHG emissions, carbon dioxide equivalent (CO_2e) emissions have been projected based on an unregulated, business-as-usual, GHG emissions scenario that does not consider the reductions in GHG emissions required by AB 32 or SB 32. In December 2007, CARB stated that California contributed 427 million metric tons (MMT) of GHG emissions in CO_2e in 1990, and under a business-as-usual development scenario, will contribute approximately 509 MMT of CO_2e emissions in 2020, which presents a linear upward trend. These numbers were based on the International Panel on Climate Change's (IPCC's) Second Assessment Report. Under AB 32, California must reduce emissions to 1990 levels by 2020. By 2013, most climate change organizations were adopting the IPCC's Fourth Assessment Report, which revises global warming potentials of GHG. As a result, ARB updated the new 2020 statewide limit to 431 MMT CO_2e by 2020.[12] CARB plans on achieving the reductions by focusing on the following seven sectors: transportation, electricity generation, industrial, residential, agriculture, commercial, and forestry.

Greenhouse Gas Emissions Significance Thresholds

As of February 2016, SCAQMD, state, and federal agencies have not set mandatory significance thresholds for project impacts on climate change and global warming. SCAQMD has set a guidance threshold of 10,000 MT/year CO_2e for industrial facilities, but the guidance does not apply to the proposed project. More broadly, the EPA has set a GHG reporting threshold for facilities emitting at least 25,000 MT CO_2e / year.

[12] California Air Resources Board. June 6, 2017. *California 1990 Greenhouse Gas Emissions Level and 2020 Limit.* Available at: https://www.arb.ca.gov/cc/inventory/1990level/1990level.htm

5.2 IMPACT ANALYSIS

Proposed trail width within the proposed project varies between 3 and 12 feet. Therefore, spatial impact analysis for air quality and GHG emissions was based on a worst-case analysis using a maximum width of 12 feet and additional construction disturbances beyond the trail footprint for the bike skills areas, equestrian parks, trailhead and staging areas, and trailheads.

5.2.1 Air Quality

The potential for the proposed project to result in impacts related to air quality was analyzed in relation to the questions in Appendix G of the State CEQA Guidelines,[13] as modified for the County. Would the project:

- Conflict with or obstruct implementation of applicable air quality plans of either the South Coast AQMD (SCAQMD) or the Antelope Valley AQMD (AVAQMD)?
- Violate any air quality standard or contribute substantially to an existing or projected air quality violation?
- Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?
- Expose sensitive receptors to substantial pollutant concentrations?
- Create objectionable odors affecting a substantial number of people?

Applicable Air Quality Plans

The proposed project would result in less than significant impacts to air quality in regard to conflicting with or obstructing implementation of applicable air quality plans within SCAQMD. The two main plans of concern are the Air Quality Element of the County General Plan and the 2016 SCAQMD AQMP. The proposed project would also be consistent with SCAG's 2016–2040 RTP/SCS. The construction, operation, and maintenance of the proposed project would not cause a violation of the SCAQMD AQMP because it would not impede the ability of the basin to achieve the NAAQS attainment deadlines for those pollutants not in attainment. Designations for attainment are determined from the ambient air quality. The proposed project would be consistent with the AQMP's goals to invest in strategies that improve air quality by supporting transportation control measures to reduce vehicle miles traveled (VMT). This is also consistent with the Air Quality Element for the County General Plan, which states a direct link between transportation activities and air pollution. The project design measures to limit particulate matter from construction are in alignment with Policy AQ 1.3.

For operations, the proposed project would minimally increase the number of vehicles coming to and from the parks and open space areas in the area by providing recreational opportunities close to where people live and through the long-term conservation of open space lands. These trips would be recreational in purpose, occurring mainly on weekends and/or outside peak hour traffic, and therefore not causing additional traffic. With limited new trips, the proposed project would

[13] *California Code of Regulations*, Title 14, Division 6, Chapter 3, Sections 15000–15387, Appendix G.

support Goal 2 of the County General Plan by coordinating land use, transportation, and air quality planning. The proposed project would also not have a long-term consequence on achieving attainment deadlines in the SCAQMD AQMP for criteria pollutants that are not in attainment. The proposed project is aligned with the 2016–2040 RTP/SCS because it would reduce VMT and encourage nearby recreation. Therefore, the proposed project would result in less than significant impacts in regard to conflicting with or obstructing implementation of applicable air quality plans, and no mitigation would be required.

Air Quality Standards

The proposed project would result in less than significant impacts to air quality in regard to violating any air quality standard or contributing substantially to an existing or projected air quality violation. Ambient air quality of two nearby monitoring stations is reported in Table 5.1-2.

Construction

The project's daily construction emissions were generated using CalEEMod 2016.3.1. Table 5.2.1-1, *Estimated Daily Construction Emissions*, summarizes the daily construction emissions associated with the proposed project's construction activities and indicates that emissions would be below the SCAQMD daily constructional emissions thresholds of significance.

TABLE 5.2.1-1
ESTIMATED DAILY CONSTRUCTION EMISSIONS

Criteria Air Pollutants	Mitigated Construction Emissions[1]		Exceed Significance Threshold?
	Maximum Annual Project Emissions[2] (pounds/day)	SCAQMD Daily Significance Threshold (pounds/day)	
Carbon monoxide (CO)	24.02	550	No
Sulfur Dioxide (SO_2)	0.07	150	No
Nitrogen oxides (NO_x)	43.33	100	No
Reactive organic gases (ROGs)	4.05	75	No
Particulate matter (PM_{10})	16.30	150	No
Fine particulate matter ($PM_{2.5}$)	9.69	55	No

NOTE: [1] Includes two recommended measures: Reduce speed on unpaved roads to less than 15 mph and water exposed area three times a day.
[2] Daily emissions taken from CalEEMod Summer Report (Appendix A).

Operation

Given that the proposed project would be operated as trails that would not require any stationary sources for daily operation and maintenance, long-term operation-related air emissions in the proposed project area are likely to result from vehicles traveling to and from the trailheads and minimal usage of a loader/backhoe/tractor for trail maintenance. According to Table 5.2.1-2, *Estimated Daily Operational Emissions,* operational emissions associated with the proposed project are expected to be below the level of significance as determined by the SCAQMD. Therefore, the

proposed project would result in less than significant impacts in regard to air quality standards, and no mitigation would be required.

TABLE 5.2.1-2
ESTIMATED DAILY OPERATIONAL EMISSIONS

Criteria Air Pollutants	Mitigated Operational Emissions[1]		Exceed Significance Threshold?
	Project Emissions[2] (pounds/day)	SCAQMD Daily Significance Threshold (pounds/day)	
Carbon monoxide (CO)	47.93	550	No
Sulfur dioxide (SO_2)	0.24	150	No
Nitrogen oxides (NO_x)	20.17	55	No
Reactive organic gases (ROGs)	3.98	55	No
Particulate matter (PM_{10})	45.82	150	No
Fine particulate matter ($PM_{2.5}$)	11.88	55	No

NOTE: [1] Includes one mitigation measure: Reduce speed on unpaved roads to less than 15 mph**.**
[2] Daily emissions taken from CalEEMod Summer Report.

Cumulatively Considerable Increase of Any Criteria Pollutant

The proposed project would result in less than significant impacts to air quality in regard to resulting in cumulatively considerable net increase of any criteria pollutant for which the region is in non-attainment. Compared to the NAAQS, the County portion of the South Coast Air Basin is a nonattainment area for 1- hour ozone, 8-hour ozone, fine particulate matter ($PM_{2.5}$), and lead for near-source monitors. Compared to the CAAQS, the County portion of the South Coast Air Basin is a nonattainment area for 1-hour ozone, 8-hour ozone, $PM_{2.5}$, and respirable particulate matter (PM_{10}). The proposed project would generate these pollutants during the construction of trail improvements. The operations and maintenance phases of the proposed project would not cause a cumulatively considerable net increase of any criteria pollutant, as the proposed project is a recreational trail generating minimal new vehicle trips (4 trips/mile/hour) and requiring minimal equipment for trail maintenance. Short-term cumulative impacts related to air quality could occur if project construction and nearby construction activities were to occur simultaneously. In particular, with respect to local impacts, cumulative construction particulate matter (i.e., fugitive dust) impacts are considered when projects are located within a few hundred yards of each other. Many of the related projects located within the proposed project area are residential subdivisions or other development projects that would require trail easements with the potential to create significant air quality impacts cumulatively during the construction phase. As these development projects are not fully defined in their entirety at this point in time, it is not feasible to quantify the emissions from these projects. Other nearby construction activities would include construction for the Castaic Trails Master Plan, which includes 89 miles of new trails, and Phase I of SSMTMP, which proposes 25 miles of new trails. These related trails would occur over the 2035 planning horizon and therefore are not expected to contribute substantially to daily emission thresholds. The proposed project is first and foremost a trails plan, which provides recreational opportunities close to areas where people live and work. This is consistent with the strategies in the 2016–2040 RTP/SCS for reducing VMT and enhancing public health. Therefore, the proposed project's emissions would not be cumulatively considerable, and mitigation would not be required.

Sensitive Receptors

The proposed project would result in less than significant impacts to air quality in regard to exposing sensitive receptors to substantial pollutant concentrations. There are 6,681 known sensitive receptors (6,666 residential areas, 6 parks, 9 schools) within the proposed project area. There are an additional 2,966 known sensitive receptors (2,953 residential areas, 1 senior day care center, 4 homes for aged and others, 3 parks, 1 health center, 4 schools) within a 0.5-mile radius of the proposed project area (Figure 5.1-3). Exposure of sensitive receptors to potential emissions would vary from day to day, depending on the amount of work being conducted, the weather conditions, the location of receptors, and the length of time that receptors would be exposed to air emissions. The proposed project includes design features to water three times a day and reduce vehicle speeds on unpaved roads to 15 mph to reduce fugitive dust. Best management practices would be required for dust suppression, pursuant to County building codes. Due to the short-term nature of project construction, sensitive receptors would not be expected to be adversely affected by construction. For operation or maintenance of the proposed project, sensitive receptors would experience a longer duration of exposure. These emissions are below the level of significance and would decrease rapidly with distance from the proposed project site. Therefore, impacts in regard to exposing sensitive receptors to substantial pollutant concentrations would be less than significant, and mitigation would not be required.

Objectionable Odors

The proposed project would result in less than significant impacts to air quality in regard to creating objectionable odors affecting a substantial number of people. The construction, operation, and maintenance of the proposed project would not involve the type of land uses or industrial operations typically associated with odor nuisance. There are no land uses typically associated with the generation of nuisance odors in the proposed project area. Construction and maintenance of the proposed project would occur over very short durations. With the exception of providing access for individuals afforded protection pursuant to the Americans with Disabilities Act, the County does not allow the use of motorized equipment on trails or within park facilities, other than those designated for such use. Motor vehicle trips would be limited as well. Therefore, impacts in regard to creation of objectionable odors would be less than significant, and no mitigation would be required.

5.2.2 Greenhouse Gas Emissions

The potential for the proposed project to result in impacts related to GHG emissions was analyzed in relation to the questions in Appendix G of the State CEQA Guidelines,[14] as modified for the County. Would the project:

- Generate greenhouse gas (GHG) emissions, either directly or indirectly, that may have a significant impact on the environment?
- Conflict with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?

[14] *California Code of Regulations*, Title 14, Division 6, Chapter 3, Sections 15000–15387, Appendix G.

GHG Emissions

The proposed project would result in less than significant impacts in regard to generating GHG emissions, either directly or indirectly, that would have a significant impact on the environment. To quantitatively analyze the proposed project's impacts on global climate change, CalEEMod 2016.3.1 was used to calculate GHG emissions resulting from construction and operation of the proposed project (Appendix A). Approximately 927 MT CO_2e per year would be emitted as result of the proposed project's construction (Appendix A). Operations of the proposed project would be expected to result in approximately 4,362 metric tons of CO_2e emissions per year (Appendix A), mostly from motor vehicle trips of people using the trails. Both construction and operation GHG emissions are well below the suggested GHG reporting threshold of 25,000 MT CO_2e/yr. Therefore, the proposed project would result in less than significant impacts in regard to generating GHG emissions, and no mitigation would be required.

Applicable GHG Plans, Policies, Regulations

The proposed project would result in less than significant impacts in regard to conflicting with any applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of GHGs. The primary applicable plan is the County of Los Angeles Community Climate Action Plan (CCAP). CARB has set the following reduction targets for the SCAG region: reduce per capita GHG emissions 8 percent below 2005 levels by 2020 and 13 percent by 2035. The proposed project would help achieve these GHG reduction goals by bringing recreation closer to where people live. The proposed project fulfills the land use and transportation strategy area in the County of Los Angeles CCAP to reduce regionwide VMT and promote sustainability in land use design in the unincorporated areas of the County. Therefore, the proposed project would not conflict with any applicable plan, policy, or regulation related to reducing GHG emissions, and no mitigation would be required.

5.3 MITIGATION RECOMMENDATIONS

No mitigation measures would be required.

Level of Significance after Mitigation

Impacts to air quality and GHG emissions would be less than significant.

SECTION 6.0
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APPENDIX A
CalEEMod Output for the Santa Susana Mountains Trails Master Plan – Phase II

Santa Susana Trails Plan

Los Angeles-South Coast County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	220.00	Space	1.98	88,000.00	0
City Park	140.00	Acre	140.00	6,098,400.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2035
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Santa Susana Trails Plan - Los Angeles-South Coast County, Annual

Project Characteristics - 2035 operational year, SCE, LA-South Coast

Land Use - 140 acres of land disturbance and 220 parking spaces - see calculations in AQTR Methods section

Construction Phase - Projects would be completed incrementally, but modeling represents total project impact assuming full build out of 71.5 miles of trails in 16 years. It assumes 12 year of site preparation and 4 years of grading.

Off-road Equipment - Grading assumptions: 2 Graders for 2 hrs/day, 4 dozers for 2 hrs/day, 1 off highway truck for 4 hrs/day

Off-road Equipment - Site prep assumptions: 2 backhoes for 2 hrs/day, 1 off highway truck for 4 hrs/day

Trips and VMT - Reduced worker trips/day to 1.25* #Equipment as per AQMD's Appendix A: Calculation Details for CalEEMod. 1 vendor trip is used for the water truck. Assume no hauling.

Demolition - no demo

Grading - 140 acres disturbed, assume balance on site

Vehicle Trips - 4 trips/mi/hr assumed to derived empirical trip rate, as taken from Santa Susana Trails Plan. 4 trips/mi/hr * 12 hours/day * 71.5 mi trails= 3432 trips for 140 acres. Assume ~25 trips/acre/day on Saturday and Sunday and ~15 trip/acre/day during the week.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Road Dust - restrict mean vehicle speed on unpaved roads to 15 mph

Consumer Products - assume no area emissions

Area Coating -

Landscape Equipment -

Energy Use - default lighting energy used for parking lots

Land Use Change -

Construction Off-road Equipment Mitigation - Water construction areas 3x/day. Reduce vehicle speed on unpaved roads to 15 mph.

Mobile Land Use Mitigation -

Area Mitigation - low VOC paint for parking

Energy Mitigation -

Operational Off-Road Equipment - Assume 1 tractor/loader/backhoe for 8 hr/day, 260 days a year for maintenance.

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True

Santa Susana Trails Plan - Los Angeles-South Coast County, Annual

tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	310.00	1,044.00
tblConstructionPhase	NumDays	120.00	3,131.00
tblConstructionPhase	PhaseEndDate	6/1/2022	6/1/2034
tblConstructionPhase	PhaseEndDate	5/31/2019	5/31/2030
tblConstructionPhase	PhaseStartDate	6/1/2019	6/1/2030
tblGrading	AcresOfGrading	2,349.00	140.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblProjectCharacteristics	OperationalYear	2018	2035
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	MeanVehicleSpeed	40	15
tblRoadDust	MeanVehicleSpeed	40	15
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	15.00	4.00
tblTripsAndVMT	WorkerTripNumber	33.00	9.00

tblVehicleTrips	ST_TR	22.75	25.00
tblVehicleTrips	SU_TR	16.74	25.00
tblVehicleTrips	WD_TR	1.89	15.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

Santa Susana Trails Plan - Los Angeles-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.3080	3.2936	1.2702	2.6400e-003	28.2878	0.1580	28.4458	15.5478	0.1454	15.6932	0.0000	241.3396	241.3396	0.0734	0.0000	243.1744
2019	0.5099	5.3705	2.1251	4.5300e-003	28.2914	0.2580	28.5494	15.5488	0.2374	15.7862	0.0000	407.2704	407.2704	0.1259	0.0000	410.4168
2020	0.4852	5.0254	2.0562	4.5400e-003	28.2914	0.2421	28.5335	15.5488	0.2228	15.7716	0.0000	399.9924	399.9924	0.1263	0.0000	403.1503
2021	0.4649	4.7801	1.9942	4.5200e-003	28.2914	0.2285	28.5199	15.5488	0.2102	15.7590	0.0000	398.2162	398.2162	0.1258	0.0000	401.3613
2022	0.3748	3.8156	1.7891	4.5000e-003	28.2913	0.1783	28.4696	15.5488	0.1640	15.7128	0.0000	396.3520	396.3520	0.1253	0.0000	399.4839
2023	0.3126	3.1240	1.5963	4.5000e-003	28.2913	0.1386	28.4299	15.5488	0.1275	15.6763	0.0000	396.0604	396.0604	0.1253	0.0000	399.1919
2024	0.3180	3.1265	1.6145	4.5300e-003	28.2914	0.1385	28.4299	15.5488	0.1275	15.6763	0.0000	398.9257	398.9257	0.1262	0.0000	402.0811
2025	0.2962	2.8823	1.5499	4.5100e-003	28.2914	0.1239	28.4153	15.5488	0.1140	15.6628	0.0000	397.1132	397.1132	0.1257	0.0000	400.2558
2026	0.2961	2.8821	1.5486	4.5100e-003	28.2914	0.1239	28.4153	15.5488	0.1140	15.6628	0.0000	396.8877	396.8877	0.1257	0.0000	400.0300
2027	0.2960	2.8819	1.5475	4.5100e-003	28.2914	0.1239	28.4153	15.5488	0.1140	15.6628	0.0000	396.6877	396.6877	0.1257	0.0000	399.8297
2028	0.2948	2.8706	1.5406	4.4900e-003	28.2913	0.1234	28.4148	15.5488	0.1136	15.6623	0.0000	394.9919	394.9919	0.1252	0.0000	398.1216
2029	0.2958	2.8815	1.5455	4.5100e-003	28.2914	0.1239	28.4153	15.5488	0.1140	15.6628	0.0000	396.3533	396.3533	0.1257	0.0000	399.4948
2030	0.3798	1.6578	2.3530	7.8400e-003	31.5147	0.0591	31.5739	17.2862	0.0591	17.3454	0.0000	729.9395	729.9395	0.0307	0.0000	730.7072
2031	0.4511	1.8387	3.1301	9.6400e-003	3.2360	0.0647	3.3007	1.7408	0.0647	1.8055	0.0000	914.2437	914.2437	0.0364	0.0000	915.1533
2032	0.4526	1.8455	3.1403	9.6800e-003	3.2361	0.0649	3.3010	1.7409	0.0649	1.8057	0.0000	917.5070	917.5070	0.0365	0.0000	918.4196
2033	0.4489	1.8312	3.1148	9.6000e-003	3.2360	0.0644	3.3004	1.7408	0.0644	1.8052	0.0000	910.2950	910.2950	0.0362	0.0000	911.2003
2034	0.1881	0.7676	1.3052	4.0200e-003	3.2254	0.0270	3.2524	1.7380	0.0270	1.7650	0.0000	381.5471	381.5471	0.0152	0.0000	381.9264
Maximum	**0.5099**	**5.3705**	**3.1403**	**9.6800e-003**	**31.5147**	**0.2580**	**31.5739**	**17.2862**	**0.2374**	**17.3454**	**0.0000**	**917.5070**	**917.5070**	**0.1263**	**0.0000**	**918.4196**

2.1 Overall Construction

Mitigated Construction

Santa Susana Trails Plan - Los Angeles-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2018	0.3080	3.2936	1.2702	2.6400e-003	22.0698	0.1580	22.2279	12.1287	0.1454	12.2740	0.0000	241.3393	241.3393	0.0734	0.0000	243.1741
2019	0.5099	5.3705	2.1251	4.5300e-003	22.0765	0.2580	22.3345	12.1304	0.2374	12.3677	0.0000	407.2699	407.2699	0.1259	0.0000	410.4163
2020	0.4852	5.0254	2.0562	4.5400e-003	22.0766	0.2421	22.3187	12.1304	0.2228	12.3532	0.0000	399.9919	399.9919	0.1263	0.0000	403.1498
2021	0.4649	4.7801	1.9942	4.5200e-003	22.0765	0.2285	22.3050	12.1304	0.2102	12.3406	0.0000	398.2157	398.2157	0.1258	0.0000	401.3609
2022	0.3748	3.8156	1.7891	4.5000e-003	22.0765	0.1783	22.2547	12.1304	0.1640	12.2944	0.0000	396.3516	396.3516	0.1253	0.0000	399.4835
2023	0.3126	3.1240	1.5963	4.5000e-003	22.0765	0.1386	22.2150	12.1304	0.1275	12.2579	0.0000	396.0600	396.0600	0.1253	0.0000	399.1914
2024	0.3180	3.1265	1.6145	4.5300e-003	22.0766	0.1385	22.2151	12.1304	0.1275	12.2578	0.0000	398.9253	398.9253	0.1262	0.0000	402.0806
2025	0.2962	2.8823	1.5499	4.5100e-003	22.0765	0.1239	22.2004	12.1304	0.1140	12.2444	0.0000	397.1127	397.1127	0.1257	0.0000	400.2554
2026	0.2961	2.8821	1.5486	4.5100e-003	22.0765	0.1239	22.2004	12.1304	0.1140	12.2444	0.0000	396.8872	396.8872	0.1257	0.0000	400.0295
2027	0.2960	2.8819	1.5475	4.5100e-003	22.0765	0.1239	22.2004	12.1304	0.1140	12.2444	0.0000	396.6872	396.6872	0.1257	0.0000	399.8292
2028	0.2948	2.8706	1.5406	4.4900e-003	22.0765	0.1234	22.1999	12.1304	0.1136	12.2439	0.0000	394.9914	394.9914	0.1252	0.0000	398.1211
2029	0.2958	2.8815	1.5455	4.5100e-003	22.0765	0.1239	22.2004	12.1304	0.1140	12.2444	0.0000	396.3529	396.3529	0.1257	0.0000	399.4943
2030	0.3798	1.6578	2.3530	7.8400e-003	24.5968	0.0591	24.6560	13.4871	0.0591	13.5462	0.0000	729.9386	729.9386	0.0307	0.0000	730.7063
2031	0.4511	1.8387	3.1301	9.6400e-003	2.5438	0.0647	2.6085	1.3628	0.0647	1.4274	0.0000	914.2426	914.2426	0.0364	0.0000	915.1522
2032	0.4526	1.8455	3.1403	9.6800e-003	2.5440	0.0649	2.6089	1.3628	0.0649	1.4277	0.0000	917.5059	917.5059	0.0365	0.0000	918.4186
2033	0.4489	1.8312	3.1148	9.6000e-003	2.5437	0.0644	2.6081	1.3627	0.0644	1.4271	0.0000	910.2939	910.2939	0.0362	0.0000	911.1993
2034	0.1881	0.7676	1.3052	4.0200e-003	2.5240	0.0270	2.5510	1.3577	0.0270	1.3847	0.0000	381.5466	381.5466	0.0152	0.0000	381.9260
Maximum	**0.5099**	**5.3705**	**3.1403**	**9.6800e-003**	**24.5968**	**0.2580**	**24.6560**	**13.4871**	**0.2374**	**13.5462**	**0.0000**	**917.5059**	**917.5059**	**0.1263**	**0.0000**	**918.4186**

Santa Susana Trails Plan - Los Angeles-South Coast County, Annual

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**21.95**	**0.00**	**21.82**	**21.98**	**0.00**	**21.76**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**6-1-2018**	**8-31-2018**	1.5569	1.5569
2	**9-1-2018**	**11-30-2018**	1.5401	1.5401
3	**12-1-2018**	**2-28-2019**	1.4742	1.4742
4	**3-1-2019**	**5-31-2019**	1.4804	1.4804
5	**6-1-2019**	**8-31-2019**	1.4804	1.4804
6	**9-1-2019**	**11-30-2019**	1.4644	1.4644
7	**12-1-2019**	**2-29-2020**	1.4003	1.4003
8	**3-1-2020**	**5-31-2020**	1.3820	1.3820
9	**6-1-2020**	**8-31-2020**	1.3820	1.3820
10	**9-1-2020**	**11-30-2020**	1.3671	1.3671
11	**12-1-2020**	**2-28-2021**	1.3126	1.3126
12	**3-1-2021**	**5-31-2021**	1.3205	1.3205
13	**6-1-2021**	**8-31-2021**	1.3204	1.3204
14	**9-1-2021**	**11-30-2021**	1.3062	1.3062
15	**12-1-2021**	**2-28-2022**	1.1242	1.1242
16	**3-1-2022**	**5-31-2022**	1.0590	1.0590
17	**6-1-2022**	**8-31-2022**	1.0590	1.0590
18	**9-1-2022**	**11-30-2022**	1.0476	1.0476
19	**12-1-2022**	**2-28-2023**	0.9139	0.9139
20	**3-1-2023**	**5-31-2023**	0.8685	0.8685
21	**6-1-2023**	**8-31-2023**	0.8685	0.8685
22	**9-1-2023**	**11-30-2023**	0.8591	0.8591

23	**12-1-2023**	**2-29-2024**	0.8561	0.8561
24	**3-1-2024**	**5-31-2024**	0.8639	0.8639
25	**6-1-2024**	**8-31-2024**	0.8638	0.8638
26	**9-1-2024**	**11-30-2024**	0.8545	0.8545
27	**12-1-2024**	**2-28-2025**	0.8044	0.8044
28	**3-1-2025**	**5-31-2025**	0.8002	0.8002
29	**6-1-2025**	**8-31-2025**	0.8002	0.8002
30	**9-1-2025**	**11-30-2025**	0.7916	0.7916
31	**12-1-2025**	**2-28-2026**	0.7829	0.7829
32	**3-1-2026**	**5-31-2026**	0.8001	0.8001
33	**6-1-2026**	**8-31-2026**	0.8001	0.8001
34	**9-1-2026**	**11-30-2026**	0.7915	0.7915
35	**12-1-2026**	**2-28-2027**	0.7828	0.7828
36	**3-1-2027**	**5-31-2027**	0.8001	0.8001
37	**6-1-2027**	**8-31-2027**	0.8000	0.8000
38	**9-1-2027**	**11-30-2027**	0.7914	0.7914
39	**12-1-2027**	**2-29-2028**	0.7914	0.7914
40	**3-1-2028**	**5-31-2028**	0.8000	0.8000
41	**6-1-2028**	**8-31-2028**	0.8000	0.8000
42	**9-1-2028**	**11-30-2028**	0.7913	0.7913
43	**12-1-2028**	**2-28-2029**	0.7826	0.7826
44	**3-1-2029**	**5-31-2029**	0.7999	0.7999
45	**6-1-2029**	**8-31-2029**	0.7999	0.7999
46	**9-1-2029**	**11-30-2029**	0.7913	0.7913
47	**12-1-2029**	**2-28-2030**	0.5417	0.5417
48	**3-1-2030**	**5-31-2030**	0.4243	0.4243
49	**6-1-2030**	**8-31-2030**	0.5765	0.5765

50	**9-1-2030**	**11-30-2030**	0.5704	0.5704
51	**12-1-2030**	**2-28-2031**	0.5641	0.5641
52	**3-1-2031**	**5-31-2031**	0.5765	0.5765
53	**6-1-2031**	**8-31-2031**	0.5764	0.5764
54	**9-1-2031**	**11-30-2031**	0.5703	0.5703
55	**12-1-2031**	**2-29-2032**	0.5702	0.5702
56	**3-1-2032**	**5-31-2032**	0.5763	0.5763
57	**6-1-2032**	**8-31-2032**	0.5763	0.5763
58	**9-1-2032**	**11-30-2032**	0.5701	0.5701
59	**12-1-2032**	**2-28-2033**	0.5639	0.5639
60	**3-1-2033**	**5-31-2033**	0.5762	0.5762
61	**6-1-2033**	**8-31-2033**	0.5762	0.5762
62	**9-1-2033**	**11-30-2033**	0.5700	0.5700
63	**12-1-2033**	**2-28-2034**	0.5638	0.5638
64	**3-1-2034**	**5-31-2034**	0.5761	0.5761
65	**6-1-2034**	**8-31-2034**	0.0063	0.0063
		Highest	1.5569	1.5569

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0647	4.0000e-005	4.5700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.9300e-003	8.9300e-003	2.0000e-005	0.0000	9.5100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	24.6740	24.6740	1.0200e-003	2.1000e-004	24.7623
Mobile	0.4275	2.5632	5.7017	0.0297	5.8162	0.0152	5.8314	1.4983	0.0141	1.5124	0.0000	2,766.6852	2,766.6852	0.1089	0.0000	2,769.4084
Offroad	0.0212	0.1252	0.3047	4.9000e-004		1.6500e-003	1.6500e-003		1.6500e-003	1.6500e-003	0.0000	42.4242	42.4242	1.7200e-003	0.0000	42.4671
Waste						0.0000	0.0000		0.0000	0.0000	2.4440	0.0000	2.4440	0.1444	0.0000	6.0549
Water						0.0000	0.0000		0.0000	0.0000	0.0000	590.4788	590.4788	0.0244	5.0400e-003	592.5913
Total	**0.5134**	**2.6884**	**6.0110**	**0.0302**	**5.8162**	**0.0169**	**5.8330**	**1.4983**	**0.0158**	**1.5141**	**2.4440**	**3,424.2712**	**3,426.7152**	**0.2805**	**5.2500e-003**	**3,435.2935**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.0647	4.0000e-005	4.5700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.9300e-003	8.9300e-003	2.0000e-005	0.0000	9.5100e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	24.6740	24.6740	1.0200e-003	2.1000e-004	24.7623
Mobile	0.4275	2.5632	5.7017	0.0297	5.8162	0.0152	5.8314	1.4983	0.0141	1.5124	0.0000	2,766.6852	2,766.6852	0.1089	0.0000	2,769.4084
Offroad	0.0212	0.1252	0.3047	4.9000e-004		1.6500e-003	1.6500e-003		1.6500e-003	1.6500e-003	0.0000	42.4242	42.4242	1.7200e-003	0.0000	42.4671
Waste						0.0000	0.0000		0.0000	0.0000	2.4440	0.0000	2.4440	0.1444	0.0000	6.0549
Water						0.0000	0.0000		0.0000	0.0000	0.0000	1,180.9576	1,180.9576	0.0488	0.0101	1,185.1825
Total	**0.5134**	**2.6884**	**6.0110**	**0.0302**	**5.8162**	**0.0169**	**5.8330**	**1.4983**	**0.0158**	**1.5141**	**2.4440**	**4,014.7500**	**4,017.1940**	**0.3049**	**0.0103**	**4,027.8848**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**-17.24**	**-17.23**	**-8.69**	**-96.19**	**-17.25**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/1/2018	5/31/2030	5	3131	
2	Grading	Grading	6/1/2030	6/1/2034	5	1044	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 140

Acres of Paving: 1.98

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Off-Highway Trucks	1	4.00	402	0.38
Grading	Off-Highway Trucks	1	4.00	402	0.38
Site Preparation	Tractors/Loaders/Backhoes	2	2.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	2	2.00	187	0.41
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Rubber Tired Dozers	4	2.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	6	4.00	1.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	13	9.00	1.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					28.2827	0.0000	28.2827	15.5465	0.0000	15.5465	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3055	3.2815	1.2471	2.5700e-003		0.1579	0.1579		0.1453	0.1453	0.0000	234.7640	234.7640	0.0731	0.0000	236.5912
Total	**0.3055**	**3.2815**	**1.2471**	**2.5700e-003**	**28.2827**	**0.1579**	**28.4406**	**15.5465**	**0.1453**	**15.6917**	**0.0000**	**234.7640**	**234.7640**	**0.0731**	**0.0000**	**236.5912**

3.2 Site Preparation - 2018

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.9000e-004	0.0102	2.8600e-003	2.0000e-005	5.5000e-004	8.0000e-005	6.2000e-004	1.6000e-004	7.0000e-005	2.3000e-004	0.0000	2.1405	2.1405	1.4000e-004	0.0000	2.1440
Worker	2.1400e-003	1.9000e-003	0.0203	5.0000e-005	4.4900e-003	4.0000e-005	4.5300e-003	1.1900e-003	4.0000e-005	1.2300e-003	0.0000	4.4351	4.4351	1.6000e-004	0.0000	4.4392
Total	**2.5300e-003**	**0.0121**	**0.0231**	**7.0000e-005**	**5.0400e-003**	**1.2000e-004**	**5.1500e-003**	**1.3500e-003**	**1.1000e-004**	**1.4600e-003**	**0.0000**	**6.5756**	**6.5756**	**3.0000e-004**	**0.0000**	**6.5832**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					22.0605	0.0000	22.0605	12.1263	0.0000	12.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3055	3.2815	1.2471	2.5700e-003		0.1579	0.1579		0.1453	0.1453	0.0000	234.7638	234.7638	0.0731	0.0000	236.5909
Total	**0.3055**	**3.2815**	**1.2471**	**2.5700e-003**	**22.0605**	**0.1579**	**22.2184**	**12.1263**	**0.1453**	**12.2715**	**0.0000**	**234.7638**	**234.7638**	**0.0731**	**0.0000**	**236.5909**

3.2 Site Preparation - 2018

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.9000e-004	0.0102	2.8600e-003	2.0000e-005	9.4000e-004	8.0000e-005	1.0100e-003	2.5000e-004	7.0000e-005	3.3000e-004	0.0000	2.1405	2.1405	1.4000e-004	0.0000	2.1440
Worker	2.1400e-003	1.9000e-003	0.0203	5.0000e-005	8.3800e-003	4.0000e-005	8.4200e-003	2.1500e-003	4.0000e-005	2.1800e-003	0.0000	4.4351	4.4351	1.6000e-004	0.0000	4.4392
Total	**2.5300e-003**	**0.0121**	**0.0231**	**7.0000e-005**	**9.3200e-003**	**1.2000e-004**	**9.4300e-003**	**2.4000e-003**	**1.1000e-004**	**2.5100e-003**	**0.0000**	**6.5756**	**6.5756**	**3.0000e-004**	**0.0000**	**6.5832**

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					28.2827	0.0000	28.2827	15.5465	0.0000	15.5465	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5059	5.3511	2.0896	4.4100e-003		0.2578	0.2578		0.2372	0.2372	0.0000	396.2660	396.2660	0.1254	0.0000	399.4004
Total	**0.5059**	**5.3511**	**2.0896**	**4.4100e-003**	**28.2827**	**0.2578**	**28.5406**	**15.5465**	**0.2372**	**15.7837**	**0.0000**	**396.2660**	**396.2660**	**0.1254**	**0.0000**	**399.4004**

3.2 Site Preparation - 2019

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-004	0.0165	4.5000e-003	4.0000e-005	9.4000e-004	1.1000e-004	1.0500e-003	2.7000e-004	1.1000e-004	3.8000e-004	0.0000	3.6368	3.6368	2.3000e-004	0.0000	3.6426
Worker	3.3200e-003	2.8700e-003	0.0310	8.0000e-005	7.7000e-003	7.0000e-005	7.7700e-003	2.0500e-003	6.0000e-005	2.1100e-003	0.0000	7.3675	7.3675	2.5000e-004	0.0000	7.3738
Total	**3.9200e-003**	**0.0194**	**0.0355**	**1.2000e-004**	**8.6400e-003**	**1.8000e-004**	**8.8200e-003**	**2.3200e-003**	**1.7000e-004**	**2.4900e-003**	**0.0000**	**11.0044**	**11.0044**	**4.8000e-004**	**0.0000**	**11.0164**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					22.0605	0.0000	22.0605	12.1263	0.0000	12.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.5059	5.3511	2.0896	4.4100e-003		0.2578	0.2578		0.2372	0.2372	0.0000	396.2655	396.2655	0.1254	0.0000	399.3999
Total	**0.5059**	**5.3511**	**2.0896**	**4.4100e-003**	**22.0605**	**0.2578**	**22.3183**	**12.1263**	**0.2372**	**12.3635**	**0.0000**	**396.2655**	**396.2655**	**0.1254**	**0.0000**	**399.3999**

3.2 Site Preparation - 2019

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	6.0000e-004	0.0165	4.5000e-003	4.0000e-005	1.6100e-003	1.1000e-004	1.7200e-003	4.3000e-004	1.1000e-004	5.4000e-004	0.0000	3.6368	3.6368	2.3000e-004	0.0000	3.6426
Worker	3.3200e-003	2.8700e-003	0.0310	8.0000e-005	0.0144	7.0000e-005	0.0145	3.6800e-003	6.0000e-005	3.7500e-003	0.0000	7.3675	7.3675	2.5000e-004	0.0000	7.3738
Total	**3.9200e-003**	**0.0194**	**0.0355**	**1.2000e-004**	**0.0160**	**1.8000e-004**	**0.0162**	**4.1100e-003**	**1.7000e-004**	**4.2900e-003**	**0.0000**	**11.0044**	**11.0044**	**4.8000e-004**	**0.0000**	**11.0164**

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					28.2827	0.0000	28.2827	15.5465	0.0000	15.5465	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4816	5.0077	2.0239	4.4200e-003		0.2420	0.2420		0.2226	0.2226	0.0000	389.1954	389.1954	0.1259	0.0000	392.3422
Total	**0.4816**	**5.0077**	**2.0239**	**4.4200e-003**	**28.2827**	**0.2420**	**28.5247**	**15.5465**	**0.2226**	**15.7691**	**0.0000**	**389.1954**	**389.1954**	**0.1259**	**0.0000**	**392.3422**

3.2 Site Preparation - 2020

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.2000e-004	0.0151	4.1000e-003	4.0000e-005	9.4000e-004	7.0000e-005	1.0200e-003	2.7000e-004	7.0000e-005	3.4000e-004	0.0000	3.6261	3.6261	2.2000e-004	0.0000	3.6316
Worker	3.0800e-003	2.5700e-003	0.0282	8.0000e-005	7.7300e-003	6.0000e-005	7.8000e-003	2.0500e-003	6.0000e-005	2.1100e-003	0.0000	7.1709	7.1709	2.2000e-004	0.0000	7.1765
Total	**3.6000e-003**	**0.0177**	**0.0323**	**1.2000e-004**	**8.6700e-003**	**1.3000e-004**	**8.8200e-003**	**2.3200e-003**	**1.3000e-004**	**2.4500e-003**	**0.0000**	**10.7970**	**10.7970**	**4.4000e-004**	**0.0000**	**10.8081**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					22.0605	0.0000	22.0605	12.1263	0.0000	12.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4816	5.0077	2.0239	4.4200e-003		0.2420	0.2420		0.2226	0.2226	0.0000	389.1949	389.1949	0.1259	0.0000	392.3417
Total	**0.4816**	**5.0077**	**2.0239**	**4.4200e-003**	**22.0605**	**0.2420**	**22.3025**	**12.1263**	**0.2226**	**12.3489**	**0.0000**	**389.1949**	**389.1949**	**0.1259**	**0.0000**	**392.3417**

3.2 Site Preparation - 2020

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	5.2000e-004	0.0151	4.1000e-003	4.0000e-005	1.6100e-003	7.0000e-005	1.6900e-003	4.4000e-004	7.0000e-005	5.1000e-004	0.0000	3.6261	3.6261	2.2000e-004	0.0000	3.6316
Worker	3.0800e-003	2.5700e-003	0.0282	8.0000e-005	0.0144	6.0000e-005	0.0145	3.7000e-003	6.0000e-005	3.7600e-003	0.0000	7.1709	7.1709	2.2000e-004	0.0000	7.1765
Total	**3.6000e-003**	**0.0177**	**0.0323**	**1.2000e-004**	**0.0161**	**1.3000e-004**	**0.0162**	**4.1400e-003**	**1.3000e-004**	**4.2700e-003**	**0.0000**	**10.7970**	**10.7970**	**4.4000e-004**	**0.0000**	**10.8081**

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					28.2827	0.0000	28.2827	15.5465	0.0000	15.5465	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4616	4.7641	1.9646	4.4100e-003		0.2284	0.2284		0.2101	0.2101	0.0000	387.7152	387.7152	0.1254	0.0000	390.8501
Total	**0.4616**	**4.7641**	**1.9646**	**4.4100e-003**	**28.2827**	**0.2284**	**28.5111**	**15.5465**	**0.2101**	**15.7566**	**0.0000**	**387.7152**	**387.7152**	**0.1254**	**0.0000**	**390.8501**

3.2 Site Preparation - 2021

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.4000e-004	0.0137	3.7200e-003	4.0000e-005	9.4000e-004	3.0000e-005	9.7000e-004	2.7000e-004	3.0000e-005	3.0000e-004	0.0000	3.5843	3.5843	2.1000e-004	0.0000	3.5896
Worker	2.8600e-003	2.3100e-003	0.0258	8.0000e-005	7.7000e-003	6.0000e-005	7.7700e-003	2.0500e-003	6.0000e-005	2.1000e-003	0.0000	6.9167	6.9167	2.0000e-004	0.0000	6.9217
Total	**3.3000e-003**	**0.0160**	**0.0296**	**1.2000e-004**	**8.6400e-003**	**9.0000e-005**	**8.7400e-003**	**2.3200e-003**	**9.0000e-005**	**2.4000e-003**	**0.0000**	**10.5010**	**10.5010**	**4.1000e-004**	**0.0000**	**10.5113**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					22.0605	0.0000	22.0605	12.1263	0.0000	12.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4616	4.7641	1.9646	4.4100e-003		0.2284	0.2284		0.2101	0.2101	0.0000	387.7148	387.7148	0.1254	0.0000	390.8496
Total	**0.4616**	**4.7641**	**1.9646**	**4.4100e-003**	**22.0605**	**0.2284**	**22.2889**	**12.1263**	**0.2101**	**12.3364**	**0.0000**	**387.7148**	**387.7148**	**0.1254**	**0.0000**	**390.8496**

3.2 Site Preparation - 2021

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.4000e-004	0.0137	3.7200e-003	4.0000e-005	1.6100e-003	3.0000e-005	1.6400e-003	4.3000e-004	3.0000e-005	4.6000e-004	0.0000	3.5843	3.5843	2.1000e-004	0.0000	3.5896
Worker	2.8600e-003	2.3100e-003	0.0258	8.0000e-005	0.0144	6.0000e-005	0.0144	3.6800e-003	6.0000e-005	3.7400e-003	0.0000	6.9167	6.9167	2.0000e-004	0.0000	6.9217
Total	**3.3000e-003**	**0.0160**	**0.0296**	**1.2000e-004**	**0.0160**	**9.0000e-005**	**0.0161**	**4.1100e-003**	**9.0000e-005**	**4.2000e-003**	**0.0000**	**10.5010**	**10.5010**	**4.1000e-004**	**0.0000**	**10.5113**

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					28.2827	0.0000	28.2827	15.5465	0.0000	15.5465	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3717	3.8006	1.7619	4.3900e-003		0.1782	0.1782		0.1639	0.1639	0.0000	386.1650	386.1650	0.1249	0.0000	389.2873
Total	**0.3717**	**3.8006**	**1.7619**	**4.3900e-003**	**28.2827**	**0.1782**	**28.4609**	**15.5465**	**0.1639**	**15.7104**	**0.0000**	**386.1650**	**386.1650**	**0.1249**	**0.0000**	**389.2873**

3.2 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1000e-004	0.0129	3.5100e-003	4.0000e-005	9.4000e-004	3.0000e-005	9.6000e-004	2.7000e-004	2.0000e-005	3.0000e-004	0.0000	3.5391	3.5391	2.0000e-004	0.0000	3.5442
Worker	2.6800e-003	2.0800e-003	0.0237	7.0000e-005	7.6700e-003	6.0000e-005	7.7300e-003	2.0400e-003	6.0000e-005	2.0900e-003	0.0000	6.6479	6.6479	1.8000e-004	0.0000	6.6524
Total	**3.0900e-003**	**0.0150**	**0.0272**	**1.1000e-004**	**8.6100e-003**	**9.0000e-005**	**8.6900e-003**	**2.3100e-003**	**8.0000e-005**	**2.3900e-003**	**0.0000**	**10.1870**	**10.1870**	**3.8000e-004**	**0.0000**	**10.1966**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					22.0605	0.0000	22.0605	12.1263	0.0000	12.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3717	3.8006	1.7619	4.3900e-003		0.1782	0.1782		0.1639	0.1639	0.0000	386.1645	386.1645	0.1249	0.0000	389.2869
Total	**0.3717**	**3.8006**	**1.7619**	**4.3900e-003**	**22.0605**	**0.1782**	**22.2387**	**12.1263**	**0.1639**	**12.2902**	**0.0000**	**386.1645**	**386.1645**	**0.1249**	**0.0000**	**389.2869**

3.2 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	4.1000e-004	0.0129	3.5100e-003	4.0000e-005	1.6000e-003	3.0000e-005	1.6300e-003	4.3000e-004	2.0000e-005	4.6000e-004	0.0000	3.5391	3.5391	2.0000e-004	0.0000	3.5442
Worker	2.6800e-003	2.0800e-003	0.0237	7.0000e-005	0.0143	6.0000e-005	0.0144	3.6700e-003	6.0000e-005	3.7300e-003	0.0000	6.6479	6.6479	1.8000e-004	0.0000	6.6524
Total	**3.0900e-003**	**0.0150**	**0.0272**	**1.1000e-004**	**0.0159**	**9.0000e-005**	**0.0160**	**4.1000e-003**	**8.0000e-005**	**4.1900e-003**	**0.0000**	**10.1870**	**10.1870**	**3.8000e-004**	**0.0000**	**10.1966**

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					28.2827	0.0000	28.2827	15.5465	0.0000	15.5465	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3098	3.1125	1.5713	4.4000e-003		0.1385	0.1385		0.1274	0.1274	0.0000	386.2262	386.2262	0.1249	0.0000	389.3490
Total	**0.3098**	**3.1125**	**1.5713**	**4.4000e-003**	**28.2827**	**0.1385**	**28.4213**	**15.5465**	**0.1274**	**15.6739**	**0.0000**	**386.2262**	**386.2262**	**0.1249**	**0.0000**	**389.3490**

3.2 Site Preparation - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-004	9.6200e-003	3.1500e-003	4.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	3.4297	3.4297	1.8000e-004	0.0000	3.4342
Worker	2.5200e-003	1.8800e-003	0.0218	7.0000e-005	7.6700e-003	6.0000e-005	7.7300e-003	2.0400e-003	5.0000e-005	2.0900e-003	0.0000	6.4046	6.4046	1.6000e-004	0.0000	6.4087
Total	**2.8200e-003**	**0.0115**	**0.0250**	**1.1000e-004**	**8.6100e-003**	**7.0000e-005**	**8.6800e-003**	**2.3100e-003**	**6.0000e-005**	**2.3700e-003**	**0.0000**	**9.8343**	**9.8343**	**3.4000e-004**	**0.0000**	**9.8429**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					22.0605	0.0000	22.0605	12.1263	0.0000	12.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3098	3.1125	1.5713	4.4000e-003		0.1385	0.1385		0.1274	0.1274	0.0000	386.2257	386.2257	0.1249	0.0000	389.3485
Total	**0.3098**	**3.1125**	**1.5713**	**4.4000e-003**	**22.0605**	**0.1385**	**22.1991**	**12.1263**	**0.1274**	**12.2537**	**0.0000**	**386.2257**	**386.2257**	**0.1249**	**0.0000**	**389.3485**

3.2 Site Preparation - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-004	9.6200e-003	3.1500e-003	4.0000e-005	1.6000e-003	1.0000e-005	1.6100e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	3.4297	3.4297	1.8000e-004	0.0000	3.4342
Worker	2.5200e-003	1.8800e-003	0.0218	7.0000e-005	0.0143	6.0000e-005	0.0144	3.6700e-003	5.0000e-005	3.7200e-003	0.0000	6.4046	6.4046	1.6000e-004	0.0000	6.4087
Total	**2.8200e-003**	**0.0115**	**0.0250**	**1.1000e-004**	**0.0159**	**7.0000e-005**	**0.0160**	**4.1000e-003**	**6.0000e-005**	**4.1600e-003**	**0.0000**	**9.8343**	**9.8343**	**3.4000e-004**	**0.0000**	**9.8429**

3.2 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					28.2827	0.0000	28.2827	15.5465	0.0000	15.5465	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3153	3.1151	1.5909	4.4300e-003		0.1385	0.1385		0.1274	0.1274	0.0000	389.2290	389.2290	0.1259	0.0000	392.3761
Total	**0.3153**	**3.1151**	**1.5909**	**4.4300e-003**	**28.2827**	**0.1385**	**28.4212**	**15.5465**	**0.1274**	**15.6739**	**0.0000**	**389.2290**	**389.2290**	**0.1259**	**0.0000**	**392.3761**

3.2 Site Preparation - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-004	9.6600e-003	3.0800e-003	4.0000e-005	9.4000e-004	1.0000e-005	9.6000e-004	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	3.4429	3.4429	1.8000e-004	0.0000	3.4474
Worker	2.4100e-003	1.7300e-003	0.0205	7.0000e-005	7.7300e-003	6.0000e-005	7.7900e-003	2.0500e-003	5.0000e-005	2.1100e-003	0.0000	6.2538	6.2538	1.5000e-004	0.0000	6.2576
Total	**2.7100e-003**	**0.0114**	**0.0236**	**1.1000e-004**	**8.6700e-003**	**7.0000e-005**	**8.7500e-003**	**2.3200e-003**	**6.0000e-005**	**2.3900e-003**	**0.0000**	**9.6967**	**9.6967**	**3.3000e-004**	**0.0000**	**9.7050**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					22.0605	0.0000	22.0605	12.1263	0.0000	12.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.3153	3.1151	1.5909	4.4300e-003		0.1385	0.1385		0.1274	0.1274	0.0000	389.2285	389.2285	0.1259	0.0000	392.3756
Total	**0.3153**	**3.1151**	**1.5909**	**4.4300e-003**	**22.0605**	**0.1385**	**22.1990**	**12.1263**	**0.1274**	**12.2536**	**0.0000**	**389.2285**	**389.2285**	**0.1259**	**0.0000**	**392.3756**

3.2 Site Preparation - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	3.0000e-004	9.6600e-003	3.0800e-003	4.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	3.4429	3.4429	1.8000e-004	0.0000	3.4474
Worker	2.4100e-003	1.7300e-003	0.0205	7.0000e-005	0.0144	6.0000e-005	0.0145	3.7000e-003	5.0000e-005	3.7500e-003	0.0000	6.2538	6.2538	1.5000e-004	0.0000	6.2576
Total	**2.7100e-003**	**0.0114**	**0.0236**	**1.1000e-004**	**0.0161**	**7.0000e-005**	**0.0161**	**4.1400e-003**	**6.0000e-005**	**4.2000e-003**	**0.0000**	**9.6967**	**9.6967**	**3.3000e-004**	**0.0000**	**9.7050**

3.2 Site Preparation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					28.2827	0.0000	28.2827	15.5465	0.0000	15.5465	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2937	2.8712	1.5280	4.4100e-003		0.1238	0.1238		0.1139	0.1139	0.0000	387.7129	387.7129	0.1254	0.0000	390.8478
Total	**0.2937**	**2.8712**	**1.5280**	**4.4100e-003**	**28.2827**	**0.1238**	**28.4066**	**15.5465**	**0.1139**	**15.6604**	**0.0000**	**387.7129**	**387.7129**	**0.1254**	**0.0000**	**390.8478**

3.2 Site Preparation - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.9000e-004	9.5400e-003	2.9900e-003	4.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	3.4115	3.4115	1.8000e-004	0.0000	3.4159
Worker	2.2800e-003	1.5700e-003	0.0190	7.0000e-005	7.7000e-003	6.0000e-005	7.7600e-003	2.0500e-003	5.0000e-005	2.1000e-003	0.0000	5.9887	5.9887	1.4000e-004	0.0000	5.9921
Total	**2.5700e-003**	**0.0111**	**0.0220**	**1.1000e-004**	**8.6400e-003**	**7.0000e-005**	**8.7100e-003**	**2.3200e-003**	**6.0000e-005**	**2.3800e-003**	**0.0000**	**9.4002**	**9.4002**	**3.2000e-004**	**0.0000**	**9.4081**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					22.0605	0.0000	22.0605	12.1263	0.0000	12.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2937	2.8712	1.5280	4.4100e-003		0.1238	0.1238		0.1139	0.1139	0.0000	387.7125	387.7125	0.1254	0.0000	390.8473
Total	**0.2937**	**2.8712**	**1.5280**	**4.4100e-003**	**22.0605**	**0.1238**	**22.1844**	**12.1263**	**0.1139**	**12.2402**	**0.0000**	**387.7125**	**387.7125**	**0.1254**	**0.0000**	**390.8473**

3.2 Site Preparation - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.9000e-004	9.5400e-003	2.9900e-003	4.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.3000e-004	1.0000e-005	4.5000e-004	0.0000	3.4115	3.4115	1.8000e-004	0.0000	3.4159
Worker	2.2800e-003	1.5700e-003	0.0190	7.0000e-005	0.0144	6.0000e-005	0.0144	3.6800e-003	5.0000e-005	3.7400e-003	0.0000	5.9887	5.9887	1.4000e-004	0.0000	5.9921
Total	**2.5700e-003**	**0.0111**	**0.0220**	**1.1000e-004**	**0.0160**	**7.0000e-005**	**0.0161**	**4.1100e-003**	**6.0000e-005**	**4.1900e-003**	**0.0000**	**9.4002**	**9.4002**	**3.2000e-004**	**0.0000**	**9.4081**

3.2 Site Preparation - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					28.2827	0.0000	28.2827	15.5465	0.0000	15.5465	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2937	2.8712	1.5280	4.4100e-003		0.1238	0.1238		0.1139	0.1139	0.0000	387.7129	387.7129	0.1254	0.0000	390.8478
Total	**0.2937**	**2.8712**	**1.5280**	**4.4100e-003**	**28.2827**	**0.1238**	**28.4066**	**15.5465**	**0.1139**	**15.6604**	**0.0000**	**387.7129**	**387.7129**	**0.1254**	**0.0000**	**390.8478**

3.2 Site Preparation - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8000e-004	9.4400e-003	2.9400e-003	3.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	3.3941	3.3941	1.7000e-004	0.0000	3.3984
Worker	2.1800e-003	1.4500e-003	0.0177	6.0000e-005	7.7000e-003	5.0000e-005	7.7600e-003	2.0500e-003	5.0000e-005	2.1000e-003	0.0000	5.7807	5.7807	1.3000e-004	0.0000	5.7838
Total	**2.4600e-003**	**0.0109**	**0.0207**	**9.0000e-005**	**8.6400e-003**	**6.0000e-005**	**8.7100e-003**	**2.3200e-003**	**6.0000e-005**	**2.3800e-003**	**0.0000**	**9.1747**	**9.1747**	**3.0000e-004**	**0.0000**	**9.1822**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					22.0605	0.0000	22.0605	12.1263	0.0000	12.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2937	2.8712	1.5280	4.4100e-003		0.1238	0.1238		0.1139	0.1139	0.0000	387.7125	387.7125	0.1254	0.0000	390.8473
Total	**0.2937**	**2.8712**	**1.5280**	**4.4100e-003**	**22.0605**	**0.1238**	**22.1844**	**12.1263**	**0.1139**	**12.2402**	**0.0000**	**387.7125**	**387.7125**	**0.1254**	**0.0000**	**390.8473**

3.2 Site Preparation - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8000e-004	9.4400e-003	2.9400e-003	3.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.3000e-004	1.0000e-005	4.5000e-004	0.0000	3.3941	3.3941	1.7000e-004	0.0000	3.3984
Worker	2.1800e-003	1.4500e-003	0.0177	6.0000e-005	0.0144	5.0000e-005	0.0144	3.6800e-003	5.0000e-005	3.7400e-003	0.0000	5.7807	5.7807	1.3000e-004	0.0000	5.7838
Total	**2.4600e-003**	**0.0109**	**0.0207**	**9.0000e-005**	**0.0160**	**6.0000e-005**	**0.0161**	**4.1100e-003**	**6.0000e-005**	**4.1900e-003**	**0.0000**	**9.1747**	**9.1747**	**3.0000e-004**	**0.0000**	**9.1822**

3.2 Site Preparation - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					28.2827	0.0000	28.2827	15.5465	0.0000	15.5465	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2937	2.8712	1.5280	4.4100e-003		0.1238	0.1238		0.1139	0.1139	0.0000	387.7129	387.7129	0.1254	0.0000	390.8478
Total	**0.2937**	**2.8712**	**1.5280**	**4.4100e-003**	**28.2827**	**0.1238**	**28.4066**	**15.5465**	**0.1139**	**15.6604**	**0.0000**	**387.7129**	**387.7129**	**0.1254**	**0.0000**	**390.8478**

3.2 Site Preparation - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8000e-004	9.3500e-003	2.8900e-003	3.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	3.3783	3.3783	1.7000e-004	0.0000	3.3826
Worker	2.0900e-003	1.3400e-003	0.0166	6.0000e-005	7.7000e-003	5.0000e-005	7.7500e-003	2.0500e-003	5.0000e-005	2.0900e-003	0.0000	5.5964	5.5964	1.2000e-004	0.0000	5.5993
Total	**2.3700e-003**	**0.0107**	**0.0195**	**9.0000e-005**	**8.6400e-003**	**6.0000e-005**	**8.7000e-003**	**2.3200e-003**	**6.0000e-005**	**2.3700e-003**	**0.0000**	**8.9748**	**8.9748**	**2.9000e-004**	**0.0000**	**8.9819**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					22.0605	0.0000	22.0605	12.1263	0.0000	12.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2937	2.8712	1.5280	4.4100e-003		0.1238	0.1238		0.1139	0.1139	0.0000	387.7125	387.7125	0.1254	0.0000	390.8473
Total	**0.2937**	**2.8712**	**1.5280**	**4.4100e-003**	**22.0605**	**0.1238**	**22.1844**	**12.1263**	**0.1139**	**12.2402**	**0.0000**	**387.7125**	**387.7125**	**0.1254**	**0.0000**	**390.8473**

3.2 Site Preparation - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.8000e-004	9.3500e-003	2.8900e-003	3.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.3000e-004	1.0000e-005	4.5000e-004	0.0000	3.3783	3.3783	1.7000e-004	0.0000	3.3826
Worker	2.0900e-003	1.3400e-003	0.0166	6.0000e-005	0.0144	5.0000e-005	0.0144	3.6800e-003	5.0000e-005	3.7300e-003	0.0000	5.5964	5.5964	1.2000e-004	0.0000	5.5993
Total	**2.3700e-003**	**0.0107**	**0.0195**	**9.0000e-005**	**0.0160**	**6.0000e-005**	**0.0161**	**4.1100e-003**	**6.0000e-005**	**4.1800e-003**	**0.0000**	**8.9748**	**8.9748**	**2.9000e-004**	**0.0000**	**8.9819**

3.2 Site Preparation - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					28.2827	0.0000	28.2827	15.5465	0.0000	15.5465	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2925	2.8602	1.5221	4.4000e-003		0.1234	0.1234		0.1135	0.1135	0.0000	386.2274	386.2274	0.1249	0.0000	389.3503
Total	**0.2925**	**2.8602**	**1.5221**	**4.4000e-003**	**28.2827**	**0.1234**	**28.4061**	**15.5465**	**0.1135**	**15.6600**	**0.0000**	**386.2274**	**386.2274**	**0.1249**	**0.0000**	**389.3503**

3.2 Site Preparation - 2028

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7000e-004	9.2400e-003	2.8400e-003	3.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	3.3520	3.3520	1.7000e-004	0.0000	3.3562
Worker	1.9800e-003	1.2300e-003	0.0156	6.0000e-005	7.6700e-003	5.0000e-005	7.7200e-003	2.0400e-003	4.0000e-005	2.0800e-003	0.0000	5.4124	5.4124	1.1000e-004	0.0000	5.4151
Total	**2.2500e-003**	**0.0105**	**0.0184**	**9.0000e-005**	**8.6100e-003**	**6.0000e-005**	**8.6700e-003**	**2.3100e-003**	**5.0000e-005**	**2.3600e-003**	**0.0000**	**8.7645**	**8.7645**	**2.8000e-004**	**0.0000**	**8.7713**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					22.0605	0.0000	22.0605	12.1263	0.0000	12.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2925	2.8602	1.5221	4.4000e-003		0.1234	0.1234		0.1135	0.1135	0.0000	386.2270	386.2270	0.1249	0.0000	389.3498
Total	**0.2925**	**2.8602**	**1.5221**	**4.4000e-003**	**22.0605**	**0.1234**	**22.1839**	**12.1263**	**0.1135**	**12.2398**	**0.0000**	**386.2270**	**386.2270**	**0.1249**	**0.0000**	**389.3498**

3.2 Site Preparation - 2028

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7000e-004	9.2400e-003	2.8400e-003	3.0000e-005	1.6000e-003	1.0000e-005	1.6100e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	3.3520	3.3520	1.7000e-004	0.0000	3.3562
Worker	1.9800e-003	1.2300e-003	0.0156	6.0000e-005	0.0143	5.0000e-005	0.0144	3.6700e-003	4.0000e-005	3.7100e-003	0.0000	5.4124	5.4124	1.1000e-004	0.0000	5.4151
Total	**2.2500e-003**	**0.0105**	**0.0184**	**9.0000e-005**	**0.0159**	**6.0000e-005**	**0.0160**	**4.1000e-003**	**5.0000e-005**	**4.1500e-003**	**0.0000**	**8.7645**	**8.7645**	**2.8000e-004**	**0.0000**	**8.7713**

3.2 Site Preparation - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					28.2827	0.0000	28.2827	15.5465	0.0000	15.5465	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2937	2.8712	1.5280	4.4100e-003		0.1238	0.1238		0.1139	0.1139	0.0000	387.7129	387.7129	0.1254	0.0000	390.8478
Total	**0.2937**	**2.8712**	**1.5280**	**4.4100e-003**	**28.2827**	**0.1238**	**28.4066**	**15.5465**	**0.1139**	**15.6604**	**0.0000**	**387.7129**	**387.7129**	**0.1254**	**0.0000**	**390.8478**

3.2 Site Preparation - 2029

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7000e-004	9.2000e-003	2.8200e-003	3.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	3.3529	3.3529	1.7000e-004	0.0000	3.3571
Worker	1.8700e-003	1.1400e-003	0.0147	6.0000e-005	7.7000e-003	4.0000e-005	7.7500e-003	2.0500e-003	4.0000e-005	2.0900e-003	0.0000	5.2875	5.2875	1.0000e-004	0.0000	5.2899
Total	**2.1400e-003**	**0.0103**	**0.0175**	**9.0000e-005**	**8.6400e-003**	**5.0000e-005**	**8.7000e-003**	**2.3200e-003**	**5.0000e-005**	**2.3700e-003**	**0.0000**	**8.6404**	**8.6404**	**2.7000e-004**	**0.0000**	**8.6470**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					22.0605	0.0000	22.0605	12.1263	0.0000	12.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2937	2.8712	1.5280	4.4100e-003		0.1238	0.1238		0.1139	0.1139	0.0000	387.7125	387.7125	0.1254	0.0000	390.8473
Total	**0.2937**	**2.8712**	**1.5280**	**4.4100e-003**	**22.0605**	**0.1238**	**22.1844**	**12.1263**	**0.1139**	**12.2402**	**0.0000**	**387.7125**	**387.7125**	**0.1254**	**0.0000**	**390.8473**

3.2 Site Preparation - 2029

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.7000e-004	9.2000e-003	2.8200e-003	3.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.3000e-004	1.0000e-005	4.5000e-004	0.0000	3.3529	3.3529	1.7000e-004	0.0000	3.3571
Worker	1.8700e-003	1.1400e-003	0.0147	6.0000e-005	0.0144	4.0000e-005	0.0144	3.6800e-003	4.0000e-005	3.7300e-003	0.0000	5.2875	5.2875	1.0000e-004	0.0000	5.2899
Total	**2.1400e-003**	**0.0103**	**0.0175**	**9.0000e-005**	**0.0160**	**5.0000e-005**	**0.0161**	**4.1100e-003**	**5.0000e-005**	**4.1800e-003**	**0.0000**	**8.6404**	**8.6404**	**2.7000e-004**	**0.0000**	**8.6470**

3.2 Site Preparation - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					28.2827	0.0000	28.2827	15.5465	0.0000	15.5465	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1161	0.5826	0.5220	2.1800e-003		0.0214	0.0214		0.0214	0.0214	0.0000	193.8157	193.8157	9.4000e-003	0.0000	194.0507
Total	**0.1161**	**0.5826**	**0.5220**	**2.1800e-003**	**28.2827**	**0.0214**	**28.3042**	**15.5465**	**0.0214**	**15.5679**	**0.0000**	**193.8157**	**193.8157**	**9.4000e-003**	**0.0000**	**194.0507**

3.2 Site Preparation - 2030

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-004	3.8100e-003	1.1600e-003	1.0000e-005	3.9000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.2000e-004	0.0000	1.3957	1.3957	7.0000e-005	0.0000	1.3974
Worker	7.3000e-004	4.4000e-004	5.7500e-003	2.0000e-005	3.2200e-003	2.0000e-005	3.2300e-003	8.5000e-004	2.0000e-005	8.7000e-004	0.0000	2.1538	2.1538	4.0000e-005	0.0000	2.1547
Total	**8.4000e-004**	**4.2500e-003**	**6.9100e-003**	**3.0000e-005**	**3.6100e-003**	**2.0000e-005**	**3.6300e-003**	**9.6000e-004**	**2.0000e-005**	**9.9000e-004**	**0.0000**	**3.5495**	**3.5495**	**1.1000e-004**	**0.0000**	**3.5522**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					22.0605	0.0000	22.0605	12.1263	0.0000	12.1263	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1161	0.5826	0.5220	2.1800e-003		0.0214	0.0214		0.0214	0.0214	0.0000	193.8154	193.8154	9.4000e-003	0.0000	194.0505
Total	**0.1161**	**0.5826**	**0.5220**	**2.1800e-003**	**22.0605**	**0.0214**	**22.0820**	**12.1263**	**0.0214**	**12.1477**	**0.0000**	**193.8154**	**193.8154**	**9.4000e-003**	**0.0000**	**194.0505**

3.2 Site Preparation - 2030

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-004	3.8100e-003	1.1600e-003	1.0000e-005	6.7000e-004	0.0000	6.8000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	1.3957	1.3957	7.0000e-005	0.0000	1.3974
Worker	7.3000e-004	4.4000e-004	5.7500e-003	2.0000e-005	6.0100e-003	2.0000e-005	6.0200e-003	1.5400e-003	2.0000e-005	1.5500e-003	0.0000	2.1538	2.1538	4.0000e-005	0.0000	2.1547
Total	**8.4000e-004**	**4.2500e-003**	**6.9100e-003**	**3.0000e-005**	**6.6800e-003**	**2.0000e-005**	**6.7000e-003**	**1.7200e-003**	**2.0000e-005**	**1.7400e-003**	**0.0000**	**3.5495**	**3.5495**	**1.1000e-004**	**0.0000**	**3.5522**

3.3 Grading - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.2178	0.0000	3.2178	1.7360	0.0000	1.7360	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2605	1.0643	1.8044	5.5200e-003		0.0376	0.0376		0.0376	0.0376	0.0000	523.8702	523.8702	0.0210	0.0000	524.3949
Total	**0.2605**	**1.0643**	**1.8044**	**5.5200e-003**	**3.2178**	**0.0376**	**3.2554**	**1.7360**	**0.0376**	**1.7736**	**0.0000**	**523.8702**	**523.8702**	**0.0210**	**0.0000**	**524.3949**

3.3 Grading - 2030

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5000e-004	5.3100e-003	1.6200e-003	2.0000e-005	5.5000e-004	1.0000e-005	5.5000e-004	1.6000e-004	1.0000e-005	1.6000e-004	0.0000	1.9463	1.9463	1.0000e-004	0.0000	1.9487
Worker	2.2900e-003	1.3700e-003	0.0180	7.0000e-005	0.0101	5.0000e-005	0.0102	2.6800e-003	5.0000e-005	2.7300e-003	0.0000	6.7578	6.7578	1.2000e-004	0.0000	6.7607
Total	**2.4400e-003**	**6.6800e-003**	**0.0197**	**9.0000e-005**	**0.0106**	**6.0000e-005**	**0.0107**	**2.8400e-003**	**6.0000e-005**	**2.8900e-003**	**0.0000**	**8.7041**	**8.7041**	**2.2000e-004**	**0.0000**	**8.7094**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.5099	0.0000	2.5099	1.3540	0.0000	1.3540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.2605	1.0643	1.8044	5.5200e-003		0.0376	0.0376		0.0376	0.0376	0.0000	523.8696	523.8696	0.0210	0.0000	524.3943
Total	**0.2605**	**1.0643**	**1.8044**	**5.5200e-003**	**2.5099**	**0.0376**	**2.5475**	**1.3540**	**0.0376**	**1.3916**	**0.0000**	**523.8696**	**523.8696**	**0.0210**	**0.0000**	**524.3943**

3.3 Grading - 2030

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.5000e-004	5.3100e-003	1.6200e-003	2.0000e-005	9.4000e-004	1.0000e-005	9.4000e-004	2.5000e-004	1.0000e-005	2.6000e-004	0.0000	1.9463	1.9463	1.0000e-004	0.0000	1.9487
Worker	2.2900e-003	1.3700e-003	0.0180	7.0000e-005	0.0188	5.0000e-005	0.0189	4.8300e-003	5.0000e-005	4.8800e-003	0.0000	6.7578	6.7578	1.2000e-004	0.0000	6.7607
Total	**2.4400e-003**	**6.6800e-003**	**0.0197**	**9.0000e-005**	**0.0198**	**6.0000e-005**	**0.0198**	**5.0800e-003**	**6.0000e-005**	**5.1400e-003**	**0.0000**	**8.7041**	**8.7041**	**2.2000e-004**	**0.0000**	**8.7094**

3.3 Grading - 2031

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.2178	0.0000	3.2178	1.7360	0.0000	1.7360	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4472	1.8275	3.0984	9.4800e-003		0.0646	0.0646		0.0646	0.0646	0.0000	899.5404	899.5404	0.0360	0.0000	900.4412
Total	**0.4472**	**1.8275**	**3.0984**	**9.4800e-003**	**3.2178**	**0.0646**	**3.2823**	**1.7360**	**0.0646**	**1.8005**	**0.0000**	**899.5404**	**899.5404**	**0.0360**	**0.0000**	**900.4412**

3.3 Grading - 2031

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6000e-004	9.0700e-003	2.7800e-003	3.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	3.3359	3.3359	1.6000e-004	0.0000	3.3400
Worker	3.6300e-003	2.1300e-003	0.0290	1.3000e-004	0.0173	9.0000e-005	0.0174	4.6000e-003	8.0000e-005	4.6800e-003	0.0000	11.3674	11.3674	1.8000e-004	0.0000	11.3720
Total	**3.8900e-003**	**0.0112**	**0.0318**	**1.6000e-004**	**0.0183**	**1.0000e-004**	**0.0184**	**4.8700e-003**	**9.0000e-005**	**4.9600e-003**	**0.0000**	**14.7034**	**14.7034**	**3.4000e-004**	**0.0000**	**14.7120**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.5099	0.0000	2.5099	1.3540	0.0000	1.3540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4472	1.8275	3.0984	9.4800e-003		0.0646	0.0646		0.0646	0.0646	0.0000	899.5393	899.5393	0.0360	0.0000	900.4402
Total	**0.4472**	**1.8275**	**3.0984**	**9.4800e-003**	**2.5099**	**0.0646**	**2.5744**	**1.3540**	**0.0646**	**1.4186**	**0.0000**	**899.5393**	**899.5393**	**0.0360**	**0.0000**	**900.4402**

3.3 Grading - 2031

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6000e-004	9.0700e-003	2.7800e-003	3.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	3.3359	3.3359	1.6000e-004	0.0000	3.3400
Worker	3.6300e-003	2.1300e-003	0.0290	1.3000e-004	0.0324	9.0000e-005	0.0324	8.2900e-003	8.0000e-005	8.3700e-003	0.0000	11.3674	11.3674	1.8000e-004	0.0000	11.3720
Total	**3.8900e-003**	**0.0112**	**0.0318**	**1.6000e-004**	**0.0340**	**1.0000e-004**	**0.0341**	**8.7300e-003**	**9.0000e-005**	**8.8200e-003**	**0.0000**	**14.7034**	**14.7034**	**3.4000e-004**	**0.0000**	**14.7120**

3.3 Grading - 2032

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.2178	0.0000	3.2178	1.7360	0.0000	1.7360	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4489	1.8345	3.1103	9.5200e-003		0.0648	0.0648		0.0648	0.0648	0.0000	902.9869	902.9869	0.0362	0.0000	903.8912
Total	**0.4489**	**1.8345**	**3.1103**	**9.5200e-003**	**3.2178**	**0.0648**	**3.2826**	**1.7360**	**0.0648**	**1.8008**	**0.0000**	**902.9869**	**902.9869**	**0.0362**	**0.0000**	**903.8912**

3.3 Grading - 2032

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6000e-004	9.0400e-003	2.7700e-003	3.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	3.3419	3.3419	1.6000e-004	0.0000	3.3460
Worker	3.3800e-003	1.9500e-003	0.0273	1.2000e-004	0.0174	8.0000e-005	0.0175	4.6200e-003	8.0000e-005	4.7000e-003	0.0000	11.1782	11.1782	1.7000e-004	0.0000	11.1824
Total	**3.6400e-003**	**0.0110**	**0.0301**	**1.5000e-004**	**0.0183**	**9.0000e-005**	**0.0184**	**4.8900e-003**	**9.0000e-005**	**4.9800e-003**	**0.0000**	**14.5201**	**14.5201**	**3.3000e-004**	**0.0000**	**14.5284**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.5099	0.0000	2.5099	1.3540	0.0000	1.3540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4489	1.8345	3.1102	9.5200e-003		0.0648	0.0648		0.0648	0.0648	0.0000	902.9858	902.9858	0.0362	0.0000	903.8901
Total	**0.4489**	**1.8345**	**3.1102**	**9.5200e-003**	**2.5099**	**0.0648**	**2.5747**	**1.3540**	**0.0648**	**1.4189**	**0.0000**	**902.9858**	**902.9858**	**0.0362**	**0.0000**	**903.8901**

3.3 Grading - 2032

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6000e-004	9.0400e-003	2.7700e-003	3.0000e-005	1.6100e-003	1.0000e-005	1.6200e-003	4.4000e-004	1.0000e-005	4.5000e-004	0.0000	3.3419	3.3419	1.6000e-004	0.0000	3.3460
Worker	3.3800e-003	1.9500e-003	0.0273	1.2000e-004	0.0325	8.0000e-005	0.0326	8.3200e-003	8.0000e-005	8.4000e-003	0.0000	11.1782	11.1782	1.7000e-004	0.0000	11.1824
Total	**3.6400e-003**	**0.0110**	**0.0301**	**1.5000e-004**	**0.0341**	**9.0000e-005**	**0.0342**	**8.7600e-003**	**9.0000e-005**	**8.8500e-003**	**0.0000**	**14.5201**	**14.5201**	**3.3000e-004**	**0.0000**	**14.5284**

3.3 Grading - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.2178	0.0000	3.2178	1.7360	0.0000	1.7360	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4455	1.8205	3.0865	9.4400e-003		0.0643	0.0643		0.0643	0.0643	0.0000	896.0938	896.0938	0.0359	0.0000	896.9913
Total	**0.4455**	**1.8205**	**3.0865**	**9.4400e-003**	**3.2178**	**0.0643**	**3.2821**	**1.7360**	**0.0643**	**1.8003**	**0.0000**	**896.0938**	**896.0938**	**0.0359**	**0.0000**	**896.9913**

3.3 Grading - 2033

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6000e-004	8.9200e-003	2.7400e-003	3.0000e-005	9.4000e-004	1.0000e-005	9.5000e-004	2.7000e-004	1.0000e-005	2.8000e-004	0.0000	3.3110	3.3110	1.6000e-004	0.0000	3.3150
Worker	3.1300e-003	1.7800e-003	0.0256	1.2000e-004	0.0173	8.0000e-005	0.0173	4.5900e-003	7.0000e-005	4.6500e-003	0.0000	10.8902	10.8902	1.5000e-004	0.0000	10.8941
Total	**3.3900e-003**	**0.0107**	**0.0283**	**1.5000e-004**	**0.0182**	**9.0000e-005**	**0.0183**	**4.8600e-003**	**8.0000e-005**	**4.9300e-003**	**0.0000**	**14.2012**	**14.2012**	**3.1000e-004**	**0.0000**	**14.2090**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.5099	0.0000	2.5099	1.3540	0.0000	1.3540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.4455	1.8205	3.0865	9.4400e-003		0.0643	0.0643		0.0643	0.0643	0.0000	896.0928	896.0928	0.0359	0.0000	896.9902
Total	**0.4455**	**1.8205**	**3.0865**	**9.4400e-003**	**2.5099**	**0.0643**	**2.5742**	**1.3540**	**0.0643**	**1.4184**	**0.0000**	**896.0928**	**896.0928**	**0.0359**	**0.0000**	**896.9902**

3.3 Grading - 2033

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	2.6000e-004	8.9200e-003	2.7400e-003	3.0000e-005	1.6000e-003	1.0000e-005	1.6100e-003	4.3000e-004	1.0000e-005	4.4000e-004	0.0000	3.3110	3.3110	1.6000e-004	0.0000	3.3150
Worker	3.1300e-003	1.7800e-003	0.0256	1.2000e-004	0.0322	8.0000e-005	0.0323	8.2600e-003	7.0000e-005	8.3300e-003	0.0000	10.8902	10.8902	1.5000e-004	0.0000	10.8941
Total	**3.3900e-003**	**0.0107**	**0.0283**	**1.5000e-004**	**0.0338**	**9.0000e-005**	**0.0339**	**8.6900e-003**	**8.0000e-005**	**8.7700e-003**	**0.0000**	**14.2012**	**14.2012**	**3.1000e-004**	**0.0000**	**14.2090**

3.3 Grading - 2034

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					3.2178	0.0000	3.2178	1.7360	0.0000	1.7360	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1868	0.7632	1.2940	3.9600e-003		0.0270	0.0270		0.0270	0.0270	0.0000	375.6701	375.6701	0.0151	0.0000	376.0463
Total	**0.1868**	**0.7632**	**1.2940**	**3.9600e-003**	**3.2178**	**0.0270**	**3.2447**	**1.7360**	**0.0270**	**1.7629**	**0.0000**	**375.6701**	**375.6701**	**0.0151**	**0.0000**	**376.0463**

3.3 Grading - 2034

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-004	3.7200e-003	1.1500e-003	1.0000e-005	3.9000e-004	0.0000	4.0000e-004	1.1000e-004	0.0000	1.2000e-004	0.0000	1.3863	1.3863	7.0000e-005	0.0000	1.3880
Worker	1.2300e-003	6.9000e-004	0.0101	5.0000e-005	7.2400e-003	3.0000e-005	7.2700e-003	1.9200e-003	3.0000e-005	1.9500e-003	0.0000	4.4906	4.4906	6.0000e-005	0.0000	4.4921
Total	**1.3400e-003**	**4.4100e-003**	**0.0112**	**6.0000e-005**	**7.6300e-003**	**3.0000e-005**	**7.6700e-003**	**2.0300e-003**	**3.0000e-005**	**2.0700e-003**	**0.0000**	**5.8769**	**5.8769**	**1.3000e-004**	**0.0000**	**5.8801**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					2.5099	0.0000	2.5099	1.3540	0.0000	1.3540	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1868	0.7632	1.2940	3.9600e-003		0.0270	0.0270		0.0270	0.0270	0.0000	375.6697	375.6697	0.0151	0.0000	376.0459
Total	**0.1868**	**0.7632**	**1.2940**	**3.9600e-003**	**2.5099**	**0.0270**	**2.5368**	**1.3540**	**0.0270**	**1.3810**	**0.0000**	**375.6697**	**375.6697**	**0.0151**	**0.0000**	**376.0459**

3.3 Grading - 2034

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	1.1000e-004	3.7200e-003	1.1500e-003	1.0000e-005	6.7000e-004	0.0000	6.8000e-004	1.8000e-004	0.0000	1.9000e-004	0.0000	1.3863	1.3863	7.0000e-005	0.0000	1.3880
Worker	1.2300e-003	6.9000e-004	0.0101	5.0000e-005	0.0135	3.0000e-005	0.0135	3.4600e-003	3.0000e-005	3.4900e-003	0.0000	4.4906	4.4906	6.0000e-005	0.0000	4.4921
Total	**1.3400e-003**	**4.4100e-003**	**0.0112**	**6.0000e-005**	**0.0142**	**3.0000e-005**	**0.0142**	**3.6400e-003**	**3.0000e-005**	**3.6800e-003**	**0.0000**	**5.8769**	**5.8769**	**1.3000e-004**	**0.0000**	**5.8801**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4275	2.5632	5.7017	0.0297	5.8162	0.0152	5.8314	1.4983	0.0141	1.5124	0.0000	2,766.6852	2,766.6852	0.1089	0.0000	2,769.4084
Unmitigated	0.4275	2.5632	5.7017	0.0297	5.8162	0.0152	5.8314	1.4983	0.0141	1.5124	0.0000	2,766.6852	2,766.6852	0.1089	0.0000	2,769.4084

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	2,100.00	3,500.00	3500.00	8,278,652	8,278,652
Parking Lot	0.00	0.00	0.00		
Total	2,100.00	3,500.00	3,500.00	8,278,652	8,278,652

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	18.50	10.10	7.90	33.00	48.00	19.00	66	28	6
Parking Lot	18.50	10.10	7.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.539854	0.043743	0.210883	0.115969	0.013375	0.006440	0.022010	0.036531	0.002703	0.001629	0.005324	0.000732	0.000807
City Park	0.539854	0.043743	0.210883	0.115969	0.013375	0.006440	0.022010	0.036531	0.002703	0.001629	0.005324	0.000732	0.000807

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	24.6740	24.6740	1.0200e-003	2.1000e-004	24.7623
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	24.6740	24.6740	1.0200e-003	2.1000e-004	24.7623
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	77440	24.6740	1.0200e-003	2.1000e-004	24.7623
Total		**24.6740**	**1.0200e-003**	**2.1000e-004**	**24.7623**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
City Park	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	77440	24.6740	1.0200e-003	2.1000e-004	24.7623
Total		**24.6740**	**1.0200e-003**	**2.1000e-004**	**24.7623**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0647	4.0000e-005	4.5700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.9300e-003	8.9300e-003	2.0000e-005	0.0000	9.5100e-003
Unmitigated	0.0647	4.0000e-005	4.5700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.9300e-003	8.9300e-003	2.0000e-005	0.0000	9.5100e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.2200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0630					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.2000e-004	4.0000e-005	4.5700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.9300e-003	8.9300e-003	2.0000e-005	0.0000	9.5100e-003
Total	**0.0647**	**4.0000e-005**	**4.5700e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.9300e-003**	**8.9300e-003**	**2.0000e-005**	**0.0000**	**9.5100e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	1.2200e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.0630					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	4.2000e-004	4.0000e-005	4.5700e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005	0.0000	8.9300e-003	8.9300e-003	2.0000e-005	0.0000	9.5100e-003
Total	**0.0647**	**4.0000e-005**	**4.5700e-003**	**0.0000**		**2.0000e-005**	**2.0000e-005**		**2.0000e-005**	**2.0000e-005**	**0.0000**	**8.9300e-003**	**8.9300e-003**	**2.0000e-005**	**0.0000**	**9.5100e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	1,180.9576	0.0488	0.0101	1,185.1825
Unmitigated	590.4788	0.0244	5.0400e-003	592.5913

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 166.807	590.4788	0.0244	5.0400e-003	592.5913
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**590.4788**	**0.0244**	**5.0400e-003**	**592.5913**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
City Park	0 / 166.807	1,180.9576	0.0488	0.0101	1,185.1825
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**1,180.9576**	**0.0488**	**0.0101**	**1,185.1825**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	2.4440	0.1444	0.0000	6.0549
Unmitigated	2.4440	0.1444	0.0000	6.0549

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	12.04	2.4440	0.1444	0.0000	6.0549
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**2.4440**	**0.1444**	**0.0000**	**6.0549**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
City Park	12.04	2.4440	0.1444	0.0000	6.0549
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Total		**2.4440**	**0.1444**	**0.0000**	**6.0549**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Tractors/Loaders/Backhoes	1	8.00	260	97	0.37	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	tons/yr										MT/yr					
Tractors/Loaders/Backhoes	0.0212	0.1252	0.3047	4.9000e-004		1.6500e-003	1.6500e-003		1.6500e-003	1.6500e-003	0.0000	42.4242	42.4242	1.7200e-003	0.0000	42.4671
Total	**0.0212**	**0.1252**	**0.3047**	**4.9000e-004**		**1.6500e-003**	**1.6500e-003**		**1.6500e-003**	**1.6500e-003**	**0.0000**	**42.4242**	**42.4242**	**1.7200e-003**	**0.0000**	**42.4671**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Santa Susana Trails Plan

Los Angeles-South Coast County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Parking Lot	220.00	Space	1.98	88,000.00	0
City Park	140.00	Acre	140.00	6,098,400.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	2.2	**Precipitation Freq (Days)**	33
Climate Zone	9			**Operational Year**	2035
Utility Company	Southern California Edison				
CO2 Intensity (lb/MWhr)	702.44	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Santa Susana Trails Plan - Los Angeles-South Coast County, Summer

Project Characteristics - 2035 operational year, SCE, LA-South Coast

Land Use - 140 acres of land disturbance and 220 parking spaces - see calculations in AQTR Methods section

Construction Phase - Projects would be completed incrementally, but modeling represents total project impact assuming full build out of 71.5 miles of trails in 16 years. It assumes 12 year of site preparation and 4 years of grading.

Off-road Equipment - Grading assumptions: 2 Graders for 2 hrs/day, 4 dozers for 2 hrs/day, 1 off highway truck for 4 hrs/day

Off-road Equipment - Site prep assumptions: 2 backhoes for 2 hrs/day, 1 off highway truck for 4 hrs/day

Trips and VMT - Reduced worker trips/day to 1.25* #Equipment as per AQMD's Appendix A: Calculation Details for CalEEMod. 1 vendor trip is used for the water truck. Assume no hauling.

Demolition - no demo

Grading - 140 acres disturbed, assume balance on site

Vehicle Trips - 4 trips/mi/hr assumed to derived empirical trip rate, as taken from Santa Susana Trails Plan. 4 trips/mi/hr * 12 hours/day * 71.5 mi trails= 3432 trips for 140 acres. Assume ~25 trips/acre/day on Saturday and Sunday and ~15 trip/acre/day during the week.

Vehicle Emission Factors -

Vehicle Emission Factors -

Vehicle Emission Factors -

Road Dust - restrict mean vehicle speed on unpaved roads to 15 mph

Consumer Products - assume no area emissions

Area Coating -

Landscape Equipment -

Energy Use - default lighting energy used for parking lots

Land Use Change -

Construction Off-road Equipment Mitigation - Water construction areas 3x/day. Reduce vehicle speed on unpaved roads to 15 mph.

Mobile Land Use Mitigation -

Area Mitigation - low VOC paint for parking

Energy Mitigation -

Operational Off-Road Equipment - Assume 1 tractor/loader/backhoe for 8 hr/day, 260 days a year for maintenance.

Table Name	Column Name	Default Value	New Value
tblAreaMitigation	UseLowVOCPaintParkingCheck	False	True

Santa Susana Trails Plan - Los Angeles-South Coast County, Summer

tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstDustMitigation	WaterUnpavedRoadVehicleSpeed	40	15
tblConstructionPhase	NumDays	310.00	1,044.00
tblConstructionPhase	NumDays	120.00	3,131.00
tblConstructionPhase	PhaseEndDate	6/1/2022	6/1/2034
tblConstructionPhase	PhaseEndDate	5/31/2019	5/31/2030
tblConstructionPhase	PhaseStartDate	6/1/2019	6/1/2030
tblGrading	AcresOfGrading	2,349.00	140.00
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	LoadFactor	0.38	0.38
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentType		Off-Highway Trucks
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	2.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	4.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOffRoadEquipment	UsageHours	8.00	2.00
tblOperationalOffRoadEquipment	OperOffRoadEquipmentNumber	0.00	1.00
tblProjectCharacteristics	OperationalYear	2018	2035
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural
tblRoadDust	MeanVehicleSpeed	40	15
tblRoadDust	MeanVehicleSpeed	40	15
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	VendorTripNumber	0.00	1.00
tblTripsAndVMT	WorkerTripNumber	15.00	4.00
tblTripsAndVMT	WorkerTripNumber	33.00	9.00

tblVehicleTrips	ST_TR	22.75	25.00
tblVehicleTrips	SU_TR	16.74	25.00
tblVehicleTrips	WD_TR	1.89	15.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

Santa Susana Trails Plan - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	4.0528	43.3311	16.7290	0.0348	18.1338	2.0791	20.2129	9.9488	1.9128	11.8615	0.0000	3,503.6067	3,503.6067	1.0645	0.0000	3,530.2193
2019	3.9066	41.1475	16.2985	0.0347	18.1338	1.9769	20.1107	9.9488	1.8188	11.7676	0.0000	3,443.2473	3,443.2473	1.0631	0.0000	3,469.8255
2020	3.7035	38.3568	15.7095	0.0347	18.1338	1.8483	19.9821	9.9488	1.7005	11.6492	0.0000	3,368.7936	3,368.7936	1.0630	0.0000	3,395.3673
2021	3.5622	36.6249	15.2938	0.0347	18.1338	1.7510	19.8848	9.9488	1.6109	11.5597	0.0000	3,366.5988	3,366.5988	1.0627	0.0000	3,393.1663
2022	2.8826	29.3472	13.7741	0.0347	18.1338	1.3712	19.5050	9.9488	1.2615	11.2102	0.0000	3,363.6347	3,363.6347	1.0623	0.0000	3,390.1921
2023	2.4043	24.0279	12.2907	0.0347	18.1338	1.0661	19.1998	9.9488	0.9808	10.9295	0.0000	3,361.0539	3,361.0539	1.0621	0.0000	3,387.6070
2024	2.4272	23.8637	12.3350	0.0346	18.1338	1.0575	19.1913	9.9488	0.9729	10.9216	0.0000	3,359.4504	3,359.4504	1.0621	0.0000	3,386.0022
2025	2.2696	22.0840	11.8869	0.0346	18.1338	0.9495	19.0833	9.9488	0.8735	10.8223	0.0000	3,356.9053	3,356.9053	1.0619	0.0000	3,383.4516
2026	2.2688	22.0825	11.8764	0.0346	18.1338	0.9494	19.0832	9.9488	0.8735	10.8222	0.0000	3,354.9183	3,354.9183	1.0617	0.0000	3,381.4617
2027	2.2680	22.0810	11.8670	0.0346	18.1338	0.9494	19.0832	9.9488	0.8735	10.8222	0.0000	3,353.1574	3,353.1574	1.0616	0.0000	3,379.6980
2028	2.2672	22.0798	11.8588	0.0346	18.1338	0.9494	19.0832	9.9488	0.8734	10.8222	0.0000	3,351.6027	3,351.6027	1.0615	0.0000	3,378.1409
2029	2.2663	22.0786	11.8506	0.0346	18.1338	0.9494	19.0832	9.9488	0.8734	10.8222	0.0000	3,350.2147	3,350.2147	1.0614	0.0000	3,376.7506
2030	3.4585	14.0887	24.0189	0.0740	18.1338	0.4955	18.5274	9.9488	0.4955	10.3423	0.0000	7,729.1892	7,729.1892	0.3076	0.0000	7,736.8778
2031	3.4563	14.0868	24.0028	0.0739	6.3071	0.4955	6.8026	3.3636	0.4954	3.8590	0.0000	7,727.0603	7,727.0603	0.3074	0.0000	7,734.7449
2032	3.4542	14.0851	23.9881	0.0739	6.3071	0.4954	6.8025	3.3636	0.4954	3.8590	0.0000	7,724.9618	7,724.9618	0.3072	0.0000	7,732.6426
2033	3.4525	14.0836	23.9755	0.0739	6.3071	0.4954	6.8025	3.3636	0.4953	3.8589	0.0000	7,723.1243	7,723.1243	0.3071	0.0000	7,730.8019
2034	3.4511	14.0823	23.9632	0.0739	6.3071	0.4953	6.8025	3.3636	0.4953	3.8589	0.0000	7,721.5107	7,721.5107	0.3070	0.0000	7,729.1852
Maximum	**4.0528**	**43.3311**	**24.0189**	**0.0740**	**18.1338**	**2.0791**	**20.2129**	**9.9488**	**1.9128**	**11.8615**	**0.0000**	**7,729.1892**	**7,729.1892**	**1.0645**	**0.0000**	**7,736.8778**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

Santa Susana Trails Plan - Los Angeles-South Coast County, Summer

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2018	4.0528	43.3311	16.7290	0.0348	14.2168	2.0791	16.2959	7.7781	1.9128	9.6909	0.0000	3,503.6067	3,503.6067	1.0645	0.0000	3,530.2193
2019	3.9066	41.1475	16.2985	0.0347	14.2168	1.9769	16.1937	7.7781	1.8188	9.5970	0.0000	3,443.2473	3,443.2473	1.0631	0.0000	3,469.8255
2020	3.7035	38.3568	15.7095	0.0347	14.2168	1.8483	16.0651	7.7781	1.7005	9.4786	0.0000	3,368.7936	3,368.7936	1.0630	0.0000	3,395.3673
2021	3.5622	36.6249	15.2938	0.0347	14.2168	1.7510	15.9678	7.7781	1.6109	9.3890	0.0000	3,366.5988	3,366.5988	1.0627	0.0000	3,393.1663
2022	2.8826	29.3472	13.7741	0.0347	14.2168	1.3712	15.5880	7.7781	1.2615	9.0396	0.0000	3,363.6347	3,363.6347	1.0623	0.0000	3,390.1921
2023	2.4043	24.0279	12.2907	0.0347	14.2168	1.0661	15.2828	7.7781	0.9808	8.7589	0.0000	3,361.0539	3,361.0539	1.0621	0.0000	3,387.6070
2024	2.4272	23.8637	12.3350	0.0346	14.2168	1.0575	15.2743	7.7781	0.9729	8.7510	0.0000	3,359.4504	3,359.4504	1.0621	0.0000	3,386.0022
2025	2.2696	22.0840	11.8869	0.0346	14.2168	0.9495	15.1663	7.7781	0.8735	8.6516	0.0000	3,356.9053	3,356.9053	1.0619	0.0000	3,383.4516
2026	2.2688	22.0825	11.8764	0.0346	14.2168	0.9494	15.1662	7.7781	0.8735	8.6516	0.0000	3,354.9183	3,354.9183	1.0617	0.0000	3,381.4617
2027	2.2680	22.0810	11.8670	0.0346	14.2168	0.9494	15.1662	7.7781	0.8735	8.6516	0.0000	3,353.1574	3,353.1574	1.0616	0.0000	3,379.6980
2028	2.2672	22.0798	11.8588	0.0346	14.2168	0.9494	15.1662	7.7781	0.8734	8.6516	0.0000	3,351.6027	3,351.6027	1.0615	0.0000	3,378.1409
2029	2.2663	22.0786	11.8506	0.0346	14.2168	0.9494	15.1662	7.7781	0.8734	8.6515	0.0000	3,350.2147	3,350.2147	1.0614	0.0000	3,376.7506
2030	3.4585	14.0887	24.0189	0.0740	14.2168	0.4955	14.6104	7.7781	0.4955	8.1717	0.0000	7,729.1892	7,729.1892	0.3076	0.0000	7,736.8778
2031	3.4563	14.0868	24.0028	0.0739	5.0740	0.4955	5.5694	2.6622	0.4954	3.1576	0.0000	7,727.0603	7,727.0603	0.3074	0.0000	7,734.7449
2032	3.4542	14.0851	23.9881	0.0739	5.0740	0.4954	5.5694	2.6622	0.4954	3.1576	0.0000	7,724.9618	7,724.9618	0.3072	0.0000	7,732.6426
2033	3.4525	14.0836	23.9755	0.0739	5.0740	0.4954	5.5694	2.6622	0.4953	3.1575	0.0000	7,723.1243	7,723.1243	0.3071	0.0000	7,730.8019
2034	3.4511	14.0823	23.9632	0.0739	5.0740	0.4953	5.5693	2.6622	0.4953	3.1575	0.0000	7,721.5107	7,721.5107	0.3070	0.0000	7,729.1852
Maximum	**4.0528**	**43.3311**	**24.0189**	**0.0740**	**14.2168**	**2.0791**	**16.2959**	**7.7781**	**1.9128**	**9.6909**	**0.0000**	**7,729.1892**	**7,729.1892**	**1.0645**	**0.0000**	**7,736.8778**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**21.40**	**0.00**	**20.00**	**21.73**	**0.00**	**19.42**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3554	3.3000e-004	0.0366	0.0000		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		0.0788	0.0788	2.0000e-004		0.0839
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	3.4576	19.2026	45.5509	0.2362	45.6914	0.1169	45.8083	11.7587	0.1086	11.8672		24,239.4565	24,239.4565	0.9235		24,262.5433
Offroad	0.1633	0.9628	2.3440	3.8000e-003		0.0127	0.0127		0.0127	0.0127		359.7283	359.7283	0.0146		360.0923
Total	**3.9763**	**20.1658**	**47.9314**	**0.2400**	**45.6914**	**0.1297**	**45.8211**	**11.7587**	**0.1214**	**11.8800**		**24,599.2636**	**24,599.2636**	**0.9382**	**0.0000**	**24,622.7194**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	0.3554	3.3000e-004	0.0366	0.0000		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		0.0788	0.0788	2.0000e-004		0.0839
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	3.4576	19.2026	45.5509	0.2362	45.6914	0.1169	45.8083	11.7587	0.1086	11.8672		24,239.4565	24,239.4565	0.9235		24,262.5433
Offroad	0.1633	0.9628	2.3440	3.8000e-003		0.0127	0.0127		0.0127	0.0127		359.7283	359.7283	0.0146		360.0923
Total	**3.9763**	**20.1658**	**47.9314**	**0.2400**	**45.6914**	**0.1297**	**45.8211**	**11.7587**	**0.1214**	**11.8800**		**24,599.2636**	**24,599.2636**	**0.9382**	**0.0000**	**24,622.7194**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	6/1/2018	5/31/2030	5	3131	
2	Grading	Grading	6/1/2030	6/1/2034	5	1044	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 140

Acres of Paving: 1.98

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Off-Highway Trucks	1	4.00	402	0.38
Grading	Off-Highway Trucks	1	4.00	402	0.38
Site Preparation	Tractors/Loaders/Backhoes	2	2.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	2	2.00	187	0.41
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Grading	Rubber Tired Dozers	4	2.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	6	4.00	1.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT
Grading	13	9.00	1.00	0.00	19.80	7.90	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

Reduce Vehicle Speed on Unpaved Roads

3.2 Site Preparation - 2018

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	4.0199	43.1780	16.4091	0.0338		2.0776	2.0776		1.9113	1.9113		3,405.0401	3,405.0401	1.0600		3,431.5410
Total	**4.0199**	**43.1780**	**16.4091**	**0.0338**	**18.0663**	**2.0776**	**20.1438**	**9.9307**	**1.9113**	**11.8420**		**3,405.0401**	**3,405.0401**	**1.0600**		**3,431.5410**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.0100e-003	0.1311	0.0359	2.9000e-004	7.3300e-003	9.8000e-004	8.3100e-003	2.1100e-003	9.4000e-004	3.0500e-003		31.3619	31.3619	1.9700e-003		31.4112
Worker	0.0279	0.0219	0.2840	6.8000e-004	0.0602	5.3000e-004	0.0607	0.0160	4.9000e-004	0.0165		67.2047	67.2047	2.4900e-003		67.2671
Total	**0.0329**	**0.1531**	**0.3199**	**9.7000e-004**	**0.0675**	**1.5100e-003**	**0.0691**	**0.0181**	**1.4300e-003**	**0.0195**		**98.5666**	**98.5666**	**4.4600e-003**		**98.6783**

3.2 Site Preparation - 2018

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.0917	0.0000	14.0917	7.7459	0.0000	7.7459			0.0000			0.0000
Off-Road	4.0199	43.1780	16.4091	0.0338		2.0776	2.0776		1.9113	1.9113	0.0000	3,405.0401	3,405.0401	1.0600		3,431.5410
Total	**4.0199**	**43.1780**	**16.4091**	**0.0338**	**14.0917**	**2.0776**	**16.1692**	**7.7459**	**1.9113**	**9.6573**	**0.0000**	**3,405.0401**	**3,405.0401**	**1.0600**		**3,431.5410**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	5.0100e-003	0.1311	0.0359	2.9000e-004	0.0126	9.8000e-004	0.0135	3.3900e-003	9.4000e-004	4.3300e-003		31.3619	31.3619	1.9700e-003		31.4112
Worker	0.0279	0.0219	0.2840	6.8000e-004	0.1126	5.3000e-004	0.1131	0.0288	4.9000e-004	0.0293		67.2047	67.2047	2.4900e-003		67.2671
Total	**0.0329**	**0.1531**	**0.3199**	**9.7000e-004**	**0.1251**	**1.5100e-003**	**0.1266**	**0.0322**	**1.4300e-003**	**0.0336**		**98.5666**	**98.5666**	**4.4600e-003**		**98.6783**

3.2 Site Preparation - 2019

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8769	41.0047	16.0120	0.0338		1.9756	1.9756		1.8176	1.8176		3,347.1915	3,347.1915	1.0590		3,373.6669
Total	**3.8769**	**41.0047**	**16.0120**	**0.0338**	**18.0663**	**1.9756**	**20.0419**	**9.9307**	**1.8176**	**11.7482**		**3,347.1915**	**3,347.1915**	**1.0590**		**3,373.6669**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.5300e-003	0.1235	0.0329	2.9000e-004	7.3300e-003	8.4000e-004	8.1600e-003	2.1100e-003	8.0000e-004	2.9100e-003		31.0363	31.0363	1.9000e-003		31.0839
Worker	0.0252	0.0193	0.2536	6.5000e-004	0.0602	5.1000e-004	0.0607	0.0160	4.7000e-004	0.0164		65.0195	65.0195	2.2100e-003		65.0748
Total	**0.0297**	**0.1428**	**0.2865**	**9.4000e-004**	**0.0675**	**1.3500e-003**	**0.0689**	**0.0181**	**1.2700e-003**	**0.0194**		**96.0558**	**96.0558**	**4.1100e-003**		**96.1587**

3.2 Site Preparation - 2019

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.0917	0.0000	14.0917	7.7459	0.0000	7.7459			0.0000			0.0000
Off-Road	3.8769	41.0047	16.0120	0.0338		1.9756	1.9756		1.8176	1.8176	0.0000	3,347.1915	3,347.1915	1.0590		3,373.6669
Total	**3.8769**	**41.0047**	**16.0120**	**0.0338**	**14.0917**	**1.9756**	**16.0673**	**7.7459**	**1.8176**	**9.5635**	**0.0000**	**3,347.1915**	**3,347.1915**	**1.0590**		**3,373.6669**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	4.5300e-003	0.1235	0.0329	2.9000e-004	0.0126	8.4000e-004	0.0134	3.3900e-003	8.0000e-004	4.1900e-003		31.0363	31.0363	1.9000e-003		31.0839
Worker	0.0252	0.0193	0.2536	6.5000e-004	0.1126	5.1000e-004	0.1131	0.0288	4.7000e-004	0.0293		65.0195	65.0195	2.2100e-003		65.0748
Total	**0.0297**	**0.1428**	**0.2865**	**9.4000e-004**	**0.1251**	**1.3500e-003**	**0.1265**	**0.0322**	**1.2700e-003**	**0.0335**		**96.0558**	**96.0558**	**4.1100e-003**		**96.1587**

3.2 Site Preparation - 2020

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.6764	38.2265	15.4493	0.0338		1.8473	1.8473		1.6995	1.6995		3,274.9193	3,274.9193	1.0592		3,301.3987
Total	**3.6764**	**38.2265**	**15.4493**	**0.0338**	**18.0663**	**1.8473**	**19.9135**	**9.9307**	**1.6995**	**11.6302**		**3,274.9193**	**3,274.9193**	**1.0592**		**3,301.3987**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.8600e-003	0.1131	0.0298	2.9000e-004	7.3300e-003	5.7000e-004	7.9000e-003	2.1100e-003	5.4000e-004	2.6500e-003		30.8303	30.8303	1.8000e-003		30.8754
Worker	0.0232	0.0172	0.2304	6.3000e-004	0.0602	4.9000e-004	0.0607	0.0160	4.6000e-004	0.0164		63.0440	63.0440	1.9700e-003		63.0932
Total	**0.0271**	**0.1303**	**0.2602**	**9.2000e-004**	**0.0675**	**1.0600e-003**	**0.0686**	**0.0181**	**1.0000e-003**	**0.0191**		**93.8743**	**93.8743**	**3.7700e-003**		**93.9686**

3.2 Site Preparation - 2020

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.0917	0.0000	14.0917	7.7459	0.0000	7.7459			0.0000			0.0000
Off-Road	3.6764	38.2265	15.4493	0.0338		1.8473	1.8473		1.6995	1.6995	0.0000	3,274.9193	3,274.9193	1.0592		3,301.3987
Total	**3.6764**	**38.2265**	**15.4493**	**0.0338**	**14.0917**	**1.8473**	**15.9389**	**7.7459**	**1.6995**	**9.4454**	**0.0000**	**3,274.9193**	**3,274.9193**	**1.0592**		**3,301.3987**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.8600e-003	0.1131	0.0298	2.9000e-004	0.0126	5.7000e-004	0.0131	3.3900e-003	5.4000e-004	3.9400e-003		30.8303	30.8303	1.8000e-003		30.8754
Worker	0.0232	0.0172	0.2304	6.3000e-004	0.1126	4.9000e-004	0.1131	0.0288	4.6000e-004	0.0293		63.0440	63.0440	1.9700e-003		63.0932
Total	**0.0271**	**0.1303**	**0.2602**	**9.2000e-004**	**0.1251**	**1.0600e-003**	**0.1262**	**0.0322**	**1.0000e-003**	**0.0332**		**93.8743**	**93.8743**	**3.7700e-003**		**93.9686**

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.5372	36.5066	15.0546	0.0338		1.7503	1.7503		1.6102	1.6102		3,274.9644	3,274.9644	1.0592		3,301.4442
Total	**3.5372**	**36.5066**	**15.0546**	**0.0338**	**18.0663**	**1.7503**	**19.8165**	**9.9307**	**1.6102**	**11.5409**		**3,274.9644**	**3,274.9644**	**1.0592**		**3,301.4442**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2900e-003	0.1027	0.0271	2.9000e-004	7.3300e-003	2.2000e-004	7.5500e-003	2.1100e-003	2.1000e-004	2.3200e-003		30.5924	30.5924	1.7300e-003		30.6357
Worker	0.0217	0.0155	0.2120	6.1000e-004	0.0602	4.8000e-004	0.0607	0.0160	4.4000e-004	0.0164		61.0419	61.0419	1.7800e-003		61.0865
Total	**0.0250**	**0.1183**	**0.2392**	**9.0000e-004**	**0.0675**	**7.0000e-004**	**0.0682**	**0.0181**	**6.5000e-004**	**0.0187**		**91.6344**	**91.6344**	**3.5100e-003**		**91.7222**

3.2 Site Preparation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.0917	0.0000	14.0917	7.7459	0.0000	7.7459			0.0000			0.0000
Off-Road	3.5372	36.5066	15.0546	0.0338		1.7503	1.7503		1.6102	1.6102	0.0000	3,274.9644	3,274.9644	1.0592		3,301.4442
Total	**3.5372**	**36.5066**	**15.0546**	**0.0338**	**14.0917**	**1.7503**	**15.8419**	**7.7459**	**1.6102**	**9.3562**	**0.0000**	**3,274.9644**	**3,274.9644**	**1.0592**		**3,301.4442**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.2900e-003	0.1027	0.0271	2.9000e-004	0.0126	2.2000e-004	0.0128	3.3900e-003	2.1000e-004	3.6100e-003		30.5924	30.5924	1.7300e-003		30.6357
Worker	0.0217	0.0155	0.2120	6.1000e-004	0.1126	4.8000e-004	0.1130	0.0288	4.4000e-004	0.0293		61.0419	61.0419	1.7800e-003		61.0865
Total	**0.0250**	**0.1183**	**0.2392**	**9.0000e-004**	**0.1251**	**7.0000e-004**	**0.1258**	**0.0322**	**6.5000e-004**	**0.0329**		**91.6344**	**91.6344**	**3.5100e-003**		**91.7222**

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.8592	29.2357	13.5527	0.0338		1.3705	1.3705		1.2609	1.2609		3,274.4157	3,274.4157	1.0590		3,300.8910
Total	**2.8592**	**29.2357**	**13.5527**	**0.0338**	**18.0663**	**1.3705**	**19.4368**	**9.9307**	**1.2609**	**11.1915**		**3,274.4157**	**3,274.4157**	**1.0590**		**3,300.8910**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.0900e-003	0.0975	0.0257	2.8000e-004	7.3300e-003	2.0000e-004	7.5200e-003	2.1100e-003	1.9000e-004	2.3000e-003		30.3249	30.3249	1.6700e-003		30.3668
Worker	0.0203	0.0140	0.1957	5.9000e-004	0.0602	4.6000e-004	0.0607	0.0160	4.3000e-004	0.0164		58.8941	58.8941	1.6100e-003		58.9344
Total	**0.0234**	**0.1115**	**0.2214**	**8.7000e-004**	**0.0675**	**6.6000e-004**	**0.0682**	**0.0181**	**6.2000e-004**	**0.0187**		**89.2191**	**89.2191**	**3.2800e-003**		**89.3011**

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.0917	0.0000	14.0917	7.7459	0.0000	7.7459			0.0000			0.0000
Off-Road	2.8592	29.2357	13.5527	0.0338		1.3705	1.3705		1.2609	1.2609	0.0000	3,274.4157	3,274.4157	1.0590		3,300.8910
Total	**2.8592**	**29.2357**	**13.5527**	**0.0338**	**14.0917**	**1.3705**	**15.4622**	**7.7459**	**1.2609**	**9.0068**	**0.0000**	**3,274.4157**	**3,274.4157**	**1.0590**		**3,300.8910**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	3.0900e-003	0.0975	0.0257	2.8000e-004	0.0126	2.0000e-004	0.0128	3.3900e-003	1.9000e-004	3.5800e-003		30.3249	30.3249	1.6700e-003		30.3668
Worker	0.0203	0.0140	0.1957	5.9000e-004	0.1126	4.6000e-004	0.1130	0.0288	4.3000e-004	0.0292		58.8941	58.8941	1.6100e-003		58.9344
Total	**0.0234**	**0.1115**	**0.2214**	**8.7000e-004**	**0.1251**	**6.6000e-004**	**0.1258**	**0.0322**	**6.2000e-004**	**0.0328**		**89.2191**	**89.2191**	**3.2800e-003**		**89.3011**

3.2 Site Preparation - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.3829	23.9422	12.0872	0.0338		1.0655	1.0655		0.9803	0.9803		3,274.9343	3,274.9343	1.0592		3,301.4138
Total	**2.3829**	**23.9422**	**12.0872**	**0.0338**	**18.0663**	**1.0655**	**19.1318**	**9.9307**	**0.9803**	**10.9109**		**3,274.9343**	**3,274.9343**	**1.0592**		**3,301.4138**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.2800e-003	0.0731	0.0232	2.7000e-004	7.3300e-003	9.0000e-005	7.4200e-003	2.1100e-003	9.0000e-005	2.2000e-003		29.3825	29.3825	1.4900e-003		29.4198
Worker	0.0191	0.0127	0.1803	5.7000e-004	0.0602	4.5000e-004	0.0607	0.0160	4.1000e-004	0.0164		56.7371	56.7371	1.4500e-003		56.7734
Total	**0.0214**	**0.0858**	**0.2035**	**8.4000e-004**	**0.0675**	**5.4000e-004**	**0.0681**	**0.0181**	**5.0000e-004**	**0.0186**		**86.1196**	**86.1196**	**2.9400e-003**		**86.1932**

3.2 Site Preparation - 2023

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.0917	0.0000	14.0917	7.7459	0.0000	7.7459			0.0000			0.0000
Off-Road	2.3829	23.9422	12.0872	0.0338		1.0655	1.0655		0.9803	0.9803	0.0000	3,274.9343	3,274.9343	1.0592		3,301.4138
Total	**2.3829**	**23.9422**	**12.0872**	**0.0338**	**14.0917**	**1.0655**	**15.1572**	**7.7459**	**0.9803**	**8.7262**	**0.0000**	**3,274.9343**	**3,274.9343**	**1.0592**		**3,301.4138**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.2800e-003	0.0731	0.0232	2.7000e-004	0.0126	9.0000e-005	0.0126	3.3900e-003	9.0000e-005	3.4800e-003		29.3825	29.3825	1.4900e-003		29.4198
Worker	0.0191	0.0127	0.1803	5.7000e-004	0.1126	4.5000e-004	0.1130	0.0288	4.1000e-004	0.0292		56.7371	56.7371	1.4500e-003		56.7734
Total	**0.0214**	**0.0858**	**0.2035**	**8.4000e-004**	**0.1251**	**5.4000e-004**	**0.1257**	**0.0322**	**5.0000e-004**	**0.0327**		**86.1196**	**86.1196**	**2.9400e-003**		**86.1932**

3.2 Site Preparation - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.4069	23.7794	12.1443	0.0338		1.0569	1.0569		0.9724	0.9724		3,275.2025	3,275.2025	1.0593		3,301.6841
Total	**2.4069**	**23.7794**	**12.1443**	**0.0338**	**18.0663**	**1.0569**	**19.1232**	**9.9307**	**0.9724**	**10.9031**		**3,275.2025**	**3,275.2025**	**1.0593**		**3,301.6841**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.2300e-003	0.0728	0.0226	2.7000e-004	7.3300e-003	9.0000e-005	7.4200e-003	2.1100e-003	9.0000e-005	2.2000e-003		29.2683	29.2683	1.4700e-003		29.3052
Worker	0.0181	0.0116	0.1682	5.5000e-004	0.0602	4.4000e-004	0.0607	0.0160	4.1000e-004	0.0164		54.9796	54.9796	1.3300e-003		55.0129
Total	**0.0203**	**0.0844**	**0.1907**	**8.2000e-004**	**0.0675**	**5.3000e-004**	**0.0681**	**0.0181**	**5.0000e-004**	**0.0186**		**84.2480**	**84.2480**	**2.8000e-003**		**84.3181**

3.2 Site Preparation - 2024

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.0917	0.0000	14.0917	7.7459	0.0000	7.7459			0.0000			0.0000
Off-Road	2.4069	23.7794	12.1443	0.0338		1.0569	1.0569		0.9724	0.9724	0.0000	3,275.2025	3,275.2025	1.0593		3,301.6841
Total	**2.4069**	**23.7794**	**12.1443**	**0.0338**	**14.0917**	**1.0569**	**15.1486**	**7.7459**	**0.9724**	**8.7183**	**0.0000**	**3,275.2025**	**3,275.2025**	**1.0593**		**3,301.6841**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.2300e-003	0.0728	0.0226	2.7000e-004	0.0126	9.0000e-005	0.0126	3.3900e-003	9.0000e-005	3.4800e-003		29.2683	29.2683	1.4700e-003		29.3052
Worker	0.0181	0.0116	0.1682	5.5000e-004	0.1126	4.4000e-004	0.1130	0.0288	4.1000e-004	0.0292		54.9796	54.9796	1.3300e-003		55.0129
Total	**0.0203**	**0.0844**	**0.1907**	**8.2000e-004**	**0.1251**	**5.3000e-004**	**0.1257**	**0.0322**	**5.0000e-004**	**0.0327**		**84.2480**	**84.2480**	**2.8000e-003**		**84.3181**

3.2 Site Preparation - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.2503	22.0013	11.7087	0.0338		0.9489	0.9489		0.8730	0.8730		3,274.9452	3,274.9452	1.0592		3,301.4247
Total	**2.2503**	**22.0013**	**11.7087**	**0.0338**	**18.0663**	**0.9489**	**19.0152**	**9.9307**	**0.8730**	**10.8037**		**3,274.9452**	**3,274.9452**	**1.0592**		**3,301.4247**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1800e-003	0.0721	0.0220	2.7000e-004	7.3300e-003	9.0000e-005	7.4200e-003	2.1100e-003	8.0000e-005	2.1900e-003		29.1112	29.1112	1.4500e-003		29.1476
Worker	0.0172	0.0106	0.1562	5.3000e-004	0.0602	4.3000e-004	0.0606	0.0160	4.0000e-004	0.0164		52.8489	52.8489	1.2200e-003		52.8793
Total	**0.0194**	**0.0827**	**0.1782**	**8.0000e-004**	**0.0675**	**5.2000e-004**	**0.0681**	**0.0181**	**4.8000e-004**	**0.0186**		**81.9601**	**81.9601**	**2.6700e-003**		**82.0269**

3.2 Site Preparation - 2025

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.0917	0.0000	14.0917	7.7459	0.0000	7.7459			0.0000			0.0000
Off-Road	2.2503	22.0013	11.7087	0.0338		0.9489	0.9489		0.8730	0.8730	0.0000	3,274.9452	3,274.9452	1.0592		3,301.4247
Total	**2.2503**	**22.0013**	**11.7087**	**0.0338**	**14.0917**	**0.9489**	**15.0406**	**7.7459**	**0.8730**	**8.6189**	**0.0000**	**3,274.9452**	**3,274.9452**	**1.0592**		**3,301.4247**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1800e-003	0.0721	0.0220	2.7000e-004	0.0126	9.0000e-005	0.0126	3.3900e-003	8.0000e-005	3.4800e-003		29.1112	29.1112	1.4500e-003		29.1476
Worker	0.0172	0.0106	0.1562	5.3000e-004	0.1126	4.3000e-004	0.1130	0.0288	4.0000e-004	0.0292		52.8489	52.8489	1.2200e-003		52.8793
Total	**0.0194**	**0.0827**	**0.1782**	**8.0000e-004**	**0.1251**	**5.2000e-004**	**0.1256**	**0.0322**	**4.8000e-004**	**0.0327**		**81.9601**	**81.9601**	**2.6700e-003**		**82.0269**

3.2 Site Preparation - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.2503	22.0013	11.7087	0.0338		0.9489	0.9489		0.8730	0.8730		3,274.9452	3,274.9452	1.0592		3,301.4247
Total	**2.2503**	**22.0013**	**11.7087**	**0.0338**	**18.0663**	**0.9489**	**19.0152**	**9.9307**	**0.8730**	**10.8037**		**3,274.9452**	**3,274.9452**	**1.0592**		**3,301.4247**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1300e-003	0.0714	0.0216	2.7000e-004	7.3300e-003	9.0000e-005	7.4100e-003	2.1100e-003	8.0000e-005	2.1900e-003		28.9605	28.9605	1.4400e-003		28.9964
Worker	0.0164	9.7700e-003	0.1461	5.1000e-004	0.0602	4.2000e-004	0.0606	0.0160	3.9000e-004	0.0164		51.0127	51.0127	1.1200e-003		51.0405
Total	**0.0186**	**0.0812**	**0.1677**	**7.8000e-004**	**0.0675**	**5.1000e-004**	**0.0680**	**0.0181**	**4.7000e-004**	**0.0185**		**79.9731**	**79.9731**	**2.5600e-003**		**80.0369**

3.2 Site Preparation - 2026

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.0917	0.0000	14.0917	7.7459	0.0000	7.7459			0.0000			0.0000
Off-Road	2.2503	22.0013	11.7087	0.0338		0.9489	0.9489		0.8730	0.8730	0.0000	3,274.9452	3,274.9452	1.0592		3,301.4247
Total	**2.2503**	**22.0013**	**11.7087**	**0.0338**	**14.0917**	**0.9489**	**15.0406**	**7.7459**	**0.8730**	**8.6189**	**0.0000**	**3,274.9452**	**3,274.9452**	**1.0592**		**3,301.4247**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.1300e-003	0.0714	0.0216	2.7000e-004	0.0126	9.0000e-005	0.0126	3.3900e-003	8.0000e-005	3.4700e-003		28.9605	28.9605	1.4400e-003		28.9964
Worker	0.0164	9.7700e-003	0.1461	5.1000e-004	0.1126	4.2000e-004	0.1130	0.0288	3.9000e-004	0.0292		51.0127	51.0127	1.1200e-003		51.0405
Total	**0.0186**	**0.0812**	**0.1677**	**7.8000e-004**	**0.1251**	**5.1000e-004**	**0.1256**	**0.0322**	**4.7000e-004**	**0.0327**		**79.9731**	**79.9731**	**2.5600e-003**		**80.0369**

3.2 Site Preparation - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.2503	22.0013	11.7087	0.0338		0.9489	0.9489		0.8730	0.8730		3,274.9452	3,274.9452	1.0592		3,301.4247
Total	**2.2503**	**22.0013**	**11.7087**	**0.0338**	**18.0663**	**0.9489**	**19.0152**	**9.9307**	**0.8730**	**10.8037**		**3,274.9452**	**3,274.9452**	**1.0592**		**3,301.4247**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0900e-003	0.0708	0.0212	2.7000e-004	7.3300e-003	9.0000e-005	7.4100e-003	2.1100e-003	8.0000e-005	2.1900e-003		28.8249	28.8249	1.4200e-003		28.8603
Worker	0.0157	9.0200e-003	0.1371	5.0000e-004	0.0602	4.0000e-004	0.0606	0.0160	3.6000e-004	0.0163		49.3873	49.3873	1.0200e-003		49.4130
Total	**0.0178**	**0.0798**	**0.1583**	**7.7000e-004**	**0.0675**	**4.9000e-004**	**0.0680**	**0.0181**	**4.4000e-004**	**0.0185**		**78.2123**	**78.2123**	**2.4400e-003**		**78.2733**

3.2 Site Preparation - 2027

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.0917	0.0000	14.0917	7.7459	0.0000	7.7459			0.0000			0.0000
Off-Road	2.2503	22.0013	11.7087	0.0338		0.9489	0.9489		0.8730	0.8730	0.0000	3,274.9452	3,274.9452	1.0592		3,301.4247
Total	**2.2503**	**22.0013**	**11.7087**	**0.0338**	**14.0917**	**0.9489**	**15.0406**	**7.7459**	**0.8730**	**8.6189**	**0.0000**	**3,274.9452**	**3,274.9452**	**1.0592**		**3,301.4247**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0900e-003	0.0708	0.0212	2.7000e-004	0.0126	9.0000e-005	0.0126	3.3900e-003	8.0000e-005	3.4700e-003		28.8249	28.8249	1.4200e-003		28.8603
Worker	0.0157	9.0200e-003	0.1371	5.0000e-004	0.1126	4.0000e-004	0.1130	0.0288	3.6000e-004	0.0292		49.3873	49.3873	1.0200e-003		49.4130
Total	**0.0178**	**0.0798**	**0.1583**	**7.7000e-004**	**0.1251**	**4.9000e-004**	**0.1256**	**0.0322**	**4.4000e-004**	**0.0327**		**78.2123**	**78.2123**	**2.4400e-003**		**78.2733**

3.2 Site Preparation - 2028

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.2503	22.0013	11.7087	0.0338		0.9489	0.9489		0.8730	0.8730		3,274.9452	3,274.9452	1.0592		3,301.4247
Total	**2.2503**	**22.0013**	**11.7087**	**0.0338**	**18.0663**	**0.9489**	**19.0152**	**9.9307**	**0.8730**	**10.8037**		**3,274.9452**	**3,274.9452**	**1.0592**		**3,301.4247**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0500e-003	0.0702	0.0210	2.7000e-004	7.3300e-003	8.0000e-005	7.4100e-003	2.1100e-003	8.0000e-005	2.1900e-003		28.7092	28.7092	1.4000e-003		28.7442
Worker	0.0149	8.3400e-003	0.1292	4.8000e-004	0.0602	3.7000e-004	0.0606	0.0160	3.4000e-004	0.0163		47.9484	47.9484	9.5000e-004		47.9720
Total	**0.0170**	**0.0785**	**0.1501**	**7.5000e-004**	**0.0675**	**4.5000e-004**	**0.0680**	**0.0181**	**4.2000e-004**	**0.0185**		**76.6576**	**76.6576**	**2.3500e-003**		**76.7162**

3.2 Site Preparation - 2028

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.0917	0.0000	14.0917	7.7459	0.0000	7.7459			0.0000			0.0000
Off-Road	2.2503	22.0013	11.7087	0.0338		0.9489	0.9489		0.8730	0.8730	0.0000	3,274.9452	3,274.9452	1.0592		3,301.4247
Total	**2.2503**	**22.0013**	**11.7087**	**0.0338**	**14.0917**	**0.9489**	**15.0406**	**7.7459**	**0.8730**	**8.6189**	**0.0000**	**3,274.9452**	**3,274.9452**	**1.0592**		**3,301.4247**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0500e-003	0.0702	0.0210	2.7000e-004	0.0126	8.0000e-005	0.0126	3.3900e-003	8.0000e-005	3.4700e-003		28.7092	28.7092	1.4000e-003		28.7442
Worker	0.0149	8.3400e-003	0.1292	4.8000e-004	0.1126	3.7000e-004	0.1129	0.0288	3.4000e-004	0.0292		47.9484	47.9484	9.5000e-004		47.9720
Total	**0.0170**	**0.0785**	**0.1501**	**7.5000e-004**	**0.1251**	**4.5000e-004**	**0.1256**	**0.0322**	**4.2000e-004**	**0.0326**		**76.6576**	**76.6576**	**2.3500e-003**		**76.7162**

3.2 Site Preparation - 2029

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.2503	22.0013	11.7087	0.0338		0.9489	0.9489		0.8730	0.8730		3,274.9452	3,274.9452	1.0592		3,301.4247
Total	**2.2503**	**22.0013**	**11.7087**	**0.0338**	**18.0663**	**0.9489**	**19.0152**	**9.9307**	**0.8730**	**10.8037**		**3,274.9452**	**3,274.9452**	**1.0592**		**3,301.4247**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0200e-003	0.0696	0.0207	2.7000e-004	7.3300e-003	8.0000e-005	7.4100e-003	2.1100e-003	8.0000e-005	2.1900e-003		28.6059	28.6059	1.3800e-003		28.6405
Worker	0.0140	7.6700e-003	0.1212	4.7000e-004	0.0602	3.4000e-004	0.0606	0.0160	3.1000e-004	0.0163		46.6637	46.6637	8.7000e-004		46.6854
Total	**0.0160**	**0.0773**	**0.1419**	**7.4000e-004**	**0.0675**	**4.2000e-004**	**0.0680**	**0.0181**	**3.9000e-004**	**0.0185**		**75.2696**	**75.2696**	**2.2500e-003**		**75.3258**

3.2 Site Preparation - 2029

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.0917	0.0000	14.0917	7.7459	0.0000	7.7459			0.0000			0.0000
Off-Road	2.2503	22.0013	11.7087	0.0338		0.9489	0.9489		0.8730	0.8730	0.0000	3,274.9452	3,274.9452	1.0592		3,301.4247
Total	**2.2503**	**22.0013**	**11.7087**	**0.0338**	**14.0917**	**0.9489**	**15.0406**	**7.7459**	**0.8730**	**8.6189**	**0.0000**	**3,274.9452**	**3,274.9452**	**1.0592**		**3,301.4247**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	2.0200e-003	0.0696	0.0207	2.7000e-004	0.0126	8.0000e-005	0.0126	3.3900e-003	8.0000e-005	3.4700e-003		28.6059	28.6059	1.3800e-003		28.6405
Worker	0.0140	7.6700e-003	0.1212	4.7000e-004	0.1126	3.4000e-004	0.1129	0.0288	3.1000e-004	0.0291		46.6637	46.6637	8.7000e-004		46.6854
Total	**0.0160**	**0.0773**	**0.1419**	**7.4000e-004**	**0.1251**	**4.2000e-004**	**0.1255**	**0.0322**	**3.9000e-004**	**0.0326**		**75.2696**	**75.2696**	**2.2500e-003**		**75.3258**

3.2 Site Preparation - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	2.1298	10.6901	9.5782	0.0400		0.3932	0.3932		0.3932	0.3932		3,920.0952	3,920.0952	0.1902		3,924.8489
Total	**2.1298**	**10.6901**	**9.5782**	**0.0400**	**18.0663**	**0.3932**	**18.4595**	**9.9307**	**0.3932**	**10.3239**		**3,920.0952**	**3,920.0952**	**0.1902**		**3,924.8489**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9900e-003	0.0691	0.0205	2.7000e-004	7.3300e-003	8.0000e-005	7.4100e-003	2.1100e-003	8.0000e-005	2.1900e-003		28.5123	28.5123	1.3700e-003		28.5465
Worker	0.0131	7.0300e-003	0.1138	4.6000e-004	0.0602	3.2000e-004	0.0605	0.0160	2.9000e-004	0.0163		45.5167	45.5167	8.0000e-004		45.5366
Total	**0.0151**	**0.0761**	**0.1343**	**7.3000e-004**	**0.0675**	**4.0000e-004**	**0.0679**	**0.0181**	**3.7000e-004**	**0.0185**		**74.0290**	**74.0290**	**2.1700e-003**		**74.0831**

3.2 Site Preparation - 2030

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					14.0917	0.0000	14.0917	7.7459	0.0000	7.7459			0.0000			0.0000
Off-Road	2.1298	10.6901	9.5782	0.0400		0.3932	0.3932		0.3932	0.3932	0.0000	3,920.0952	3,920.0952	0.1902		3,924.8489
Total	**2.1298**	**10.6901**	**9.5782**	**0.0400**	**14.0917**	**0.3932**	**14.4849**	**7.7459**	**0.3932**	**8.1391**	**0.0000**	**3,920.0952**	**3,920.0952**	**0.1902**		**3,924.8489**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9900e-003	0.0691	0.0205	2.7000e-004	0.0126	8.0000e-005	0.0126	3.3900e-003	8.0000e-005	3.4700e-003		28.5123	28.5123	1.3700e-003		28.5465
Worker	0.0131	7.0300e-003	0.1138	4.6000e-004	0.1126	3.2000e-004	0.1129	0.0288	2.9000e-004	0.0291		45.5167	45.5167	8.0000e-004		45.5366
Total	**0.0151**	**0.0761**	**0.1343**	**7.3000e-004**	**0.1251**	**4.0000e-004**	**0.1255**	**0.0322**	**3.7000e-004**	**0.0326**		**74.0290**	**74.0290**	**2.1700e-003**		**74.0831**

3.3 Grading - 2030

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1643	0.0000	6.1643	3.3256	0.0000	3.3256			0.0000			0.0000
Off-Road	3.4271	14.0038	23.7423	0.0727		0.4947	0.4947		0.4947	0.4947		7,598.2644	7,598.2644	0.3044		7,605.8741
Total	**3.4271**	**14.0038**	**23.7423**	**0.0727**	**6.1643**	**0.4947**	**6.6590**	**3.3256**	**0.4947**	**3.8203**		**7,598.2644**	**7,598.2644**	**0.3044**		**7,605.8741**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9900e-003	0.0691	0.0205	2.7000e-004	7.3300e-003	8.0000e-005	7.4100e-003	2.1100e-003	8.0000e-005	2.1900e-003		28.5123	28.5123	1.3700e-003		28.5465
Worker	0.0295	0.0158	0.2561	1.0300e-003	0.1355	7.2000e-004	0.1362	0.0359	6.6000e-004	0.0366		102.4125	102.4125	1.7900e-003		102.4573
Total	**0.0314**	**0.0849**	**0.2766**	**1.3000e-003**	**0.1428**	**8.0000e-004**	**0.1436**	**0.0380**	**7.4000e-004**	**0.0388**		**130.9248**	**130.9248**	**3.1600e-003**		**131.0038**

3.3 Grading - 2030

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.8082	0.0000	4.8082	2.5940	0.0000	2.5940			0.0000			0.0000
Off-Road	3.4271	14.0038	23.7423	0.0727		0.4947	0.4947		0.4947	0.4947	0.0000	7,598.2644	7,598.2644	0.3044		7,605.8741
Total	**3.4271**	**14.0038**	**23.7423**	**0.0727**	**4.8082**	**0.4947**	**5.3029**	**2.5940**	**0.4947**	**3.0887**	**0.0000**	**7,598.2644**	**7,598.2644**	**0.3044**		**7,605.8741**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9900e-003	0.0691	0.0205	2.7000e-004	0.0126	8.0000e-005	0.0126	3.3900e-003	8.0000e-005	3.4700e-003		28.5123	28.5123	1.3700e-003		28.5465
Worker	0.0295	0.0158	0.2561	1.0300e-003	0.2533	7.2000e-004	0.2540	0.0648	6.6000e-004	0.0655		102.4125	102.4125	1.7900e-003		102.4573
Total	**0.0314**	**0.0849**	**0.2766**	**1.3000e-003**	**0.2658**	**8.0000e-004**	**0.2666**	**0.0682**	**7.4000e-004**	**0.0690**		**130.9248**	**130.9248**	**3.1600e-003**		**131.0038**

3.3 Grading - 2031

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1643	0.0000	6.1643	3.3256	0.0000	3.3256			0.0000			0.0000
Off-Road	3.4271	14.0038	23.7423	0.0727		0.4947	0.4947		0.4947	0.4947		7,598.2644	7,598.2644	0.3044		7,605.8741
Total	**3.4271**	**14.0038**	**23.7423**	**0.0727**	**6.1643**	**0.4947**	**6.6590**	**3.3256**	**0.4947**	**3.8203**		**7,598.2644**	**7,598.2644**	**0.3044**		**7,605.8741**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9800e-003	0.0687	0.0204	2.6000e-004	7.3300e-003	8.0000e-005	7.4100e-003	2.1100e-003	8.0000e-005	2.1900e-003		28.4598	28.4598	1.3600e-003		28.4937
Worker	0.0272	0.0144	0.2400	1.0100e-003	0.1355	6.7000e-004	0.1361	0.0359	6.2000e-004	0.0365		100.3362	100.3362	1.6400e-003		100.3771
Total	**0.0292**	**0.0831**	**0.2604**	**1.2700e-003**	**0.1428**	**7.5000e-004**	**0.1436**	**0.0380**	**7.0000e-004**	**0.0387**		**128.7959**	**128.7959**	**3.0000e-003**		**128.8708**

3.3 Grading - 2031

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.8082	0.0000	4.8082	2.5940	0.0000	2.5940			0.0000			0.0000
Off-Road	3.4271	14.0038	23.7423	0.0727		0.4947	0.4947		0.4947	0.4947	0.0000	7,598.2644	7,598.2644	0.3044		7,605.8741
Total	**3.4271**	**14.0038**	**23.7423**	**0.0727**	**4.8082**	**0.4947**	**5.3029**	**2.5940**	**0.4947**	**3.0887**	**0.0000**	**7,598.2644**	**7,598.2644**	**0.3044**		**7,605.8741**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9800e-003	0.0687	0.0204	2.6000e-004	0.0126	8.0000e-005	0.0126	3.3900e-003	8.0000e-005	3.4700e-003		28.4598	28.4598	1.3600e-003		28.4937
Worker	0.0272	0.0144	0.2400	1.0100e-003	0.2533	6.7000e-004	0.2539	0.0648	6.2000e-004	0.0655		100.3362	100.3362	1.6400e-003		100.3771
Total	**0.0292**	**0.0831**	**0.2604**	**1.2700e-003**	**0.2658**	**7.5000e-004**	**0.2666**	**0.0682**	**7.0000e-004**	**0.0689**		**128.7959**	**128.7959**	**3.0000e-003**		**128.8708**

3.3 Grading - 2032

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1643	0.0000	6.1643	3.3256	0.0000	3.3256			0.0000			0.0000
Off-Road	3.4271	14.0038	23.7423	0.0727		0.4947	0.4947		0.4947	0.4947		7,598.2644	7,598.2644	0.3044		7,605.8741
Total	**3.4271**	**14.0038**	**23.7423**	**0.0727**	**6.1643**	**0.4947**	**6.6590**	**3.3256**	**0.4947**	**3.8203**		**7,598.2644**	**7,598.2644**	**0.3044**		**7,605.8741**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9600e-003	0.0682	0.0203	2.6000e-004	7.3300e-003	8.0000e-005	7.4100e-003	2.1100e-003	8.0000e-005	2.1900e-003		28.4023	28.4023	1.3500e-003		28.4361
Worker	0.0252	0.0131	0.2254	9.8000e-004	0.1355	6.3000e-004	0.1361	0.0359	5.8000e-004	0.0365		98.2950	98.2950	1.5000e-003		98.3324
Total	**0.0272**	**0.0813**	**0.2457**	**1.2400e-003**	**0.1428**	**7.1000e-004**	**0.1435**	**0.0380**	**6.6000e-004**	**0.0387**		**126.6974**	**126.6974**	**2.8500e-003**		**126.7685**

3.3 Grading - 2032

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.8082	0.0000	4.8082	2.5940	0.0000	2.5940			0.0000			0.0000
Off-Road	3.4271	14.0038	23.7423	0.0727		0.4947	0.4947		0.4947	0.4947	0.0000	7,598.2644	7,598.2644	0.3044		7,605.8741
Total	**3.4271**	**14.0038**	**23.7423**	**0.0727**	**4.8082**	**0.4947**	**5.3029**	**2.5940**	**0.4947**	**3.0887**	**0.0000**	**7,598.2644**	**7,598.2644**	**0.3044**		**7,605.8741**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9600e-003	0.0682	0.0203	2.6000e-004	0.0126	8.0000e-005	0.0126	3.3900e-003	8.0000e-005	3.4700e-003		28.4023	28.4023	1.3500e-003		28.4361
Worker	0.0252	0.0131	0.2254	9.8000e-004	0.2533	6.3000e-004	0.2539	0.0648	5.8000e-004	0.0654		98.2950	98.2950	1.5000e-003		98.3324
Total	**0.0272**	**0.0813**	**0.2457**	**1.2400e-003**	**0.2658**	**7.1000e-004**	**0.2665**	**0.0682**	**6.6000e-004**	**0.0689**		**126.6974**	**126.6974**	**2.8500e-003**		**126.7685**

3.3 Grading - 2033

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1643	0.0000	6.1643	3.3256	0.0000	3.3256			0.0000			0.0000
Off-Road	3.4271	14.0038	23.7423	0.0727		0.4947	0.4947		0.4947	0.4947		7,598.2644	7,598.2644	0.3044		7,605.8741
Total	**3.4271**	**14.0038**	**23.7423**	**0.0727**	**6.1643**	**0.4947**	**6.6590**	**3.3256**	**0.4947**	**3.8203**		**7,598.2644**	**7,598.2644**	**0.3044**		**7,605.8741**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9500e-003	0.0678	0.0202	2.6000e-004	7.3300e-003	8.0000e-005	7.4100e-003	2.1100e-003	7.0000e-005	2.1800e-003		28.3562	28.3562	1.3400e-003		28.3897
Worker	0.0235	0.0121	0.2129	9.7000e-004	0.1355	5.8000e-004	0.1361	0.0359	5.4000e-004	0.0365		96.5037	96.5037	1.3800e-003		96.5381
Total	**0.0254**	**0.0799**	**0.2332**	**1.2300e-003**	**0.1428**	**6.6000e-004**	**0.1435**	**0.0380**	**6.1000e-004**	**0.0386**		**124.8599**	**124.8599**	**2.7200e-003**		**124.9278**

3.3 Grading - 2033

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.8082	0.0000	4.8082	2.5940	0.0000	2.5940			0.0000			0.0000
Off-Road	3.4271	14.0038	23.7423	0.0727		0.4947	0.4947		0.4947	0.4947	0.0000	7,598.2644	7,598.2644	0.3044		7,605.8741
Total	**3.4271**	**14.0038**	**23.7423**	**0.0727**	**4.8082**	**0.4947**	**5.3029**	**2.5940**	**0.4947**	**3.0887**	**0.0000**	**7,598.2644**	**7,598.2644**	**0.3044**		**7,605.8741**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9500e-003	0.0678	0.0202	2.6000e-004	0.0126	8.0000e-005	0.0126	3.3900e-003	7.0000e-005	3.4700e-003		28.3562	28.3562	1.3400e-003		28.3897
Worker	0.0235	0.0121	0.2129	9.7000e-004	0.2533	5.8000e-004	0.2539	0.0648	5.4000e-004	0.0654		96.5037	96.5037	1.3800e-003		96.5381
Total	**0.0254**	**0.0799**	**0.2332**	**1.2300e-003**	**0.2658**	**6.6000e-004**	**0.2665**	**0.0682**	**6.1000e-004**	**0.0689**		**124.8599**	**124.8599**	**2.7200e-003**		**124.9278**

3.3 Grading - 2034

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					6.1643	0.0000	6.1643	3.3256	0.0000	3.3256			0.0000			0.0000
Off-Road	3.4271	14.0038	23.7423	0.0727		0.4947	0.4947		0.4947	0.4947		7,598.2644	7,598.2644	0.3044		7,605.8741
Total	**3.4271**	**14.0038**	**23.7423**	**0.0727**	**6.1643**	**0.4947**	**6.6590**	**3.3256**	**0.4947**	**3.8203**		**7,598.2644**	**7,598.2644**	**0.3044**		**7,605.8741**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9400e-003	0.0674	0.0202	2.6000e-004	7.3300e-003	8.0000e-005	7.4100e-003	2.1100e-003	7.0000e-005	2.1800e-003		28.3211	28.3211	1.3300e-003		28.3544
Worker	0.0221	0.0112	0.2007	9.5000e-004	0.1355	5.5000e-004	0.1360	0.0359	5.0000e-004	0.0364		94.9252	94.9252	1.2600e-003		94.9567
Total	**0.0240**	**0.0786**	**0.2209**	**1.2100e-003**	**0.1428**	**6.3000e-004**	**0.1434**	**0.0380**	**5.7000e-004**	**0.0386**		**123.2463**	**123.2463**	**2.5900e-003**		**123.3111**

3.3 Grading - 2034

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					4.8082	0.0000	4.8082	2.5940	0.0000	2.5940			0.0000			0.0000
Off-Road	3.4271	14.0038	23.7423	0.0727		0.4947	0.4947		0.4947	0.4947	0.0000	7,598.2644	7,598.2644	0.3044		7,605.8741
Total	**3.4271**	**14.0038**	**23.7423**	**0.0727**	**4.8082**	**0.4947**	**5.3029**	**2.5940**	**0.4947**	**3.0887**	**0.0000**	**7,598.2644**	**7,598.2644**	**0.3044**		**7,605.8741**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	1.9400e-003	0.0674	0.0202	2.6000e-004	0.0126	8.0000e-005	0.0126	3.3900e-003	7.0000e-005	3.4700e-003		28.3211	28.3211	1.3300e-003		28.3544
Worker	0.0221	0.0112	0.2007	9.5000e-004	0.2533	5.5000e-004	0.2538	0.0648	5.0000e-004	0.0653		94.9252	94.9252	1.2600e-003		94.9567
Total	**0.0240**	**0.0786**	**0.2209**	**1.2100e-003**	**0.2658**	**6.3000e-004**	**0.2665**	**0.0682**	**5.7000e-004**	**0.0688**		**123.2463**	**123.2463**	**2.5900e-003**		**123.3111**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	3.4576	19.2026	45.5509	0.2362	45.6914	0.1169	45.8083	11.7587	0.1086	11.8672		24,239.4565	24,239.4565	0.9235		24,262.5433
Unmitigated	3.4576	19.2026	45.5509	0.2362	45.6914	0.1169	45.8083	11.7587	0.1086	11.8672		24,239.4565	24,239.4565	0.9235		24,262.5433

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
City Park	2,100.00	3,500.00	3500.00	8,278,652	8,278,652
Parking Lot	0.00	0.00	0.00		
Total	2,100.00	3,500.00	3,500.00	8,278,652	8,278,652

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
City Park	18.50	10.10	7.90	33.00	48.00	19.00	66	28	6
Parking Lot	18.50	10.10	7.90	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.539854	0.043743	0.210883	0.115969	0.013375	0.006440	0.022010	0.036531	0.002703	0.001629	0.005324	0.000732	0.000807
City Park	0.539854	0.043743	0.210883	0.115969	0.013375	0.006440	0.022010	0.036531	0.002703	0.001629	0.005324	0.000732	0.000807

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
City Park	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.3554	3.3000e-004	0.0366	0.0000		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		0.0788	0.0788	2.0000e-004		0.0839
Unmitigated	0.3554	3.3000e-004	0.0366	0.0000		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		0.0788	0.0788	2.0000e-004		0.0839

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	6.7000e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3454					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.3400e-003	3.3000e-004	0.0366	0.0000		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		0.0788	0.0788	2.0000e-004		0.0839
Total	**0.3554**	**3.3000e-004**	**0.0366**	**0.0000**		**1.3000e-004**	**1.3000e-004**		**1.3000e-004**	**1.3000e-004**		**0.0788**	**0.0788**	**2.0000e-004**		**0.0839**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	6.7000e-003					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	0.3454					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	3.3400e-003	3.3000e-004	0.0366	0.0000		1.3000e-004	1.3000e-004		1.3000e-004	1.3000e-004		0.0788	0.0788	2.0000e-004		0.0839
Total	**0.3554**	**3.3000e-004**	**0.0366**	**0.0000**		**1.3000e-004**	**1.3000e-004**		**1.3000e-004**	**1.3000e-004**		**0.0788**	**0.0788**	**2.0000e-004**		**0.0839**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
Tractors/Loaders/Backhoes	1	8.00	260	97	0.37	Diesel

UnMitigated/Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Equipment Type	lb/day										lb/day					
Tractors/Loaders/ Backhoes	0.1633	0.9628	2.3440	3.8000e-003		0.0127	0.0127		0.0127	0.0127		359.7283	359.7283	0.0146		360.0923
Total	**0.1633**	**0.9628**	**2.3440**	**3.8000e-003**		**0.0127**	**0.0127**		**0.0127**	**0.0127**		**359.7283**	**359.7283**	**0.0146**		**360.0923**

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Appendix C

2017 Biological Resources Technical Report

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN – PHASE II

Biological Resources Technical Report

Prepared for:

County of Los Angeles
Department of Parks and Recreation
510 S. Vermont Ave.
Los Angeles, CA 90020

Prepared by:

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November 2, 2017

SECTION ES
EXECUTIVE SUMMARY

This Biological Resource Technical Report addresses potential impacts to biological resources that could result from proposed work associated with the Santa Susana Mountains Trails Master Plan (Trails Master Plan), including Phase II (SSMTMP-PII), located within unincorporated Los Angeles County, California. This biological resource study is based on desktop analysis conducted for the Trails Master Plan Study Area and a pedestrian survey of the Johnson Motorway Trail Area, which is a component of Phase I of the larger Trails Master Plan Area. Impacts on biological resources were considered in relation to the seven thresholds articulated in Appendix G of the California Environmental Quality Act Guidelines (State CEQA Guidelines) and the County of Los Angeles Department of Parks and Recreation's Environmental Checklist Form.

Listed, Sensitive, and Locally Important Species

Listed, sensitive, and locally important plant and wildlife species have the potential to be present throughout the project area. The construction of trails may result in impacts to these species either directly or through habitat conservation. Implementation of Mitigation Measure BIO-1 would reduce impacts to below the level of significance.

Riparian and State Sensitive Plant Communities

State sensitive and riparian plant communities have the potential to be present throughout the project area. The construction of trails may result in impacts to these plant communities through removal or disturbance. Implementation of Mitigation Measures BIO-1 and BIO-2 would reduce impacts to below the level of significance.

Federally Protected Wetlands and Waterways

Federally and state-protected wetlands and waterways have the potential to be present throughout the project area. The construction of trails may result in impacts to these wetlands and waterways through ground disturbing and fill activities. Implementation of Mitigation Measures BIO-1 and BIO 2 would reduce impacts to below the level of significance.

Migratory Corridors and Nursery Sites

The project area is located within areas of native wildlife movement and native wildlife nursery sites have the potential to be present throughout the area. The construction of trails may result in impacts due to the disruption of wildlife movement and disturbance of nursery sites. Implementation of Mitigation Measures BIO-1, BIO-2, and BIO-3 would reduce impacts to below the level of significance.

Oak and Native Woodlands

Oak and other native woodlands have the potential to be present throughout the project area. The construction of trails and supporting facilities may result in impacts to these woodlands through removal or disturbance. Implementation of Mitigation Measures BIO-1, BIO-2, BIO-3, and BIO-4 would reduce impacts to below the level of significance.

General Plans and Policies

The proposed project would result in no impacts to biological resources related to conflicts with any local policies or ordinances protecting biological resources. Therefore, no mitigation measures would be required.

Habitat Conservation Plans and Natural Community Conservation Plans

There are no Habitat Conservation Plans or Natural Community Conservation Plans with boundaries that intersect the project area. Therefore, the proposed project would result in no impacts related to conflicts with the provision of adopted state, regional, or local habitat conservation plans, and no mitigation measures are required.

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SECTION 1.0
INTRODUCTION

This Biological Resource Technical Report (BRTR) has been prepared to support the County of Los Angeles (County) Department of Parks and Recreation (DPR) in the development of Phase II of the Santa Susana Mountains Trails Master Plan (SSMTMP), located within unincorporated Los Angeles County, California.

1.1 CEQA COMPLIANCE

DPR proposes to complete Phase II of the SSMTMP (SSMTMP-PII), ultimately to amend the Parks and Recreation Element of the Los Angeles County General Plan 2035. The SSMTMP-PII would guide public and private development of trails and thus constitutes a project pursuant to the California Environmental Quality Act (CEQA).

1.2 PURPOSE

This BRTR serves two purposes: (1) to provide information regarding biological resources to inform the planning process; and (2) to provide the substantial evidence required with respect to biological resources for consideration of the potential for environmental effects under CEQA. The BRTR provides information that supports the planning process in two ways: First, it provides information regarding sensitive biological resources that need to be safeguarded from human intrusion, such as occupied habitat for sensitive species. Second, it provides information regarding biological resources that can support the recreation user experience, or provide educational opportunities that can be integrated into the project design. The BRTR provides information in relation to the biological resource areas identified in Appendix G of the State CEQA Guidelines.

1.3 INTENDED AUDIENCE

This BRTR provides information for consideration by DPR and the design team, Alta Planning + Design, engaged in the development of the SSMTMP-PII. The substantial evidence will be available for the responsible and trustee agencies, and the public, including property owners, during circulation of the draft environmental document for public review. Ultimately, the BRTR will be used by the County Board of Supervisors to support their decision-making process related to the SSMTMP-PII. The BRTR will also inform the County and private parties in the ultimate development, operation, and maintenance of trails in the plan area.

1.4 SCOPE

In May 2015, the County adopted the first phase of the Santa Susana Mountains Trails Master Plan (SSMFTMP), which involved the extension of the 35.7 miles of existing County-, City-, and Conservancy-managed trails in the Phase I and Phase II study areas by approximately 35.9 miles with 22 proposed trail segments, for a total of approximately 71.5 miles of trails within the SSMFTMP Area. In 2017, the County initiated planning efforts for further development of the Phase II study area, which has been expanded to Phase II.a and II.b. This assessment is based on literature and database review to determine rare, threatened species, as well as locally important species that have the potential to be present within or adjacent to the project area, state-designated sensitive habitats, wetlands and other waters of the United States, migratory corridors, resources afforded

additional protection pursuant to the Los Angeles County 2035 General Plan, and Habitat Conservation Plan (HCP) and Natural Community Conservation Plan (NCCP) areas.

1.5 SOURCES OF RELEVANT INFORMATION

Information used in the preparation of this BRTR was derived from the California Natural Diversity Database (CNDDB), California Native Plant Society (CNPS), National Wetlands Inventory (NWI) database, California Department of Fish and Wildlife (CDFW), U.S. Fish and Wildlife Service (USFWS), Los Angeles County 2035 General Plan, and California Regional Conservation Plans. Sources of relevant information are cited in footnotes and compiled in Section 6, *References*.

1.6 WORKING DEFINITIONS

There are a number of technical terms used in the characterization of baseline conditions and assessment of the potential for the project to affect biological resources.

Federal Wetlands are defined by the U.S. Army Corps of Engineers (USACE) and the U.S. Environmental Protection Agency (EPA) 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. Wetlands generally include swamps, marshes, bogs, and similar areas."[1]

Federally Listed Species are those provided with special legal protection under the federal Endangered Species Act (ESA). A federally listed endangered species is a species that is in danger of extinction throughout all, or a significant portion, of its range. A federally threatened species is one likely to become endangered in the absence of special protection or management efforts provided by the listing. A candidate species is one that is proposed by the federal government for listing as endangered or threatened.

Habitat Conservation Plans are required by the USFWS as part of an application for an incidental "take" permit for species listed pursuant to the federal ESA. HCPs describe the anticipated effects of the proposed taking, how the impacts will be minimized and mitigated, and how the HCP is to be funded.

Natural Community Conservation Plans are defined by CDFW as plans for the conservation of natural communities that identify and provide for the regional or area-wide protection and perpetuation of plants, animals, and their habitats.

Nursery Sites are considered habitat in which native wildlife may establish nests, maternity roosts, dens, or otherwise engage in breeding and/or the rearing of offspring.

Sensitive Plant Communities are native plant communities listed on the CDFW Natural Communities List as being rare within California or threatened by human actions.

Sensitive Species are those not listed by the state government as endangered, threatened, or candidate species but categorized by the state as a species of special concern or fully protected species. A California species of special concern is defined by the CDFW as being a wildlife species

[1] U.S. Army Corps of Engineers. 1987. *Corps of Engineers Wetland Delineation Manual*. Vicksburg, MS.

that has declining population levels, a limited range, and/or continuing threats that have made it vulnerable to extinction. For the purpose of this BRTR, those plant species recognized by the CNPS are considered sensitive species (Rare Plant Rank 1A, 1B, 2A, 2B, 3, or 4) [2] This designation also includes those species listed on the California Special Animals list that are not otherwise covered by other regulations.[3] It also includes species afforded protection by the County General Plan, such as some native oak trees.

Special Status Species are those afforded special recognition by federal, state, and/or local resource agencies or jurisdictions, or recognized resource conservation organizations. Special status plant and wildlife species include those federally listed or state listed as endangered, threatened, or candidate species pursuant to the federal ESA, the California ESA, or other regulations enforced by a federal or state agency (such as the Bureau of Land Management [BLM] or U.S. Forest Service [USFS]); or those considered by the scientific community to be rare. For this BRTR, special status species include listed, sensitive, and locally important species.

Species of Special Concern are species, subspecies, or distinct population of an animal (bird, mammal, fish, reptile, and amphibian) native to California that currently satisfies one or more of the following criteria: (1) is extirpated from the State or, in the case of birds, in its primary seasonal or breeding role; (2) is listed as federally-, but not State-, threatened or endangered; (3) meets the State definition of threatened or endangered but has not formally been listed; (4) is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status; (5) has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status.

State Wetlands/Streams are defined by the California Fish and Game Code. A *stream* is defined as a body of water that flows at least periodically, or intermittently, through a bed or channel having banks and supporting fish or other aquatic life. *Wetlands* are defined as areas having riparian vegetation, without regard to wetland vegetation, soils, or hydrology.

State-listed Species are those provided with special legal protection under the California ESA. A state-listed endangered species is a species that is in danger of extinction throughout all, or a significant portion, of its range. A state-listed threatened species is one likely to become endangered in the absence of special protection or management efforts provided by the listing. A candidate species is one that is proposed by the federal or state government for listing as endangered or threatened.

Streams as defined by Mulholland Scenic Parkway Specific Plan are defined as: "The streams protected by the Specific Plan are those water courses designated by the USGS and shown on the maps available for viewing at the Department of City Planning's Van Nuys office and the Department's web site. A stream may include a water course having a surface or subsurface flow that supports or has supported riparian vegetation."[4,5]

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[2] California Native Plant Society (CNPS). 2014. Inventory of Rare and Endangered Plants (online edition, v8-02). California Native Plant Society. Sacramento, CA. Available at: http://www.rareplants.cnps.org

[3] California Department of Fish and Game, Biogeographic Data Branch. Accessed December 2014. Rarefind 5: A Database Application for the Use of the California Department of Fish and Game Natural Diversity Database. Sacramento, CA.

[4] City of Los Angeles, City Planning Commission. 22 May 2003. *Mulholland Scenic Parkway Specific Plan: Design and*

Waters of the United States are defined as surface waters such as navigable waters and their tributaries, all interstate waters and their tributaries, natural lakes, all wetlands adjacent to other waters, and all impoundments of these waters. On April 21, 2014, the EPA proposed to refine the definition of waters of the United States to include all tributaries of traditional navigable waters, interstate waters, territorial seas, and impoundments of such tributaries; wetlands adjacent to the foregoing; and waters other than wetlands that are adjacent to other jurisdictional waters.[6]

Wildlife Movement Corridors are characterized as areas of habitat that are used by wildlife for the purpose of moving between locations.

Preservation Guidelines. Los Angeles, CA.

[5] City of Los Angeles, Planning Department. 13 May 1992. *Mulholland Scenic Parkway Specific Plan*. Los Angeles, CA.

[6] *Federal Register*. Vol. 79, No. 76, Monday April 21, 2014. Proposed Rules. Available at: http://www.gpo.gov/fdsys/pkg/FR-2014-04-21/pdf/2014-07142.pdf

SECTION 2.0
PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The Trails Master Plan (approximately 49 square miles) is located north and west of the San Fernando Valley in the Santa Susana Mountains, in the western portion of the unincorporated area of the County of Los Angeles (Figure 2.1-1, *Regional Vicinity Map*). The Santa Susana Mountains are centrally located in the Transverse Ranges, a group of east-west trending mountains paralleling the Pacific Ocean between Santa Barbara and San Diego Counties. The proposed designation and improvement of a portion of the Johnson Motorway Trail is an element of the first phase of the Trails Master Plan (SSMFTMP).

2.2 TRAILS MASTER PLAN STUDY AREA

Phase I Area. The northern boundary of the Trails Master Plan – Phase I is defined by the southern limits of the Newhall Ranch Specific Plan Area and the northern limits of the proposed Santa Susana Mountains / Simi Hills Significant Ecological Area (SEA). The southern boundary is defined by the northern limit of the City of Los Angeles. The eastern boundary is defined by U.S. Interstate 5 (I-5). The western boundary is defined by the corporate boundary between Los Angeles and Ventura Counties (Figure 2.2-1, *Trails Master Plan Location*). The SSMFTMP is divided into two subareas or phases (see Figure 2.2-1). Phase I is the Northwest San Fernando Valley Study Area, and Phase II is the Southwest Santa Clarita Valley Study Area. Phase I includes 16,038.1 acres (25.1 square miles); the northern boundary is defined by the northern limits of the Los Angeles County Oat Mountain Planning Area, the southern boundary is defined by the northern limit of the City of Los Angeles, the eastern boundary is defined by the I-5 freeway, and the western boundary is defined by the boundary between Los Angeles and Ventura Counties.

Phase II Area. Phase II includes 8,084.4 acres (12.6 square miles). The northern boundary is defined by the northern limits of the proposed Santa Susana Mountains / Simi Hills SEA. The southern boundary is defined by the southern limits of the proposed Santa Susana Mountains / Simi Hills SEA. The eastern boundary is defined by the I-5 freeway. The western boundary is defined by the southern and eastern boundaries of the Newhall Ranch Specific Plan area.

The Trails Master Plan – Phase II has been expanded beyond the spatial extents of Phase II in the SSMFTMP and also divided into two subareas. The Phase II.a area is an approximately 22-square-mile area located in the north-facing slopes of the Santa Susana Mountains and the Santa Clarita Valley that is bound by Henry Mayo Drive (State Route [SR] 126) to the north, the I-5 freeway to the east, Phase I of the adopted SSMFTMP Area to the south, and the Newhall Ranch Specific Plan Area to the west. The Phase II.b area is an approximately 2-square-mile area located in the foothills of the Santa Monica Mountains, including Bell Canyon, Dayton Canyon, and Woolsey Canyon, west of the San Fernando Valley, that is bound by Ventura County to the north and west and the City of Los Angeles to the east and south.

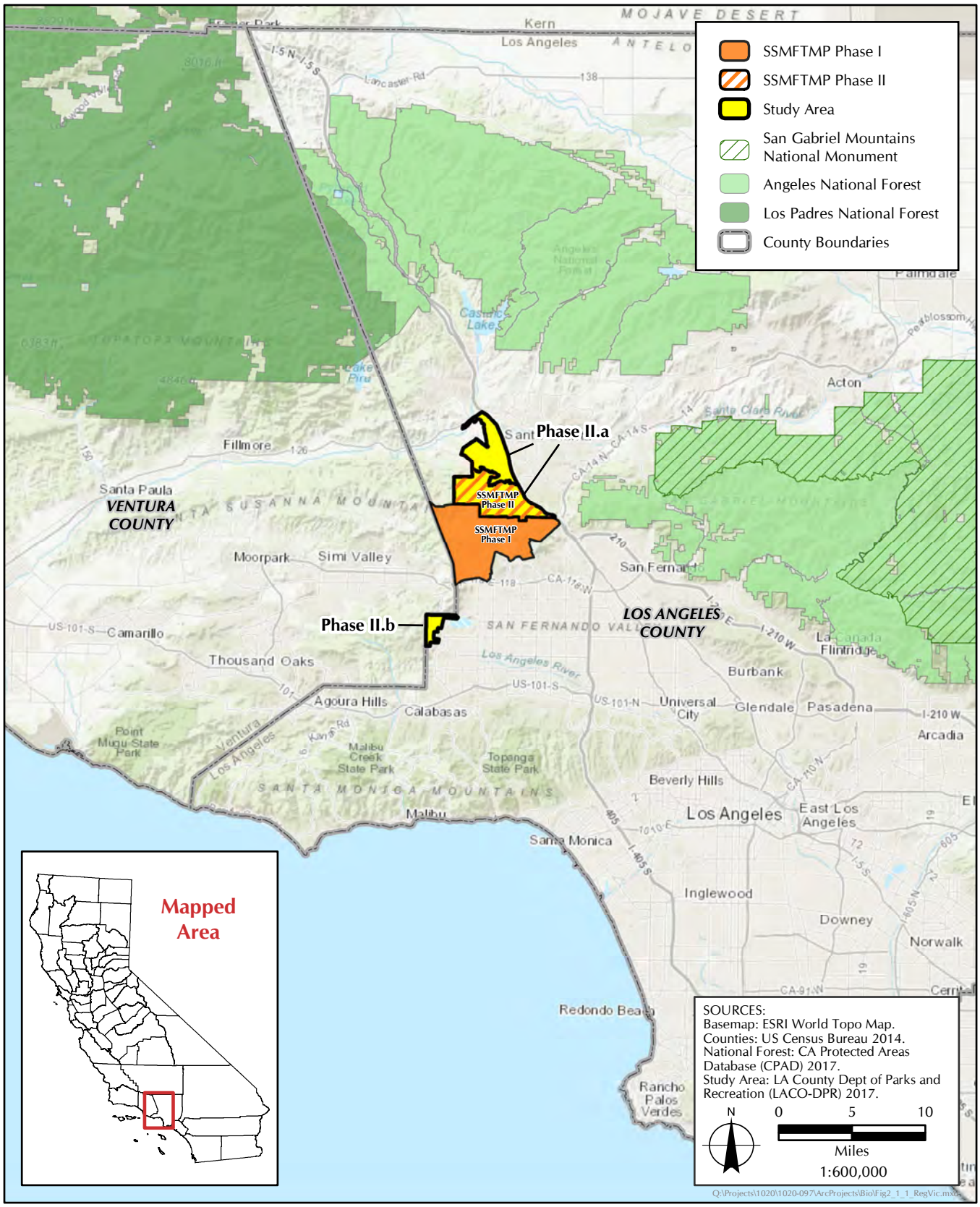

FIGURE 2.1-1

Regional Vicinity Map

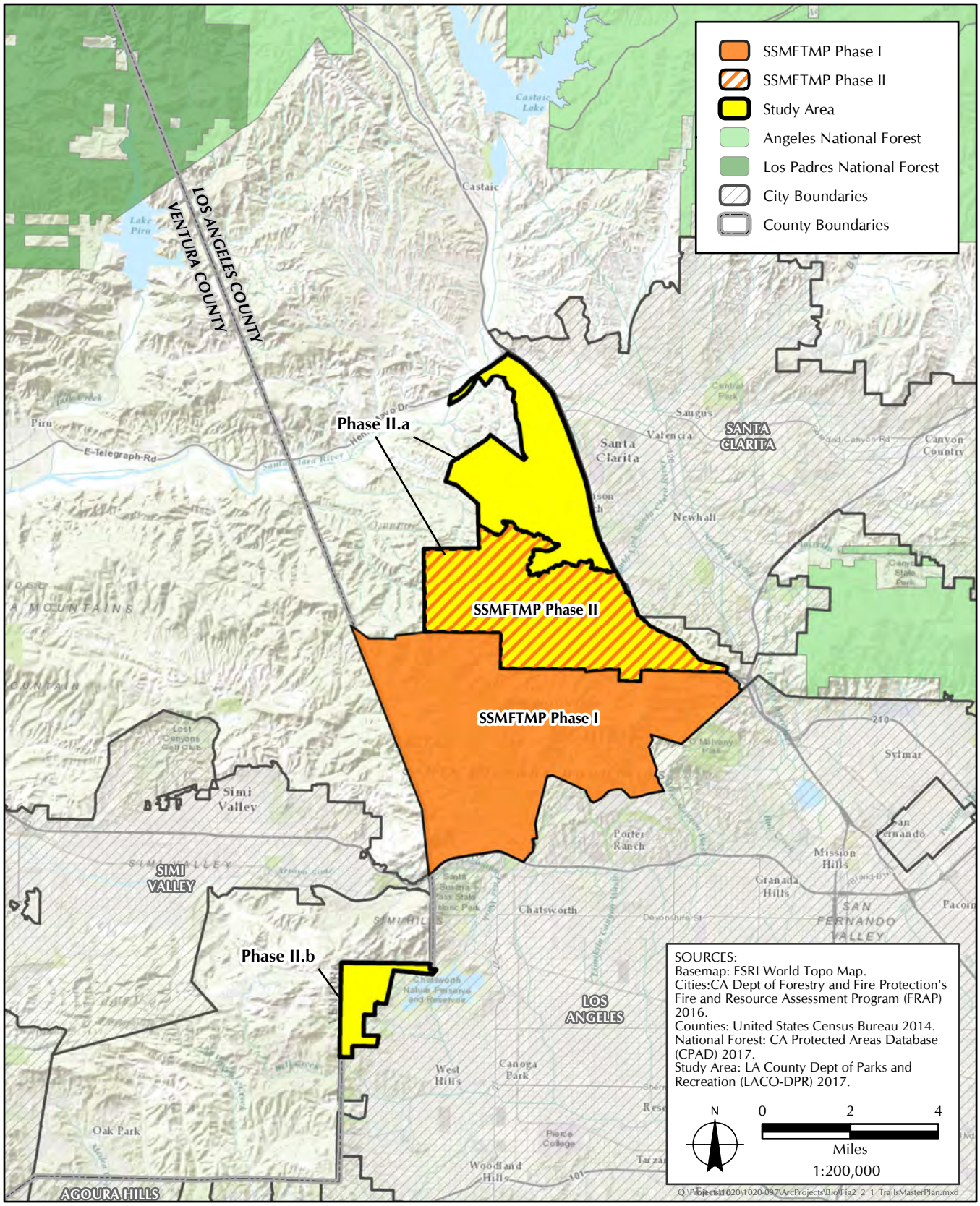

FIGURE 2.2-1

Trails Master Plan Location

Topography. The Trails Master Plan is located in the U.S. Geological Survey (USGS) 7.5-minute series, Newhall, Oat Mountain, Simi Valley East, and Val Verde, California, topographic quadrangles[7,8] and includes portions of Township 2 North, Range 16 West (San Bernardino Baseline and Meridian [SBB&M]); Sections 6 and 7, Township 2 North, Range 17 West (SBB&M), Sections 1, 2, 11, and 12; Township 3 North, Range 16 West (SBB&M), Sections 4–10, 13–24, and 26–34; and Township 3 North, Range 17 West (SBB&M), Sections 1, 2, 11–15, 22–27, and 34–36 (Figure 2.2-2, *Topographic Map with USGS 7.5-minute Quadrangle Index*). Phase I of the Trails Master Plan is located on the USGS 7.5-minute series Simi Valley East and Oat Mountain topographic quadrangles. Phase II of the Trails Master Plan is located on the Val Verde, Newhall, Simi Valley East (Santa Susana), Oat Mountain, and Calabasas topographic quadrangles. Situated along the southern flanks of the Santa Susana Mountains, the topography of the Trails Master Plan is characterized by a series of southwest draining canyons that are separated by steep-sloped and narrow ridge tops. The Trails Master Plan has elevations that range from 946 to 3,400 feet above mean sea level (msl). Vegetation in the area is characterized by Sage and Chaparral plant communities with scattered yucca plants. Although small areas of exposed bedrock are seen along the trail corridor, much of the proposed project area is characterized by thick vegetative coverage, which is particularly dense in the canyon bottoms and at lower elevations.

2.3 PROJECT SUMMARY

The SSMTMP-PII will guide future trail development and recommend improvements to existing trails. The Trails Master Plan will provide trail users and local populations with seamless transitions throughout the proposed study area to trails of adjacent jurisdictions and prime destinations within and adjacent to the study area. The goals of the plan are to:

1. Develop a complete multi-use trail system connecting user groups and local populations to desired recreation destinations and experiences, with seamless transitions to the trails of adjacent jurisdictions, compatibility with adjacent land uses and environmental resources, and a safe and sustainable design that is consistent with the County of Los Angeles Trails Manual.

2. Develop a recreational trail system that supports low-intensity use, including mountain biking, equestrian use, and hiking, to accommodate the population increase anticipated in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area through the 2035 planning horizon consistent with the Parks and Recreation Element of the Los Angeles County General Plan 2035.

The overall work efforts will include a trails master plan and associated CEQA documentation. Individual trail alignments would be developed at a later phase of this project, which is intended to provide a trail planning framework for the study area.

[7] U.S. Geological Survey. 1969. *7.5-Minute Series, Oat Mountain, California, Topographic Quadrangle*. Scale 1:24,000. Reston, VA.

[8] U.S. Geological Survey. 1969. *7.5-Minute Series, Willow Springs, California, Topographic Quadrangle*. Reston, VA.

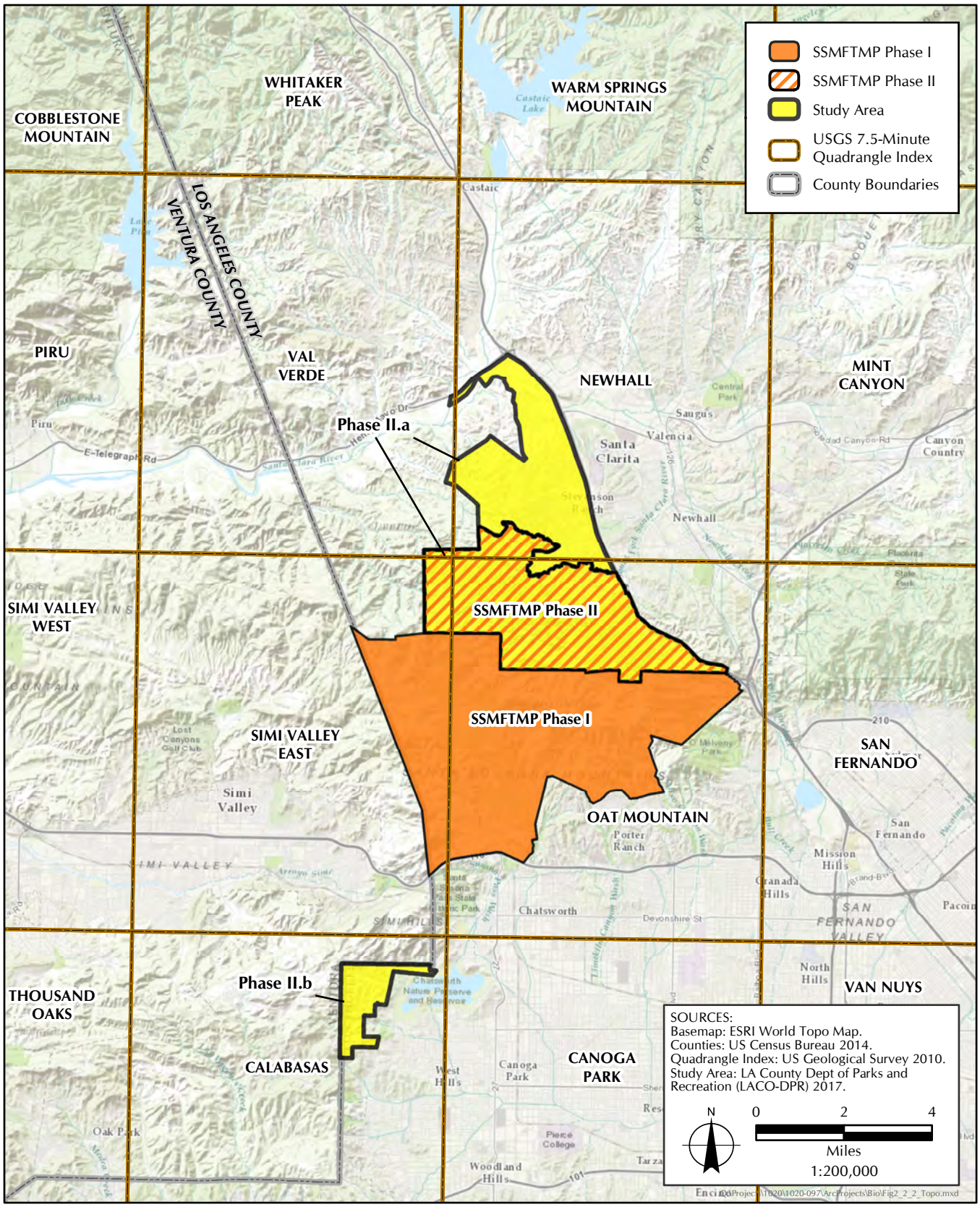

FIGURE 2.2-2

Topographic Map with USGS 7.5 Minute Quadrangle Index

Project Elements

The SSMTMP-PII involves approximately 70 miles of proposed new multi-use trails in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area. The trails would be multi-use and range from 3 to 12 feet wide based on site conditions, with adequate space for combined pedestrian, equestrian, and mountain biking use, in accordance with the County Trails Manual guidelines. The proposed trails would provide connections to the proposed Rim of the Valley Trail, trails in the City of Los Angeles, trails in the City of Santa Clarita, trails in the Newhall Ranch Specific Plan area, and trails within other jurisdictions as identified in the Trails Master Plan. The SSMTMP-PII identifies up to 20 potential locations for proposed facilities, including 4 trailheads, 2 bike skills areas, 2 equestrian parks, 8 trailhead and staging areas, and 4 additional trailheads within the City of Los Angeles that would need to be developed by the City of Los Angeles. As the recommended City of Los Angeles trailheads would not be developed under jurisdiction of the County, this Report considers the 16 proposed facilities located within the SSMTMP-PII study area.

SECTION 3.0
REGULATORY FRAMEWORK

3.1 FEDERAL

Federal Endangered Species Act

The federal ESA defines listed species as "endangered" or "threatened" and provides regulatory protection for listed species. The federal ESA provides a program for conservation and recovery of threatened and endangered species; it also ensures the conservation of designated critical habitat that the USFWS has determined is required for the survival and recovery of these listed species. Section 9 of the federal ESA prohibits the "take" of species listed by USFWS as threatened or endangered. Take is defined as follows: "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in such conduct." In recognition that take cannot always be avoided, Section 10(a) of the federal ESA includes provisions for take that is incidental to, but not the purpose of, otherwise lawful activities. Section 10(a)(1)(B) permits (incidental take permits) may be issued if take is incidental and does not jeopardize the survival and recovery of the species. An HCP must accompany an application for an incidental take permit. The purpose of the HCP planning process associated with the permit is to ensure there is adequate minimizing and mitigating of the effects of the authorized incidental take. As defined in the federal ESA, individuals, organizations, states, local governments, and other nonfederal entities are affected by the designation of critical habitat only if their actions occur on federal lands; require a federal permit, license, or other authorization; or involve federal funding.

Migratory Bird Treaty Act (MBTA)

The MBTA makes it unlawful to pursue, capture, kill, or possess any migratory bird or part, nest, or egg of any such bird listed in wildlife protection treaties between the United States, Great Britain, Mexico, Japan, and Russia (formerly the Soviet Union). Similar to the federal ESA, the MBTA authorizes the Secretary of the Interior to issue permits for incidental take.

Bald and Golden Eagle Protection Act (BGEPA)

The purpose of the federal BGEPA (16 USC 668–668c, as amended) that is administered by the USFWS protects bald and golden eagles, their nests, eggs, and parts. The BGEPA prohibits the "take" of bald and golden eagles unless pursuant to regulations. Take is defined by the BGEPA as an action "to pursue, shoot, shoot at, poison, wound, kill, capture, trap, collect, molest, or disturb (i.e., agitate or bother to a degree that causes injury, decreased productivity, or nest abandonment)." In addition, the National Bald Eagle Management Guidelines were published by the USFWS in May 2007 in conjunction with delisting the bald eagle to provide provisions to continue to protect bald eagles from harmful actions and impacts. Under the BGEPA, a final rule was published in May 2008 in the Federal Register that proposed authorization for take of bald eagles for those with existing authorization under the federal ESA where the bald eagle is covered in an HCP or the golden eagle is covered as a non-listed species.[9]

[9] Federal Register. 20 May 2008. Notices. 73(98): 29075–29084.

Section 404 of the Federal Clean Water Act

Section 404 of the federal Clean Water Act, which is administered by the USACE, regulates the discharge of dredged and fill material into Waters of the United States, which include surface waters such as navigable waters and their tributaries, all interstate waters and their tributaries, natural lakes, all wetlands adjacent to other waters, and all impoundments of these waters. USACE has established a series of nationwide permits that authorize certain activities in Waters of the United States, provided that a proposed activity can demonstrate compliance with standard conditions. Projects that result in the loss of less than the acreage specified by the applicable nationwide permit can normally be conducted pursuant to one of the nationwide permits, if consistent with the standard permit conditions. If the conditions of a nationwide permit cannot be met, or the project results in more than minimal adverse environmental impact, an individual permit may be required.

3.2 STATE

California Endangered Species Act

The California ESA (CESA) prohibits the take of listed species except as otherwise provided in State law. Unlike the federal ESA, CESA applies the take prohibitions to species petitioned for listing (state candidates). State lead agencies are required to consult with CDFW to ensure that any actions undertaken by that lead agency are not likely to jeopardize the continued existence of any state-listed species or result in destruction or degradation of required habitat. CDFW is authorized to enter into memoranda of understanding with individuals, public agencies, universities, zoological gardens, and scientific or educational institutions to import, export, take, or possess listed species for scientific, educational, or management purposes.

Sections 2080 and 2081 of the State Fish and Wildlife Code

Section 2080 of the State Fish and Wildlife Code (Code) states that "no person shall import into [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the [State Fish and Wildlife Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter, the Native Plant Protection Act, or the California Desert Native Plants Act."

Under Section 2081 of the Code, the CDFW may authorize individuals or public agencies to import, export, take, or possess, any state-listed endangered, threatened, or candidate species. These otherwise prohibited acts may be authorized through permits or memoranda of understanding if (1) the take is incidental to an otherwise lawful activity, (2) impacts of the authorized take are minimized and fully mitigated, (3) the permit is consistent with any regulations adopted pursuant to any recovery plan for the species, and (4) the applicant ensures adequate funding to implement the measures required by CDFW. CDFW shall make this determination based on the best scientific and other information that is reasonably available and shall include consideration of the species' capability to survive and reproduce.

Sections 3503 and 3503.5 of the State Fish and Wildlife Code

Sections 3503 and 3503.5 of the State Fish and Wildlife Code provide regulatory protection to resident and migratory birds and all birds of prey within the state. These sections prohibit take of nests and eggs unless other provided for by the State Fish and Wildlife Code.

Native Plant Protection Act

The Native Plant Protection Act includes measures to preserve, protect, and enhance rare and endangered native plants. The list of native plants afforded protection pursuant to the Native Plant Protection Act includes those listed as rare and endangered under the California ESA. The Native Plant Protection Act provides limitations on take as follows: "No person will import into this State, or take, possess, or sell within this State" any rare or endangered native plant, except in compliance with provisions of the act. Individual landowners are required to notify the CDFW at least 10 days in advance of changing land uses to allow the CDFW to salvage any rare or endangered native plant material.

Section 1600 of the State Fish and Wildlife Code

All diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California are subject to the regulatory authority of the CDFW pursuant to Sections 1600 through 1603 of the Code and require preparation of a Streambed Alteration Agreement. Pursuant to the Code, a *stream* is defined as a body of water that flows at least periodically, or intermittently, through a bed or channel having banks and supporting fish or other aquatic life. Based on this definition, a watercourse with surface or subsurface flows that support or have supported riparian vegetation is a stream and is subject to CDFW jurisdiction. Altered or artificial waterways valuable to fish and wildlife are subject to CDFW jurisdiction. The CDFW also has jurisdiction over dry washes that carry water ephemerally during storm events.

The CDFW has adopted the USFWS wetland definition as modified by the CDFW Guidance, as follows:

> The Commission concurs with the Department's recommendation to use the U.S. Fish and Wildlife Service's (USFWS) definition as the basis for wetland identification. When all three wetland indicators (i.e., hydric soils, wetland vegetation, and hydrology) are present, the presumption of wetland existence shall be conclusive. Where less than three indicators are present, policy application shall be supported by the demonstrable use of wetland areas by wetland-associated fish or wildlife resources, related biological activity, and wetland habitat values.
>
> The USFWS wetland identification system should be applied by professionals trained in its methodology. The accuracy of existing wetland inventory mapping should not necessarily be assumed. The Commission supports the Department's current practice of on-site inspections of projects which would impact wetlands and strongly encourages the Department to conduct on-site inspections of such projects and particularly whenever requested to do so by project proponents or concerned public agencies.[10]

[11] County of Los Angeles Department of Regional Planning. Adopted 6 October 2015. Los Angeles County 2035 General Plan: Chapter 9: Conservation and Natural Resources Element. Available online at: http://planning.lacounty.gov/assets/upl/project/gp_final-general-plan-ch9.pdf

State Senate Concurrent Resolution No. 17 – Relative to Oak Woodlands

The State Senate Concurrent Resolution No. 17, filed with the Secretary of State on September 1, 1989, states that any state agencies having land use planning duties and responsibilities shall assess the effects of their land use decisions or actions within any oak woodlands containing blue oak (*Quercus douglasii*), Engelmann oak (*Q. engelmannii*), valley oak (*Q. lobata*), or coast live oak (*Q. agrifolia*). The State Senate defines "oak woodland" as a 5-acre circular area containing five or more oak trees per acre. This resolution requires that state agencies must preserve and protect native oak woodlands to the maximum extent feasible or provide for replacement plantings where blue, Engelmann, valley, or coast live oak are removed from oak woodlands.

3.3 LOCAL

Los Angeles County General Plan 2035

The project area is located within the County of Los Angeles and subject to the provisions of the Los Angeles County General Plan 2035. The Conservation and Natural Resources Element of the General Plan 2035 has established two goals and 12 policies related to biological resources:[11]

Goal C/NR 3: Permanent, sustainable preservation of genetically and physically diverse biological resources and ecological systems including: habitat linkages, forests, coastal zone, riparian habitats, streambeds, wetlands, woodlands, alpine habitat, chaparral, shrublands, and Significant Ecological Areas. Topic Policy

- *Policy C/NR 3.1:* Conserve and enhance the ecological function of diverse natural habitats and biological resources.
- *Policy C/NR 3.2:* Create and administer innovative County programs incentivizing the permanent dedication of SEAs and other important biological resources as open space areas.
- *Policy C/NR 3.3:* Restore upland communities and significant riparian resources, such as degraded streams, rivers, and wetlands to maintain ecological function—acknowledging the importance of incrementally restoring ecosystem values when complete restoration is not feasible.
- *Policy C/NR 3.4:* Conserve and sustainably manage forests and woodlands.
- *Policy C/NR 3.5:* Ensure compatibility of development in the National Forests in conjunction with the U.S. Forest Service Land and Resource Management Plan.
- *Policy C/NR 3.6:* Assist state and federal agencies and other agencies, as appropriate, with the preservation of special status species and their associated habitat and wildlife movement corridors through the administration of the SEAs and other programs.
- *Policy C/NR 3.7:* Participate in inter-jurisdictional collaborative strategies that protect biological resources. Site Sensitive Design
- *Policy C/NR 3.8:* Discourage development in areas with identified significant biological resources, such as SEAs.

[11] County of Los Angeles Department of Regional Planning. Adopted 6 October 2015. Los Angeles County 2035 General Plan: Chapter 9: Conservation and Natural Resources Element. Available online at: http://planning.lacounty.gov/assets/upl/project/gp_final-general-plan-ch9.pdf

- *Policy C/NR 3.9:* Consider the following in the design of a project that is located within an SEA, to the greatest extent feasible:
  - Preservation of biologically valuable habitats, species, wildlife corridors and linkages;
  - Protection of sensitive resources on the site within open space;
  - Protection of water sources from hydro-modification in order to maintain the ecological function of riparian habitats;
  - Placement of the development in the least biologically sensitive areas on the site (prioritize the preservation or avoidance of the most sensitive biological resources onsite);
  - Design required open spaces to retain contiguous undisturbed open space that preserves the most sensitive biological resources onsite and/or serves to maintain regional connectivity;
  - Maintenance of watershed connectivity by capturing, treating, retaining, and/or infiltrating storm water flows on site; and
  - Consideration of the continuity of onsite open space with adjacent open space in project design.
- *Policy C/NR 3.10:* Require environmentally superior mitigation for unavoidable impacts on biologically sensitive areas, and permanently preserve mitigation sites.
- *Policy C/NR 3.11:* Discourage development in riparian habitats, streambeds, wetlands, and other native woodlands in order to maintain and support their preservation in a natural state, unaltered by grading, fill, or diversion activities.

Goal C/NR 4: Conserved and sustainably managed woodlands.

- *Policy C/NR 4.1:* Preserve and restore oak woodlands and other native woodlands that are conserved in perpetuity with a goal of no net loss of existing woodlands.

Santa Clarita Valley Area Plan

The Trails Master Plan Study Area is located within the Santa Clarita Valley and is subject to the 2012 Santa Clarita Valley Area Plan. The Conservation and Open Space Element of the Santa Clarita Valley Area Plan has seven objectives and 34 policies that cover biological resources:

Objective CO-3.1: In review of development plans and projects, encourage conservation of existing natural areas and restoration of damaged natural vegetation to provide for habitat and biodiversity.

- *Policy CO-3.1.1:* On the Land Use Map and through the development review process, concentrate development into previously developed or urban areas to promote infill development and prevent sprawl and habitat loss, to the extent feasible.
- *Policy CO-3.1.2:* Avoid designating or approving new development that will adversely impact wetlands, floodplains, threatened or endangered species and habitat, and water bodies supporting fish or recreational uses, and establish an adequate buffer area as deemed appropriate through site specific review.
- *Policy CO-3.1.3:* On previously undeveloped sites ("greenfields"), identify biological resources and incorporate habitat preservation measures into the site plan, where appropriate.

- *Policy CO-3.1.4:* For new development on sites with degraded habitat, include habitat restoration measures as part of the project development plan, where appropriate.
- *Policy CO-3.1.5:* Promote the use of site-appropriate native or adapted plant materials, and prohibit use of invasive or noxious plant species in landscape designs.
- *Policy CO-3.1.6:* On development sites, preserve and enhance natural site elements including existing water bodies, soil conditions, ecosystems, trees, vegetation and habitat, to the extent feasible.
- *Policy CO-3.1.7:* Limit the use of turf-grass on development sites and promote the use of native or adapted plantings to promote biodiversity and natural habitat.
- *Policy CO-3.1.8:* On development sites, require tree planting to provide habitat and shade to reduce the heat island effect caused by pavement and buildings.
- *Policy CO-3.1.9:* During construction, ensure preservation of habitat and trees designated to be protected through use of fencing and other means as appropriate, so as to prevent damage by grading, soil compaction, pollution, erosion or other adverse construction impacts.
- *Policy CO-3.1.10:* To the extent feasible, encourage the use of open space to promote biodiversity.
- *Policy CO-3.1.11:* Promote use of pervious materials or porous concrete on sidewalks to allow for planted area infiltration, allow oxygen to reach tree roots (preventing sidewalk lift-up from roots seeking oxygen), and mitigate tree sidewalk conflicts, in order to maintain a healthy mature urban forest.

Objective CO-3.2: Identify and protect areas which have exceptional biological resource value due to a specific type of vegetation, habitat, ecosystem, or location.

- *Policy CO-3.2.1:* Protect wetlands from development impacts, with the goal of achieving no net loss (or functional reduction) of jurisdictional wetlands within the planning area.
- *Policy CO-3.2.2:* Ensure that development is located and designed to protect oak and other significant indigenous woodlands.
- *Policy CO-3.2.3:* Ensure protection of any endangered or threatened species or habitat, in conformance with State and federal laws.
- *Policy CO-3.2.4:* Protect biological resources in the designated Significant Ecological Areas (SEAs) through the siting and design of development which is highly compatible with the SEA resources. Specific development standards shall be identified to control the types of land use, density, building location and size, roadways and other infrastructure, landscape, drainage, and other elements to assure the protection of the critical and important plant and animal habitats of each SEA. In general, the principle shall be to minimize the intrusion and impacts of development in these areas with sufficient controls to adequately protect the resources.

Objective CO-3.3: Protect significant wildlife corridors from encroachment by development that would hinder or obstruct wildlife movement.

- *Policy CO-3.3.1:* Protect the banks and adjacent riparian habitat along the Santa Clara River and its tributaries, to provide wildlife corridors.

- *Policy CO-3.3.2:* Cooperate with other responsible agencies to protect, enhance, and extend the Rim of the Valley trail system through Elsmere and Whitney Canyons, and other areas as appropriate, to provide both recreational trails and wildlife corridors linking the Santa Susana and San Gabriel Mountains.
- *Policy CO-3.3.3:* Identify and protect one or more designated wildlife corridors linking the Los Padres and Angeles National Forests through the Santa Clarita Valley (the San Gabriel-Castaic connection).
- *Policy CO-3.3.4:* Support the maintenance of Santa Clarita Woodlands Park, a critical component of a cross-mountain range wildlife habitat corridor linking the Santa Monica Mountains to the Angeles and Los Padres National Forests.
- *Policy CO-3.3.5:* Encourage connection of natural open space areas in site design, to allow for wildlife movement.

Objective CO-3.4: Ensure that development in the Santa Clarita Valley does not adversely impact habitat within the adjacent National Forest lands.

- *Policy CO-3.4.1:* Coordinate with the United States Forest Service on discretionary development projects that may have impacts on the National Forest.
- *Policy CO-3.4.2:* Consider principles of forest management in land use decisions for projects adjacent to the National Forest, including limiting the use of invasive species, discouraging off-road vehicle use, maintaining fuel modification zones and fire access roads, and other measures as appropriate, in accordance with the goals set forth in the Angeles National Forest Land Management Plan.
- *Policy CO-3.4.3:* On the Land Use Map, maintain low density rural residential and open space uses adjacent to forest land, and protect the urban-forest interface area from overdevelopment.
- *Policy CO-3.4.4:* Participate as a stakeholder in planning efforts by the United States Forest Service for land uses within the National Forest, providing input as appropriate.

Objective CO-3.5: Maintain, enhance, and manage the urban forest throughout developed portions of the Santa Clarita Valley to provide habitat, reduce energy consumption, and create a more livable environment.

- *Policy CO-3.5.1:* Continue to plant and maintain trees on public lands and within the public right-of-way to provide shade and walkable streets, incorporating measures to ensure that roots have access to oxygen at tree maturity, such as use of porous concrete.
- *Policy CO-3.5.2:* Where appropriate, promote planting of trees that are native or climactically appropriate to the surrounding environment, emphasizing oaks, sycamores, maple, walnut, and other native species in order to enhance habitat, and discouraging the use of introduced species such as eucalyptus, pepper trees, and palms except as ornamental landscape features.
- *Policy CO-3.5.3:* Pursuant to the requirements of the Zoning Ordinance, protect heritage oak trees that, due to their size and condition, are deemed to have exceptional value to the community.

Objective CO-3.6: Minimize impacts of human activity and the built environment on natural plant and wildlife communities.

- *Policy CO-3.6.1:* Minimize light trespass, sky-glow, glare, and other adverse impacts on the nocturnal ecosystem by limiting exterior lighting to the level needed for safety and comfort; reduce unnecessary lighting for landscaping and architectural purposes, and encourage reduction of lighting levels during non-business nighttime hours.
- *Policy CO-3.6.2:* Reduce impervious surfaces and provide more natural vegetation to enhance microclimates and provide habitat. In implementing this policy, consider the following design concepts:
  - Consideration of reduced parking requirements, where supported by a parking study and/or through shared use of parking areas;
  - Increased use of vegetated areas around parking lot perimeters; such areas should be designed as bioswales or as otherwise determined appropriate to allow surface water infiltration;
  - Use of connected open space areas as drainage infiltration areas in lieu of curbed landscape islands, minimizing the separation of natural and landscaped areas into isolated "islands"; and
  - Breaking up large expanses of paving with natural landscaped areas planted with shade trees to reduce the heat island effect, along with shrubs and groundcover to provide diverse vegetation for habitat.
- *Policy CO-3.6.3:* Restrict use of unauthorized off -road vehicles within sensitive habitat areas through signage, fencing, or other means as appropriate.
- *Policy CO-3.6.4:* Provide public information and support with demonstration sites at County facilities on gardening and landscaping techniques to reduce spread of invasive species and pollution from pesticides and fertilizers that threaten natural ecosystems.
- *Policy CO-3.6.5:* Ensure revegetation of graded areas and slopes adjacent to natural open space areas with native plants (consistent with fi re prevention requirements).

Objective CO-3.7: Provide public access to, and education about, natural habitats and ecosystems.

- *Policy CO-3.7.1:* Support the public education programs offered at the Placerita Canyon Nature Center and Ed Davis Park (Sonia Thompson Nature Center).
- *Policy CO-3.7.2:* Seek opportunities for partnerships with schools, non-profit organizations, and volunteers, to increase public access to and information about natural areas.

Newhall Ranch Specific Plan

A portion of the Trails Master Plan Study Area is within the Newhall Ranch area and is subject to the Newhall Ranch Specific Plan. There are five Resource Conservation Objectives within the Newhall Ranch Specific Plan that relate to biological resources:

Resource Conservation Objective 1: Protect wetland and endangered species in the Santa Clara River.

Resource Conservation Objective 2: Preserve the Santa Clara River Corridor and adjacent uplands containing significant natural resources for their resource value, *Open Area*, and recreational use.

Resource Conservation Objective 3: Retain major *Open Area* and its natural vegetation as a wildlife or ecological reserve.

Resource Conservation Objective 4: Preserve significant stands of oak trees.

Resource Conservation Objective 6: Identify and protect significant resources within the two Los Angeles County Significant Ecological Areas.

Los Angeles County Municipal Code Title 12, Chapter 12.36 – Wildflower Reserves

Title 12, Chapter 12.36 of the Los Angeles County Municipal Code states that a person, firm or corporation shall not drive, or allow the same to be driven, on or over any designated Wildflower Reserve Area during any portion of the period from February 1st to April 15th, inclusive, or May 1st to July 15th, inclusive, of any calendar year.

Los Angeles County Municipal Code Title 22, § 22.56.215 – Significant Ecological Areas

Title 22, Section 22.56.215 of the Los Angeles County Municipal Code regulates development within Significant Ecological Areas (SEAs). Conditional use permits are required prior to granting a building permit or grading permit within an SEA and must be approved to allow development within SEAs, subject to review by the Significant Ecological Areas Technical Advisory Committee (SEATAC) and a public hearing.

Los Angeles County Municipal Code Title 22, § Chapter 22.44, Part 6 – Sensitive Environmental Resource Areas

Sensitive Environmental Resource Areas (SERAs) are located within the Santa Monica Mountains Coastal Zone area only. SERAs contain biological resources that, because of their special characteristics and/or vulnerability, require greater protection, and development in a SERA requires a heightened level of review to ensure that protection. Projects in a SERA are subject to review by the Los Angeles County Department of Regional Planning Environmental Review Board.

Los Angeles County Municipal Code Sections 22.56.2050 – 22.56.2260 – Oak Tree Ordinance

The Los Angeles County Oak Tree Ordinance requires a permit prior to the cutting, removing, destroying, relocating, inflicting damage on, or encroaching into a protected zone of any tree within the oak genus. The Ordinance regulates only oak trees (genus *Quercus*) located within unincorporated areas of Los Angeles County. In addition, the circumference of an oak tree with one trunk must be 25 inches (8 inches in diameter) or more. For oak trees with multiple trunks, any two trunks must have a circumference of 38 inches (12 inches in diameter) or more. Measurements must be recorded at 4.5 feet above mean natural grade.

SECTION 4.0
METHODS

This section describes the methods employed in the characterization and evaluation of biological resource in the Trails Master Plan Study Area. The potential for SSMTMP-PII to result in impacts to biological resources was evaluated pursuant to the seven thresholds articulated in Appendix G of the California Environmental Quality Act Guidelines (State CEQA Guidelines) and the County of Los Angeles Department of Parks and Recreation's Environmental Checklist Form.

4.1 LISTED, SENSITIVE, AND LOCALLY IMPORTANT SPECIES

Records of listed and sensitive plants and animals were reviewed to determine what federally and state-listed species and sensitive species have the potential to occur within the limits of the project area. For the purposes of this analysis, species were assumed to be present if historic records of the species occur within or in the immediate vicinity of the project area and the area has suitable habitat. Directed surveys would need to be undertaken to assess the presence or absence of sensitive species and make a determination as to whether or not permits would be required pursuant to Section 10(a)(1) of the federal ESA or Section 2081 of the California ESA.

The CNDDB query was supplemented with information from published and unpublished literature, including program- and project-level environmental documents prepared pursuant to CEQA and the National Environmental Policy Act (NEPA) in the vicinity of the project area. A CNDDB and CNPS Online Inventory[12] query for occurrence data within the following USGS 7.5-minute series topographic quadrangles: Valley East,[13] Newhall,[14] Val Verde,[15] Oat Mountain,[16] Calabasas,[17] Canoga Park,[18] Malibu Beach,[19] Mint Canyon,[20] Piru,[21] Point Dume,[22] San Fernando,[23] Santa Susana,[24] Simi,[25] Thousand Oaks,[26] Topanga,[27] and Van Nuys[28] was conducted.

[12] California Native Plant Society. 2013. *Inventory of Rare and Endangered Plants*,. Sacramento, CA.

[13] U.S. Geologic Survey. 2017. 7.5-minute Series, Simi Valley East, California, Topographic Quadrangle. Reston, VA.

[14] U.S. Geologic Survey. 2017. 7.5-minute Series, Newhall, California, Topographic Quadrangle. Reston, VA.

[15] U.S. Geologic Survey. 2017. 7.5-minute Series, Val Verde, California, Topographic Quadrangle. Reston, VA.

[16] U.S. Geologic Survey. 2017. 7.5-minute Series, Oat Mountain, California, Topographic Quadrangle. Reston, VA.

[17] U.S. Geologic Survey. 2017. 7.5-minute Series, Calabasas, California, Topographic Quadrangle. Reston, VA.

[18] U.S. Geologic Survey. 2017. 7.5-minute Series, Canoga Park, California, Topographic Quadrangle. Reston, VA.

[19] U.S. Geologic Survey. 2017. 7.5-minute Series, Malibu Beach, California, Topographic Quadrangle. Reston, VA.

[20] U.S. Geologic Survey. 2017. 7.5-minute Series, Mint Canyon, California, Topographic Quadrangle. Reston, VA.

[21] U.S. Geologic Survey. 2017. 7.5-minute Series, Piru, California, Topographic Quadrangle. Reston, VA.

[22] U.S. Geologic Survey. 2017. 7.5-minute Series, Point Dume, California, Topographic Quadrangle. Reston, VA.

[23] U.S. Geologic Survey. 2017. 7.5-minute Series, San Fernando, California, Topographic Quadrangle. Reston, VA.

[24] U.S. Geologic Survey. 2017. 7.5-minute Series, Santa Susana, California, Topographic Quadrangle. Reston, VA.

[25] U.S. Geologic Survey. 2017. 7.5-minute Series, Simi, California, Topographic Quadrangle. Reston, VA.

[26] U.S. Geologic Survey. 2017. 7.5-minute Series, Thousand Oaks, California, Topographic Quadrangle. Reston, VA.

[27] U.S. Geologic Survey. 2017. 7.5-minute Series, Topanga, California, Topographic Quadrangle. Reston, VA.

[28] U.S. Geologic Survey. 2017. 7.5-minute Series, Van Nuys, California, Topographic Quadrangle. Reston, VA.

Critical habitat data, as determined by the USFWS, was searched to determine the proximity of critical habitat to the project area.[29] The list of species was evaluated with respect to the habitats present. *The Jepson Manual* was consulted for detailed biological, distributional, and phenological information of plants and used as a standard for nomenclature.[30]

4.2 RIPARIAN AND STATE SENSITIVE PLANT COMMUNITIES

The evaluation of riparian and state-sensitive plant communities for the project area was undertaken using data from the Natural Heritage Division of CDFW via a query of the CNDDB, which identifies special-status natural communities. It is important to note that there is the potential for additional state-sensitive plant communities and riparian habitat to exist within the project area. Focused plant community mapping would need to be undertaken to assess the presence or absence and extent of riparian habitat and state-sensitive plant communities.

4.3 FEDERALLY PROTECTED WETLANDS AND WATERWAYS

The purpose of evaluating federal Waters of the United States was to determine what federal wetlands and waterways are potentially present and which agency (Federal or State) may have jurisdiction. Sapphos Environmental, Inc. used the NWI database and USGS topographical maps to determine if federal wetlands may be present within the project area. For the purpose of this evaluation, all NWI wetlands are assumed to be USACE jurisdictional wetlands, but these wetlands may also fall under other jurisdictions. In addition, Sapphos Environmental, Inc. used USGS maps and blue-line drainage data to find navigable water bodies and blue-line features that may be considered federal waterways. A jurisdictional delineation would be required to be undertaken to assess the presence or absence of Waters of the United States and the potential for development of a trails system to result in dredge or fill activities within any features subject to Section 404 of the federal CWA and requiring either a pre-construction notification pursuant to a Nationwide Permit or an individual permit from USACE.

4.4 MIGRATORY CORRIDORS AND NURSERY SITES

Sapphos Environmental, Inc. used GIS to overlay the project area with topographic, plant community, and published data for migratory corridors and nursery sites for wildlife species to characterize the baseline conditions for these resources within the area. The County has established SEAs primarily with the goal of protecting plants and animals and their corridors. Sapphos Environmental, Inc. used the SEAs in the vicinity of the project area as indicators of the presence of wildlife corridors. The project area would require a directed survey to assess the presence or absence of migratory corridors or nursery sites and the potential for development of a trails system to result in impacts to such resources.

[29] U.S. Fish and Wildlife Service. 2015. *Critical Habitat Mapper*. Available at: http://criticalhabitat.fws.gov/crithab/flex/crithabMapper.jsp?

[30] Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, eds. 2012. *The Jepson Manual: Vascular Plants of California*. 2nd ed. Berkeley: University of California Press.

4.5 OAK AND NATIVE WOODLANDS

The evaluation of oak and native woodlands for the project area was undertaken using data from the Natural Heritage Division of CDFW via a query of the CNDDB, which identifies special-status natural communities. Consequently, these CNDDB records date back only as recently as 1993. It is important to note that there is the potential for additional oak and native woodlands to exist within the project area as well as additional individual oak trees or other native trees. Focused plant community and tree mapping would need to be undertaken to assess the presence or absence and extent of oak and native woodland communities as well as individual oak and native trees.

4.6 GENERAL PLANS AND POLICIES

The Los Angeles County General Plan 2035 and Newhall Ranch Specific Plan were evaluated to determine if the project area has the potential to conflict with adopted goals, policies, and ordinances related to conservation of biological resources that are applicable to the plan. The Los Angeles County Oak Tree Ordinance, Wildflower Reserve Ordinance, Significant Ecological Area Ordinance, and Sensitive Environmental Resource Area Ordinance were also evaluated to determine its applicability to the proposed project.

4.7 HABITAT CONSERVATION PLANS AND NATURAL COMMUNITY CONSERVATION PLANS

Adopted and proposed HCPs and NCCPs within and adjacent to the project area were mapped using data obtained from the USFWS and CDFW. The boundaries of any HCP or NCCP were compared to the project area boundaries using CDFW's NCCP California Regional Conservation Plans Map, which features all NCCPs and HCPs in the State of California (see https://www.wildlife.ca.gov/Conservation/Planning/NCCP). All applicable HCPs and NCCPs were intensively reviewed to identify provisions for the management of biological resources that are applicable to the proposed project.

SECTION 5.0
RESULTS

This section provides the characterization and evaluation of the potential for the proposed Trails Master Plan to affect biological resources within the Trails Master Plan Study Area. The results described in this section provide the substantial evidence required to address the CEQA scope of analysis, related to biological resources.

5.1 EXISTING CONDITIONS

Listed, Sensitive, and Locally Important Species

Listed and Candidate Species and Critical Habitat

The literature review identified a total of 30 species that are listed or candidate species under protection of the federal ESA or California ESA that are known to occur within the 16-quadrangle CNDDB search. Special consideration was given to species within a 5-mile radius of the project, including five plant species and 15 wildlife species (Figure 5.1-1, *Listed Plant and Wildlife Species Records within 5 Miles of the Project Area*). Species status, habitat, and potential to occur is summarized in Appendix A, Table A1, *Listed Plant and Wildlife Species with the Potential to Occur in the Project Area*.

Critical habitat is a designated area defined by the USFWS as being important for the survival of species listed pursuant to the federal ESA. The USFWS evaluates the collection of the environmental conditions (i.e., plant communities, range, elevation, food source, etc.) essential to the continued conservation and preservation of each species listed as federally threatened or endangered. The project area contains designated critical habitat for five species: Arroyo toad, Braunton's milkvetch, coastal California gnatcatcher, least bell's vireo, and southwestern flycatcher (Figure 5.1-2, *Critical Habitat Designated within 5 Miles of the Project Area*). There are 262.9 acres of critical habitat for Arroyo toad, 152.89 acres of critical habitat for Braunton's milkvetch, 2707.88 acres of critical habitat for coastal California gnatcatcher, 471.73 acres of critical habitat for least bells' vireo, and 237.54 acres of critical habitat for southwestern willow flycatcher within to the boundary of the project area.

Sensitive Wildlife Species

A total of 72 wildlife species that are considered sensitive in the State of California were recorded within the 16- quadrangle CNDDB search. Special consideration was given to the species within a 5-mile radius of the project including two invertebrates, one fish, two amphibians, six reptiles, five mammals, and five bird species (Figure 5.1-3, *Sensitive [Non-Listed] Wildlife Species Records within 5 Miles of the Project Area*). Species status, habitat, and potential to occur for sensitive wildlife species is summarized in Appendix A, Table A2, *Sensitive Wildlife Species with the Potential to Occur in the Project Area*.

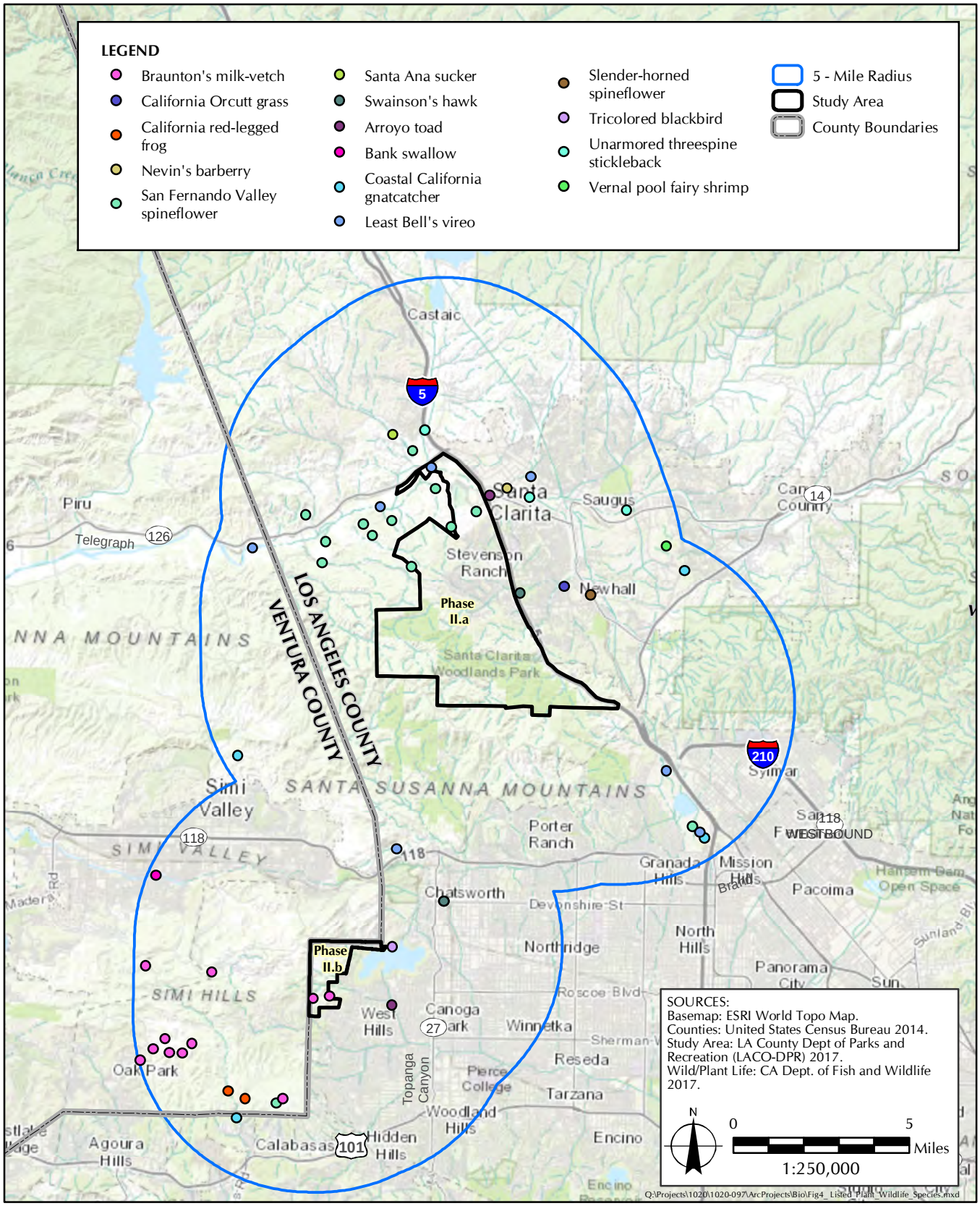

FIGURE 5.1-1

Listed Plant and Wildlife Species Records within 5 Miles of the Project Area

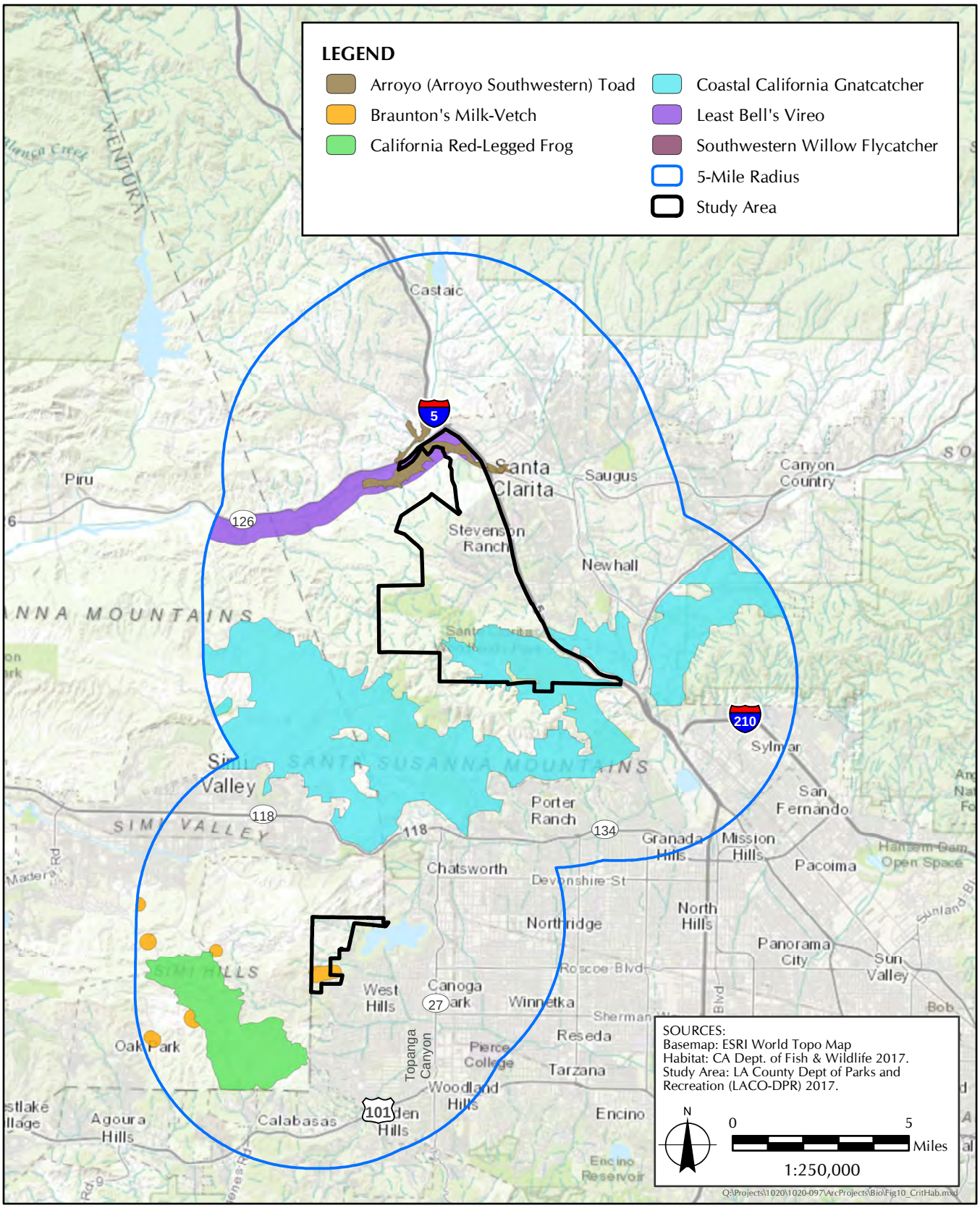

FIGURE 5.1-2

Critical Habitat Designated within 5 Miles of the Project Area

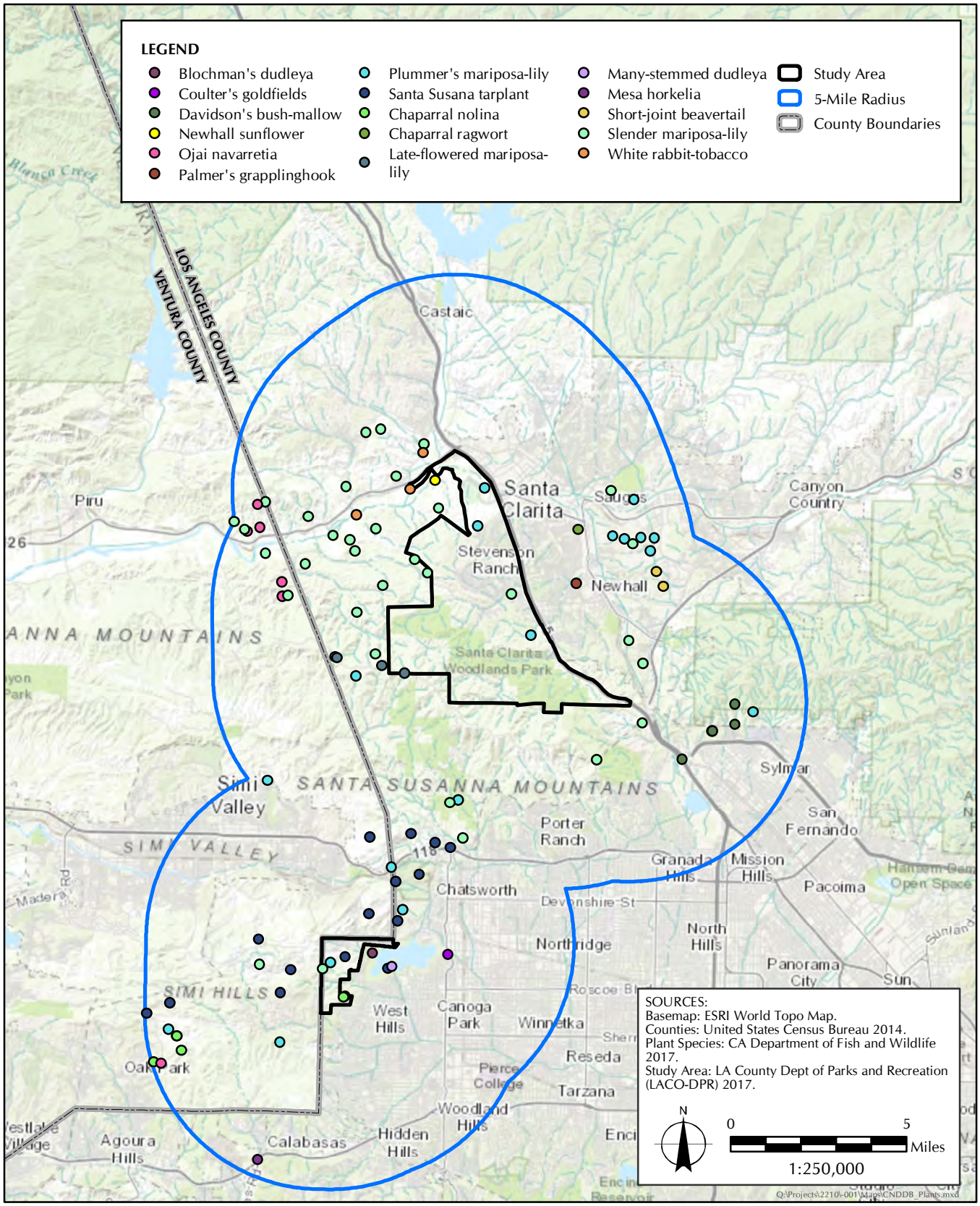

FIGURE 5.1-3

Sensitive (Non-Listed) Plant Species Records within 5 Miles of the Project Area

Rare and Locally Important Plant Species

A total of 59 plant species that are considered rare in the State of California or are locally important were recorded within the 16-quadrangle query search. Of the 59 sensitive plant species, 16 were observed within 5 miles of the project area (Figure 5.1-4, *Sensitive [Non-Listed] Plant Species Records within 5 Miles of the Project Area*). Rank, habitat, and potential to occur within the project site is summarized in Appendix A, Table A3, S*ensitive Plant Species with the Potential to Occur in the Project Area*.

Riparian and State Sensitive Plant Communities

The Natural Heritage Division of CDFW identifies special-status natural communities. A record search of the CNDDB reported six state-sensitive or riparian natural communities within the project area (Appendix A, Table A4, *Riparian Habitat and State Sensitive Plant Communities Reported in the Project Area*). The distributions of these community records in the project area are depicted in Figure 5.1-5, *Riparian and State Sensitive Plant Communities within 5 Miles of the Project Area*. Thus, it is important to note that the likelihood of additional state-sensitive plant communities and riparian habitats to exist within the project area is high. Individualized surveys within the project area would be required to delineate State-sensitive and riparian plant communities on a project-by-project basis.

Federally Protected Wetlands and Waterways

Current NWI[31] maps and USGS blue-line drainage data for the project area were reviewed for potential wetlands and waterways subject to protection under Section 404 of the CWA. Wetlands and waterways potentially subject to the jurisdiction of the USACE were determined to be present within the project area (Appendix A, Table A5, *Federally Protected Wetlands and Waterways Reported in the Project Area*). The distribution of federally protected wetlands and waterways in the project area are shown on Figure 5.1-6a, *Federally Protected Wetlands Reported within 5 Miles of the Project Area* and Figure 5.1-6b, *USGS Blue-Line Streams Reported Within 5 Miles of the Project Area*.

In addition to the NWI wetland features described in Table 5, there are 56.32 miles of USGS blue-line drainages reported that may be subject to USACOE jurisdiction in the project area. The analysis of Federally Protected Wetlands and Waterways in this section was based on aerial imagery and satellite data. Individual projects within the project area would be required to complete a formal jurisdictional delineation pursuant to USACOE requirements.

[31] U.S. Fish and Wildlife Service. n.d. National Wetlands Inventory Map. Available at: http://www.fws.gov/wetlands/Wetlands-Mapper.html

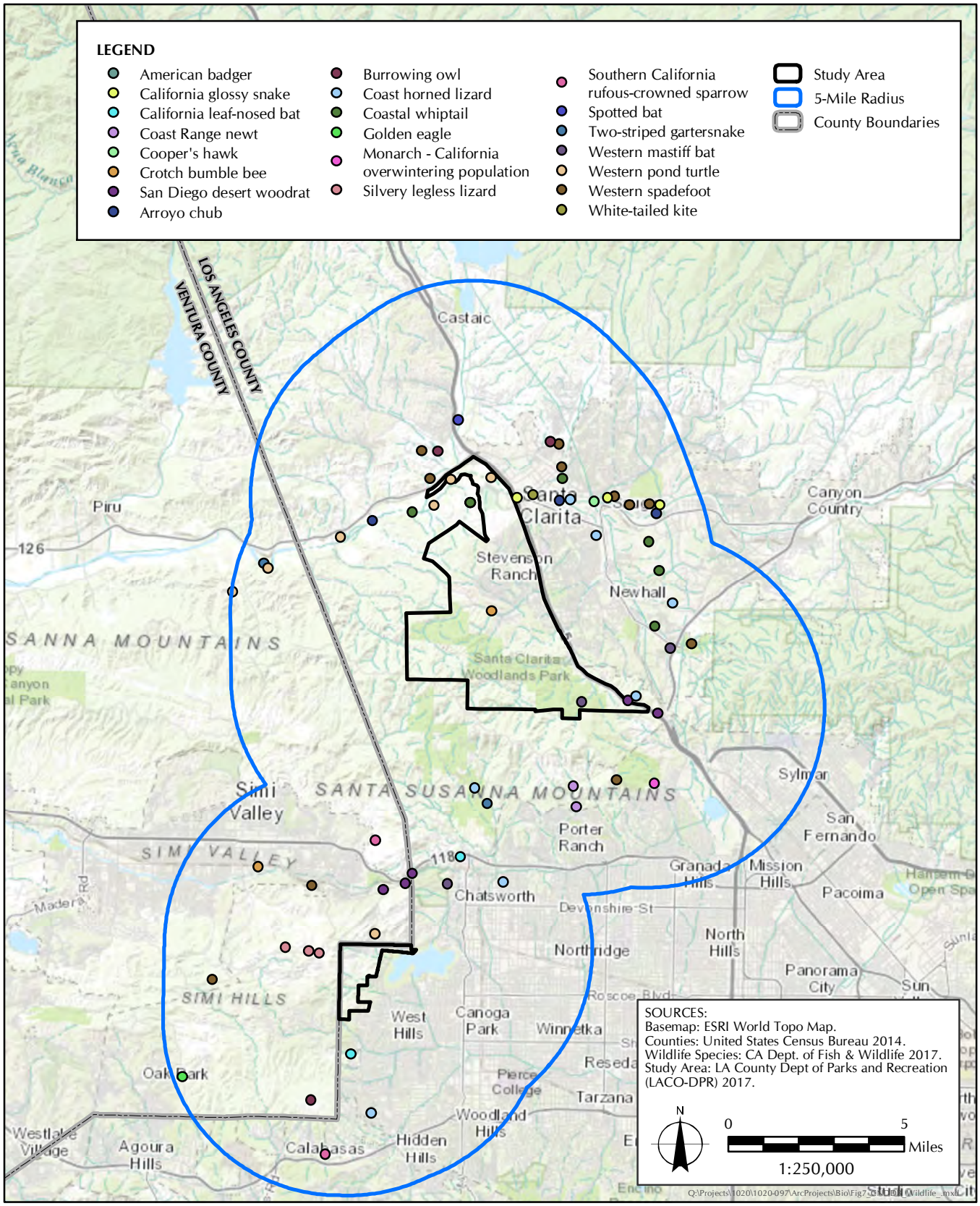

FIGURE 5.1-4

Sensitive (Non-Listed) Wildlife Species Records within 5 Miles of the Project Area

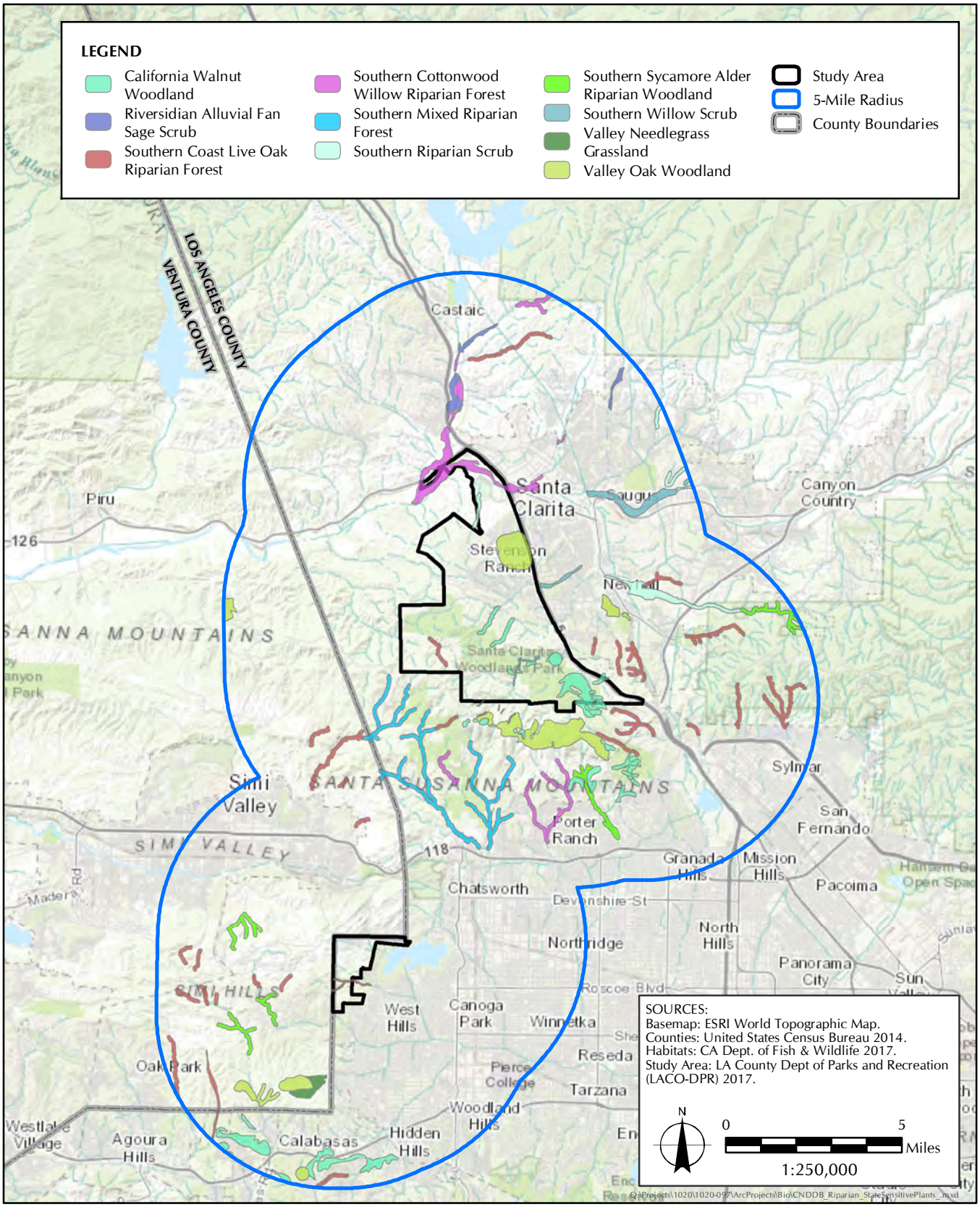

FIGURE 5.1-5

Riparian and State Sensitive Plant Communities within 5 Miles of the Project Area

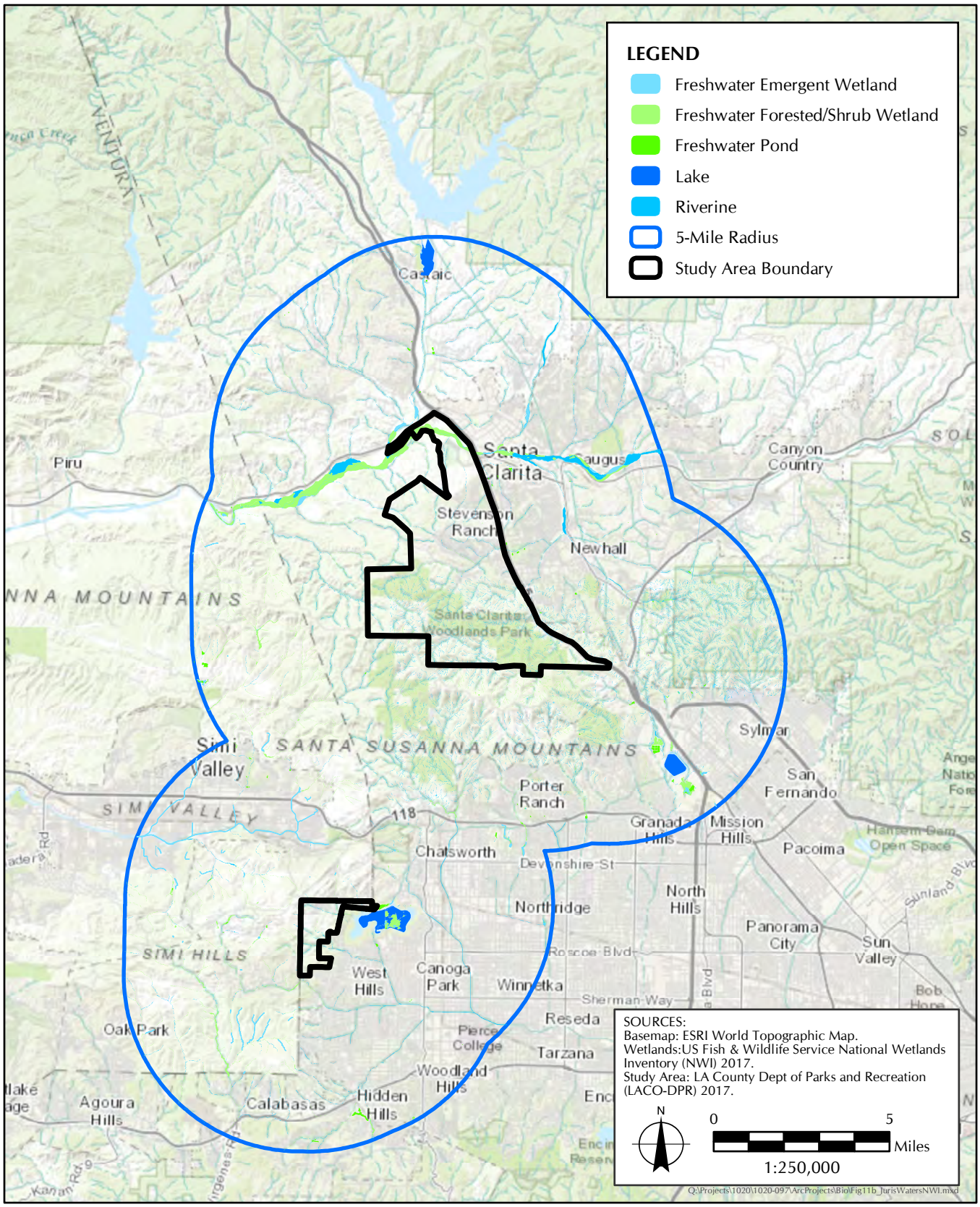

FIGURE 5.1-6a

Federally Protected Wetlands Reported Within 5 Miles of the Project Area

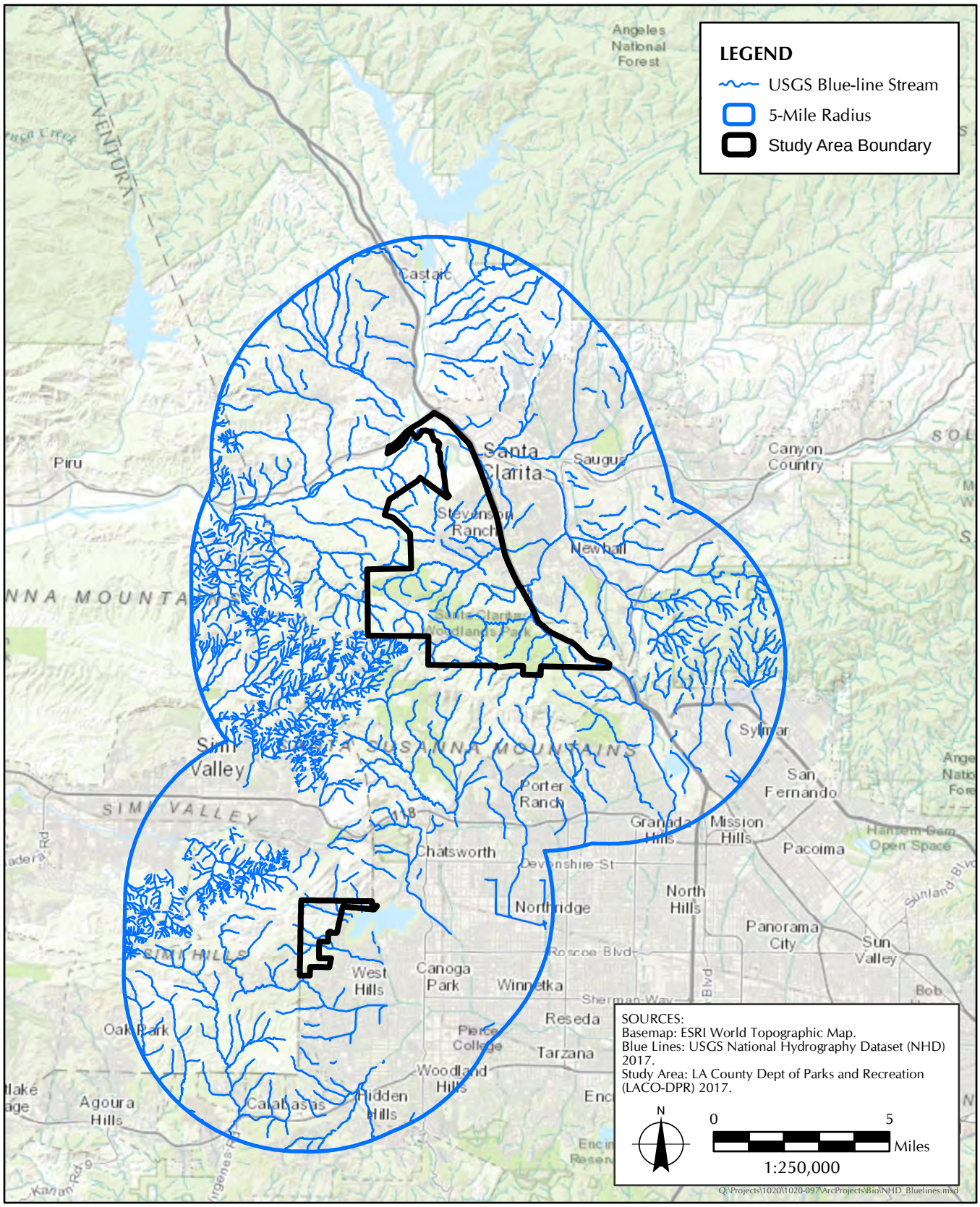

FIGURE 5.1-6b

USGS Blue-line Streams Reported Within 5 Miles of the Project Area

Migratory Corridors and Nursery Sites

A desktop analysis, including aerial imagery habitat and land use assessments, and review of existing data indicative of the presence of wildlife movement corridors and nursery sites in the project area was conducted. SEAs are areas that have been determined by the County of Los Angeles to contain sensitive biological resources based on the criteria of sensitive plants and animals, plant communities, and corridors. Often, these SEAs can be indicators of the presence of wildlife movement corridors. There are three SEAs that include 9,037.0 acres within the project area (Appendix A, Table A6, *Significant Ecological Areas Present in the Project Area,* Figure 5.1-7, *Significant Ecological Areas in the Vicinity of the Project Area*).

The Santa Clara River is the largest natural river remaining in Southern California. Although there are no known bird rookeries in the project area, many species of birds breed within the area. Nesting birds protected under the MBTA have the potential to be present throughout the project area.

Oak and Native Woodlands

A record search of the CNDDB reported approximately 672.38 acres of California Walnut Woodlands, 99.04 acres of Southern Coast Live Oak Riparian Forest, 226.95 acres of Southern Cottonwood Willow Riparian Forest, and 532.21 acres of Valley Oak Woodland, and (Appendix A, Table A4). In addition, there is the potential for protected oak trees as well as other native trees and woodlands to be present within the project area. Oak trees are typically found in oak woodlands and other indigenous woodlands, but may also be found in urban areas as planted trees. Individualized surveys within the project area would be required to delineate oak and other native woodland communities and to map individual oak and native trees on a project-by-project basis.

General Plans and Policies

Los Angeles County General Plan 2035

Of the two goals and 12 policies established in the Conservation and Natural Resources Element of the Los Angeles County General Plan 2035, two goals (C/NR 3 and C/NR 4) and 8 policies (C/NR 3.1, C/NR 3.3, C/NR 3.4, C/NR 3.8, C/NR 3.9, C/NR 3.10, C/NR 3.11, and C/NR 4.1) are applicable to the proposed project.

Santa Clarita Valley Area Plan

Of the seven objectives and 34 policies related to biological resources established in the Conservation and Open Space Element of the Santa Clarita Valley Area Plan, five objectives (CO-3.1, CO-3.2, CO-3.3, CO-3.5, and CO-3.6) and 20 policies (CO-3.1.2, CO-3.1.3, CO-3.1.4, CO-3.1.5, CO-3.1.6, CO-3.1.7, CO-3.1.10, CO-3.1.11, CO-3.2.1, CO-3.2.2, CO-3.2.3, CO-3.2.4, CO-3.3.1, CO-3.3.5, CO-3.5.2, CO-3.5.3, CO-3.6.1, CO-3.6.2, CO-3.6.3, and CO-3.6.5) are applicable to the proposed project.

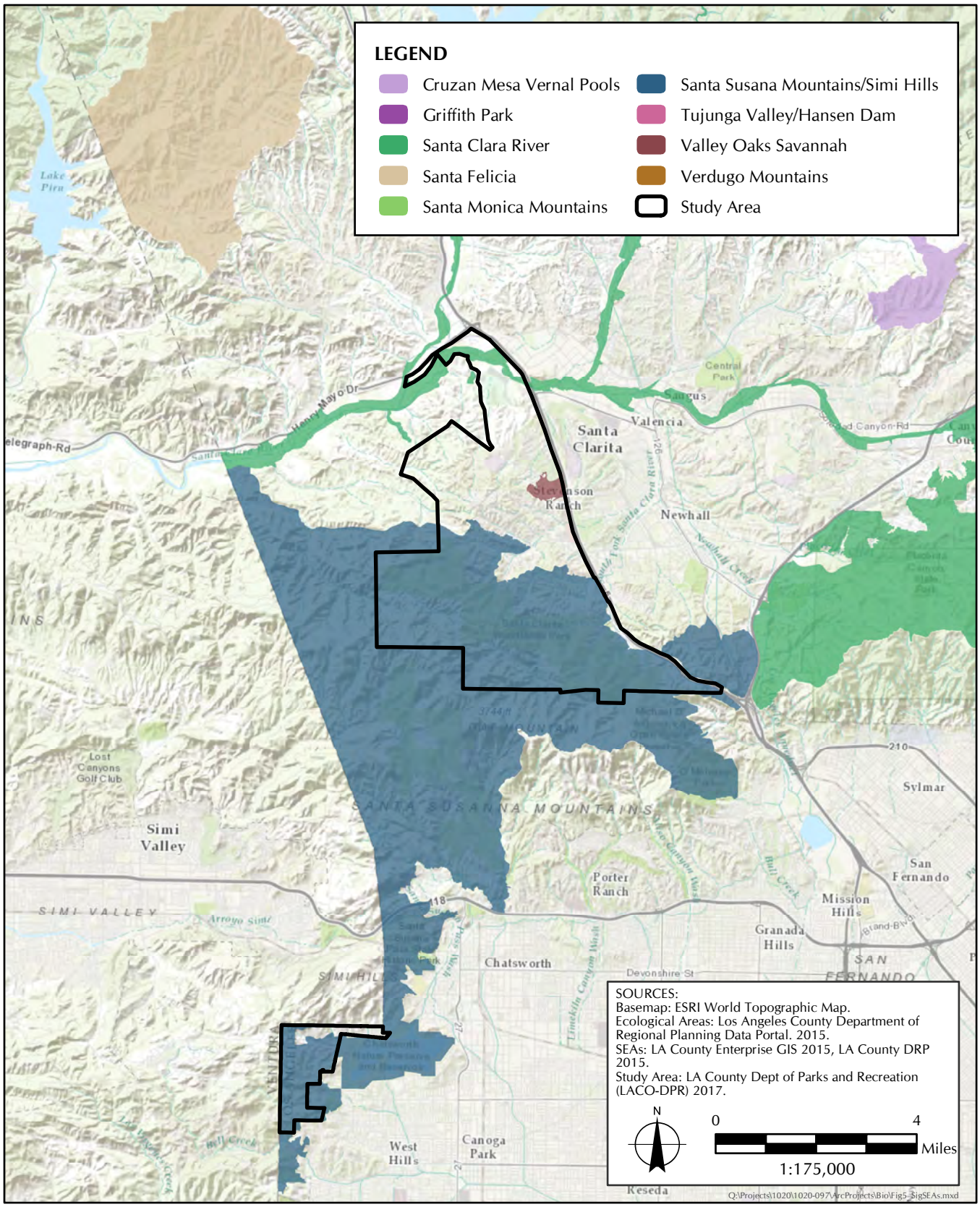

FIGURE 5.1-7

Significant Ecological Areas in the Vicinity of the Project Area

Los Angeles County Municipal Code Title 12, Chapter 12.36 – Wildflower Reserves

The project area does not contain any designated Wildflower Reserve Areas. Therefore, this ordinance is not applicable to the proposed project.

Los Angeles County Municipal Code Title 22, § 22.56.215 – Significant Ecological Areas

There are three SEAs that include 9,297.69 acres within the project area, the Santa Clara River SEA, Santa Susana Mountains/Simi Hills SEA, and Valley Oaks Savannah SEA (see Table A6 and Figure 5.1-7). Therefore, this ordinance is applicable to the proposed project.

Los Angeles County Municipal Code Title 22, § Chapter 22.44, Part 6 – Sensitive Environmental Resource Areas

The project area is not located within the Santa Monica Mountains Coastal Zone area and does not contain any Sensitive Environmental Resource Areas. Therefore, this ordinance is not applicable to the proposed project.

Newhall Ranch Specific Plan

All five Resource Conservation Objectives within the Newhall Ranch Specific Plan related to biological resources are relevant to the proposed project.

Municipal Code Sections 22.56.2050–22.56.2260

There is the potential for protected oak trees to be present on or within the vicinity of the project area. Oak trees are typically found in oak woodlands and other indigenous woodlands, but may also be found in urban areas as planted trees. Therefore, this ordinance is relevant to the evaluation of conflicts of the proposed project with local general plans, policies, and ordinances.

Habitat Conservation Plans and Natural Community Conservation Plans

HCPs and NCCPs were evaluated to determine applicability of any adopted or proposed HCPs or NCCPS in the project area. The boundaries of all HCPs/NCCPs were reviewed and compared to the project area boundary to determine their relevance. There are no HCPs or NCCPs with boundaries that intersect the project area. Therefore, the proposed project would result in no impacts related to conflicts with the provision of adopted state, regional, or local habitat conservation plans, and no mitigation would be required (Figure 5.1-8, *Habitat Conservation Plans [HCPs] and Natural Community Conservation Plans [NCCPs] Located in the Vicinity of the Project Area*).

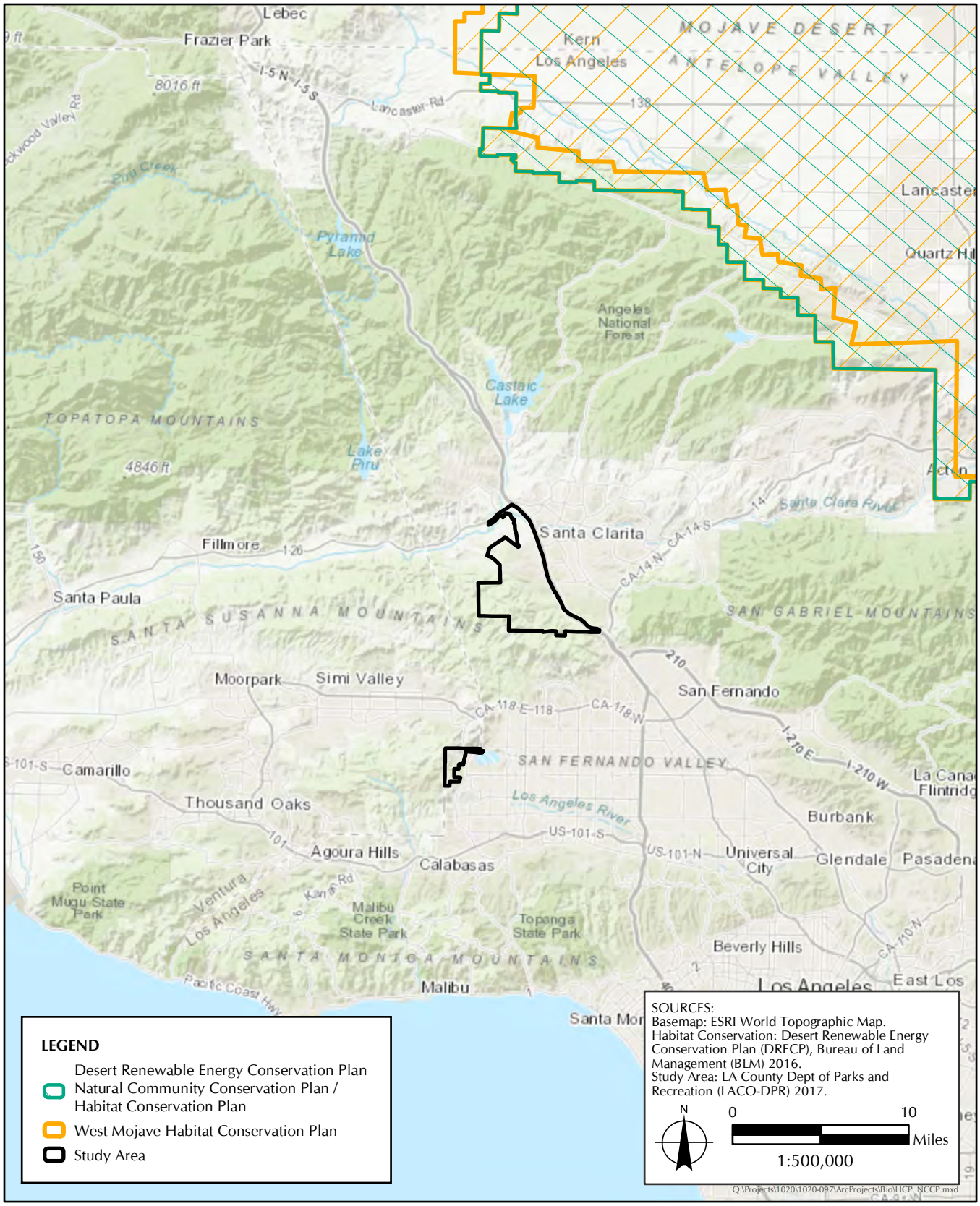

FIGURE 5.1-8

Habitat Conservation Plans (HCPs) and Natural Community Conservation Plans (NCCPs) located in the Vicinitiy of the Project Area

5.2 IMPACT ANALYSIS

Proposed trail width within the proposed project varies between 3 and 12 feet. Therefore, spatial impact analysis for biological resources was based on a worst-case analysis using a maximum width of 12 feet and incorporating a 250-foot buffer to account for construction disturbances beyond the trail footprint.

The potential for the proposed project to result in impacts related to biological resources was analyzed in relation to the questions in Appendix G of the State CEQA Guidelines,[32] as modified for the County. Would the project:

- Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS?

- Have a substantial adverse effect on any sensitive natural communities (e.g., riparian habitat, coastal sage scrub, oak woodlands, non-jurisdictional wetlands) identified in local or regional plans, policies, regulations or by CDFW or USFWS?

- Have a substantial adverse effect on federally or state protected wetlands (including, but not limited to, marshes, vernal pools, coastal wetlands, and drainages) or waters of the United States, as defined by § 404 of the federal Clean Water Act or California Fish & Game code § 1600, et seq. through direct removal, filling, hydrological interruption, or other means?

- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

- Convert oak woodlands (as defined by the state, oak woodlands are oak stands with greater than 10% canopy cover with oaks at least 5 inches in diameter measured at 4.5 feet above mean natural grade) or otherwise contain oak or other unique native trees (junipers, Joshuas, southern California black walnut, etc.)?

- Conflict with any local policies or ordinances protecting biological resources, including Wildflower Reserve Areas (L.A. County Code, Title 12, Ch. 12.36), the Los Angeles County Oak Tree Ordinance (L.A. County Code, Title 22, Ch. 22.56, Part 16), the SEAs (L.A. County Code, Title 22, § 22.56.215), and SERAs (L.A. County Code, Title 22, Ch. 22.44, Part 6)?

- Conflict with the provisions of an adopted state, regional, or local habitat conservation plan?

[32] *California Code of Regulations*. Title 14, Division 6, Chapter 3, Sections 15000–15387, Appendix G.

Listed, Sensitive, and Locally Important Species

Approximately 3,832.93 acres of critical habitat for listed species (262.90 acres for arroyo toad, 152.89 for Braunton's milk-vetch, 2,707.88 for coastal California gnatcatcher, 471.73 for least bell's vireo, and 237.54 acres for southwestern willow flycatcher) would potentially be converted to trails and other recreation amenities or would be disturbed through associated construction activities as a result of the proposed project. Furthermore, there are CNDDB records and suitable habitat for the federally and state-listed endangered unarmored threespine stickleback and San Fernando Valley spineflower, the CNPS rare plant slender mariposa lily, Plummer's mariposa lily, Newhall sunflower, Santa Susana tarplant, and sensitive wildlife species including western pond turtle, crotch bumble bee, western mastiff bat, coastal whiptail, and California glossy snake within 5 miles of the planned trail activities that may be disturbed through trail development and associated construction activities. Construction activities associated with trail development would include excavation, grading, and construction of trails and small structures at trailheads and trail staging areas. These construction activities have the potential to occur within areas of potentially suitable and occupied habitat for listed and special-status species. Direct impacts would occur during trail construction and would include direct loss of sensitive plant and/or wildlife species resulting from injury, death, or disturbance of these species. Additionally, direct impacts may occur through the direct habitat loss and fragmentation during construction of the trails and associated structures; introduction of non-native plants; and introduction of lighting, dust, and noise during construction. Further, indirect impacts resulting from the development of trails projects in the proposed project could occur as a result of increased human interaction with sensitive plants and wildlife.

This analysis of impacts of trails projects included in the proposed project to sensitive plant and wildlife species and their habitats and designated critical habitat is programmatic, and conservatively assumes that all species with critical habitat and/or CNDDB records in the project area are present. The level of impact of subsequent projects would be subject to verification at the project level of environmental review pursuant to CEQA. Trail development projects would be subject to the provisions of the federal and state ESA, as well as Sections 1900–1913, 3511, 4150, 4700, 5050, and 5515 of the State Fish and Game Code and Sections 80071–80075 of the State Food and Agriculture Code.

Therefore, the proposed project would result in significant impacts to biological resources in regard to having a substantial adverse effect, either directly or through habitat modifications, on species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the CDFW or USFWS. The consideration of mitigation measures would be required.

Riparian and State Sensitive Plant Communities

Approximately 1,606.49 acres of state designated sensitive plant communities (including 367.14 acres of riparian communities) would potentially be converted to trails and other recreation amenities or would be disturbed through associated construction activities as a result of the Trails Master Plan. Construction activities associated with trail development would include excavation, grading, and construction of trails and small structures at trailheads and trail staging areas. These construction activities have the potential to occur within sensitive natural communities on-site. Impacts associated with the disturbance of sensitive and riparian habitats would include direct loss and fragmentation of sensitive communities and riparian habitats as trails projects are developed

and the introduction of non-native plants that would degrade existing communities. Further, indirect impacts resulting from the development of trails projects in the proposed project could occur as a result of increased public access to sensitive plant communities.

This analysis of impacts of trails projects included in the proposed project to sensitive plant communities and riparian habitats is programmatic, and conservatively assumes that sensitive plant communities have the potential to exist throughout the project area and that all waterways have the potential to contain riparian habitat. The level of impact of subsequent projects would be subject to verification at the project level of environmental review pursuant to CEQA. Trail development projects would be subject to the provisions of Section 1600 of the State Fish and Game Code in which a Streambed Alteration Agreement would need to be obtained prior to the alteration of a state jurisdictional area.

Therefore, the proposed project would result in significant impacts to biological resources in regard to having a substantial adverse effect on any sensitive natural communities identified in local or regional plans, policies, regulations, or by CDFW or USFWS. The consideration of mitigation measures would be required.

Federally Protected Wetlands and Waterways

Approximately 367.19 acres of riparian communities that may be under CDFW jurisdiction, 458.30 acres of federally protected wetlands, and 56.32 miles of blueline drainages that may include waters of the United States would potentially be converted to trails and other recreation amenities or would be disturbed through associated construction activities as a result of the proposed project. Construction activities associated with trail development would include excavation, grading, and construction of trails and small structures at trailheads and trail staging areas. These construction activities have the potential to occur within and adjacent to state and federal wetlands and or waters of the United States on-site. Impacts would include disruption of streams and wetlands as new trails are developed and dredge and fill activities associated with trail development. Trail development projects would be subject to the provisions of Section 404 of the federal CWA. Dredge or fill in waters of the United States is subject to the regulatory authority of the USACE pursuant to Section 404 of the federal Clean Water Act. Trail development projects would also be subject to the provisions of Section 1600 of the State Fish and Game Code in which a Streambed Alteration Agreement would need to be obtained prior to the alteration of a state jurisdictional area.

Therefore, the proposed project would result in significant impacts to biological resources in regard to having a substantial adverse effect on federally or state protected wetlands or waters of the United States. The consideration of mitigation measures would be required.

Migratory Corridors and Nursery Sites

The project area is considered an important wildlife corridor as determined by the County General Plan. Within the County General Plan, the Santa Clara River and Santa Susana Mountains are identified as important corridors for wildlife movement, linking the Santa Monica Mountains, the San Gabriel Mountains, and Piru Lake in Ventura County. Trails and passive recreation use are an allowable use within SEAs. Although trail use would not conflict with the goals of the SEA program, new trail construction within an SEA would require consultation with the County of Los Angeles Department of Regional Planning and a Biological Technical Report prepared for SEATAC

review. Furthermore, nesting birds protected under the MBTA have the potential to be present throughout the project area.

Construction activities associated with trail development would include excavation, grading, and construction of trails and small structures at trailheads and trail staging areas. These construction activities have the potential to occur within areas used for native wildlife movement and within and adjacent to suitable nesting locations for native and migratory birds on-site. Impacts would include direct habitat removal that would disrupt nesting birds as new trails projects are developed, and introduction of lighting and noise during construction and operation that may interrupt wildlife movement and disturb nursery sites. Additionally, an increase in wildlife-human interactions as a result of the development of new trails projects may increase wildlife injury.

This analysis of impacts of trails projects included in the proposed project to wildlife corridors and nursery sites is programmatic, and conservatively assumes that wildlife movement areas and nesting birds may occur throughout the project area. The level of impact of subsequent projects would be subject to verification at the project level of environmental review pursuant to CEQA. Trail development projects would be subject to the provisions of the MBTA.

Therefore, the proposed project would result in significant impacts to biological resources in regard to interfering substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impeding the use of native wildlife nursery sites. The consideration of mitigation measures would be required.

Oak and Native Woodlands

Approximately 99.04 acres of state designated Southern Coast Live Oak Riparian Forest, 672.84 acres of California Walnut Woodland, 532.21 acres of Valley Oak Woodland and 226.95 acres of Southern Cottonwood Willow Riparian Forest would potentially be converted to trails or would be disturbed through associated construction activities as a result of the proposed project. Construction activities associated with trail development would include excavation, grading, and construction of trails and small structures at trailheads and trail staging areas. These construction activities have the potential to occur within oak and other native woodlands on-site or within the dripline of individual oak or other native trees. Impacts associated with the disturbance of oak and other native woodlands would include direct loss and fragmentation of woodlands as trails projects are developed, and the introduction of non-native plants that would degrade existing woodlands.

Therefore, the proposed project would result in significant impacts to biological resources in regard to converting oak woodlands or woodlands otherwise containing oak or other unique native trees. The consideration of mitigation measures would be required.

General Plans and Policies

The project area is not located within any Wildflower Reserve Areas or SERAs; therefore, it would not conflict with these policies. The Northlake Specific Plan does not contain any policies related to biological resources; therefore, the proposed project would not conflict with the policies of this plan. The proposed project would not result in significant impacts to biological resources related to conflicts with the County General Plan, Santa Clarita Valley Area Plan, or Newhall Ranch Specific Plan because trails and other recreation facilities are required to be designed consistent with the

County Trails Manual, which requires no net loss of habitat functions and values.[33] The application of the County Trails Manual to the individual trails projects within the proposed project would accomplish the objectives within these plans of minimizing impacts to the natural environment. Furthermore, the implementation of the proposed project would be beneficial to biological resources because it would direct visitors to the project area to designated areas for use rather than permit disorganized use of the land without acknowledgement and protection of environmentally sensitive areas.

The proposed project would not conflict with Los Angeles County Municipal Code Title 22, § 22.56.215 – Significant Ecological Areas because trails and recreation facilities are an allowed use in SEAs, and any trails project under the proposed project would be required to comply with the SEATAC CUP application process. The proposed project would not conflict with Municipal Code Sections 22.56.2050–22.56.2260 – Oak Tree Ordinance because trails and recreation facilities would be designed to avoid the removal or disturbance of any protected oak tree, and any trails project under the proposed project would be required to comply with the Los Angeles County Oak Tree Removal Permit application process should tree removal be necessary. Therefore, the proposed project would result in no impacts in regard to conflicts with local policies or ordinances protecting biological resources, and no mitigation would be required.

Habitat Conservation Plans and Natural Community Conservation Plans

The proposed project would result in no impacts to biological resources in regard to conflicting with the provisions of an adopted state, regional, or local habitat conservation plan. There are no HCPs or NCCPs with boundaries that intersect the project area. Therefore, the proposed project would result in no impacts related to conflicts with the provision of adopted state, regional, or local habitat conservation plans, and no mitigation would be required.

5.3 MITIGATION RECOMMENDATIONS

The following mitigation measures are recommended, as applicable, for ground-disturbing activities associated with trail construction and/or improvements within proposed project area. These measures, with proper implementation, would serve to avoid, minimize, or substantially reduce impacts to biological resources.

Mitigation Measure BIO-1

To mitigate potential impacts on listed, sensitive, and locally important species and their habitats, the County shall require that a habitat assessment by a qualified biologist take place using approved U.S. Fish and Wildlife Service (USFWS) and California Department of Fish and Wildlife (CDFW) protocols to identify suitable habitat for any listed, sensitive, and locally important species on-site. Where suitable and/or occupied habitat is determined to be present, mitigation shall be implemented such that there is no net loss of habitat functions or values. Opportunities for

[33] County of Los Angeles Department of Parks and Recreation. Adopted by the Board of Supervisors on May 17, 2011. Revised June 2013. County of Los Angeles Trails Manual. Available at: https://trails.lacounty.gov/Files/Documents/69/LA%20County%20Trails%20Manual%20%28Revised%2006-20-13%29.compressed.pdf

achieving this performance standard, consistent with the provisions of the federal and state Endangered Species Acts (ESAs), may include:

- Demonstration that trail segment projects have been and will be designed, constructed, and maintained to avoid disturbance of any occupied habitat, potentially suitable habitat, and designated critical habitat for any listed, sensitive, or locally important species and to minimize impacts to native plant communities, wherever practicable and feasible.
- Consultation with USFWS and CDFW with regard to trail building activities within critical habitat and suitable habitat.
- Implementation of pre-construction habitat surveys to delineate occupied or suitable sensitive species' habitat to facilitate avoidance.
- Formal consultation with the USFWS will be required if a species afforded protection pursuant to the federal ESA is determined to be present as a result of focused protocol surveys. Formal consultation with the CDFW will be required if a species afforded protection pursuant to the state ESA is determined to be present as a result of focused protocol surveys.
- Altering the timing of construction to avoid seasons when sensitive species may be present (i.e., nesting bird season).
- Worker Education and Awareness Program to inform all construction workers of their responsibilities in regard to avoiding and minimizing impacts on sensitive biological resources.
- Designation of suitable habitat as off-limits during construction on all construction drawings and diagrams.
- Use of fencing and/or flagging to delineate environmentally sensitive areas as off-limits during trail construction.
- Use of on-site monitors for periods when trail construction will be undertaken within 250 feet of environmentally sensitive areas.
- Where temporary impacts to critical habitat may occur, the development and implementation of a habitat restoration plan shall be required.

Where permanent impacts to critical habitat may occur, compensatory mitigation such as purchasing credits at a mitigation bank, purchasing off-site lands, or similar shall be required.

Mitigation Measure BIO-2

To mitigate potential impacts on riparian, state-sensitive plant communities, state protected wetlands, and federally protected wetlands and waters of the United States, the County shall require that plant community mapping be conducted by a qualified biologist with experience classifying plant communities in Southern California and/or a formal jurisdictional delineation be conducted by a certified wetland delineator to identify any state or federally protected wetlands, riparian areas, and state-sensitive plant communities on-site. Where state designated sensitive plant communities, riparian habitat, state or federally protected wetlands, or waters of the United States are determined to be present, mitigation measures shall be implemented such that there is no net loss of habitat functions or values. Opportunities for achieving this performance standard, consistent with the provisions of Section 1600 of the State Fish and Game Code and Section 404 of the Federal Clean Water Act, may include:

- Demonstration that trail segment projects have been and will be designed, constructed, and maintained to avoid disturbance of any state-sensitive plant communities or riparian habitat, or any state or federally protected wetlands or waters of the United States wherever practicable and feasible.
- Pre-construction habitat surveys to delineate sensitive plant communities and riparian habitats to facilitate avoidance.
- Consultation with CDFW with regard to trail building activities within state-sensitive plant communities.
- Use of on-site monitors for periods when trail construction will be undertaken within 250 feet of oak woodlands, native woodlands, and 100 feet of the dripline of native trees.
- Where temporary impacts may occur to sensitive plant communities, the development and implementation of a habitat enhancement and restoration plan shall be required.
- Where permanent impacts may occur to sensitive plant communities, compensatory mitigation such as purchasing credits at mitigation bank, purchasing off-site lands, or similar shall be required.
- Where impacts are located in areas subject to the jurisdiction of the CDFW pursuant to Section 1600 of the State Fish and Game Code, obtain a Streambed Alteration Agreement prior to commencing ground-disturbing activities or any other alternation of a lake or stream.
- Where impacts are located in areas subject to the jurisdiction of the U.S. Army Corps of Engineers pursuant to Section 404 of the Federal Clean Water Act, obtain authorization to complete the required work pursuant to a Nationwide or individual permit.
- Where impacts are subject to the jurisdiction of the Regional Water Quality Control Board, obtain a Waiver of Water Quality Certification or Notice of Applicability of Waste Discharge Requirement permit.

Mitigation Measure BIO-3

To avoid impacts to nesting birds protected under the Migratory Bird Treaty Act (MBTA), trail construction should take place outside of the nesting bird season, which generally occurs between February 15 and September 1. If trail construction activities cannot avoid the nesting bird season, pre-construction nesting bird surveys shall be conducted by a qualified biologist a maximum of three days prior to the start of construction. Should nesting birds be discovered within or adjacent to the construction footprint during these surveys, a non-disturbance buffer shall be placed on the active nest as determined by the biologist to prevent impacts to nesting birds. Construction shall be halted within the non-disturbance buffer of 250 feet of songbirds and 500 feet for raptors until the biologist has determined that the young have fledged and are flying well enough to avoid the proposed construction activities.

Mitigation Measure BIO-4

To mitigate potential impacts on oak and other native woodlands, the County shall require that for every protected tree that must be removed, the same species shall be replaced at a minimum of a 1:1 ratio. Compensatory mitigation for protected trees in the jurisdiction of the County may include replacement at a 3:1 ratio for trees with a diameter at breast height (DBH) of 8 inches or more at an

appropriate mitigation site, and replacement at a 10:1 ratio for heritage oaks. Monitoring for at least one year would be required to meet success criteria.

Level of Significance after Mitigation

Implementation of mitigation measures BIO-1 through BIO-4 would reduce impacts to biological resources related to an substantial adverse effect on listed, sensitive, and locally important species, riparian and state sensitive plant communities, federally protected wetlands and waterways, migratory corridors and nursery sites, and oak and native woodlands to below the level of significance.

SECTION 6.0
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APPENDIX A
RECORD SEARCH RESULTS

TABLE A1
LISTED PLANT AND WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROJECT AREA

Common Name	Scientific Name	Status	Habitat	Potential to Occur within the Project Area
Plants				
beach spectaclepod	*Dithyrea maritima*	ST, CRPR:1B.1	Seashores, coastal sand dunes; Elevation: < 50 meters (m).	Low. No suitable habitat within or in the near vicinity of the project area.
Braunton's milk-vetch*	*Astragalus brauntonii*	FE, CRPR: 1B.1	Chaparral, closed-cone coniferous forest, coastal scrub, limestone, valley and foothill grassland; often in recent burned or disturbed areas; usually in sandstone soil with carbonate layers; occurs between 4 and 640 meters (m) above mean sea level (MSL).	Very high. Several CNDDB records for this species exist within and in the immediate vicinity of the project area. Project also within critical habitat
California Orcutt grass*	*Orcuttia californica*	FE, SE, CRPR: 1B.1	Vernal pool, wetland; occurs 49–2,165 feet (ft) above MSL.	Moderate. CNDDB records for this species exist within five miles of the project area, which may contain suitable habitat.
coastal dunes milk-vetch	*Astragalus tener* var. *titi*	FE, SE, CRPR: 1B.1	Moist sandy depressions (vernal pool) near coast, coastal bluffs, dunes; Elevation: < 20 m.	Low. No suitable habitat within or in the near vicinity of the project area.
Lyon's pentachaeta	*Pentachaeta lyonii*	FE, SE, 1B.1	Coastal scrub, grassland, chaparral openings; Elevation: < 400 m.	Low. CNDDB records for this species were not observed within 5 miles of the project area.
Nevin's barberry*	*Berberis nevinii*	FE, SE, CRPR: 1B.1	Chaparral, cismontane woodland, coastal scrub, riparian scrub, in sandy or gravelly soils; occurs 274–825 m above MSL.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
salt marsh bird's-beak	*Chloropyron maritimum* ssp. *maritimum*	FE, SE, CRPR: 1B.2	Coastal salt marsh; Elevation: < 10 m.	Low. The project area is outside of the elevation range for this species.
San Fernando Valley spineflower*	*Chorizanthe parryi* var. *Fernandina*	FC, SE, CRPR: 1B.1	Coastal scrub in sandy soil, valley and foothill grassland; occurs 150–1,220 m above MSL.	Very high. Several CNDDB records for this species exist within and in the immediate vicinity of the project area.
slender-horned spineflower*	*Dodecahema leptoceras*	FE, SE, CRPR: 1B.1	Chaparral, cismontane woodland, coastal scrub (alluvial fan); often in sandy soil; occurs 200–760 m above MSL.	Low. The project area is outside of the elevation range for this species.
Ventura Marsh milk-vetch	*Astragalus pycnostachyus* var. *lanosissimus*	FE, SE , CRPR: 1B.1	Disturbed areas, open, sand to gravel; Elevation: < 100 m.	Low. The project area is outside of the elevation range for this species.
Invertebrates				
quino checkerspot butterfly	*Euphydryas editha quino*	SE	Scrubland	Low. CNDDB records for this species were not observed within 5 miles of the project area.
Riverside fairy shrimp	*Streptocephalus woottoni*	SE	Endemic to Western Riverside, Orange and San Diego Counties in areas of tectonic swales/earth slump basins in grassland and coastal sage scrub. Inhabit seasonally astatic pools filled by winter/spring rains. Hatch in warm water later in the season.	Low. CNDDB records for this species were not observed within 5 miles of the project area.
vernal pool fairy shrimp*	*Branchinecta lynchi*	FT	Vernal pools from the Transverse Range north into southern Oregon.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
Fish				
Santa Ana sucker*	*Catostomus santaanae*	ST	Endemic to Los Angeles Basin south coastal streams. Habitat generalists, but prefer sand-rubble-boulder bottoms, cool, clear water, and algae.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
steelhead - southern California DPS	*Oncorhynchus mykiss irideus*	SE	From Santa Maria River south to southern extent of range (San Mateo Creek in San Diego Co.). Southern steelhead likely have greater physiological tolerances to warmer water & more variable conditions.	Low. CNDDB records for this species were not observed within 5 miles of the project area. Project area does not contain suitable waters.
tidewater goby	*Eucyclogobius newberryi*	SE	Brackish water habitats along the Calif coast from Agua Hedionda Lagoon, San Diego Co. to the mouth of the Smith River. Found in shallow lagoons and lower stream reaches, they need fairly still but not stagnant water & high oxygen levels.	Low. CNDDB records for this species were not observed within 5 miles of the project area.
unarmored threespine stickleback*	*Gasterosteus aculeatus williamsoni*	FE, SE	Clear water systems Los Angeles and Santa Barbara Counties with a low current.	Very high. CNDDB records for this species exist within the Castaic project area.
Reptiles				
southern rubber boa	*Charina umbratica*	ST	Woodlands, forest clearings, patchy chaparral, meadows, and grassy savannas, generally not far from water; also riparian zones in arid canyons and sagebrush in some areas.	Moderate. CNDDB records for this species were not observed; however, suitable habitat is present.

TABLE A1
LISTED PLANT AND WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROJECT AREA

Common Name	Scientific Name	Status	Habitat	Potential to Occur within the Project Area
Amphibians				
arroyo toad*	*Anaxyrus californicus*	FE	Desert wash, riparian scrub, riparian woodland, south coast flowing waters, south coast standing waters; mating and egg-laying at shallow stream margins from March to July; adults require overflow pools adjacent to the inflow channel of third- to greater-order streams that are free of predatory fishes in which to breed; occurs between 0–900 m above MSL.	Very high. Critical habitat for this species exists within the project area.
California red-legged frog*	*Rana draytonii*	FT	Humid forests, woodlands, grasslands, coastal scrub, and streamsides with plant cover, especially in lowlands and foothills.	High. CNDDB records for this species exist near tributaries to the Santa Clara River, which flows through the area.
Birds				
bald eagle	*Haliaeetus leucocephalus*	SE	Ocean shore, lake margins, and rivers for both nesting and wintering. Most nests within 1 mile of water. Nests in large, old-growth, or dominant live tree with open branches, especially ponderosa pine. Roosts communally in winter.	Low. CNDDB records for this species were not observed within 5miles of the project area. Suitable habitat is limited for nest.
bank swallow*	*Riparia riparia*	ST	Riparian scrub, riparian woodland; nests in steep sand, dirt, or gravel banks, in burrows dug near the top of the bank, along the edge of inland water, along coast, in gravel pits, or road embankments; diet primarily flying insects.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
California condor	*Gymnogyps californianus*	FE, SE	Large range of habitat from pacific beaches to mountains forest and meadows. Will nest in caves along cliff faces.	Moderate. CNDDB records for this species were not observed; however suitable habitat is present.
coastal California gnatcatcher*	*Polioptila californica californica*	FT	Coastal bluff scrub, coastal scrub; dry coastal slopes, washes, and mesas; cone-shaped nests built in shrubs; areas of low plant growth (about 1 m high); strongly associated with sage scrub; generally avoids crossing unsuitable habitat.	Very high. CNDDB records and critical habitat for this species exist within the project area.
least Bell's vireo*	*Vireo bellii pusillus*	FE, SE	Riparian forest, riparian scrub, riparian woodland; forages exclusively in riparian habitats primarily on insects; dense riparian understory shrubbery required for nesting; nests usually 1 m off ground.	Very high. CNDDB records and critical habitat for this species exist within the project area.
Swainson's hawk*	*Buteo swainsoni*	ST	Riparian, cropland/hedgerow, desert, grassland/herbaceous, savanna, mixed woodland; may be found in grasslands and other open habitats in winter and migration.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
tricolored blackbird*	*Agelaius tricolor*	SCT	Cattail or tule marshes; forages in fields, farms. Breeds in large freshwater marshes, in dense stands of cattails or bulrushes. Forages in open habitats such as farm fields, pastures, cattle pens, large lawns.	High. CNDDB records and suitable habitat for this species exist within 5 miles of the project area.
western snowy plover	*Charadrius lexandrines nivosus*	ST	Sandy beaches, salt pond levees and shores of large alkali lakes. Needs sandy, gravelly or friable soils for nesting.	Low. No suitable habitat within or in the near vicinity of the project area.
western yellow-billed cuckoo	*Coccyzus americanus occidentalis*	FT, SE	Riparian forest nester, along the broad, lower flood-bottoms of larger river systems. Nests in riparian jungles of willow, often mixed with cottonwoods, lower story of blackberry, nettles, or wild grape.	Moderate. CNDDB records for this species were not observed, however suitable habitat is present.
Mammals				
San Joaquin kit fox	*Vulpes macrotis mutica*	FE, ST	Grassland, oak savanna and arid scrubland in the southern Sacramento Valley, Salinas Valley, San Joaquin Valley and adjacent foothills, south to the Mojave Desert. Associated with fine-textured, sandy, friable soils.	Low. No suitable habitat within or in the near vicinity of the project area.

NOTE: * Denotes species observed within a 5 mile buffer of Project boundaries.

KEY: FD = federal delisted species; FC = federal candidate; FE = federal endangered; FT = federal threatened; SCT = State candidate threatened; SE = State endangered; SR = State Rare; ST = State threatened; California Native Plant Society (CRPR) 1A = Plants Presumed Extinct in California; CRPR: 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere; 2 = Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere; 3 = Plants About Which we Need More Information; 4 = Plants of Limited Distribution. THREAT RANK: 0.1: Seriously endangered in California 0.2; Fairly endangered in California. 0.3: Note very endangered in California.

TABLE A2
SENSITIVE WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROJECT AREA

Common Name	Scientific Name	Status	Habitat	Potential to Occur within the Project Area
Arachnids				
Gertsch's socalchemmis spider	*Socalchemmis gertschi*	CSA	Known from only two localities in Los Angeles County: Brentwood (type locality) and Topanga Canyon. Coastal scrub.	Low. CNDDB records for this species were not observed within 5 miles of the project area. No suitable habitat present.
Invertebrates				
Crotch bumble bee*	*Bombus crotchii*	CSA	Warm and dry sites, including the inner Coast Range of California and margins of the Mojave Desert.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
globose dune beetle	*Coelus globosus*	CSA	Inhabitant of coastal sand dune habitat; erratically distributed from Ten Mile Creek in Mendocino County south to Ensenada, Mexico. Inhabits foredunes and sand hummocks; it burrows beneath the sand surface and is most common beneath dune vegetation.	Low. CNDDB records for this species were not observed within 5 miles of the project area. No suitable habitat present.
monarch butterfly - California overwintering population*	*Danaus plexippus pop. 1*	CSA	Grassland/herbaceous, old field, sand/dune, shrubland/chaparral, suburban/orchard, woodland–hardwood, woodland–mixed, coastal California conifer or eucalyptus groves. Adults rely on coastal non-native woodlands (especially Eucalyptus) for winter roosting aggregations, larval (caterpillar) stage forages exclusively on milkweed (*Asclepias* spp.), which occurs in grassland, wetland and riparian areas.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
sandy beach tiger beetle	*Cicindela hirticollis gravida*	CSA	Inhabits areas adjacent to non-brackish water along the coast of California from San Francisco Bay to northern Mexico. Clean, dry, light-colored sand in the upper zone. Subterranean larvae prefer moist sand not affected by wave action.	Low. CNDDB records for this species were not observed within 5 miles of the project area. No suitable habitat present.
Santa Monica grasshopper	*Trimerotropis occidentiloides*	CSA	Known only from the Santa Monica Mountains; Found on bare hillsides and along dirt trails in chaparral.	Low. Species limited to Santa Monica Mountains.
Fish				
arroyo chub*	*Gila orcuttii*	CSC	Aquatic, south coast flowing waters; freshwater; benthic; headwaters, creeks, intermittent streams, small to medium rivers; spawns in stream pools; diet primarily aquatic invertebrates.	High. CNDDB records for this species exist near tributaries to the Santa Clara River, which flows through the area.
Santa Ana speckled dace	*Rhinichthys osculus* ssp. *3*	CSC	Headwaters of the Santa Ana and San Gabriel rivers. May be extirpated from the Los Angeles River system. Requires permanent flowing streams with summer water temperatures of 17-20 degrees C. Usually inhabits shallow cobble and gravel riffles.	Low. CNDDB records for this species were not observed within 5 miles of the project area. No suitable habitat present.
Amphibians				
Coast Range newt*	*Taricha torosa*	CSC	Coastal drainages from Mendocino County to San Diego County. Lives in terrestrial habitats and will migrate over 1 kilometer (km) to breed in ponds, reservoirs and slow moving streams.	High. CNDDB records for this species were observed within 5 miles of project area. Suitable habitat present.
foothill yellow-legged frog	*Rana boylii*	CSC	Rocky streams, rivers with rocky substrate; found in forests, chaparral, and woodlands.	High. CNDDB records for this species exist near tributaries to the Santa Clara River, which flows through the area.
San Gabriel slender salamander	*Batrachoseps gabrieli*	CSA	Known only from the San Gabriel Mountains. Found under rocks, wood, fern fronds and on soil at the base of talus slopes. Most active on the surface in winter and early spring.	Low. CNDDB records for this species were not observed within 5 miles of the project area.
western spadefoot*	*Spea hammondii*	CSC	Cismontane woodland, coastal scrub, valley and foothill grassland, vernal pool, wetland; benthic, burrowing in or using soil; it prefers shortgrass plains, sandy or gravelly soil (e.g., alkali flats, washes, alluvial fans). It is fossorial and breeds in temporary rain pools and slow-moving streams.	Very high. Several CNDDB records for this species exist within the project area.
Reptiles				
California glossy snake*	*Arizona elegans occidentalis*	CSC	Inhabits arid scrub, rocky washes, grasslands, chaparral.	Very high. Several CNDDB records for this species exist within the project area.
California mountain kingsnake (San Bernardino population)	*Lampropeltis zonata (parvirubra)*	WL	Restricted to the San Gabriel and San Jacinto Mountains of Southern California. Inhabits a variety of habitats, including valley-foothill hardwood, coniferous, chaparral, riparian, and wet meadows.	Low. CNDDB records for this species were not observed within 5 miles of project area. Suitable habitat is present.

TABLE A2
SENSITIVE WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROJECT AREA

Common Name	Scientific Name	Status	Habitat	Potential to Occur within the Project Area
coast horned lizard*	*Phrynosoma blainvillii*	CSC	Found in a variety of vegetation types, including coastal scrub, coastal bluff scrub, valley and foothill grassland, chaparral, cismontane woodland, pinyon and juniper woodlands, riparian scrub, riparian woodland and desert wash; in inland areas, this species is restricted to areas with pockets of open microhabitat, created by disturbance.	Very high. Several CNDDB records for this species exist within the project area.
coastal whiptail*	*Aspidoscelis tigris stejnegeri*	CSA	Occurs in habitats that are primarily hot and dry open areas with sparse foliage. Found in chaparral, woodland, and riparian areas.	High. Several CNDDB records for this species exist within the immediate vicinity of the project area.
rosy boa	*Charina trivirgata*	CSA	Inhabits rocky outcrops and rocky shrublands in the southwestern U.S. and Mexico. Habitats are diverse and include desert, arid scrub, brushland, sandy plains, rocky slopes, and chaparral-covered foothills, particularly where moisture is available, as around springs, streams, and canyon floors.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
silvery legless lizard*	*Anniella pulchra pulchra*	CSC	Chaparral, coastal dunes, coastal scrub; burrows in loose soil, especially in semi-stabilized sand dunes and also in other areas with sandy soil, in areas vegetated with oak or pine-oak woodland, or chaparral; also wooded stream edges, and occasionally desert-scrub; bush lupine often is an indicator of suitable conditions; often found in leaf litter, under rocks, logs, and driftwood.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
south coast gartersnake	*Thamnophis sirtalis ssp.*	CSC	Mixed woodland, grassland, coniferous forest, dunes, brushland, generally in the vicinity of ponds or flowing water.	Moderate. CNDDB records were not observed within 5 miles of the project; however, suitable habitat is present.
two-striped garter snake*	*Thamnophis hammondii*	CSC	Marsh and swamp, riparian scrub, riparian woodland, wetland; generally found in or near permanent fresh water, often along streams with rocky beds bordered by willows and other riparian vegetation, including mountain slopes and desert oases; requires dense riparian vegetation; burrowing in or using soil.	High. Several CNDDB records for this species exist within the immediate vicinity of the project area.
western pond turtle*	*Emys marmorata*	CSC	Aquatic, artificial flowing waters, marsh and swamp, south coast flowing waters, south coast standing waters, wetland; habitat includes permanent and intermittent waters of rivers, creeks, small lakes and ponds, man-made stock ponds and sewage-treatment ponds; nesting sites on sandy banks and bars, in fields, or sunny spots up to a few hundred feet from water.	High. Several CNDDB records for this species exist within the immediate vicinity of the project area.
Birds				
American white pelican	*Pelecanus erythrorhynchos*	CSC	Colonial nester on coastal islands just outside the surf line. Nests on coastal islands of small to moderate size which afford immunity from attack by ground-dwelling predators. Roosts communally.	Low. CNDDB records and suitable habitat were not observed within 5 miles of the project.
black-crowned night heron	*Nycticorax nycticorax*	CSA	Found in wetland habitats including estuaries, marshes, lakes, streams, and reservoirs.	Moderate. CNDDB records were not observed within 5 miles of the project, however suitable habitat is present.
Brewer's sparrow	*Spizella breweri*	CSA	Arid sagebrush.	Moderate. CNDDB records were not observed within 5 miles of the project, however suitable habitat is present.
burrowing owl*	*Athene cunicularia*	CSC	Found in open grasslands, agricultural and range lands, and desert habitats and often are associated with burrowing animals, specifically the California ground squirrel; can also inhabit grass, forbs, and shrub stages of pinyon and ponderosa pine habitats.	Very high. Several CNDDB records for this species exist within the project area.
California gull	*Larus californicus*	WL	Breed on sparsely vegetated islands and levees and lakes and rivers. Forage in open areas, scrublands, pastures, orchards, meadows, and farms. Will forage along the Pacific Coast during winter.	Low. CNDDB records and suitable habitat were not observed within 5 miles of the project.
California horned lark	*Eremophila alpestris actia*	CSA	Grassland/herbaceous; open areas with sparse low herbaceous vegetation or scattered low shrubs; agricultural fields; nests in hollow on ground next to grass tuft, manure, or clod of soil.	Very high. CNDDB records for this species exist within the project area.
California spotted owl	*Strix occidentalis occidentalis*	CSC	Found in closed-canopy, uneven-aged, late succession and old-growth forest.	Low. CNDDB records and suitable habitat were not observed within 5 miles of the project.

TABLE A2
SENSITIVE WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROJECT AREA

Common Name	Scientific Name	Status	Habitat	Potential to Occur within the Project Area
Caspian tern	*Hydroprogne caspia*	CSA	Found on both fresh and salt water including large lakes, coastal waters, beaches, lagoons, rivers, and bays.	Low. CNDDB records and suitable habitat were not observed within 5 miles of the project.
Clark's marsh wren	*Cistothorus palustris clarkae*	CSC	Restricted to freshwater and brackish marshes dominated by bulrushes or cattails.	Moderate. CNDDB records were not observed within 5 miles of the project; however, suitable habitat is present.
Cooper's hawk*	*Accipiter cooperii*	CSA	Cismontane woodland, riparian forest, riparian woodland, upper montane coniferous forest, urban areas; nests in tall trees; usually builds new nest on horizontal limb near trunk or in crotch, 20–59 ft above ground; may use virtually all habitats for foraging.	High. Several CNDDB records for this species exist within the immediate vicinity of the project area.
Costa's hummingbird	*Calypte costae*	CSA	Occurs in desert scrub in the Sonoran and Mojave Deserts, chaparral, and sage scrub areas in coastal California.	Low. CNDDB records and suitable habitat were not observed within 5 miles of the project.
double-crested cormorant	*Phalacrocorax auritus*	WL	Freshwater. Will breed in coast and large inland lakes.	Low. CNDDB records and suitable habitat were not observed within 5 miles of the project.
ferruginous hawk	*Buteo regalis*	WL	Open grasslands, sagebrush flats, desert scrub, low foothills and fringes of pinyon and juniper habitats. Eats mostly lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	Moderate. CNDDB records were not observed within 5 miles of the project, however suitable habitat is present.
golden eagle*	*Aquila chrysaetos*	FP;WL	Mountain hills and cliffs. Habitats ranging from arctic to desert including tundra, shrublands, grasslands, coniferous forests, frarmlands and along rivers ans streams.	High. CNDDB records and suitable habitat were observed within 5 miles of the project area.
gray vireo	*Vireo vicinior*	CSC	Brushy mountain slopes, mesas, open chaparral, scrub oak and junipers.	Moderate. CNDDB records for this species were not observed; however, suitable habitat is present
Lawrence's goldfinch	*Spinus lawrencei*	CSA	Oak-pine woods and chaparral. Breeds locally in a variety of habitats.	Moderate. CNDDB records for this species were not observed; however, suitable habitat is present
loggerhead shrike	*Lanius ludovicianus*	CSC	Cropland/hedgerow, desert, grassland/herbaceous, old field, savanna, shrubland/chaparral. Nests in shrubs or small trees.	Moderate. CNDDB records for this species were not observed; however, suitable habitat is present
merlin	*Falco columbarius*	WL	Seacoast, tidal estuaries, open woodlands, savannahs, edges of grasslands and deserts, farms and ranches. Clumps of trees or windbreaks are required for roosting in open country.	Low. CNDDB records and suitable habitat were not observed within 5 miles of the project.
mountain plover	*Charadrius montanus*	CSC	Chenopod scrub, valley and foothill grassland. Short grasslands, freshly plowed fields, newly sprouting grain fields, and sometimes sod farms. Short vegetation, bare ground and flat topography. Prefers grazed areas and areas that support burrowing rodents.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area, which may contain suitable habitat.
northern cardinal	*Cardinalis cardinalis*	WL	Extremely rare resident along the Colorado River. Dense brushy river bottom thickets, well-vegetated dry washes & dense desert scrub.	Low. CNDDB records and suitable habitat were not observed within 5 miles of the project.
northern harrier	*Circus cyaneus*	CSC	Marshes, fields, and prairies.	Low. CNDDB records did not record this species within 5 miles of the project area.
oak titmouse	*Baeolophus inornatus*	CSA	Oak woods, pinyon-juniper, locally river woods, and shade trees	Low. CNDDB records and suitable habitat were not observed within 5 miles of the project.
olive-sided flycatcher	*Contopus cooperi*	CSC	Conifer forest, burns, clearings.	Low. CNDDB records did not record this species within 5 miles of the project area.
osprey	*Pandion haliaetus*	WL	Ocean shore, bays, fresh-water lakes, and larger streams. Large nests built in tree-tops within 15 miles of a good fish-producing body of water.	Low. CNDDB records did not record this species within 5 miles of the project area. No suitable habitat present
prairie falcon	*Falco mexicanus*	CSA	Grasslands, shrub-steppe, deserts, open areas below 3,048 meters (m) in elevation.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area, which may contain suitable habitat.
rufous hummingbird	*Selasphorus rufus*	CSA	Forest edges, streamsides, and mountain meadows.	Low. CNDDB records for this species were not observed within 5 miles of the project area
snowy egret	*Egretta thula*	CSA	Marshes, swamps, ponds, and shores. Widespread in many types of aquatic habitats including fresh and salt water.	Low. CNDDB records for this species were not observed within 5 miles of the project area.
southern California rufous-crowned sparrow*	*Aimophila ruficeps canescens*	CSC	Shrubland/chaparral, coastal sage dominated by sagebrush, coastal bluff scrub. Nests on the ground or low in the branches of trees or shrubs.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
Vaux's swift	*Chaetura vauxi*	CSC	Open sky over forest, lakes, and rivers. Will feed low over water. Nests in coniferous and mixed forest.	Low. CNDDB records for this species were not observed within 5 miles of the project area.

TABLE A2
SENSITIVE WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROJECT AREA

Common Name	Scientific Name	Status	Habitat	Potential to Occur within the Project Area
white-faced ibis	*Plegadis chihi*	WL	Fresh marshes, irrigated land, and tules. Will forage in shallow water.	Low. CNDDB records for this species were not observed within 5 miles of the project area.
white-tailed kite*	*Elanus leucurus*	CFP	Cropland/hedgerow, grassland/herbaceous, savanna, hardwood woodland. Nests in trees.	High. Several CNDDB records for this species exist within the immediate vicinity of the project area.
yellow warbler	*Setophaga petechial*	CSC	Riparian woodland. Commonly in open to medium-density woodlands and forests with a heavy brush understory in breeding season. Nests often placed in deciduous saplings or shrubs 2-16 ft above ground. Territory includes tall trees for foraging and dense understory for nesting.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area, however may contain suitable habitat.
yellow-billed magpie	*Pica nuttalli*	CSA	Stream groves, scattered oaks, ranches, and farms.	Low. CNDDB records for this species were not observed within 5 miles of the project area. No suitable habitat present.
yellow-breasted chat	*Icteria virens*	CSC	Riparian forest, riparian scrub, riparian woodland; nests in bushes, brier tangles, vines, and low trees, generally in dense vegetation less than 7 ft above ground.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area, however, may contain suitable habitat.
Mammals				
American badger*	*Taxidea taxus*	CSC	Found in arid, open habitats, particularly grasslands, savannahs, mountain meadows, and desert scrub openings; needs friable soils for digging and open, uncultivated ground; occurs at low to moderate slopes; has been associated with Joshua tree woodland and pinyon-juniper habitats.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
California leaf-nosed bat*	*Macrotus californicus*	CSC	Desert riparian, desert wash, desert scrub, desert succulent shrub, alkali desert scrub, palm oasis; day roosts in mine tunnels or caves, occasionally buildings and bridges.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
cave myotis	*Myotis velifer*	CSC	Evergreen or pine-oak forest and pine forest. Also found al lower elevations in riparian habitats near desert scrub.	Low. CNDDB records for this species were not observed within 5 miles of the project area. No suitable habitat present.
hoary bat	*Lasiurus cinereus*	CSA	Forages over a wide range of habitats, but prefers open habitats with access to trees for roosting, and water. Primarily roosts in trees and foliage. Ranges throughout most of California.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area, however may contain suitable habitat.
lodgepole chipmunk	*Neotamias speciosus speciosus*	CSA	Chaparral, upper montane coniferous forest; usually found in open-canopy forests. Southern California elevation range 16,398 to 9,688 ft above MSL.	Low. The project area is outside of the elevation range for this species.
Los Angeles pocket mouse	*Perognathus longimembris brevinasus*	CSC	Lower elevation grasslands and coastal sage communities in and around the Los Angeles Basin. Open ground with fine sandy soils. May not dig extensive burrows, hiding under weeds and dead leaves instead.	Low. CNDDB records for this species were not observed within 5 miles of the project area. No suitable habitat present.
pallid bat	*Antrozous pallidus*	CSC	Occurs throughout the American west; chaparral, coastal scrub, desert wash, Great Basin grassland, Great Basin scrub, Mojavean desert scrub, riparian woodland, Sonoran desert scrub, upper montane coniferous forest, valley and foothill grassland; roosts in rock crevices, caves, mineshafts, under bridges, in buildings, and within hollow trees; consumes insects and other invertebrates; roosts in small colonies of 10 to 100 and emerges late at night to forage on the ground.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area; however, suitable habitat may be present.
San Diego black-tailed jackrabbit	*Lepus californicus bennettii*	CSC	Coastal scrub; open country with scattered thickets or patches of shrubs. Rests by day in shallow depression.	Moderate. CNDDB records for this were not observed within 5 miles of the project area; however, suitable habitat may be present.
San Diego desert woodrat*	*Neotoma lepida intermedia*	CSC	Coastal scrub; sagebrush scrub; chaparral; often associated with large cactus patches; also found in rocky outcroppings and boulder hillsides within chaparral and oak woodland habitats.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
silver-haired bat	*Lasionycteris noctivagans*	CSA	Primarily a coastal and montane forest dweller feeding over streams, ponds and open brushy areas. Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes and rarely under rocks. Needs drinking water.	Moderate. CNDDB records for this were not observed within 5 miles of the project area; however, suitable habitat may be present.
southern grasshopper mouse	*Onychomys torridus ramona*	CSC	Chenopod scrub; consumes soft-bodied insects including cutworms and grasshoppers; lives in arid habitats but requires no open water sources; the species forages under and within shrubs and crosses open areas.	Moderate. CNDDB records for this were not observed within 5 miles of the project area; however, suitable habitat may be present.

TABLE A2
SENSITIVE WILDLIFE SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROJECT AREA

Common Name	Scientific Name	Status	Habitat	Potential to Occur within the Project Area
spotted bat*	*Euderma maculatum*	CSC	Occupies a wide variety of habitats from arid deserts and grasslands through mixed conifer forests. Feeds over water and along washes. Feeds almost entirely on moths. Prefers rock crevices in cliffs or caves for roosting.	Very high. CNDDB records for this species and suitable habitat exist within the project area.
Townsend's big-eared bat	*Corynorhinus townsendii*	CSC	In a variety of locations that range form coniferous forest and woodlands, deciduous riparian woodland, semi-desert and montane shrublands.	Moderate. CNDDB records for this were not observed within 5 miles of the project area; however, suitable habitat may be present.
western mastiff bat*	*Eumops perotis californicus*	CSC	Found in the southwestern United States, generally away from human development; this species can utilize a variety of habitat types including chaparral, oak woodland, pine forests, agricultural areas, and desert washes; roosts primarily in vertical rock crevices on cliffs; common in open habitats when foraging.	High. Several CNDDB records for this species and suitable habitat exist within the immediate vicinity of the project area.
western red bat	*Lasiurus blossevillii*	CSC	Found in cities and forest. Will roosts primarily in the foliage of trees and bushes.	Moderate. CNDDB records for this were not observed within 5 miles of the project area; however, suitable habitat may be present.
western small-footed myotis	*Myotis ciliolabrum*	CSA	Found in open grasslands and foothills.	Low. CNDDB records for this species were not observed; however, suitable habitat may be present
Yuma myotis	*Myotis yumanensis*	CSA	Inhabits juniper and riparian woodlands to desert regions in proximity to open water. Roosts in caves, attics, buildings, mines, and bridges.	Moderate. CNDDB records were not observed within 5 miles of the project; however, suitable habitat is present.

KEY: CSC = California Species of Special Concern; CSA= California Special Animal; FP=Fully Protected; WL-=CDFW watchlist
NOTE: *denotes species observed within 5 miles of Project Area. California Special Animal (CSA) is a general term that refers to all of the taxa the CNDDB is interested in tracking, regardless of their legal or protection status. The Department of Fish and Wildlife considers the taxa on this list to be those of greatest conservation need. For those species with statuses identified by USFWS and/or CDFW, the status is noted. Those species included on the list due to identification by other governmental agencies and/or non-governmental conservation organizations are listed as CSA.

SOURCE: California Department of Fish and Wildlife. 2015. Rarefind 5: A Database Application for the Use of the California Department of Fish and Game Natural Diversity Data Base. Sacramento, CA.

TABLE A3
SENSITIVE PLANT SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROJECT AREA

Common Name	Scientific Name	Status	Habitat	Potential to Occur within the Project Area
Blochman's dudleya*	*Dudleya blochmaniae ssp. blochmaniae*	CRPR: 1B.1	Open, rocky slopes, often serpentine or clay-dominated; Elevation: < 450 meters (m).	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
Brewer's calandrinia	*Calandrinia breweri*	CRPR: 4.2	Sandy to loamy soil, disturbed sites, burns; Elevation: < 1,200 m.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
California androsace	*Androsace elongata ssp. acuta*	CRPR: 4.2	Chaparral, cismontane woodland, coastal scrub, meadows and seeps, pinyon and juniper woodland, valley and foothill grassland; occurs between 150–1,200 m above mean sea level (MSL).	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
California screw moss	*Tortula californica*	CRPR: 1B.2	Chenopod scrub, valley and foothill grassland, moss growing on sandy soil; Elevation: 10–1,460 m.	Low. CNDDB records for this species do not exist within 5 miles of the project area. Suitable habitat is not expected.
Catalina mariposa lily	*Calochortus catalinae*	CRPR: 4.2	Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; occurs between 15 and 700 m above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
chaparral nolina*	*Nolina cismontana*	CRPR: 1B.2	Dry chaparral of coastal mountains; Elevation: 200–1,300 m.	High. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
chaparral ragwort*	*Senecio aphanactis*	CRPR: 2B.2	Chaparral, cismontane woodland, coastal scrub; sometimes alkaline soils; occurs between 15 and 800 m above MSL.	High. CNDDB records for this species exist within the immediate vicinity of the project area.
Clokey's cryptantha	*Cryptantha clokeyi*	CRPR: 1B.2	Mojavean desert scrub; occurs between 725–1,365 m above MSL.	Low. The project area does not contain Mojavean desert scrub habitat.
club-haired mariposa lily	*Calochortus clavatus var. clavatus*	CRPR: 4.3	Usually in serpentinite, clay, rocky soils. Chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; occurs 75–1,300 m above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
conejo buckwheat	*Eriogonum crocatum*	CRPR: 1B.2	Chaparral, coastal scrub, valley and foothill grassland; Conejo volcanic outcrops and rocky sites; Elevation 90–580 m.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Coulter's goldfields*	*Lasthenia glabrata ssp. coulteri*	CRPR: 1B.1	Saline places, vernal pools; Elevation: < 1,000 m.	Moderate. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
Coulter's matilija poppy	*Romneya coulteri*	CRPR: 4.2	Dry washes, canyons; Elevation: < 1,200 m.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Coulter's saltbush	*Atriplex coulteri*	CRPR: 1B.2	Alkaline or clay soils, open sites, scrub, coastal bluff scrub; Elevation: < 500 m.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Davidson's bush-mallow*	*Malacothamnus davidsonii*	CRPR: 1B.2	Chaparral, cismontane woodland, coastal scrub, riparian woodland; occurs 185 to 855 m above MSL.	High. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
Davidson's saltscale	*Atriplex serenana var. davidsonii*	CRPR: 1B.2	Bluffs; Elevation: < 200 m.	Low. CNDDB records for this species do not exist within 5 miles of the project area. Suitable habitat is not expected.
decumbent goldenbush	*Isocoma menziesii var. decumbens*	CRPR: 1B.2	Sandy soil, chaparral, coastal scrub, landward side of dunes, hillsides, arroyos; Elevation: < 200 m.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
dune larkspur	*Delphinium parryi ssp. blochmaniae*	CRPR: 1B.2	Chaparral, coastal dunes (maritime), and on rocky areas; Elevation 18–30 m.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
fragrant pitcher sage	*Lepechinia fragrans*	CRPR: 4.2	Chaparral; occurs 20–1,310 m above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Greata's aster	*Symphyotrichum greatae*	CRPR: 1B.3	Occurs in chaparral, broadleaf upland forest, cismontane woodland, lower montane coniferous forest, and riparian woodland on mesic soils; occurs 300 to 2,010 m above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Hubby's phacelia	*Phacelia hubbyi*	CRPR: 4.2	Chaparral, coastal scrub, valley and foothill grassland in gravelly, rocky, and talus soils; occurs between 0 and 1,000 m above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Humboldt lily	*Lilium humboldtii ssp. humboldtii*	CRPR: 4.2	Chaparral, cismontane woodlands, lower montane coniferous forest.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
island mountain-mahogany	*Cercocarpus betuloides var. blancheae*	CRPR: 4.3	Closed-cone coniferous forest, chaparral; occurs 30–600 m above MSL.	Low. CNDDB records for this species do not exist within 5 miles of the project area. Suitable habitat is not expected.
Late-flowered mariposa-lily*	*Calochortus fimbriatus*	CRPR: 1B.3	Chaparral, foothill woodlands.	High. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.

TABLE A3
SENSITIVE PLANT SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROJECT AREA

Common Name	Scientific Name	Status	Habitat	Potential to Occur within the Project Area
Lewis' evening-primrose	*Camissoniopsis lewisii*	CRPR: 3	Grassland, sandy or clay soils, coastal; Elevation: < 300 m.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Malibu baccharis	*Baccharis malibuensis*	CRPR: 1B.1	Chaparral, grassy openings; Elevation: 50-300 m.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
many-stemmed dudleya*	*Dudleya multicaulis*	CRPR: 1B.2	Chaparral, Valley Grassland, Coastal Sage Scrub.	High. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
mesa horkelia*	*Horkelia cuneata var. puberula*	CRPR: 1B.1	Chaparral, cismontane woodland, coastal shrub; occurs between 70 and 810 m above MSL.	High. CNDDB records for this species exist within 5 miles of the project area, which may contain suitable habitat.
Mojave phacelia	*Phacelia mohavensis*	CRPR: 4.3	Sandy or gravelly soil. Cismontane woodland, lower montane coniferous forest, meadows and seeps, pinyon and juniper woodland; occurs 1,400–2,500 m above MSL.	Low. CNDDB records for this species do not exist within 5 miles of the project area. Suitable habitat is not expected.
Mt. Pinos larkspur	*Delphinium parryi ssp. purpureum*	CRPR: 4.3	Chaparral, Mojavean desert scrub, pinyon and juniper woodland; occurs between 1,000 and 2,600 m above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However suitable habitat may be present.
Newhall sunflower*	*Helianthus inexpectatus*	CRPR: 1B.1	Marsh and swamp, meadow and seep, wetland, riparian woodland. Occurs around 305 m above MSL.	Moderate. CNDDB records for this species exist within 5 miles of the project area. Suitable habitat is expected within the vicinity for the project area.
ocellated Humboldt lily	*Lilium humboldtii ssp. ocellatum*	CRPR: 4.2	Found in openings; chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland; occurs between 30 and 1,800 m above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Ojai navarretia*	*Navarretia ojaiensis*	CRPR: 1B.1	Chaparral, coastal scrub, valley and foothill grassland. Openings in shrublands or grasslands. Occurs between 275 and 620 m above MSL.	Moderate. CNDDB records for this species exist within 5 miles of the project area. Suitable habitat is expected within the vicinity for the project area.
Palmer's grapplinghook*	*Harpagonella palmeri*	CRPR: 4.2	Clay soils, open grassy areas within shrubland; chaparral, coastal scrub, valley and foothill grassland; occurs between 20 and 955 m above MSL.	High. CNDDB records for this species exist within the immediate vicinity of the project area.
paniculate tarplant	*Deinandra paniculata*	CRPR: 4.2	Usually found in mesic soils, sometimes sandy soils; coastal scrub, valley and foothill grassland, vernal pools; occurs between 25 and 940 m above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Parish's brittlescale	*Atriplex parishii*	CRPR: 1B.1	Chenopod scrub, playas, vernal pools.	Low. CNDDB records for this species do not exist within 5 miles of the project area. Suitable habitat is not expected.
Parry's spineflower	*Chorizanthe parryi var. parryi*	CRPR: 1B.1	Sandy or rocky openings, chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; occurs 902–4,003 feet (ft) above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Peirson's morning-glory	*Calystegia peirsonii*	CRPR: 4.2	Chaparral, chenopod scrub, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland; occurs 30 to 1,500 m above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Piute Mountains navarretia	*Navarretia setiloba*	CRPR: 1B.1	Cismontane woodland, pinyon and juniper woodlands, valley and foothill grassland. Red clay soils, other clay soils, or on gravelly loam. Occurs between 285 and 2100 m above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Plummer's baccharis	*Baccharis plummerae ssp. plummerae*	CRPR: 4.3	Broadleafed upland forest, chaparral, cismontane woodland, coastal scrub.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Plummer's mariposa-lily*	*Calochortus plummerae*	CRPR: 4.2	Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland, in granitic rocky soil; occurs 100 to 1,700 m above MSL.	High. CNDDB records for this species exist within the immediate vicinity of the project area.
Robinson's pepper-grass	*Lepidium virginicum var. robinsonii*	CRPR: 4.3	Chaparral and coastal scrub habitat. Occurs between 1 and 885 m above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Ross' pitcher sage	*Lepechinia rossii*	CRPR: 1B.2	Chaparral habitats; occurs between 305 and 790 m above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
round-leaved filaree	*California macrophylla*	CRPR: 1B.1	Cismontane woodland, valley and foothill grassland; clay soils; occurs 49–3,937 ft above MSL.	Low. CNDDB records for this species do not exist within 5 miles of the project area.
Salt Spring checkerbloom	*Sidalcea neomexicana*	CRPR: 2B.2	Chaparral, coastal scrub, lower montane coniferous forest, Mohavean desert scrub, playas.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
Santa Susana tarplant*	*Hemizonia minthornii*	CRPR: 1B	Chaparral, Coastal sage scrub.	High. CNDDB records for this species exist within the immediate vicinity of the project area.

TABLE A3
SENSITIVE PLANT SPECIES WITH THE POTENTIAL TO OCCUR IN THE PROJECT AREA

Common Name	Scientific Name	Status	Habitat	Potential to Occur within the Project Area
short-joint beavertail*	*Opuntia basilaris var. brachyclada*	CRPR: 1B.2	Chaparral, Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodlands, riparian woodland; occurs 425 to 1,800 m above MSL.	High. CNDDB records for this species exist within the immediate vicinity of the project area.
slender clarkia	*Clarkia exilis*	CRPR: 4.3	Cismontane woodland; occurs between 120 and 1,000 m above MSL.	Low. CNDDB records for this species do not exist within 5 miles of the project area.
slender mariposa-lily*	*Calochortus clavatus var. gracilis*	CRPR: 1B.2	Chaparral, coastal scrub, valley and foothill grassland; occurs 320 to 1,000 m above MSL.	Very High. Several CNDDB records for this species exist in and within the immediate vicinity of the project area.
small-flowered morning-glory	*Convolvulus simulans*	CRPR: 4.2	Clay soils and serpentinite seeps; chaparral (openings), coastal scrub, valley and foothill grassland; occurs between 30 and 700 m above MSL.	Low. CNDDB records for this species do not exist within 5 miles of the project area.
Sonoran maiden fern	*Thelypteris puberula var. sonorensis*	CRPR: 2B.2	Meadows and seeps.	Low. CNDDB records for this species do not exist within five mile of the project area.
south coast saltscale	*Atriplex pacifica*	CRPR: 1B.2	Coastal bluff scrub, coastal dunes, coastal scrub, and playas.	Low. CNDDB records for this species do not exist within 5 miles of the project area. No suitable habitat is present.
Southern California black walnut	*Juglans californica*	CRPR: 4.2	Chaparral, coastal dunes, coastal scrub, marshes and swamps (coastal salt), found in sandy sometimes rocky soils; occurs between 5 and 300 m above MSL.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
southwestern spiny rush	*Juncus acutus ssp. leopoldii*	CRPR: 4.2	Moist saline places, salt marshes, alkaline seeps; Elevation: generally < 300 m.	Low. CNDDB records for this species do not exist within 5 miles of the project area.
western bristly scaleseed	*Spermolepis lateriflora*	CRPR: 2A	Rocky or sandy desert scrub. Elevation: 365-670 m.	Low. CNDDB records for this species do not exist within 5 miles of the project area.
western dichondra	*Dichondra occidentalis*	CRPR: 4.2	Among rocks, shrubs, in coastal scrub, chaparral, oak woodland; Elevation: < 520 m.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.
western spleenwort	*Asplenium vespertinum*	CRPR: 4.2	Base of overhanging boulders; Elevation: 200-1,000 m.	Low. CNDDB records for this species do not exist within 5 miles of the project area.
white pygmy-poppy	*Canbya candida*	CRPR: 4.2	Joshua tree woodland, Mojavean desert scrub, pinyon and juniper woodlands. Sandy places. Occurs between 600 and 1,460 m.	Low. CNDDB records for this species do not exist within 5 miles of the project area.
white rabbit-tobacco*	*Pseudognaphalium leucocephalum*	CRPR: 2B.2	Coastal Sage Scrub, Chaparral.	Moderate. CNDDB records for this species exist within 5 miles of the project area. Suitable habitat is expected within the vicinity for the project area.
white-veined monardella	*Monardella hypoleuca ssp. hypoleuca*	CRPR: 1B.3	Oak woodland, chaparral; Elevation: < 1,500 m.	Moderate. CNDDB records for this species do not exist within 5 miles of the project area. However, suitable habitat may be present.

NOTE: * Denotes species observed within 5 miles of the project boundaries.

KEY: California Native Plant Socity (CRPR) 1A = Plants Presumed Extinct in California; CRPR: 1B = Plants Rare, Threatened, or Endangered in California and Elsewhere; 2 = Plants Rare, Threatened, or Endangered in California, But More Common Elsewhere; 3 = Plants About Which we Need More Information; 4 = Plants of Limited Distribution.

SOURCE: California Department of Fish and Wildlife. 2015. Rarefind 5: A Database Application for the Use of the California Department of Fish and Game Natural Diversity Data Base. Sacramento, CA. & Califoria Native Plant Society Inventory.

TABLE A4
RIPARIAN HABITAT AND STATE SENSITIVE PLANT COMMUNITIES
REPORTED IN THE PROJECT AREA

Community Name	State Sensitivity Rank	Acres Reported in the Area
California Walnut Woodland	S2.1	672.84
Southern Riparian Scrub	S1.1	41.15
Southern Willow Scrub	S2.1	34.31
Southern Coast Live Oak Riparian Forest	S4	99.04
Southern Cottonwood Willow Riparian Forest	S3	227
Valley Oak Woodland	S2.1	532.21
Total		**1,606**

TABLE A5
FEDERALLY PROTECTED WETLANDS AND WATERWAYS
REPORTED IN THE PROJECT AREA

Wetland Type	National Wetlands Inventory (Acres)
Freshwater Emergent Wetland	5.11
Freshwater Forested/Shrub Wetland	209.98
Freshwater Pond	0.49
Riverine	242.73
Total	**458.30**

TABLE A6
SIGNIFICANT ECOLOGICAL AREAS PRESENT IN THE PROJECT AREA

Significant Ecological Area Name	Acres
Santa Clara River	256.92
Santa Susana Mountains/Simi Hills	8,878.72
Valley Oaks Savannah	162.05
Total	**9,037.00**

SANTA SUSANA MOUNTAINS
TRAILS MASTER PLAN – PHASE II

FINAL MITIGATED NEGATIVE DECLARATION

STATE CLEARINGHOUSE NUMBER 2017111009

VOLUME III
APPENDICES D–H

PREPARED FOR:

COUNTY OF LOS ANGELES DEPARTMENT OF PARKS AND RECREATION
1000 S. FREMONT AVENUE, UNIT #40
BUILDING A-9 WEST, 3RD FLOOR
ALHAMBRA, CALIFORNIA 91803

PREPARED BY:

SAPPHOS ENVIRONMENTAL, INC.
430 NORTH HALSTEAD STREET
PASADENA, CALIFORNIA 91107

AUGUST 22, 2018

Appendix D

Cultural Resources Technical Report

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN – PHASE II

CULTURAL RESOURCES TECHNICAL REPORT

PREPARED FOR:

COUNTY OF LOS ANGELES DEPARTMENT OF PARKS AND RECREATION
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AUGUST 22, 2018

SECTION ES
EXECUTIVE SUMMARY

This Cultural Resources Technical Report addresses potential impacts to cultural resources that could result from proposed work associated with the Santa Susana Mountains Trails Master Plan (Trails Master Plan), including Phase II, located within unincorporated Los Angeles County, California. This cultural resources study is based on archival research conducted for the Trails Master Plan. For the purpose of this study, cultural resources include paleontological, archaeological and historical resources, as well as Native American tribal cultural resources.

Historical Resources

The archival research identified eight historic built environment resources within the cultural resources area of potential impact (API) of the Trails Master Plan. Three historic built resources (P-19-190691, P-19-186568, P-19-186541) are located within the proposed trails alignment and a 60-foot buffer. Projects requiring excavation within 60 feet of historical resources will require monitoring by a qualified architectural historian to ensure avoidance of the resources.

Archaeological Resources

The results of the records searches determined that 25 prehistoric archaeological sites, 13 historic archaeological sites, one multi-component site, two prehistoric isolates, and eight historic isolates are located within the Trails Master Plan Study Area and a 0.5-mile buffer. Of these, eight previously recorded prehistoric sites are located within the project area. Five historic archaeological resources (P-19-000247, P-19-001593H, P-19-101351, P-19-186538, P-19-101200) are located within the proposed trails alignment and a 60-foot buffer. Projects requiring excavation within 60 feet of previously recorded archaeological resources will require monitoring by a qualified archaeologist. Where archaeological resources are encountered, evaluation, avoidance or recovery, documentation, and curation of such resources would reduce impacts to below the level of significance.

Paleontological Resources

The Santa Susana Formation, Llajas Formation, Sespe Formation, Monterey Formation, Towsley Formation, Pico Formation, Saugus Formation, and older Quaternary Alluvium within the project area can be considered paleontologically sensitive geological units which are characterized by a moderate to high potential for containing unique paleontological resources. Projects requiring excavation within formations with a high potential for containing unique paleontological resources will require monitoring. Where potentially unique paleontological resources are encountered, salvage, recovery, documentation, and repository of such resources by a qualified paleontologist would reduce impacts to below the level of significance.

Human Remains

There are no formal cemeteries or previously recorded burial sites located within the project area. In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are encountered during excavation activities, the County Coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the site or any nearby areas reasonably suspected to overlie adjacent remains within 100 feet shall occur until the County Coroner has

determined, within two working days of notification of the discovery, the appropriate treatment and disposition of the human remains.

Tribal Cultural Resources

Consultation with the Native American Heritage Commission has determined that there are no recorded Sacred Sites within the project's API. Consultation was undertaken with the Tatavium and Gabrieleno Kizh Nation. There are previously recorded archaeological resources that may be considered tribal cultural resources in the vicinity of the trails plan. The County of Los Angeles is working with the tribes to identify the Best Management Practices that can be employed to avoid impacts and provide educational opportunities in conjunction with trail development.

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The location data for the archaeological resources will not be circulated for public review. To protect the sites from unauthorized excavation, looting, and/or vandalism, the County of Los Angeles has been notified of the need to keep confidential the location of known archaeological resources beyond what is necessary. Records in the information centers are exempt from the California Public Records Act (Government Code Section 6250 et seq.). Government Code Section 6254.19 states that "nothing in this chapter requires disclosure of records that relate to archaeological sites information maintained by the Department of Parks and Recreation, the State Historical Resources Commission, or the State Lands Commission." Government Code Section 6254 explicitly authorizes public agencies to withhold information from the public relating to "Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission." Due to the sensitive nature of cultural resources described herein, this report is confidential and meant for the exclusive use of the County of Los Angeles and other trustee and responsible agencies related to planning, construction, operation, maintenance, and management of the project.

SECTION 1.0
INTRODUCTION

This Cultural Resources Technical Report (CRTR) addresses potential impacts to cultural resources that could result from proposed work associated with the Santa Susana Mountains Trails Master Plan (Trails Master Plan) located within unincorporated Los Angeles County (County), California. In May 2015, the County adopted the first phase of the Santa Susana Mountains Trails Master Plan (SSMFTMP), which involved the extension of the 35.7 miles of existing County-, City-, and Conservancy-managed trails in the Phase I and Phase II study areas by approximately 35.9 miles with 22 proposed trail segments, for a total of approximately 71.5 miles of trails within the SSMFTMP Area. In 2017, the County initiated planning efforts for further development of the Phase II study area. This assessment is based on archival research for the entire Trails Master Plan study area and a pedestrian survey conducted within a portion of Phase I of the Trails Master Plan study area. In order to identify areas of cultural sensitivity, the area of direct disturbance (cultural resources area of potential impact, or API) was defined as those areas within the Trails Master Plan study area that would be subject to direct trail construction and/or improvements. In accordance with the California Environmental Quality Act (CEQA), this cultural resource study encompasses paleontological resources, archaeological resources, historical resources, human remains, and the presence of Native American Tribal resources. This CRTR presents the results of these efforts and provides a programmatic impact analysis and mitigation recommendations related to cultural resources and tribal cultural resources within the Trails Master Plan study area. While this report focuses on Phase II, it incorporates updated information for the Phase I study area.

1.1 PURPOSE OF THE CULTURAL RESOURCES TECHNICAL REPORT

This CRTR was prepared to characterize the cultural resources that would potentially be affected by construction, operation, and maintenance of the project. As such, the document presents data and information to be used by the County in making a determination of effects to cultural resources resulting from the proposed undertaking and will provide the substantial evidence required with respect to cultural resources for environmental documentation under CEQA.

1.2 INTENDED AUDIENCE

This CRTR summarizes the results of investigations for consideration by the project applicant, cooperating agencies, and Native American tribes. The information contained in this report has been an integral part of the project-planning process effort to avoid and minimize adverse effects to cultural resources to the maximum extent practicable while attaining the objectives of the project. This report summarizes the coordination and consultation that has been undertaken by the County with the Native American Heritage Commission (NAHC) and Native American representatives and documents the coordination and informal consultation that has been undertaken with the County and the Natural History Museum of Los Angeles County. In addition, preparation of this report encompassed data obtained from the South Central Coastal Information Center at California State University, Fullerton, one of eleven independent centers operated under contract to the Office of Historic Preservation, California Department of Parks and Recreation, for the purpose of maintaining the federally and state-mandated California Historic Resources Inventory.

The location data for the archaeological resources will not be circulated for public review. To protect the sites from unauthorized excavation, looting, and/or vandalism, the locations of known archaeological resources will be kept confidential beyond what is necessary. Information concerning

the nature and location of archaeological resources is protected under the Archaeological Resources Protection Act (16 U.S.C. 470 hh) and other statutes. Records in the information centers are exempt from the California Public Records Act (Government Code Section 6250 *et seq.*). Government Code Section 6254.10 states,

> Nothing in this chapter requires disclosure of records that relate to archaeological site information and reports maintained by, or in the possession of, the Department of Parks and Recreation, the State Historical Resources Commission, the State Lands Commission, the Native American Heritage Commission, another state agency, or a local agency, including the records that the agency obtains through a consultation process between a California Native American tribe and a state or local agency.

Government Code Section 6254(r) explicitly authorizes public agencies to withhold information from the public relating to "Native American graves, cemeteries, and sacred places maintained by the Native American Heritage Commission." Due to the sensitive nature of cultural resources described herein, this report is confidential and meant for the exclusive use of the County and other trustee and responsible agencies related to planning, installation, operation, maintenance, and management of the proposed projects.

1.3 SOURCES OF RELEVANT INFORMATION

Information used in the preparation of this CRTR was derived from a Class I literature review, including published and gray literature, informal consultation with cooperating agencies, field investigation, and spatial analysis based on geographic information system data. Sources of relevant information are cited in footnotes and compiled in Section 6, *References*.

1.4 WORKING DEFINITIONS

There are a number of technical terms used in the characterization of baseline conditions and assessment of the potential for the project to affect cultural resources.

Archaeological site is defined by the National Register of Historic Places (NRHP) as the place or places where the remnants of a past culture survive in a physical context that allows for the interpretation of these remains. Archaeological remains usually take the form of artifacts (e.g., fragments of tools, vestiges of utilitarian, or nonutilitarian objects), features (e.g., remnants of walls, cooking hearths, or midden deposits), and ecological evidence (e.g., pollen remaining from plants that were in the area when the activities occurred).[1] Prehistoric archaeological sites represent the material remains of Native American groups and their activities. These sites are generally thought to date to the period before European contact but, in some cases, may contain evidence of trade contact with Europeans. Historic archaeological sites reflect the activities of nonnative populations during the Historic period.

Historic period is defined as the period that begins with the arrival of the first nonnative population and thus varies by area. Most Southern California archaeologists use AD 1782 as the date to mark the beginning of the Historic period, following the beginning of the Spanish colonization of inland California.

[1] U.S. Department of the Interior, National Park Service. 2000. *National Register Bulletin: Guidelines for Evaluating and Registering Archeological Properties*. Available at: http://www.cr.nps.gov/nr/publications/bulletins/arch/

Isolate is defined as one or two distinct artifacts or a few fragments of the same artifact that are too far away (typically more than 30–50 meters) from other artifacts or features to be considered part of a site. It may lack identifiable context but has the potential to add important information about a region, culture, or person. Isolates do not require avoidance or mitigation under the National Historic Preservation Act (NHPA) because they lack contextual integrity and, therefore, are unlikely to meet the criteria for inclusion in the NRHP.

Native American sacred site is defined as an area that has been, and often continues to be, of religious significance to Native American peoples, such as an area where religious ceremonies are practiced or an area that is central to their origins as a people.

Phase I Walkover Survey is defined as an intensive archaeological pedestrian survey in parallel transects that are usually no wider that fifteen meters.

Tribal Cultural Resource is defined as a site feature, place, cultural landscape, sacred place or object, which is of cultural value to a Tribe and is either in or eligible for the California Register of Historical Resources (CRHR) or a local historic register or the lead agency, at its discretion, chooses to treat the resource as a Tribal cultural resource.

SECTION 2.0
PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The Trails Master Plan (approximately 49 square miles) is located north and west of the San Fernando Valley in the Santa Susana Mountains, in the western portion of the unincorporated area of the County of Los Angeles (Figure 2.1-1, *Regional Vicinity Map*). The Santa Susana Mountains are centrally located in the Transverse Ranges, a group of east-west trending mountains paralleling the Pacific Ocean between Santa Barbara and San Diego Counties. The proposed designation and improvement of a portion of the Johnson Motorway Trail is an element of the first phase of the Trails Master Plan (SSMFTMP).

2.2 TRAILS MASTER PLAN STUDY AREA

Phase I Area. The northern boundary of the Trails Master Plan – Phase I is defined by the southern limits of the Newhall Ranch Specific Plan Area and the northern limits of the proposed Santa Susana Mountains / Simi Hills Significant Ecological Area (SEA). The southern boundary is defined by the northern limit of the City of Los Angeles. The eastern boundary is defined by U.S. Interstate 5 (I-5). The western boundary is defined by the corporate boundary between Los Angeles and Ventura Counties (Figure 2.2-1, *Trails Master Plan Location*). The SSMFTMP is divided into two subareas or phases (see Figure 2.2-1). Phase I is the Northwest San Fernando Valley Study Area, and Phase II is the Southwest Santa Clarita Valley Study Area. Phase I includes 16,038.1 acres (25.1 square miles); the northern boundary is defined by the northern limits of the Los Angeles County Oat Mountain Planning Area, the southern boundary is defined by the northern limit of the City of Los Angeles, the eastern boundary is defined by the I-5 freeway, and the western boundary is defined by the boundary between Los Angeles and Ventura Counties.

Phase II Area. Phase II includes 8,084.4 acres (12.6 square miles). The northern boundary is defined by the northern limits of the proposed Santa Susana Mountains / Simi Hills SEA. The southern boundary is defined by the southern limits of the proposed Santa Susana Mountains / Simi Hills SEA. The eastern boundary is defined by the I-5 freeway (Figure 2.2-1). The western boundary is defined by the southern and eastern boundaries of the Newhall Ranch Specific Plan area.

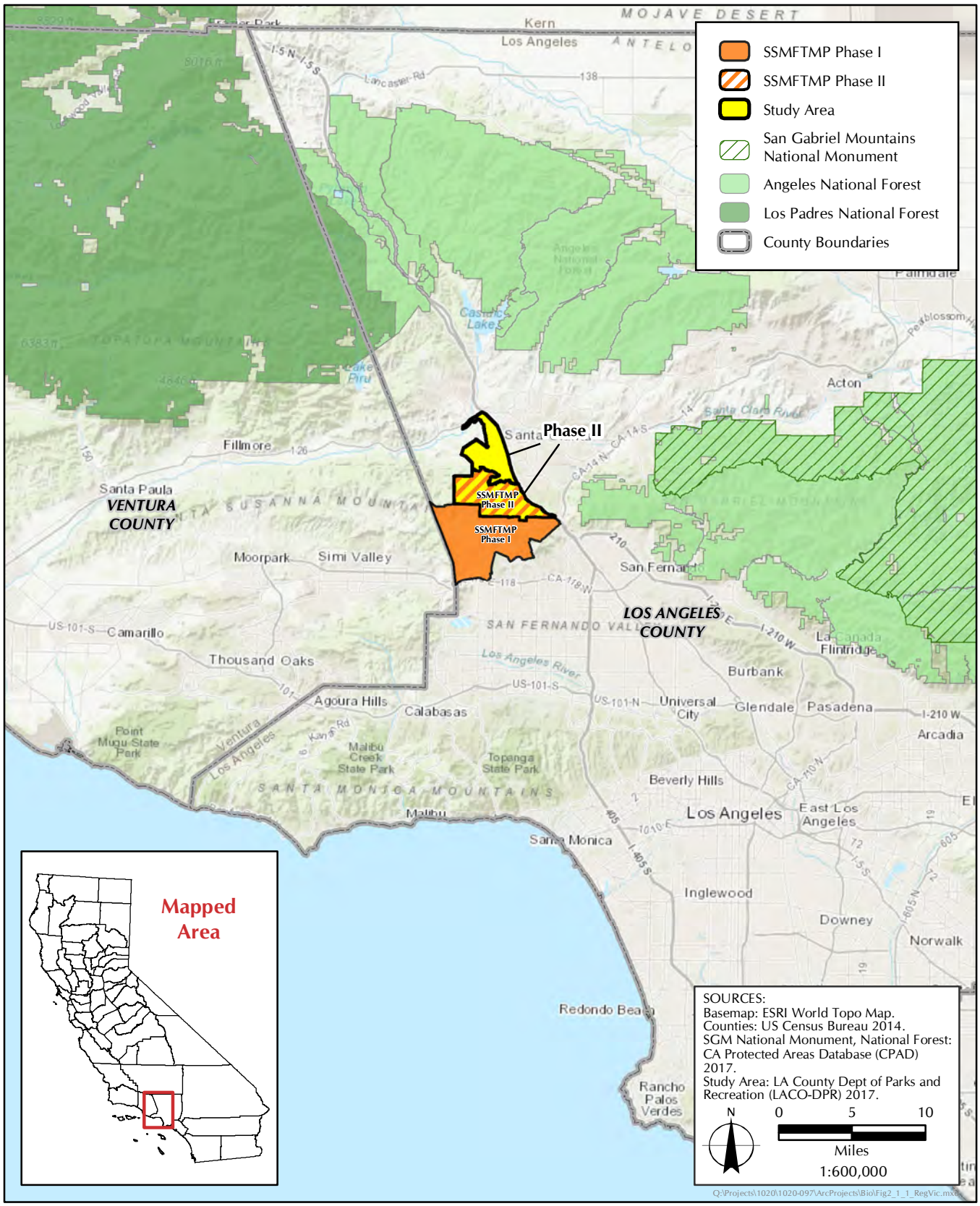

FIGURE 2.1-1

Regional Vicinity Map

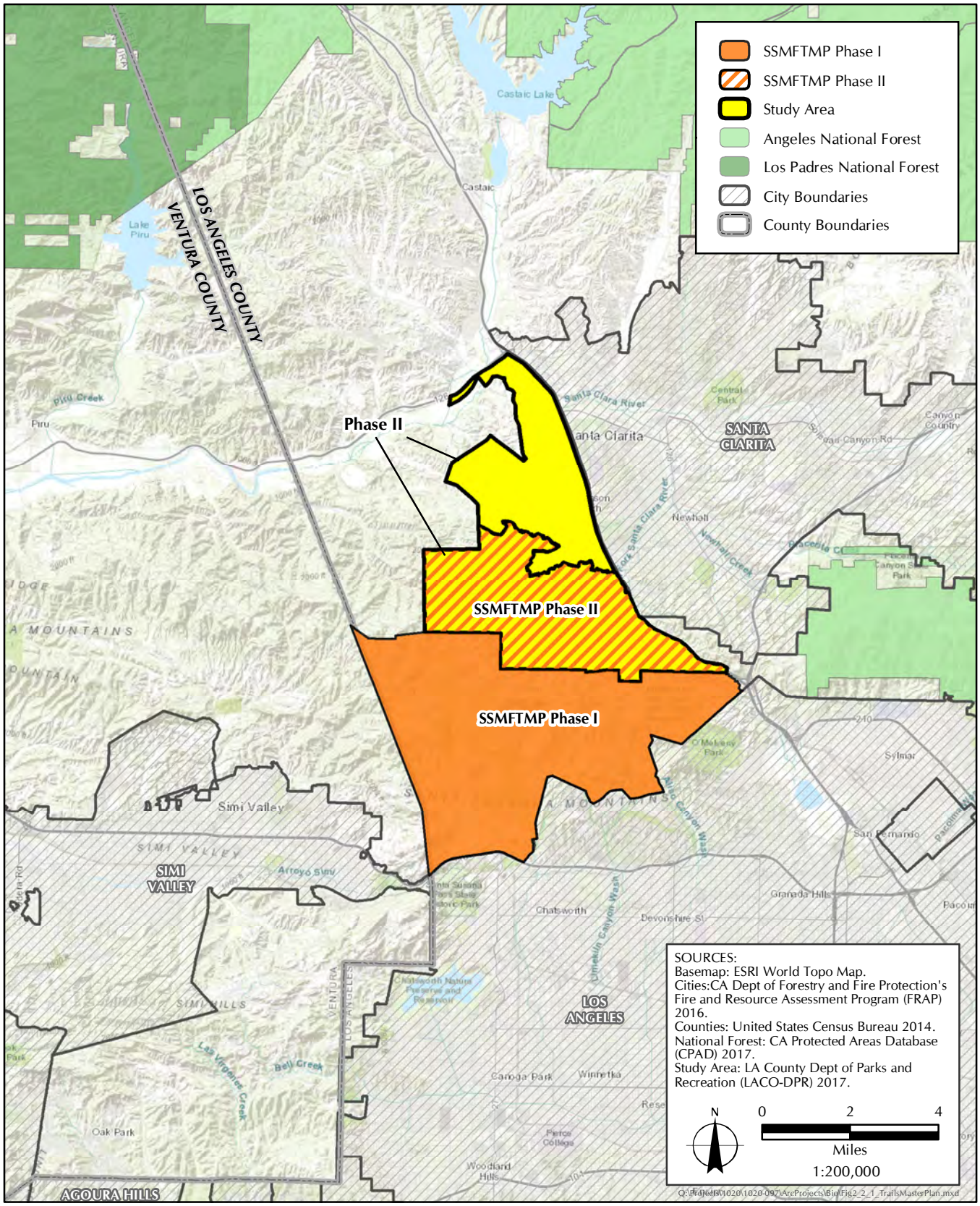

FIGURE 2.2-1

Trails Master Plan Location

The Trails Master Plan – Phase II has been expanded beyond the spatial extents of Phase II in the SSMFTMP and was also divided into two subareas, Phase II.a and Phase II.b. Due to public concern over possible environmental impacts related to hazards and hazardous materials in the Phase II.b subarea regarding the former Santa Susana Field Laboratory, Sapphos Environmental, Inc. called the Governor's Office of Planning and Research (OPR) State Clearinghouse in January 2018 to inquire about a respond from the California Environmental Protection Agency Department of Toxic Substances Control (DTSC). OPR did not forward the NOI/MND/TMP to DTSC for review during the public review period as requested in the NOI because trails and supporting recreational facilities do not typically result in significant impacts regarding hazards and hazardous materials. Sapphos Environmental, Inc. and the County reached out to the DTSC in February and March 2018 to request a comment letter regarding the Trails Master Plan Mitigated Negative Declaration. The County has not received a comment letter from DTSC regarding the Trails Master Plan. The County reached out to two commenters, Los Angeles City Council and Physicians for Social Responsibility. As a result of these communications, Phase II.b has been removed from consideration at this time, and Phase II.a has been renamed Phase II in the Final Mitigated Declaration and this CRTR. On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II.

The Phase II area is an approximately 22-square-mile area located in the north-facing slopes of the Santa Susana Mountains and the Santa Clarita Valley that is bound by Henry Mayo Drive (State Route [SR] 126) to the north, the I-5 freeway to the east, Phase I of the adopted SSMFTMP Area to the south, and the Newhall Ranch Specific Plan Area to the west.

Topography. The Trails Master Plan is located in the U.S. Geological Survey (USGS) 7.5-minute series, Newhall, Oat Mountain, Simi Valley East, and Val Verde, California, topographic quadrangles[2,3] and includes portions of Township 2 North, Range 16 West (San Bernardino Baseline and Meridian [SBB&M]); Sections 6 and 7, Township 2 North, Range 17 West (SBB&M), Sections 1, 2, 11, and 12; Township 3 North, Range 16 West (SBB&M), Sections 4–10, 13–24, and 26–34; and Township 3 North, Range 17 West (SBB&M), Sections 1, 2, 11–15, 22–27, and 34–36 (Figure 2.2-2, *Topographic Map with USGS 7.5-minute Quadrangle Index*). Phase I of the Trails Master Plan is located on the USGS 7.5-minute series Simi Valley East and Oat Mountain topographic quadrangles. Phase II of the Trails Master Plan is located on the Val Verde, Newhall, Simi Valley East (Santa Susana), Oat Mountain, and Calabasas topographic quadrangles. Situated along the southern flanks of the Santa Susana Mountains, the topography of the Trails Master Plan is characterized by a series of southwest draining canyons that are separated by steep-sloped and narrow ridge tops. The Trails Master Plan has elevations that range from 946 to 3,400 feet above mean sea level (msl). Vegetation in the area is characterized by a Sage and Chaparral plant communities with scattered yucca plants. Although small areas of exposed bedrock are seen along the trail corridor, much of the proposed project area is characterized by thick vegetative coverage, which is particularly dense in the canyon bottoms and at lower elevations.

[2] U.S. Geological Survey. 1969. *7.5-Minute Series, Oat Mountain, California, Topographic Quadrangle*. Scale 1:24,000. Reston, VA.

[3] U.S. Geological Survey. 1969. *7.5-Minute Series, Willow Springs, California, Topographic Quadrangle*. Reston, VA.

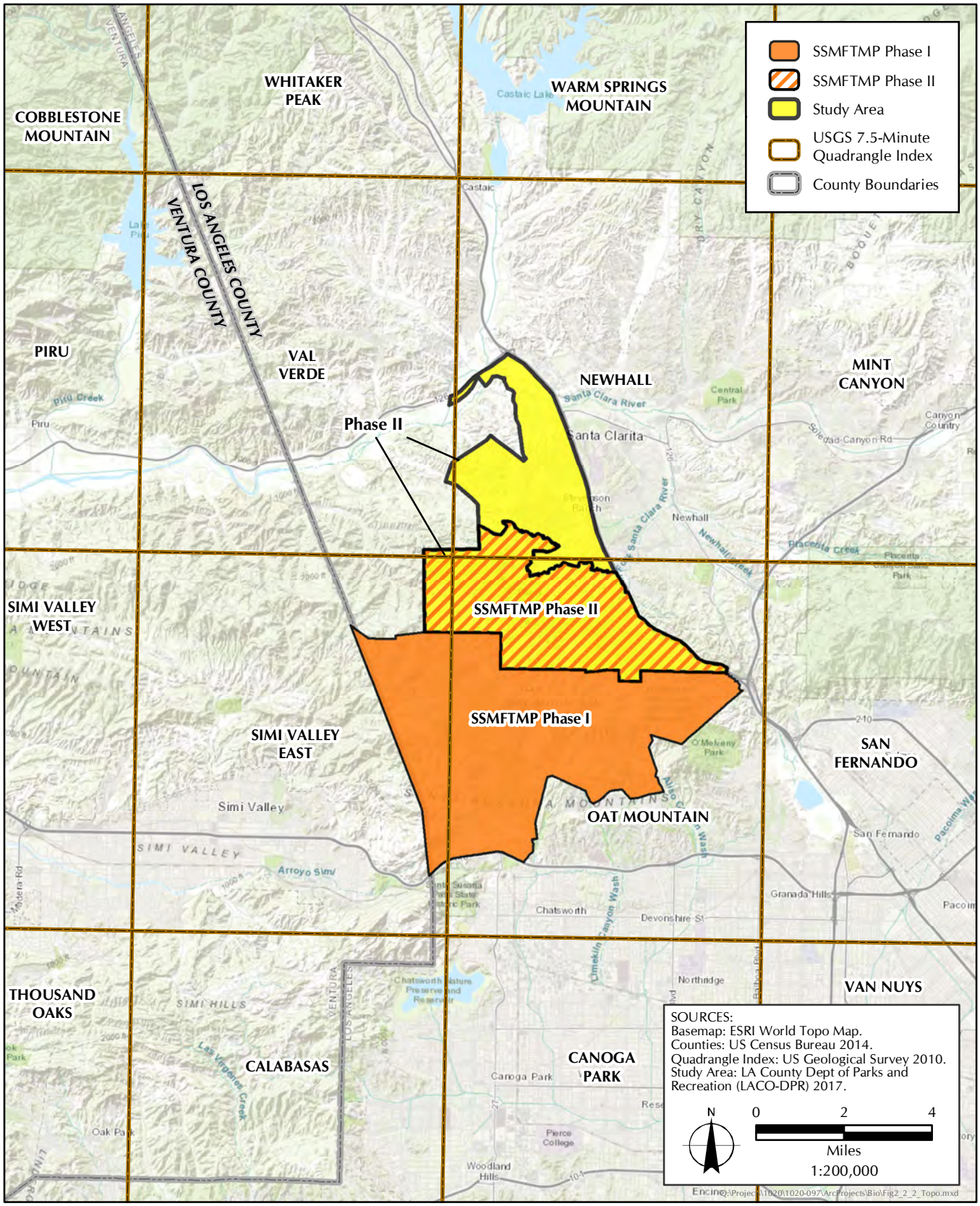

FIGURE 2.2-2

Topographic Map with USGS 7.5 Minute Quadrangle Index

2.3 PROJECT SUMMARY

The SSMTMP-PII will guide future trail development and recommend improvements to existing trails. The Trails Master Plan will provide trail users and local populations with seamless transitions throughout the proposed study area to trails of adjacent jurisdictions and prime destinations within and adjacent to the study area. The goals of the plan are to:

1. Develop a complete multi-use trail system connecting user groups and local populations to desired recreation destinations and experiences, with seamless transitions to the trails of adjacent jurisdictions, compatibility with adjacent land uses and environmental resources, and a safe and sustainable design that is consistent with the County of Los Angeles Trails Manual.

2. Develop a recreational trail system that supports low-intensity use, including mountain biking, equestrian use, and hiking, to accommodate the population increase anticipated in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area through the 2035 planning horizon consistent with the Parks and Recreation Element of the Los Angeles County General Plan 2035.

The overall work efforts will include a trails master plan and associated CEQA documentation. Individual trail alignments would be developed at a later phase of this project, which is intended to provide a trail planning framework for the study area.

SECTION 3.0
REGULATORY FRAMEWORK

3.1 FEDERAL

Historic Sites Act of 1935

The Historic Sites Act (HAS; 49 Stat. 666; 16 USC 461–467) became law on August 21, 1935, and declared that it is national policy to "Preserve for public use historic sites, buildings, and objects of national significance." The NHPA expanded the scope to include important state and local resources. Provisions of NHPA established the National Register maintained by the National Park Service (NPS), advisory councils on Historic Preservation, State Historic Preservation Offices, and grants-in-aid programs. Section 106 of the NHPA requires all federal agencies to consult the Advisory Council before continuing any activity affecting a property listed on or eligible for listing on the National Register. The Advisory Council has developed regulations for Section 106 to encourage coordination of agency cultural resource compliance requirements (Executive Order 11593).

United States Department of Transportation Act of 1966 (Section 4[f])

Section 4(f) of the U.S. Department of Transportation Act of 1966 affords special protection to public recreational lands and facilities, including local parks and school facilities that are open and available to the general public for recreational purposes, significant cultural resources, historical resources, and natural wildlife refuges. Federally funded transportation improvement projects are prohibited from the encroachment (direct or constructive use, or a take) of Section 4(f) lands unless it can be demonstrated that no feasible and prudent alternative exists.

National Historic Preservation Act of 1966

Enacted in 1966, the NHPA (Public Law 89-665; 16 U.S. Code [USC] 470 et seq.) declared a national policy of historic preservation and instituted a multifaceted program, administered by the National Parks Service, to encourage the achievement of preservation goals at the federal, state, and local levels. The NHPA authorized the expansion and maintenance of the NRHP, established the position of State Historic Preservation Officer and provided for the designation of State Review Boards, set up a mechanism to certify local governments to carry out the purposes of the NHPA, assisted Native American tribes to preserve their cultural heritage, and created the Advisory Council on Historic Preservation (ACHP). Section 106 of the NHPA states that federal agencies with direct or indirect jurisdiction over federally funded, assisted, or licensed undertakings must take into account the effect of the undertaking on any historic property that is included in, or eligible for inclusion in, the NRHP, and that the ACHP must be afforded an opportunity to comment, through a process outlined in the ACHP regulations at 36 Code of Federal Regulations (CFR) Part 800, on such undertakings.

The NPS administers two Federal recognition programs, the NRHP and the National Historic Landmarks Program.

National Register of Historic Places

Working with State Historic Preservation Offices, Tribal Historic Preservation Offices, and Federal Preservation Offices, the NPS maintains the NRHP. This is the official list of properties that are deemed worthy of preservation. Properties listed in the NRHP tell stories that are important to a local community, the citizens of a specific state, or all Americans. Properties listed in the NRHP may be owned by private individuals, universities, nonprofits, governments, and/or corporations.

The NRHP was established by the NHPA of 1966 as "an authoritative guide to be used by federal, state, and local governments, private groups, and citizens to identify the Nation's cultural resources and to indicate what properties should be considered for protection from destruction or impairment." The NRHP recognizes properties that are significant at the national, state, and local levels. To be eligible for listing in the NRHP, a resource must be significant in American history, architecture, archaeology, engineering, or culture. Districts, sites, buildings, structures, and objects of potential significance must also possess integrity of location, design, setting, materials, workmanship, feeling, and association. A property is eligible for the NRHP if it is significant under one or more of the following criteria:

Criterion A:	It is associated with events that have made a significant contribution to the broad patterns of our history.
Criterion B:	It is associated with the lives of persons who are significant in our past.
Criterion C:	It embodies the distinctive characteristics of a type, period, or method of construction; represents the work of a master; possesses high artistic values; or represents a significant and distinguishable entity whose components may lack individual distinction.
Criterion D:	It has yielded, or may be likely to yield, information important in prehistory or history.

Cemeteries, birthplaces, or graves of historic figures; properties owned by religious institutions or used for religious purposes; structures that have been moved from their original locations; reconstructed historic buildings; and properties that are primarily commemorative in nature are not considered eligible for the NRHP unless they satisfy certain conditions. In general, a resource must be at least 50 years of age to be considered for the NRHP, unless it satisfies a standard of exceptional importance.

National Historic Landmarks Program

The NPS also administers the National Historic Landmarks (NHL) Program. Properties designated as NHLs tell important stories related to the history of the nation overall. These properties must also possess a high level of historic integrity. All properties designated NHLs are automatically included in the NRHP.

Archaeology and Historic Preservation: Secretary of the Interior's Standards and Guidelines

The Standards and Guidelines are prepared under the authority of Sections 101(f) (g), and (h), and Section 110 of the NHPA of 1966, as amended. The Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation. These standards and guidelines are not regulatory and do not set or interpret agency policy. They are intended to provide technical advice about archaeological and historic preservation activities and methods. The NPS has not republished "The Secretary of the Interior's Standards and Guidelines for Archeology and Historic

Preservation" since 1983 (48 FR 44716). The NPS has updated portions of the Standards and Guidelines. NPS has officially revised portions and published the revisions in the Federal Register, such as the Historic Preservation Project standards and the treatment definitions. The purposes of the Standards are:

- To organize the information gathered about preservation activities.
- To describe results to be achieved by Federal agencies, States, and others when planning for the identification, evaluation, registration and treatment of historic properties.
- To integrate the diverse efforts of many entities performing historic preservation into a systematic effort to preserve our nation's culture heritage.

Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR Part 68, 1995)

The current version of The Secretary of the Interior's Standards for the Treatment of Historic Properties (36 CFR Part 68, 1995) consists of four treatment standards—Preservation, Rehabilitation, Restoration and Reconstruction—and is regulatory for NPS Grants-in-Aid programs. The Secretary of the Interior's Standards for Rehabilitation (36 CFR Part 67, 1990), which are included in the treatment standards, are regulatory for the Federal Historic Preservation Tax Incentives program and used as the criteria to determine if a project qualifies as "a certified rehabilitation." The 1990 and the 1995 versions of the Rehabilitation Standards are identical except for their use of "shall" and "will," respectively. The Secretary of the Interior's Standards for the Treatment of Historic Properties, in particular the Standards for Rehabilitation, are intended as general guidance for work on all historic properties and are widely used and have been adopted at the Federal, State and local levels.

Native American Graves Protection and Repatriation Act of 1990

The Native American Graves Protection and Repatriation Act (NAGPRA; Public Law 101-601; 25 USC 3001–3013) also applies if human remains of Native American origin are discovered on federal land. NAGPRA requires federal agencies and federally assisted museums to return "Native American cultural items" to the federally recognized Indian tribes or Native Hawaiian groups with which they are associated. Regulations (43 CFR Part 10) stipulate the following procedures be followed. If Native American human remains are discovered, the following provisions would be followed to comply with regulations:

- Notify, in writing, the responsible federal agency.
- Cease activity in the area of discovery and protect the human remains.
- Certify receipt of the notification.
- Take steps to secure and protect the remains.
- Notify the Native American tribes or tribes likely to be culturally affiliated with the discovered human remains within one working day.
- Initiate consultation with the Native American tribe or tribes in accordance with regulations described in 43 CFR, Part 10, Subpart B, Section 10.5.

3.2 STATE

California Implementation of Federally and State-Mandated Historic Preservation Program

The California State Office of Historic Preservation (OHP) is responsible for administering federally and state mandated historic preservation programs to further the identification, evaluation, registration, and protection of California's irreplaceable archaeological and historical resources under the direction of the State Historic Preservation Officer (SHPO), a gubernatorial appointee, and the State Historical Resources Commission.

OHP's responsibilities include:

- Identifying, evaluating, and registering historic properties
- Ensuring compliance with federal and state regulatory obligations
- Encouraging the adoption of economic incentives programs designed to benefit property owners
- Encouraging economic revitalization by promoting a historic preservation ethic through preservation education and public awareness and, most significantly, by demonstrating leadership and stewardship for historic preservation in California

OHP reviews and comments on thousands of federally sponsored projects annually pursuant to Section 106 of the NHPA and state programs and projects pursuant to Sections 5024 and 5024.5 of the Public Resources Code (PRC). OHP also reviews and comments on local government and state projects pursuant to CEQA.

The purpose of OHP's project review program is to promote the preservation of California's heritage resources by ensuring that projects and programs carried out or sponsored by federal and state agencies comply with federal and state historic preservation laws and that projects are planned in ways that avoid any adverse effects to heritage resources. If adverse effects cannot be avoided, the OHP assists Lead Agencies in developing measures to minimize or mitigate such effects.

OHP administers the NRHP, the CRHR, the California Historical Landmarks, and the California Points of Historical Interest programs. Each program has different eligibility criteria and procedural requirements; all register nominations must be submitted to the Commission for review and approval.

National Register of Historic Places

Applications to nominate California properties to the NRHP are submitted to OHP for review and approval by the State Historic Resources Commission. Authorized under the NHPA, the National Register is part of a national program to coordinate and support public and private efforts to identify, evaluate, and protect historic and archaeological resources. The National Register is administered by the NPS, which is part of the U.S. Department of the Interior. Prior to forwarding Nomination Packages for consideration for the National Register, OHP must review the package and make a determination that it conforms to the guidelines published by NPS Bulletin 16A. If approved by the State Historic Resources Commission, the nomination is sent to the State Historic Preservation Officer for nomination to the National Register.

California Register of Historical Resources

The CRHR, or California Register, is an authoritative listing and guide to be used by State and local agencies, private groups, and citizens in identifying the existing historical resources of the State and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change. The criteria for eligibility for the California Register are based upon National Register criteria. These criteria are:

Criterion 1: Associated with events that have made a significant contribution to the broad patterns of local or regional history or the cultural heritage of California of the United States;

Criterion 2: Associated with the lives of persons important to local, California or national history;

Criterion 3: Embodies the distinctive characteristics of a type, period, region or method of construction or represents the work of a master or possesses high artistic values; and

Criterion 4: Has yielded, or has the potential to yield, information important to the prehistory or history of the local area, California or the nation.

The California Register consists of resources that are listed automatically and those that must be nominated through an application and public hearing process. The California Register automatically includes the following:

- California properties listed in the NRHP (Category 1 in the State Inventory of Historical Resources) and those formally Determined Eligible for listing in the NRHP (Category 2 in the State Inventory)
- California Registered Historical Landmarks from No. 0770 onward
- Those California Points of Historical Interest that have been evaluated by the OHP and have been recommended to the State Historical Resources Commission for inclusion in the California Register

Other resources which may be nominated for listing in the California Register include:

- Historical resources with a significance rating of Categories 3 through 5 in the State Inventory. (Categories 3 and 4 refer to potential eligibility for the National Register, while Category 5 indicates a property with local significance);
- Individual historical resources;
- Historical resources contributing to historic districts; and
- Historical resources designated or listed as a local landmark.

Additionally, a historic resource eligible for listing in the California Register must meet one or more of the criteria of significance described above and retain enough of its historic character or appearance to be recognizable as a historic resource and to convey the reasons for its significance. Historical resources that have been rehabilitated or restored may be evaluated for listing.

California Historical Landmarks

California Historical Landmarks are sites, buildings, features, or events that are of statewide significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. The specific standards now in use were first applied in the designation of Landmark # 770. California Historical Landmarks #770 and above are automatically listed in the California Register of Historical Resources.

To be designated as a California Historical Landmark, a resource must meet at least one of the criteria listed below; have the approval of the property owner(s); be recommended by the State Historical Resources Commission; and be officially designated by the Director of California State Parks.

Criteria for Designation. To be eligible for designation as a Landmark, a resource must meet at least one of the following criteria:

- The first, last, only, or most significant of its type in the state or within a large geographic region (Northern, Central, or Southern California)
- Associated with an individual or group having a profound influence on the history of California
- A prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in a region of a pioneer architect, designer or master builder

Effects of Designation.

- Limited protection: Environmental review may be required under CEQA if property is threatened by a project. Contact your local planning agency for more information.
- Local assessor may enter into contract with property owner for property tax reduction (Mills Act).
- Local building inspector must grant code alternative provided under State Historic Building Code. Registration will be recorded on the property deed.
- Automatic listing in California Register of Historical Resources.
- Bronze plaque at site (underwritten by local sponsor) ordered through OHP; highway directional sign available through local Department of Transportation (Caltrans) district office.

California Points of Historical Interest

If a site is primarily of local interest, it may meet the criteria for the California Points of Historical Interest Program. California Points of Historical Interest are sites, buildings, features, or events that are of local (city or county) significance and have anthropological, cultural, military, political, architectural, economic, scientific or technical, religious, experimental, or other value. Points of Historical Interest designated after December 1997 and recommended by the State Historical Resources Commission are also listed in the California Register. No historical resource may be designated as both a Landmark and a Point. If a Point is subsequently granted status as a Landmark, the Point designation will be retired.

Criteria for Designation. To be eligible for designation as a Point of Historical Interest, a resource must meet at least one of the following criteria:

- The first, last, only, or most significant of its type within the local geographic region (City or County)
- Associated with an individual or group having a profound influence on the history of the local area
- A prototype of, or an outstanding example of, a period, style, architectural movement or construction or is one of the more notable works or the best surviving work in the local region of a pioneer architect, designer or master builder

Effects of Designation.

- Limited protection: Environmental review may be required under CEQA if property is threatened by a project. Contact your local planning agency for more information.
- Local assessor may enter into contract with property owner for property tax reduction (Mills Act).
- Local building inspector must grant code alternative provided under State Historic Building Code.
- Registration is recorded on property deed.
- A small enamel directional sign (no text) available through local Caltrans district office. Owner may place his or her own marker at the site.

California Environmental Quality Act[4]

Pursuant to CEQA, a *historical resource* is a resource listed in, or eligible for listing in, the CRHR. In addition, resources included in a local register of historic resources or identified as significant in a local survey conducted in accordance with state guidelines are also considered historical resources under CEQA, unless a preponderance of the facts demonstrates otherwise. According to CEQA, the fact that a resource is not listed in or determined eligible for listing in the CRHR, or is not included in a local register or survey, shall not preclude a Lead Agency from determining that the resource may be a historic resource as defined in PRC Section 5024.1.[5]

CEQA applies to archaeological resources when (1) the archaeological resource satisfies the definition of a historical resource or (2) the archaeological resource satisfies the definition of a "unique archaeological resource." A unique archaeological resource is an archaeological artifact, object, or site that has a high probability of meeting any of the following criteria:[6]

(1) The archaeological resource contains information needed to answer important scientific research questions and there is a demonstrable public interest in that information.

[4] *California Public Resources Code*, Division 13, Sections 21083.2 and 21084.1.

[5] *California Code of Regulations*, Title 14, Chapter 3: "Guidelines for the Implementation of the California Environmental Quality Act as Amended October 6, 2005," Section 15064.5(a).

[6] *California Public Resources Code*, Division 13, Section 21083.2(g).

(2) The archaeological resource has a special and particular quality such as being the oldest of its type or the best available example of its type.
(3) The archaeological resource is directly associated with a scientifically recognized important prehistoric or historic event or person.

California Health and Safety Code, Section 7050 and Sections 18950 through 18961

Consistent with the provisions of Section 50907.9 of the PRC, Section 7050 of the Health and Safety Code authorizes the NAHC to regulate Native American concerns regarding the excavation and disposition of Native American cultural resources. Among its duties, the Commission is authorized to resolve disputes relating to the treatment and disposition of Native American human remains and items associated with burials. Upon notification of the discovery of human remains by a county coroner, the Commission notifies the Native American group or individual most likely descended from the deceased.

The State Historic Building Code, Sections 18950–18961, provides alternative building regulations and building standards for the rehabilitation, preservation, restoration (including related reconstruction), or relocation of buildings or structures designated as historic buildings. Such alternative building standards and building regulations are intended to facilitate the restoration or change of occupancy so as to preserve their original or restored architectural elements and features, to encourage energy conservation and a cost-effective approach to preservation, and to provide for the safety of the building occupants.

California Penal Code Section 622 – Destruction of Historical Properties

This section of the California Penal Code makes it a misdemeanor for anyone (except the owner) to willfully injure or destroy anything of archaeological interest or value whether on private lands or within any public park or place. In addition, Penal Code Section 622.5 sets the penalties for the damage or removal of cultural resources.

Senate Bill 18 – Traditional Tribal Cultural Places

Senate Bill (SB) 18, enacted in 2004, requires local governments to consult with Native American groups at the earliest point in the local government land use planning process. The consultation intends to establish a meaningful dialogue regarding potential means to preserve Native American places of prehistoric, archaeological, cultural, spiritual, and ceremonial importance. It allows for tribes to hold conservation easements and for tribal cultural places to be included in open space planning.

Assembly Bill 52

Assembly Bill (AB) 52 creates a new category of environmental resources that must be considered under CEQA: "tribal cultural resources." AB 52 is applicable to a project for which a Notice of Preparation (NOP) is filed on or after July 2015.

Recognizing that tribes may have expertise with regard to their tribal history and practices, AB 52 requires lead agencies to provide notice to tribes that are traditionally and culturally affiliated with the geographic area of a proposed project if they have requested notice of projects proposed within that area. If the tribe requests consultation within 30 days upon receipt of the notice, the lead agency must consult with the tribe. Consultation may include discussing the type of environmental

review necessary, the significance of tribal cultural resources, the significance of the project's impacts on the tribal cultural resources, and alternatives and mitigation measures recommended by the tribe.

The parties must consult in good faith, and consultation is deemed concluded when either the parties agree to measures to mitigate or avoid a significant effect on a tribal cultural resource (if such a significant effect exists) or when a party concludes that mutual agreement cannot be reached.

3.3 COUNTY

Los Angeles County General Plan 2035

The County's cultural resources objective, found in the Conservation and Natural Resources Element of the Los Angeles County General Plan 2035, is to preserve and protect cultural resources including historic, archaeological, and paleontological resources.[7] Under this objective, the County has established the following policies:[8]

Policy C/NR 14.1: Mitigate all impacts from new development on or adjacent to historic, cultural, and paleontological resources to the greatest extent feasible.

Policy C/NR 14.2: Support an inter-jurisdictional collaborative system that protects and enhances historic, cultural and paleontological resources.

Policy C/NR 14.3: Support the preservation and rehabilitation of historic buildings.

Policy C/NR 14.4: Ensure proper notification procedures to Native American tribes in accordance with Senate Bill 18 (2004).

Policy C/NR 14.6: Ensure proper notification and recovery processes are carried out for development on or near historic, cultural, and paleontological resources.

Los Angeles County Historical Landmarks and Records Commission

The Los Angeles County Board of Supervisors established and has maintained the Los Angeles County Historical Landmarks and Records Commission (Commission) pursuant to Los Angeles County Code Chapter 3.30. Pursuant to Section 26490 of the California Government Code, the Commission is designated as a historical records commission to foster and promote the preservation of historical records. The Los Angeles County Historical Landmarks and Records Commission (Commission) considers and recommends to the Board of Supervisors local historical

[7] County of Los Angeles Department of Regional Planning. Adopted 6 October 2015. *Los Angeles County 2035 General Plan: Chapter 9: Conservation and Natural Resources Element*. Available at: http://planning.lacounty.gov/assets/upl/project/gp_final-general-plan-ch9.pdf

[8] County of Los Angeles Department of Regional Planning. Adopted 6 October 2015. *Los Angeles County 2035 General Plan: Chapter 9: Conservation and Natural Resources Element*. Available at: http://planning.lacounty.gov/assets/upl/project/gp_2035_Chapter9_2014.pdf

landmarks defined to be worthy of registration by the State of California, either as California Historical Landmarks or as Points of Historical Interest. The Commission may also comment for the Board on applications relating to the NRHP. The Commission is also charged with fostering and promoting the preservation of historical records. In its capacity as the memorial plaque review committee of the County of Los Angeles, the Commission screens applications for donations of historical memorial plaques and recommends to the Board plaques worthy of installation as County property.[9]

County of Los Angeles Historic Preservation Ordinance (Title 22 – Planning and Zoning of the Los Angeles County Code, Part 29 of Chapter 22.52)

22.52.3010 Purpose

The County of Los Angeles Historic Preservation Ordinance has seven established basic purposes.

A. Enhance and preserve the distinctive historic, architectural, and landscape characteristics which represent the County's cultural, social, economic, political, and architectural history.
B. Foster community pride in the beauty and noble accomplishments of the past as represented by the County's historic resources.
C. Stabilize and improve property values, and enhance the aesthetic and visual character and environmental amenities of the County's historic resources.
D. Recognize the County's historic resources as economic assets.
E. Encourage and promote the adaptive reuse of the County's historic resources.
F. Promote the County as a destination for tourists and as a desirable location for businesses.
G. Specify significance criteria and procedures for the designation of landmarks and Historic Districts, and provide for the ongoing preservation and maintenance of landmarks and Historic Districts.

22.52.3060 Criteria for Designation of Landmarks and Historic Districts

A. Property which is more than 50 years of age may be designated as a landmark if it satisfies one or more of the following criteria:
    1. It is associated with events that have made a significant contribution to the broad patterns of the history of the nation, State, County, or community.
    2. It is associated with the lives of persons who are significant in the history of the nation, State, County, or community.
    3. It embodies the distinctive characteristics of a type, architectural style, period, or method of construction; or represents the work of an architect, designer, engineer, or builder whose work is of significance to the nation, State, County, or community; or possesses artistic values of significance to the nation, State, County, or community.
    4. It has yielded, or may be likely to yield, information important locally in prehistory or history.

[9] County of Los Angeles Department of Auditor-Controller. 21 October 2002. *Sunset Review for the Los Angeles County Historical Landmarks and Records Commission*. Available at: http://auditor.co.la.ca.us/cms1_003345.pdf

5. It is listed or has been formally determined eligible by the National Park Service for listing on the National Register of Historic Places, or is listed or has been determined eligible by the State Historical Resources Commission for listing on the California Register of Historical Resources.
6. It is one of the largest or oldest trees of the species located in the County.
7. It is a tree, plant, landscape, or other natural land feature having historical significance due to an association with a historic event, person, site, street, or structure, or because it is a defining or significant outstanding feature of a neighborhood.

B. Property less than 50 years of age may be designated as a landmark if it meets one or more of the criteria set forth in Section 22.52.3060.A, above, and exhibits exceptional importance.

C. The interior space of a property, or other space held open to the general public, including but not limited to a lobby, may itself be designated as a landmark or included in the landmark designation of a property if the space is more than 50 years of age and satisfies one or more of the criteria set forth in Subsection A, above, or if the space is less than 50 years of age and satisfies the requirements of Section 22.52.3060.B, above.

SECTION 4.0
METHODS

This section describes the methods employed in the characterization and evaluation of cultural resources in the Trails Master Plan Study Area.

4.1 PALEONTOLOGICAL RESOURCES RECORDS SEARCH AND MAP REVIEW

The presence of recorded paleontological resources and fossil localities within the Trails Master Plan Study Area were assessed using information obtained from records searches at the Natural History Museum of Los Angeles County (NHMLAC).[10] Geologic maps of the San Fernando Valley were also examined to evaluate the potential for the geological deposits within the Trails Master Plan Study Area to yield unique paleontological resources.[11]

Based on the results of the records and map searches, each of the geologic units identified within the Trails Master Plan Study Area were characterized according to their potential to yield paleontological resources. The geological formations were categorized using a three-tiered sensitivity classification scheme:

- **High Potential:** Sedimentary geologic units and other geologic units that have yielded unique paleontological resources
- **Moderate Potential:** Older alluvial geologic units
- **Low to No Potential:** Metamorphic and igneous geologic units

4.2 CULTURAL RESOURCES RECORDS SEARCH AND LITERATURE REVIEW

Cultural resource records searches were conducted at the South Central Coastal Information Center (SCCIC), housed at California State University, Fullerton, on May 15, 2012; December 17, 2012; November 13, 2013; and February 27, 2014. These searches included reviews of all known previously recorded resources and relevant cultural resource survey reports within the Trails Master Plan Study Area and a 0.5-mile buffer to ascertain the presence of known prehistoric and historic archaeological resources within the currently mapped trail system within the Trails Master Plan (i.e., cultural resources API). In addition, the Historic Property Data File for Los Angeles County, which includes the NRHP, CRHR, California Historical Landmarks, and California Points of Historical Interest, was searched to identify known historical resources within the cultural resources API. The records search was updated in 2017 to incorporate and update the findings of the searches conducted in 2014, 2013, and 2012. On January 22, 2017, and March 22, 2017, an updated records search was conducted at the SCCIC. These searches included reviews of all known relevant cultural resource survey reports within the Trails Master Plan Study Area to ascertain the presence of known prehistoric and historic archaeological resources within the Trails Master Plan and a 0.5--mile buffer.

[10] McLeod, Samuel, Natural History Museum of Los Angeles County. 24 December 2013. Letter response to Roberta Thomas, Sapphos Environmental, Inc., Pasadena, CA.

[11] Jennings, C.W., and R.G. Strand. 1969. *Geologic Map of California, Los Angeles Sheet, 1:250,000*. Sacramento, CA: California Geological Survey, California Division of Mines and Geology.

4.3 CEMETERIES AND HUMAN REMAINS

On January 22, 2017, and March 22, 2017, an updated records search was conducted at the SCCIC. These searches included reviews of all previously recorded cultural resources within the Trails Master Plan Study Area to ascertain the presence of known prehistoric and historic burial sites within the Trails Master Plan Study Area and a 0.5-mile buffer. In addition, historic USGS topographic maps for the study area were reviewed to identify the locations of historic and modern cemeteries.

4.4 TRIBAL CULTURAL RESOURCES

Coordination with the NAHC was initiated for the proposed Johnson Motorway Trail element of the Trails Master Plan on December 21, 2012.[12] The NAHC was requested to conduct a Sacred Lands File Records Search for the presence of Native American sacred sites and human remains within the Johnson Motorway Trail element study area. A written response from NAHC was received by Sapphos Environmental, Inc. on December 28, 2012, stating that the Sacred Lands File search did not indicate the presence of Native American cultural resources within a 0.5-mile radius of the Johnson Motorway Trail element.[13] On the recommendation of the NAHC, Sapphos Environmental, Inc. sent letters to 16 Native American contacts classified by the NAHC as potential sources of information related to cultural resources in the vicinity of the Johnson Motorway Trail element. The letters advised the tribes and specific individuals of the Johnson Motorway Trail element and its geographic area and requested information regarding cultural resources within the vicinity of the Johnson Motorway Trail element, including feedback or concerns related to the project. As of May 20, 2013, responses have been received from Mr. Freddie Romero of the Santa Ynez Tribal Elders Council[14] and Mr. Patrick Tumamait.[15] The NAHC requested ongoing consultation regarding the project.

A supplemental NAHC request was initiated for the entirety of the Trails Master Plan Study Area on November 20, 2013.[16] A written response from NAHC was received by Sapphos Environmental, Inc. on November 25, 2013, stating that the Sacred Lands File search did not indicate the presence of Native American cultural resources within the Trails Master Plan Area, but that there are known Native American cultural places/sites in close proximity.[17] On the recommendation of the NAHC, Sapphos Environmental, Inc. sent letters to eight Native American contacts classified by the NAHC as potential sources of information related to cultural resources in the vicinity of the Trails Master Plan Study Area. These letters also advised the tribes and specific individuals of the Trails Master Plan Study Area and requested information regarding cultural resources within the vicinity of the

[12] Backes, Clarus, Sapphos Environmental, Inc., Pasadena, CA. 21 December 2012. Letter to Larry Myers, Native American Heritage Commission, Sacramento, CA.

[13] Singleton, Dave, Native American Heritage Commission, Sacramento, CA. 28 December 2012. Faxed letter response to Clarus Backes, Sapphos Environmental, Inc., Pasadena, CA.

[14] Backes, Clarus, Sapphos Environmental, Inc., Pasadena, CA. 10 January 2013. Contact Report to Patrick Tumamait, Ojai, CA.

[15] Backes, Clarus, Sapphos Environmental, Inc., Pasadena, CA. 17 January 2013. Contact Report to Freddie Romero, Santa Ynez Tribal Elders Councils, Santa Ynez, CA

[16] Thomas, Roberta, Sapphos Environmental, Inc., Pasadena, CA. 20 November 2013. Letter to David Singleton, Native American Heritage Commission, Sacramento, CA.

[17] Singleton, Dave, Native American Heritage Commission, Sacramento, CA. 25 November 2013. Faxed letter response to Roberta Thomas, Sapphos Environmental, Inc., Pasadena, CA.

area, including feedback or concerns related to the project. No responses have been received to date.

4.4.1 AB 52 Consultation

Coordination with the NAHC was reinitiated by Sapphos Environmental, Inc. on behalf of the County for the proposed Santa Susana Mountains Trails Master Plan – Phase II on March 15, 2017.[18] The NAHC was requested to conduct a Sacred Lands File Records Search for the presence of Native American sacred sites and human remains within the Santa Susana Mountain Trails Master Plan Study Area. A written response from NAHC was received by the County on March 30, 2017, stating that the Sacred Lands File search did not indicate the presence of Native American Tribal Resources within a 0.5-mile radius of the Santa Susana Mountains Trails Master Plan – Phase II.[19] On the recommendation of the NAHC, Sapphos Environmental, Inc. sent letters on behalf of the County to nine Native American contacts classified by the NAHC as potential sources of information related to cultural resources in the vicinity of the Santa Susana Mountain Trails Master Plan – Phase II (Appendix B, *Confidential Native American Consultation*).

Andrew Salas of the Gabrieleno Band of Mission Indians-Kizh Nation responded by letter on April 11, 2017. The letter stated that the project is located within a sensitive area and may cause a substantial adverse change in the significance of the tribe's cultural resources and that the tribe is requesting consultation. On May 11, 2017, the Fernandeño Tataviam Band of Mission Indians notified the DPR that they would like to engage in consultation for the above-referenced project to ensure the avoidance of culturally sensitive areas, in conjunction with the CEQA process.

A consultation meeting between the DPR and the Fernandeño Tataviam Band of Mission Indians (Tribe). The meeting was held on Wednesday, June 7, 2017, at the tribal offices in San Fernando, California. The County shared the results of the South Central Coastal Information Center (SCCIC) records search conducted by Sapphos Environmental, Inc. with the Fernandeño Tataviam Band of Mission Indians, which resulted in the identification of 41 prehistoric archaeological sites, 16 historic archaeological sites, one multi-component site, three prehistoric isolates, and eight historic isolates within the APE. The County explained that the proposed trail alignments have been designed to avoid impacts to known sites. The Fernandeño Tataviam Band of Mission Indians indicated that the study area has a high level of sensitivity to potential tribal cultural resources, and numerous sites are known from the study area. Since the trail alignments are conceptual and will ultimately be constructed in small segments over a 30-year planning horizon, it was agreed that mitigation measures should be included to ensure that the County undertakes consultation with the Fernandeño Tataviam Band of Mission Indians when trail segments are considered for development. The Fernandeño Tataviam Band of Mission Indians would inform the County if a trail alignment or specific segment of a trail alignment needs to be adjusted to avoid tribal cultural resources, or if other protective measures are warranted to protect tribal cultural resources *in situ*. In addition, the Fernandeño Tataviam Band of Mission Indians would inform the County when Native American monitoring is warranted.

[18] Yom, Julie, County of Los Angeles. 15 March 2017. Letter to Gayle Totten, Native American Heritage Commission, Sacramento, CA.

[19] Totten, Gayle, Native American Heritage Commission, Sacramento, CA. 30 March 2017. Faxed letter response to Julie Yom, County of Los Angeles.

A consultation meeting between the DPR and the Gabrieleno Band of Mission Indians - Kizh Nation was conducted on June 7, 2017. The Gabrieleno Band of Mission Indians - Kizh Nation indicated that the study area has a high level of sensitivity to potential tribal cultural resources, and that numerous sites are known from the study area. The Gabrieleno Band of Mission Indians - Kizh Nation are not opposed to the project, but want to ensure that resources are avoided and that a Native American monitor is present during ground-disturbing activities in areas with a potential for known tribal cultural resources or a potential for the unanticipated discovery of tribal cultural resources during construction. The tribe would like to provide input on the trail naming. The tribe representatives shared during the meeting a "living map" of Kizh Nation traditional use areas including villages and ceremonial sites. Since the trail alignments are conceptual and will ultimately be constructed in small segments over a 30-year planning horizon, it was agreed that mitigation measures should be included to ensure that the County undertakes consultation with the Gabrieleno Band of Mission Indians - Kizh Nation when trail segments are considered for development. The Gabrieleno Band of Mission Indians - Kizh Nation would inform the County if a trail alignment or specific segment of a trail alignment needs to be adjusted to avoid tribal cultural resources, or if other protective measures are warranted to protect tribal cultural resources *in situ*. In addition, the Gabrieleno Band of Mission Indians - Kizh Nation would inform the County when Native American monitoring is warranted.

A follow-up consultation meeting was conducted between the DPR and the Fernandeño Tataviam Band of Mission Indians (Tribe). The meeting was held on Wednesday, August 16, 2017, from 2:00 to 3:00 p.m., at the tribal offices in San Fernando, California. The purpose of the meeting was to conduct follow-up consultation consistent with the provisions of AB 52. The County shared the draft trails plan with the Fernandeño Tataviam Band of Mission Indians, so that they may compare the tribal cultural resources data within the Area of Potential Effect. The County explained that the proposed trail alignments have been designed to avoid impacts to known sites. The Fernandeño Tataviam Band of Mission Indians indicated that the study area has a high level of sensitivity to potential tribal cultural resources, and numerous sites are known from the study area. The Fernandeño Tataviam Band of Mission Indians provided the DPR and Sapphos Environmental, Inc. with a list that indicates the sensitivity of proposed trails in three categories—high, medium, and low sensitivity for tribal cultural resources. The Fernandeño Tataviam Band of Mission Indians reviewed the Tataviam ethnography to be included in the CRTR and provided comments.

A follow-up consultation meeting was conducted between the DPR and the Gabrieleno Band of Mission Indians - Kizh Nation. The meeting was held on Thursday, October 5, 2017, from 1:30 to 2:00 p.m., on a conference call. The purpose of the meeting was to conduct follow-up consultation consistent with the provisions of AB 52. The County shared the draft trails plan with the Gabrieleno Band of Mission Indians - Kizh Nation, so that they may compare the tribal cultural resources data within the Area of Potential Effect. The County explained that the proposed trail alignments have been designed to avoid impacts to known sites. The Gabrieleno Band of Mission Indians - Kizh Nation indicated that the study area has a high level of sensitivity to potential tribal cultural resources, and numerous sites are known from the study area. The Gabrieleno Band of Mission Indians - Kizh Nation will provide the Department and Sapphos Environmental, Inc. with a list that indicates the sensitivity of proposed trails in three categories—high, medium, and low sensitivity for tribal cultural resources. This information has not been provided as of October 24, 2017.

SECTION 5.0
RESULTS

This section provides the characterization and evaluation of the potential for the proposed Trails Master Plan (project) to affect cultural resources within the project API. The results described in this section provide the substantial evidence required to address the CEQA scope of analysis, related to prehistoric resources, historic resources, Native American sacred sites, and human remains. Although both prehistoric and historic period resources in the project area are considered to be archaeological sites, for clarity of presentation and analysis, the data have been organized chronologically, with prehistoric period context and resources described in relation to archaeological resources, and historic period context and resources described in relation to historic resources. Characterization of both prehistoric and historic archaeological resources, as well as Native American sacred sites, follows these background sections.

5.1 EXISTING CONDITIONS

5.1.1 Archaeological and Historic Resources

Setting

Prehistoric Context

Several prehistoric cultural chronologies have been proposed for the coastal Southern California region with three of the most frequently cited sequences developed by William Wallace,[20] Claude Warren,[21] and Chester King.[22] Such chronologies provide a framework to discuss archaeological data in relation to broad cultural changes seen in the archaeological record. The chronological sequence presented herein represents an updated synthesis of these schemes as compiled by Glassow and others[23] for the Northern California Bight. This geographic area consists of the coastal area from Vandenberg Air Force Base south to Palos Verdes, as well as the Channel Islands and adjacent inland areas, including the San Fernando Valley and Los Angeles Basin.[24] The prehistoric sequence of the Northern California Bight can be divided into four broad temporal categories (Table 5.1.1-1, *Southern California Coastal Regional Chronology*). It should be noted that the prehistoric chronology for the region is being refined on a continuing basis, with new discoveries and improvements in the accuracy of dating techniques.

[20] Wallace, William J. 1955. "A Suggested Chronology for Southern California Coastal Archaeology." *Southwestern Journal of Anthropology 11*: 214–30.

[21] Warren, Claude M. 1968. "Cultural Tradition and Ecological Adaptation on the Southern California Coast." In *Archaic Prehistory in the Western United States*, ed. Cynthia Irwin-Williams. Eastern New Mexico University Contributions in Anthropology No. 1. Portales, NM: Eastern New Mexico University.

[22] King, Chester. 1990. *Evolution of Chumash Society: A Comparative Study of Artifacts Used for Social System Maintenance in the Santa Barbara Channel Region before AD 1804*. New York, NY: Garland.

[23] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

[24] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

TABLE 5.1.1-1
SOUTHERN CALIFORNIA COASTAL REGIONAL CHRONOLOGY

Epoch	Coastal Region	Dates
Terminal Pleistocene / Early Holocene	Paleo-Coastal Period	Circa 9500 to 7000/6500 BC
Middle Holocene	Millingstone Period	Circa 7000/6500 to 1500/1000 BC
Late Holocene	Intermediate Period	1500/1000 BC to AD 750
Late Holocene	Late Period	AD 750 to Spanish contact

Terminal Pleistocene and Early Holocene: Paleo-Coastal Period (Circa 9500 to 7000/6500 BC)

Although data on early human occupation for the Southern California coast are limited, archaeological evidence from the northern Channel Islands suggests initial settlement within the region occurred at least 12,000 years before present (BP). At Daisy Cave (CA-SMI-261) on San Miguel Island, radiocarbon dates indicate an early period of use in the terminal Pleistocene, sometime between 9600 and 9000 calibrated (cal) BC.[25] Evidence of early human occupation in the Northern California Bight has also been found on nearby Santa Rosa Island, where human remains from the Arlington Springs Site (CA-SRI-1730) have been dated between 11,000 and 10,000 cal BC.[26] Archaeological data recovered from these and other coastal Paleoindian sites indicate a distinctively maritime cultural adaptation, termed the "Paleo-Coastal Tradition,"[27] which involved the use of seafaring technology and a subsistence regime focused on shellfish gathering and fishing.[28]

Relatively few sites have been identified in Los Angeles County that date to the terminal Pleistocene and early Holocene. Currently, the earliest reliable date for human occupation in the area derives from the La Brea Tar Pits (CA-LAN-159), where human bone has been dated to 8520 cal BC.[29] Evidence of possible early human occupation has also been found at the sand dune bluff site of Malaga Cove (CA-LAN-138), located between Redondo Beach and Palos Verdes.[30] Researchers have proposed that archaeological remains recovered from the lowermost cultural stratum at the site, which include shell, animal bone, and chipped stone tools, may date as early as 8000 cal BC.[31,32]

[25] Erlandson, J.M., D.J. Kennett, B.L. Ingram, D.A. Guthrie, D.P. Morris, M.A. Tveshov, G.J. West, and P.L. Walker 1996. "An Archaeological and Paleontological Chronology for Daisy Cave (CA-SMI-261), San Miguel Island, California." *Radiocarbon*, *38*: 355–73.

[26] Johnson, J.R., T.W. Stafford Jr., H.O. Ajie, and D.P. Morris. 2002. "Arlington Springs Revisited." In *Proceedings of the Fifth California Islands Symposium*, ed. D. Browne, K. Mitchell, and H. Chaney, pp. 541–45. Santa Barbara, CA: USDI Minerals Management Service and The Santa Barbara Museum of Natural History.

[27] Moratto, M.J. 1984. California Archaeology, pp. 103-113. Academic Press, New York.

[28] Rick, T.C., J.M. Erlandson, and R.L. Vellanoweth. 2001. "Paleocoastal Fishing along the Pacific Coast of the Americas: Evidence from Daisy Cave, San Miguel Island, California." *American Antiquity*, *66*: 595–614.

[29] Berger, R., R. Protsch, R. Reynolds, C. Rozaire, and J.R. Sackett. 1971. *New Radiocarbon Dates Based on Bone Collagen of California Indians*. Los Angeles, CA: Contributions to the University of California Archaeological Survey.

[30] Walker, Edwin Francis. 1951. *Five Prehistoric Archaeological Sites in Los Angeles County, California*. F. W. Hodge Anniversary Publication Fund VI. Los Angeles, CA: Southwest Museum.

[31] Moratto, M.J. 1984. California Archaeology, pp. 132. Academic Press, New York.

[32] Wallace, W.J. 1986. "Archaeological Research at Malaga Cove." In *Symposium: A New Look at Some Old Sites*, ed. G.S. Breschini and T. Haversat. Salinas, CA: Coyote Press.

Middle Holocene: Millingstone Period (Circa 7000/6500 to 1500/1000 BC)

The Millingstone Period or Horizon, also referred to as the "Encinitas Tradition,"[33,34] is the earliest well-established cultural occupation of the coastal areas of the region. The onset of this period, which began sometime between 7000 and 6500 cal BC, is marked by the expansion of populations throughout the Southern California Bight. Regional variations in technology, settlement patterns, and mortuary practices among Millingstone sites have led researchers to define several local manifestations or "patterns" of the tradition.[35] Groups that occupied the San Fernando Valley are thought to have been relatively small and highly mobile during this time, with a general subsistence economy focused on the gathering of shellfish and plant foods, particularly hard seeds, with hunting being of less importance.[36]

Two temporal subdivisions have been defined for the portion of the Topanga Pattern falling within the Millingstone Period: Topanga I (circa 6500 to 3000 BC) and Topanga II (circa 3000 to 1000 BC).[37] Topanga I assemblages are characterized by abundant manos and metates, core tools and scrapers, charmstones, cogged stone, and discoidals; projectile points are quite rare with those present resembling earlier, large, leaf-shaped forms.[38] Secondary inhumations with associated cairns are the most common burial form at Millingstone sites with small numbers of extended inhumations also identified. The subsequent Topanga II phase largely represents a continuation of the Topanga pattern with site assemblages characterized by numerous manos and metates, charmstones, cogged stones, discoidals, and some stone balls. A significant technological change in ground stone occurs at this time with the appearance of mortars and pestles at Topanga II sites suggesting the adoption of balanophagy by coastal populations.[39] The quantity of projectile points also notably increases in Topanga II site deposits indicating that the hunting of large game may have played a greater role in the subsistence economy than in earlier times. While secondary burials continue to be quite common, a few flexed inhumations have also been recovered from archaeological contexts dating to the Topanga II phase.

A number of Millingstone sites have been identified in the San Fernando Valley and surrounding areas. The early component of the Tank site (CA-LAN-1), located in the nearby Santa Monica Mountains appears to date to the Topanga I phase.[40] In addition, a marine shell sample from the

[33] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, *44*(2): 1–54.

[34] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, *42*(4): 1–64.

[35] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, *42*(4): 1–64.

[36] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

[37] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, *42*(4): 1–64, 8.

[38] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

[39] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, *42*(4): 1–64, 41.

[40] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, *42*(4): 1–64, 8.

Encino Village site (CA-LAN-43 / CA-LAN-111) yielded a radiocarbon date of 4570 ± 80, suggesting use of the southern portion of the valley during the Topanga I phase.[41] The presence of mortars and pestles alongside stemmed projectile points at the Chatsworth site (CA-LAN-21), located at the western edge of the San Fernando Valley, suggests a Topanga II presence.[42] Finally, the Big Tujunga Wash site, located at the eastern edge of the San Fernando Valley, may have also contained a Topanga II component.[43]

Late Holocene: Intermediate Period (1500/1000 BC to AD 750)

The Intermediate Period, which encompasses the early portion of the "Del Rey Tradition" as defined by Sutton,[44] begins around 3500 BP. At this time, significant changes are seen throughout the coastal areas of Southern California in material culture, settlement systems, subsistence strategies, and mortuary practices. These new cultural traits have been attributed to the arrival of Takic speaking people from the southern San Joaquin Valley.[45] Biological, archaeological, and linguistic data indicate that the Takic groups who settled in the San Fernando Valley were ethnically distinct from the preexisting Hokan-speaking Topanga populations and are believed to be ancestral to ethnographic Gabrielino groups.[46] While archaeological evidence indicates that "relic" Topanga III populations continued to survive in isolation in the Santa Monica Mountains, these indigenous groups appear to have been largely replaced or absorbed by the Gabrielino or Chumash by 2000 BP.[47]

Intermediate Period sites within the San Fernando Valley are represented by the "Angeles Pattern" of the Del Rey Tradition.[48] Three temporal subdivisions have been defined for the portion of the Angeles Pattern that falls within the Intermediate Period: Angeles I (1500 to 600 BC), Angeles II (600 BC to AD 400), and Angeles III (AD 400 to 750).[49] The onset of the Angeles I phase is characterized by the increase and aggregation of regional populations and the appearance of the first village settlements. The prevalence of projectile points, single-piece shell fishhooks, and bone harpoon points at Angeles I sites suggests a subsistence shift in the Intermediate Period with an increased emphasis on fishing and terrestrial hunting and less reliance on the gathering of shellfish resources. Regional trade or interaction networks also appeared to develop at this time with coastal

[41] Taylor, R.E., P.J. Ennis, P.J. Slota Jr. and L.A. Payen. 1989. "Non-Age-Related Variations in Aspartic Acid Racemization in Bone from a Radiocarbon-dated Late Holocene Archaeological Site." *Radiocarbon*, *31*(3): 1048-56.

[42] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, *42*(4): 1–64, 8.

[43] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, *42*(4): 1–64, 8.

[44] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, *44*(2): 1–54.

[45] Sutton, Mark Q. 2009. "People and Language: Defining the Takic Expansion in Southern California." *Pacific Coast Archaeological Society Quarterly*, *41*(2&3): 31-93.

[46] Sutton, Mark Q. 2009. "People and Language: Defining the Takic Expansion in Southern California." *Pacific Coast Archaeological Society Quarterly*, *41*(2&3): 31-93.

[47] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, *42*(4): 1–64, 17.

[48] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, *44*(2): 1–54.

[49] Sutton, Mark Q., and Jill K. Gardner. 2010. "Reconceptualizing the Encinitas Tradition of Southern California." *Pacific Coast Archaeological Society Quarterly*, *42*(4): 1–64, 8.

populations in Los Angeles County obtaining small steatite artifacts and *Olivella* shell beads from the southern Channel Islands and obsidian from the Coso Volcanic Field.[50] Finally, marked changes are seen in mortuary practices during the Angeles I phase with flexed primary inhumations and cremations replacing extended inhumations and cairns.

The Angeles II phase largely represents a continuation and elaboration of the Angeles I technology, settlement, and subsistence systems. One exception to this pattern is the introduction of a new funerary complex around 2600 BP consisting of large rock cairns or platforms which contain abundant broken tools, faunal remains, and cremated human bone. These mortuary features have generally been thought to represent the predecessor of the Southern California Mourning Ceremony.[51] Several important changes in the archaeological record mark the beginning of the Angeles III phase. At this time, larger seasonal villages characterized by well-developed middens and cemeteries were established along the coast or inland areas. Archaeological data from Angeles III sites indicate that residents of these settlements practiced a fairly diverse subsistence strategy which included the exploitation of both marine and terrestrial resources.[52] Notable technological changes occurred at this time with the introduction of the plank canoe and bow and arrow.[53] The appearance of new *Olivella* bead types at Angeles III sites indicates a reconfiguration of existing regional exchange networks with increased interaction with populations in the Gulf of California.[54] Finally, cremations increase slightly in frequency at this time with inhumations no longer placed in an extended position.[55] Intermediate Period sites in Los Angeles County include CA-LAN-2 and CA-LAN-197, both of which are located in the Santa Monica Mountains. The formal cemeteries at these sites are representative of the increased sedentism that occurred during the Intermediate Period.[56]

[50] Koerper, Henry C., Roger D. Mason, and Mark L. Peterson. 2002. "Complexity, Demography, and Change in Late Holocene Orange County." In *Catalysts to Complexity: Late Holocene Societies of the California Coast*, ed. M. Erlandson and Terry L. Jones. Perspectives in California Archaeology, Vol. 6. Los Angeles, CA: University of California, Los Angeles, Institute of Archaeology.

[51] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, *44*(2): 1–54.

[52] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, *44*(2): 1–54.

[53] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

[54]Koerper, Henry C., Roger D. Mason, and Mark L. Peterson. 2002. "Complexity, Demography, and Change in Late Holocene Orange County." In *Catalysts to Complexity: Late Holocene Societies of the California Coast*, ed. M. Erlandson and Terry L. Jones. Perspectives in California Archaeology, Vol. 6. Los Angeles, CA: University of California, Los Angeles, Institute of Archaeology.

[55] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, *44*(2): 1–54.

[56] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

Late Holocene: Late Period (AD 750 to Spanish Contact)

The Late Period dates from approximately AD 750 until Spanish contact at AD 1542. Sutton[57] has divided this period, which falls within the larger Del Rey Tradition, into two phases: Angeles IV (AD 750–1200) and Angeles V (AD 1200–1550). The Angeles IV phase is characterized by the continued growth of regional populations and the development of large, sedentary villages. Although chiefdoms appear to have developed in the northern Channel Islands and Santa Barbara region after 850 BP,[58,59] little direct evidence has been found to suggest this level of social complexity existed in the San Fernando Valley during the late prehistoric period.[60]

Several new types of material culture appear during the Angeles IV phase including Cottonwood series points, birdstone and "spike" effigies, *Olivella* cupped beads, and *Mytilus* shell disk beads. The presence of Southwestern pottery, Patayan ceramic figurines, and Hohokam shell bracelets at Angeles IV sites suggests some interaction between groups in Southern California and the Southwest. Notable changes are seen in regional exchange networks after 800 BP with an increase in the number and size of steatite artifacts, including large vessels, elaborate effigies, and *comals*, recovered from Angeles V sites. The presence of these artifacts suggests a strengthening of trade ties between coastal Los Angeles populations and the southern Channel Islands.[61] Finally, Late Period mortuary practices remain largely unchanged from the Intermediate Period with flexed primary inhumations continuing to be the preferred burial method.

Late Period sites in Los Angeles County include CA-LAN-227 and CA-LAN-229, which are situated in the Santa Monica Mountains. Both sites contain less Millingstone artifacts than earlier sites, but more mortars, pestles, projectile points, drills, beads, pipes, and bone tools.[62] Although these sites represent a move toward centralized sedentary villages during this period, it is unclear whether they represent year-round occupation or semi-permanent villages used as base settlements.[63]

Regional Ethnography

Gabrielino

Prior to Spanish contact and the establishment of the Missions, local Native Americans associated themselves with a lineage or village rather than a collective tribal group. Native American

[57] Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, *44*(2): 1–54.

[58] Arnold, Jeanne E. 1992. "Complex Hunter-Gatherer-Fishers of Prehistoric California: Chiefs, Specialists, and Maritime Adaptations of the Channel Islands." *American Antiquity*, *57*(1): 60–84.

[59] Gamble, Lynn H. 2005. "Culture and Climate: Reconsidering the Effect of Palaeoclimatic Variability among Southern California Hunter-Gatherer Societies." *World Archaeology*, *37*(1): 92–108.

[60]Sutton, Mark Q. 2010. "The Del Rey Tradition and Its Place in the Prehistory of Southern California." *Pacific Coast Archaeological Society Quarterly*, *44*(2): 1–54.

[61] Koerper, Henry C., Roger D. Mason, and Mark L. Peterson. 2002. "Complexity, Demography, and Change in Late Holocene Orange County." In *Catalysts to Complexity: Late Holocene Societies of the California Coast*, ed. M. Erlandson and Terry L. Jones. Perspectives in California Archaeology, Vol. 6. Los Angeles, CA: University of California, Los Angeles, Institute of Archaeology.

[62] Moratto, M. 1984. *California Archaeology*. pp. 141. Academic Press, Inc. Orlando, Florida.

[63] Glassow, Michael A., Lynn H. Gamble, Jennifer E. Perry, and Glenn S. Russell. 2007. "Prehistory of the Northern California Bight and the Adjacent Transverse Ranges." In *California Prehistory, Colonization, Culture, and Complexity*, ed. Terry L. Jones and Kathryn A. Klar. New York, NY: Altamira.

territorial occupation of the San Fernando Valley is traditionally assigned to lineages that are now known by the mission term Gabrielino, or the ethnographic term Tongva; however, the Chumash and Tataviam territories are thought to have bordered the northwest and northern limits of the San Fernando Valley.[64,65,66] The Native American groups in the area became known as the Gabrielino and Fernandeño. The communities identify themselves today as Gabrieleno Kizh and Fernandeño Tataviam. For this study, a description of Gabrielino and Tataviam ethnography is provided.

At the time of European contact, the Native Americans, subsequently known as the Gabrielino Indians, occupied nearly the entire basin comprising the Counties of Los Angeles and Orange. They belonged to the Takic family of the Uto-Aztecan linguistic stock. Named after the Mission San Gabriel, the Gabrielino are considered to have been one of the two wealthiest and largest ethnic groups in aboriginal Southern California,[67] the other being the Chumash. This was largely due to the many natural resources within the land base they controlled, primarily the rich coastal section from Topanga Canyon to Aliso Creek and the offshore islands of San Clemente, San Nicholas, and Santa Catalina.

The ancestors of the Gabrielino arrived in the Los Angeles Basin around 500 BC and began to spread throughout the area, displacing a preexisting Hokan speaking population. The first Spanish contact with the local Native American villages took place in 1520, when Juan Rodriguez Cabrillo arrived in Santa Catalina Island. In 1602, the Spanish returned to Santa Catalina under Sebastián Vizcaíno, and in 1769, Gaspar de Portolá made the first attempt to colonize Gabrielino territory. By 1771, the Spanish had built four missions and the decimation of the local Native Americans had already begun.[68] European diseases and conflicts among the local villages, as well as conversion to Christianity, carried a toll in their numbers, traditions, and beliefs.

Although determining an accurate account of the population numbers is difficult, Bean and Smith[69] state that by AD 500, the local Native Americans established permanent settlements and their population continued to grow. Early Spanish accounts indicate that the local Native Americans lived in permanent villages with a population ranging from 50 to 200 individuals. The local Native American population surpassed 5,000 people by around 1770.

Several types of structures characterized the local Native American villages. They lived in domed circular structures covered with tule, fern, or carrizo. Communal structures measured over 60 feet in diameter and could house three or four families. Sweathouses, menstrual huts, and a ceremonial enclosure were also part of the village arrangements.[70]

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[64] Bean, L.J., and C.R. Smith. 1978. "Gabrielino." In *Handbook of North American Indians*, Vol. 8, ed. R.F. Heizer. Washington, DC: Smithsonian Institution.

[65] King, C., and T. Blackburn. 1978. "Tataviam." In *Handbook of North American Indians*, Vol. 8, ed. R.F. Heizer. Washington, DC: Smithsonian Institution, p. 535.

[66] Grant, C. 1978. "Eastern Coastal Chumash." In *Handbook of North American Indians*, Vol. 8, ed. R.F. Heizer. Washington, DC: Smithsonian Institution, p. 538.

[67] Bean, L.J., and C.R. Smith. 1978. "Gabrielino." In *Handbook of North American Indians*, Vol. 8, ed. R.F. Heizer. Washington, DC: Smithsonian Institution, p. 538.

[68] Bean, L.J., and C.R. Smith. 1978. "Gabrielino." In *Handbook of North American Indians*, Vol. 8, ed. R.F. Heizer. Washington, DC: Smithsonian Institution, p. 540–41

[69] Bean, L.J., and C.R. Smith. 1978. "Gabrielino." In *Handbook of North American Indians*, Vol. 8, ed. R.F. Heizer. Washington, DC: Smithsonian Institution, p. 540.

[70] Bean, L.J., and C.R. Smith. 1978. "Gabrielino." In *Handbook of North American Indians*, Vol. 8, ed. R.F. Heizer. Washington, DC: Smithsonian Institution, p. 542.

The local Native Americans practiced different subsistence strategies that included hunting, fishing, and gathering. Hunting activities on land were carried out with the use of bow and arrow, deadfalls, snares, and traps. Smoke and throwing clubs also were used to assist with the hunt of burrowing animals. Aquatic animals were hunted with harpoons, spear-throwers, and clubs. Although most fishing activities took place along rivers and from shore, open water fishing trips between mainland and the islands also took place using boats made from wood planks and asphaltum. The prehistoric fishing equipment included fishhooks made of shells, nets, basketry traps, and poison substances obtained from plants.[71]

The diet included a large number of animals, such as deer, rabbit, squirrel, snake, and rats, as well as a wide variety of insects. However, some meat taboos also existed. The meat of bears, rattlesnakes, stingrays, and ravens were not consumed; these animals were believed to be messengers of the god Chengiichngech. Aquatic animals such as fish, whales, seals, sea otters, and shellfish were also an important part of the diet, mainly among the coastal population.[72]

A variety of plant foods were consumed by the local Native Americans, the main one being acorns. These nuts are rich in nutrients and have a high content of fiber and fat. Other plants used for consumption include the seeds of the Islay (*Prunus ilicifolia*), which were ground into a meal, and the seeds and shoots of the Chía (*Salvia columbariae*), which were eaten raw, made into loaves, or mixed with water to make a beverage. Roots and bulbs were also part of the diet among the mainland and island groups, as well as clover, wild sunflower seeds, and cholla seeds. Wild tobacco was used for medicinal purposes and as a sedative and narcotic.[73]

The local Native American villages were involved in trade among themselves and with other regions. Coastal villages exchanged steatite, shell and shell beads, dried fish, sea otter pelts, and salt with inland groups for acorns, seeds, obsidian, and deerskins.[74] During the late prehistoric period, the principal trade item, both among the local villages and for export to other groups, was steatite. Also known as soapstone or soaprock, major outcroppings of steatite are found on Santa Catalina Island. Steatite was widely used among the local villages to make arrow straighteners and artistic or ritualistic objects. In addition, this rock was used in the making of functional objects for food preparation such as bowls, mortars, pestles, and comals.[75] Archaeological data indicate that a steatite "industry" developed prehistorically on the island that involved the large-scale trade of both raw materials and finished artifacts to mainland communities.[76]

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[71] Bean, L.J., and C.R. Smith. 1978. "Gabrielino." In *Handbook of North American Indians*, Vol. 8, ed. R.F. Heizer. Washington, DC: Smithsonian Institution, p. 546.

[72] McCawley, W. 1996. *The First Angelinos: The Gabrielino Indians of Los Angeles*. Banning, CA: Malki Museum Press., 116–117, 121, 126.

[73] McCawley, W. 1996. *The First Angelinos: The Gabrielino Indians of Los Angeles*. Banning, CA: Malki Museum Press., 128–131.

[74] Bean, L.J., and C.R. Smith. 1978. "Gabrielino." In *Handbook of North American Indians*, Vol. 8, ed. R.F. Heizer. Washington, DC: Smithsonian Institution, p. 547.

[61] Bean, L.J., and C.R. Smith. 1978. "Gabrielino." In *Handbook of North American Indians*, Vol. 8, ed. R.F. Heizer. Washington, DC: Smithsonian Institution, p. 547.

[76] Bean, L.J., and C.R. Smith. 1978. "Gabrielino." In *Handbook of North American Indians*, Vol. 8, ed. R.F. Heizer. Washington, DC: Smithsonian Institution, p. 547.

Tataviam

The existing ethnographic data on the Tataviam is limited and limited archaeological research has been directly linked to this group. Most of what is known about the Tataviam comes from the work of two anthropologists, John Harrington and Alfred Kroeber, and from data obtained from the San Fernando Mission's registers, as well as the limited archaeological record.[77] In addition, a recent synthesis of mission's registers has greatly expanded our understanding on Tataviam ethnography.[78]

Tataviam territory was bounded by the Chumash to the west, the Kitanemuk to the north, the Serrano to the east, and the Gabrielino to the south. Thus, their material culture, subsistence strategies, rock art representation, and religious practices resemble those of their neighbors, primarily the Gabrielino and Inland Chumash, as well as the Serrano and even the Kawaiisu, who were located to the north of the Kitanemuk.[79,80]

The Tataviam territory extended from the northwest to the southeast, and encompassed portions of the Antelope, San Fernando, and Santa Clarita Valleys. The center of their territory is assumed to have been the Santa Clarita Basin area (upper portion of the Santa Clara River), east of Piru Creek, just north of what is currently known as the Los Angeles Metropolitan area.[81] The northern portion of their territory probably included the foothills of Liebre Mountain and Sawmill Mountain, located at the southwestern edge of the Antelope Valley. The northeast boundary of Tataviam territory included the south-facing slopes of Sawmill Mountain and Sierra Pelona, extending southeast to Soledad Pass. The southeastern boundary is unclear but it is likely that the upper Soledad Canyon–Acton area was part of Tataviam territory, at least sometime during the Late Prehistoric period. The southern boundary included the high portions of the San Gabriel Mountains and continued to the west towards the Santa Susana Mountains. Piru Creek appears to be the westernmost boundary of the Tataviam territory.[82,83] Tataviam territory included portions of the Lake Hughes/Gorman/West of Lancaster, Castaic/Santa Clarita/Agua Dulce, and Acton initiative subareas.

Linguistically the Tataviam (also known as Alliklik)[84] are considered to be part of the Takic

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[77] King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In *Handbook of North American Indians, Volume 8: California, ed.* William C. Sturtevant. Washington, DC: Smithsonian Institute, p. 535-537.

[78] King, Chester D. 2004. "*Ethnographic Overview of the Angeles National Forest Tataviam and San Gabriel Mountain Serrano Ethnohistory*." Prepared for: U.S. Department of Agriculture Southern California Province Angeles National Forest, Arcadia, CA.

[79] King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In *Handbook of North American Indians, Volume 8: California, ed.* by William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 535-537.

[80] Heizer, R.F. (ed). 1978. "Key to Tribal Territories." In *Handbook of North American Indians, Volume 8: California, ed.* William C. Sturtevant. Washington, DC: Smithsonian Institute, p. ix.

[81] Johnson, John R. 1990. "Tataviam Geography and Ethnohistory." In J*ournal of California and Great Basin Anthropology*, 12(2): 191-214. Banning, CA: Malki Museum, Inc.

[82] King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In *Handbook of North American Indians, Volume 8: California, ed.* William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 535-537.

[83] Johnson, John R. 1990. "Tataviam Geography and Ethnohistory." In *Journal of California and Great Basin Anthropology*, 12(2): 191-214. Banning, CA: Malki Museum, Inc.

[84] Kroeber, A. 1925. *Handbook of the Indians of California*. New York: Dover Publications, Inc., p. 995. (Used the term Alliklik, which was the name used by neighboring Chumash groups and roughly translates grunters or stammerers. The Kitanemuk used the term Tataviam or people facing the sun when referring to the inhabitants of the sunny upper Santa Clara River. The term Alliklik is considered to be derogatory, and therefore ceased to be used in literature around the mid-1970s.)

subfamily of the Uto Aztecan linguistic family, who moved inland towards the west and along the California coast. The time frame of the Takic expansion is not clearly defined, because migration of the population throughout the region took place at different times. Moratto indicates that Uto-Aztecan speakers migrated to California and that by the end of the Early period (circa 1500–1200 BC) Takic groups, such as the Tataviam, the Gabrielino, and the northern Serrano, already had firmly established territories.[85]

Ethnographic and archaeological information indicates that the Tataviam lived in villages of various sizes, with large centers occupied by about 200 people, widely separated from each other. Large villages were considered to be the major centers. Very small satellite communities of 10 to 15 people were located near the large centers, while mid-size settlements of 20 to 60 people were situated among the large villages. The total Tataviam population at the time of contact is assumed not to have exceeded 1,000 people.[86] The village located at Vasquez Rocks is known as the Agua Dulce Village. According to King et al.,[87] the Agua Dulce Village was larger than the surrounding villages and was probably an important economic and political center. Alliances with other villages were maintained through intermarriage and trade. It is estimated that the population of the Agua Dulce Village was possibly as low as 50 people during the early portion of the Middle period and approximately 200 to 300 people towards the end of the Middle period and throughout the Historic period (after AD 1200).[88]

Tataviam subsistence strategies were very similar to those of neighboring groups. A variety of plant foods was part of their diet, including the buds of the yucca plant (*Yucca whipplei*), a major staple, as well as coast live oak acorns (*Quercus agrifolia*), sage (*Salvia mellifera*), juniper berries (*Juniperus californica*), and berries of holly-leaf cherry (*Prunus ilicifolia*). Their diet was also supplemented with insects, small mammals, deer, and possibly pronghorn.[89] The Tataviam cooked the flower stalks of the plant in earth ovens lined with rocks. The final product was stored and consumed throughout the year. The flowers, seeds, and leaves at the base of the plant were also consumed. Archaeological evidence suggests that the Tataviam, as well as most native Southern Californians, traveled a long distance to collect acorns during certain times of the year. Ethnographic information indicates that acorn was primarily processed using bedrock mortars.

The Tataviam mortuary practices were influenced by their immediate neighbors, and archaeological evidence indicates that the Tataviam practiced both cremation and inhumation. Among the groups influencing the Tataviam were the Chumash; Coastal and inland Chumash were among the few that used inhumation exclusively.[90] The Gabrielino practiced both, inhumation and

[85] Moratto, Michael J. [1984] 2004. *California Archaeology*. Salinas, CA: Coyote Press.

[86] King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam.: In *Handbook of North American Indians, Volume 8: California, ed.* William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 535-537.

[87] King, Chester D., Charles Smith and Tom King. 1974. Archaeological Report Related to the Interpretation of Archaeological Resources Present at Vasquez Rocks County Park. Prepared for: County of Los Angeles Department of Parks and Recreation, p. 43.

[88] King, Chester D., Charles Smith and Tom King. 1974. Archaeological Report Related to the Interpretation of Archaeological Resources Present at Vasquez Rocks County Park. Prepared for: County of Los Angeles Department of Parks and Recreation, p. 33.

[89] King, Chester D., and Thomas C. Blackburn. 1978. "Tataviam." In *Handbook of North American Indians, Volume 8: California, ed.* William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 535-537.

[90] Kroeber, A.L. 1925. *Handbook of the Indians of California*. New York: Dover Publications, Inc., p. 556.

cremation,[91] until the establishment of the missions, when cremation was eliminated and inhumation alone became the norm. The Serrano cremated their deceased,[92] while the Kitanemuk preferred inhumation.[93] Based on his research of the Gabrielino, McCawley[94] mentions that inhumation (more common along coastal groups) may have been a result of cultural influence by the Chumash or a practice adopted because of a scarcity of fuel required for cremations.[95] With interment came the practice of grave goods, a practice favored by most of the tribes in California. Grave goods usually consisted of beads of various materials, knifes, projectile points, and exotic trade items among other objects. Ethnographic studies, as well as archaeological evidence regarding the presence or absence of grave goods, and their quality, has been an important archaeological tool to determine social hierarchy among individuals in specific social groups. Excavations at two burial sites in the Agua Dulce Village (CA-LAN-361 and CA-LAN-373) show social differentiation, which is reflected as the presence of exotic trade items in the graves, or complete lack of any grave goods.

Historic Context[96]

European Settlement and the Mission Period

The first Europeans to pass through the San Fernando Valley were a group of Spanish explorers on their way to Monterey Bay from San Diego. Under the leadership of Gaspar de Portolá, the exploration party crossed the Santa Monica Mountains and entered the San Fernando Valley on August 5, 1769. After camping in the present day community of Encino, the group headed north traversing the Santa Clarita Valley on their way to Santa Barbara.

In August of 1795, an exploration party set out to identify a site for a new mission, to be located between the San Gabriel Mission and the San Buenaventura Mission. The requirements included that the land be viable for crops, be near a source of abundant water, and have an indigenous population that could be converted to Catholicism. With these objectives met, a site for the new mission was decided upon in the upper half of the Los Encinos Valle, as the San Fernando Valley was then called. The spot for the new mission was located within the property boundary of the Reyes Rancho, which was owned by Francisco Reyes, the *alcalde* (mayor) of the Pueblo de Los Angeles. Reyes had prospered as a result of his land holdings and the Reyes Rancho consisted of a large family home; livestock; crops such as corn, beans, and melon; and numerous Native American ranch hands. At the request of the church, Reyes relinquished an enormous portion of his ranch to be utilized for the new Mission San Fernando Rey de Espana (San Fernando Mission).

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[91] McCawley, William. 1996. *The First Angelinos: The Gabrielino Indians of Los Angeles*. Banning, CA: Malki Museum Press, p. 157.

[92] Bean, Lowell J., and Charles R. Smith. 1978. "Serrano." In *Handbook of North American Indians, Volume 8: California, ed*. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 570-574.

[93] Blackburn, Thomas C., and Lowell J. Bean. 1978. "Kitanemuk." In *Handbook of North American Indians, Volume 8: California, ed*. William C. Sturtevant. Washington, DC: Smithsonian Institute, pp. 564-569.

[94] McCawley, William. 1996. *The First Angelinos: The Gabrielino Indians of Los Angeles*. Banning, CA: Malki Museum Press.

[95] McCawley, William. 1996. *The First Angelinos: The Gabrielino Indians of Los Angeles*. Banning, CA: Malki Museum Press, p. 157.

[96] This section is drawn from Robinson, W. 1961. *The Story of the San Fernando Valley*. Los Angeles, CA: Title Insurance and Trust Company.

The San Fernando Mission was established on September 8, 1797 and was the seventeenth mission founded by the Catholic Church in California. Father Fermin Francisco Lausen was appointed in charge of the mission. The name given to the mission honored King Ferdinand III of Spain (1217-1251). In order to assist in the establishment of the San Fernando Mission, several other California missions sent nearly 1,000 animals that included cattle, horses, mules, and sheep. Crops were planted and the people of the traditional lineages and villages associated with the project boundary were forcefully recruited to local missions. The Native Americans that were recruited to Mission San Fernando became collectively known as Fernandeño, while those to Mission San Gabriel became known as Gabrielino. While living at the mission, they were under the direction of the priests who required the Native Americans to farm (wheat, barley, corn, beans, peas, and fruit trees); raise cattle; cure hides; tend vineyards; make wine; and practice a trade, such as carpentry, masonry, tailoring or shoemaking. the Native Americans became associated with their respective missions upon European arrival.

The Mexican Period

In 1822, when Mexico declared its independence from Spain, initially little changed for the missions. At that time there were approximately 1,000 Native Americans living and working at the San Fernando Mission. However, in 1834, the Mexican government secularized the California Missions, which resulted in the San Fernando Mission being turned over to Don Pedro Lopez, who acted as mission *majordomo* (governor of the mission). Under the Secularization Act of 1834, the Native Americans were to retain Mission land under government trust and protection, and had the right to organize electoral village governments. Had the Secularization Plan been effective, and protected in the American period under the 1848 Treaty of Guadalupe Hidalgo, which was established to protect the natives' rights to land, self-government, and citizenship, then it would have supported the placement of land into trust for the Fernandeños. The governor Manuel Micheltorena (1842-1845) tried to support the missions while granting land and liberty to natives at Mission San Fernando and other missions. On May of 1843, Micheltorena granted a square league of land to 41 Fernandeño native petitioners. Of these 41 petitioners were members of lineages/villages originating in the San Fernando, Simi, and Santa Clarita valleys. They received local land grants such as Rancho Tujunga, Rancho Encino, Rancho Cahuenga, and Rancho El Escorpion. Between 1840 and 1846, six separate land grants were carved out of the former Rancho Misión San Fernando Rey de España. Eulogio de Célis was the first to acquire the entire 116,858-acre ranch for an estimated $14,000. Further encroachments on mission lands in the valley included Tujunga (1840), El Escorpión (1845), El Encino (1845), La Providencia (1845), and Cahuenga (1846). In 1846, California governor Pio Pico authorized the sale of remaining mission land to raise money to defend Mexican California from an inevitable American takeover. Rancho El Escorpion was maintained by three Chumash individuals, Odón Chijulla, Urbano, and Mañuel. Odon's daughter, Espritu, maintained the land and fought to protect it for years from both Anglo-settler encroachment and her husband.

The American Period

After the American conquest of Mexican California in 1847, Pio Pico's brother, Andres Pico, still retained a portion of the Rancho Ex-Mission San Fernando, which included the former Mission buildings that he used as his home. This land was eventually given to Pio Pico, who in 1869 sold the land to the San Fernando Farm Homestead Association. Much of the land from this sale came under the control of two men: Isaac Lankershim and Isaac Newton Van Nuys. Together, the two men initially used the land for ranching, but after a drought killed off much of their livestock they switched to farming wheat. By 1874, San Fernando was recognized by the county as a town,

bringing in plans for railroad development, improved roads and infrastructure, and more residents. During the 1880s, many of the original Mexican land grants had been subdivided into agricultural tracts that were used primarily for raising citrus, nuts, beans, wheat, and vegetables.

The 20th century brought the San Fernando Valley the critical resource it was lacking, an abundant and reliable source of water for agriculture. The Los Angeles Aqueduct was completed in 1913 and soon after San Fernando Valley was annexed by the City of Los Angeles. Between the 1910s and 1920s, much of the land in the valley was used for field crops and orchard agriculture. Most of the groves were situated on relatively frost-free land, were owner operated, and consisted of tracts of 10 to 15 acres. Major industrial activity in the San Fernando Valley apart from agricultural processing grew to include the fledgling aerospace industry. The entertainment industry set up studios in the San Fernando Valley and used the rugged landscape of the Simi Hills on the northern edge of the valley to film many early western films and television series.

During the 1930s, the population of the San Fernando Valley grew due to the increased use of automobiles, which required the construction of roads and highways. After World War II, the population increased even more dramatically with tract home development to accommodate returning war veterans, which led to many orchards being replaced by the suburban sprawl that today dominates much of the San Fernando Valley.

Fernandeño-associated Native Americans maintained a voluntary coalition of lineages after european arrival until present-day. Today, the community is known as the Fernandeño Tataviam Band of Mission Indians.

Characterization

Previous Archaeological Surveys in the Trails Master Plan Study Area

The results of the literature reviews indicate that 82 archaeological studies (survey, excavation, and monitoring) have been conducted within the Trails Master Plan Study Area (Table 5.1.1-2, *Previous Surveys within the Trails Master Plan Study Area*). Of these, 57 have been completed within the cultural resource study area of the Trails Master Plan Study Area. As a result of the previous surveys conducted, approximately 40 percent of the Trails Master Plan Study Area and currently mapped trail system have been previously investigated for the presence of cultural resources.

Previously Recorded Archaeological Resources

The results of the records searches determined that 25 prehistoric archaeological sites, 13 historic archaeological sites, one multi-component site, two prehistoric isolates, and eight historic isolates are located within the Trails Master Plan Study Area and a 0.5-mile buffer (Appendix C: Confidential Map of Previously Recorded Cultural Resources). The majority of resources are unevaluated. Two resources (P-19-000253 and P-19-000823) within the 0.5-mile buffer were determined to be significant. One resource (P-19-003989) within the project area is eligible for listing on the NRHP. Two resources (P-19-001696 and P-19-002240) within the project area are potentially significant. Descriptions of these resources are provided in Table 5.1.1-3, *Previously Recorded Archaeological Resources*.

TABLE 5.1.1-2
PREVIOUS SURVEYS WITHIN THE TRAILS MASTER PLAN STUDY AREA

Report No.	Year	Report Title	Authors	Location
LA-00023	1974	Archaeological Reconnaissance of Tentative Tract # 31399, A Residential Development Near Newhall California	Nelson, Leonard, III, University of California Los Angeles Archaeological Survey	Within project area
LA-00058	1974	An Archaeological Reconnaissance of Union Gardett 1-20	Nelson, Leonard, N., III	Within project area
LA-00059	1974	An Evaluation of the Archaeological Resources of the Oat Mountain Vicinity	Nelson, Leonard, N., III	Within project area
LA-00081	1975	Evaluation of the Archaeological Resources for the Area wide Facilities Plan for the Las Virgenes Municipal District, (Malibu Coast, Western Santa Monica Mountains, Southern Simi Hills), Los Angeles and Ventura Counties	Rosen, Martin D., University of California, Los Angeles Archaeological Survey	Within 0.5-mile buffer
LA-00103	1975	Archaeological Resource Survey of Portions of the South Fork, Santa Clara River, Los Angeles County, California	Singer, Clay A., U.S. Army Corps of Engineers, Los Angeles District Office	Within project area
LA-00113	1974	Assessment of the Impact on Archaeological Resources of Proposed Drilling on Well Location and Rig Site Orcutt-trust No. 1	D'Altory, Trence, N., Terence D'Altory, Consulting Archaeologist	Within 0.5-mile buffer
LA-00267	1981	Cultural Resources Management Plan for Tentative Tract No. 34494	John M. Foster, Greenwood and Associates	Within project area
LA-00306	1978	Report of the Potential Negative Impact on Archaeological Resources of the Proposed Development of Tentative Tract No. 34494, North of Chatsworth California	D'Altroy, Terence N., Archaeological Consultant	Within project area
LA-00468	1978	Archaeological Survey Report: a 17+/- Acre Parcel of Property Located Between the Simi Valley Freeway and Topanga Canyon Boulevard in Chatsworth, California	Murray, John R., Archaeological Consultant	Within 0.5-mile buffer
LA-00510	1979	Preliminary Archaeological Overview: a 3,000+/- Acre Parcel Bordering Portrero Canyon New Newhall, California	Van Horn, David, M., Ultrasystems, Inc.	Within project area
LA-00590	1980	Field Survey and Cultural Resource Assessment for Tentative Tract No. 33622, a 70 Acre Parcel in Chatsworth, Los Angeles County, California	McIntyre, Michael J., Northridge Archaeological Research Center	Within 0.5-mile buffer
LA-00762	1979	Assessment of the Historic Resources Present Within Tentative Tract Number 34494, Chatsworth, California	D'Altroy, Terence N., Northridge Archaeological Research Center	Within project area
LA-00776	1980	Cultural Resources Reconnaissance and Assessment of a Pipeline No. 1192, Chatsworth, Los Angeles County, California	McIntyre, Michael, J., Northridge Archaeological Center, CSUN	Within project area
LA-00807	1980	Archaeological Assessment of Tentative Tract 39482, North of Chatsworth, California	Rosen Martin D., University of California, Los Angeles Archaeological Survey	Within project area
LA-00817	1978	Report of the Field Operations Conducted to Assess the Cultural Resources Located on Tentative Tract No. 33622	Toren, George A., and Tartaglia, Louis, Northridge Archaeological Research Center	Within project area
LA-00842	1977	Archaeological Survey and Cultural Resource Assessment for a Portion of Towsley Canyon, Near Newhall, Los Angeles County, California	Singer, Clay, A., J.I. Planning	Within project area
LA-00878	1977	Assessment of the Impact Upon Cultural Resources by the Development of Lots 9 and 14 of the Porter Ranch in Granada Hills, California	Tartagila, Louis, J., Porter Ranch Development Company	Within project area
LA-00883	1980	Cultural Resource Reconnaissance of the Cadillac-Fairview Property in Chatsworth, California	Greenwood, Roberta S., Greenwood and Associates	Within project area
LA-00986	1981	Archaeological Investigations at Sites LAN-870 and LAN-963, Tentative Tract Number 34622, Chatsworth, California	McIntyre, Michael J., Northridge Archaeological Research Center	Within 0.5-mile buffer
LA-01031	1981	Cultural Resource Survey and Impact Assessment for the Bowers Property in Browns Canyon, Los Angeles County, California	Singer, Clay A., Warden and Associates	Within project area
LA-01038	1977	Assessment of Archaeological Impact of Tentative Tract No. 33622	Toren, George A., Northridge Archaeological Research Center	Within project area
LA-01062	1981	Archaeological Survey of the Sylmar Development Project Site, Los Angeles County, California	Schilz, Alan J., Boyle Engineering	Within project area
LA-01133	1981	An Archaeological Resources Assessment Conducted for a 330 Acre Parcel in the Chatsworth Area of Los Angeles, Formerly known as the Bradeis Ranch	Cottrell, Maria G., Archaeological Resource Management Corp., Garden Grove, CA	Within 0.5-mile buffer
LA-01138	1982	An Archaeological Resources Survey and Impact Assessment of a Portion of Lots 16 and 18 of Addition San Jose Gladstone Ave. San Dimas, Los Angeles County, Ca.	Dillon, Brian, D.	Within project area
LA-01496	1985	An Archaeological Investigation of LAN-870, a Rockshelter in Northwestern San Fernando Valley, Los Angeles County, California	Wlodarski, Robert J., Tartaglia, Louis, Archaeological Consulting	Within 0.5-mile buffer
LA-01583	1986	Archaeological Evaluation of Tentative Tract No. 44327 (sites LAN-761, 762, 1113) Indian Falls Estates, Chatsworth, Los Angeles County, CA	Love, Bruce	Within 0.5-mile buffer
LA-01584	1986	Archaeological Investigations at Tentative Tract 42353, Indian Falls Estates, Los Angeles County, CA (sites LAN-809, 810, 814, 879)	Love, Bruce	Within project area
LA-01677	1987	Cultural Resources Evaluation and Mitigation Alternatives for Archaeological Site CA-LAN-209	Parker, John, John Parker Archaeological Specialist	Within project area
LA-01730	1978	Archaeological Report Status of LAN-816 in Sunshine Canyon	Clewlow, William, C. Jr., University of California, Los Angeles Archaeological Survey	Within project area

TABLE 5.1.1-2
PREVIOUS SURVEYS WITHIN THE TRAILS MASTER PLAN STUDY AREA

Report No.	Year	Report Title	Authors	Location
LA-01771	1989	Draft Environmental Impact Report Porter Ranch Land Use/transportation Specific Plan	Author: Anonymous, City of Los Angeles	Within project area
LA-01734	1988	Archaeological, Historical, and Paleontological Assessment Tt 35714 and Tt 44362, California West Development, Chatsworth, California	Whitney-Desautels, Nancy A., Scientific Resource Surveys, Inc.	Within 0.5-mile buffer
LA-01778	1989	Report of Archaeological Reconnaissance Survey Of: Tentative Tract No. 47329 Simi Hills Los Angeles County, California	Salis, Roy A., Northridge Center for Public Archaeology	Within project area
LA-01779	1989	Report of Archaeological Reconnaissance Survey Of: Tentative Tract No. 45016 Simi Hills Los Angeles County, California	Salis, Roy A., Northridge Center for Public Archaeology	Within project area
LA-01913	1981	Cultural Resources Investigations Re: Castaic Clay Manufacturing Company	Robinson, R.W., Andel Engineering Company	Within 0.5-mile buffer
LA-01978	1990	Report of Archaeological Reconnaissance Survey of Santa Clarita-newhall Carrier Annex Environmental Assessment, Esa Project Number 9094c, Newhall, California	Sails, Roy A., Environmental Science Associates	Within project area
LA-02034	1980	Cultural Resources of the Devil Canyon Project Area, 44 Arcsine Chatsworth, Los Angeles County, California	Bissell, Ronald M., Becker, Kenneth, RMW Paleo Associates, Inc.	Within project area
LA-02204	1990	Cultural Resources Reconnaissance of the Continental Community Project Area 55 Acres in Chatsworth, Los Angeles County, California	Evans, Stuart, A., Bissell Kenneth, RMW Paleo Associates, Inc.	Within project area
LA-02230	1990	Cultural Resource Survey for the Proposed Residential Development of Tentative Tract No. 49567 Located in Los Angeles County, California	Romani, John F., Greenwood and Associates	Within 0.5-mile buffer
LA-02305	1990	Cultural and Paleontological Resources in the Santa Susana and Santa Monica Mountains, Los Angeles County, California	Moratto, Michael, J.	Within project area
LA-02365	1990	Cultural and Paleontological Resources Assessment of the Edwards Cinema Plaza of La Verne, Los Angeles County, California	Desautels, Jacqueline, Scientific Resources Surveys, Inc.	Within project area
LA-02366	1976	Draft Master Environmental Impact Report	Wessel, Richard, L., Northridge Archaeological Research Center, CSUN	Within project area
LA-02427	1990	Archaeological Survey Report: a Surface Mining Project on the Stevenson Television Ranch Near Newhall, Los Angeles County	Van Horn, David, M., Archaeological Associates, Ltd.	Within project area
LA-02608	1991	An Archaeological Assessment of a 25+/- Acre Portion of the Bfi Waste Management Facility Located at 14747 San Fernando Road in Sylmar, Los Angeles County	White, Laura, S., Archaeological Associates, Ltd.	Within 0.5-mile buffer
LA-02848	1992	Cultural Resources Assessment of the Proposed Newhall Alignment, Ventura and Los Angeles Counties	Peak and Associates, Inc.	Within project area
LA-02950	1992	Consolidated Report: Cultural Resources Studies for the Proposed Pacific Pipeline Project	Peak & Associates, Inc.	Within project area
LA-03000	1993	Phase I Archaeological Survey and Cultural Resources Assessment of the 225 Acres Alternative Site 2 Study Area, Santa Clarita, Los Angeles County, California.	Simon, Joseph, M., Whitley, David, S., W & S Consultants	Within project area
LA-03082	1994	Archaeological Reconnaissance of Proposed Communication Site on Oat Mountain Los Angeles County, California	King, Chester, Topanga Anthropological Consultants	Within project area
LA-03282	1995	Archaeological Reconnaissance at 28870 Grayfox Street, Malibu, California	King, Chester, Topanga Anthropological Consultants	Within 0.5-mile buffer
LA-03301	1989	Archaeological Assessment Santa Susana Pass Road Realignment California West Development Chatsworth, California	Scientific Resource Surveys, Inc.	Within 0.5-mile buffer
LA-03397	1994	Intensive Phase I Archaeological Survey of the West Ranch Project Area, Los Angeles County, California	Whitley, David, S., Simon, Joseph, M., W & S Consultants	Within project area
LA-03622	1996	Archaeological Reconnaissance at the Dahl Property, Chatsworth Los Angeles County, California	King, Chester, Topanga Anthropological Consultants	Within project area
LA-03782	1997	Cultural Resources Reconnaissance of a 70 Acre Parcel for the Church at Rocky Peak, Los Angeles County, California	Maxon, Patrick O., RMW Paleo Associates, Inc.	Within 0.5-mile buffer
LA-03962	1996	Archaeological Reconnaissance of a Communications Site at 22601 Santa Susana Pass Road, Chatsworth, Los Angeles County, Ca	King, Chester, Topanga Anthropological Consultants	Within 0.5-mile buffer
LA-04828	1995	Cultural Resources Investigation Report of Two Loci (sc-3 and sc-9) in the Sunshine Canyon Landfill Extension Project Jma Project No. Bfi-94-164 Area	Stickel, Gary, E., John Minch & Associates, Inc.	Within project area
LA-04829	1997	An Archaeological Site (sc-16) Investigation Report in the Sunshine Canyon Landfill Extension Project Area Jma Project #Bfi94-164	Stickel, Gary, E., John Minch & Associates, Inc.	Within 0.5-mile buffer
LA-04830	1997	Cultural Resources Investigation Report of One loci (sc-10) Investigation Report in the Sunshine Canyon Landfill Extension Project Area Jma Project #Bfi94-164	Stickel, Gary, E., John Minch & Associates, Inc.	Within 0.5-mile buffer
LA-05145	1997	Cultural Resources Investigation Report of Five Loci (sc-12) Investigation Report in the Sunshine Canyon Landfill Extension Project Area Jma Project #Bfi94-164	Stickel, Gary, E., John Minch & Associates, Inc.	Within 0.5-mile buffer
LA-05148	1995	A Preliminary Investigation of an Off-site Ridgecrest Archaeological Site (sc-1) for the Sunshine Canyon Landfill Extension Project Area	Stickel, Gary, E., John Minch & Associates, Inc.	Within 0.5-mile buffer
LA-05533	2000	Negative Archaeological Report: Rock-Lined Section and the Addition of an Access to Paved Section of Drainage Channel Near Interstate 5 in Santa Clarita	Smith, Philomene, C., Caltrans District 7	Within project area

TABLE 5.1.1-2
PREVIOUS SURVEYS WITHIN THE TRAILS MASTER PLAN STUDY AREA

Report No.	Year	Report Title	Authors	Location
LA-05642	2001	A Phase I Cultural Resources Investigation of a Portion of Tentative Tract Map 44327 (the Indian Springs Development) in the Santa Susana / Chatsworth Area of Los Angeles County, California	McKenna, Jeanette A. and Ahab Afifi, McKenna et al.	Within 0.5-mile buffer
LA-05855	2001	Phase 1 Archaeological Survey of the 558 Acres Old Road Study Area, Los Angeles County, California	Anonymous, Dan Palmer	Within project area
LA-05856	2000	Phase I Archaeological Survey of the Chatsworth Ridge Estates Study Area, Los Angeles County, California	W & S Consultants	Within project area
LA-06900	2003	An Archaeological Monitoring Program-the Indian Springs Project Area in Chatsworth Los Angeles County, California	McKenna, Jeanette A., McKenna et al.	Within 0.5-mile buffer
LA-09063	2003	Negative Archaeological Survey Report: Church of the Nazarene (c.u.p. No 03-090) the Old Road, Santa Clarita, Los Angeles County	Schmidt, June, A., Compass Rose Archaeological, Inc.	Within project area
LA-09065	2006	Dwo 6135-7981, Ai No. 5-7941: Iverson 2.4 Kv Idle Facility Removal, Chatsworth Area, Los Angeles County	Schmidt, James J., Compass Rose Archaeological, Inc.	Within project area
LA-09066	2004	Phase I Cultural Resources Assessment for Lyons Canyon Ranch Specific Plan, Tentative Tract Map 53653, Santa Clarita, Los Angeles County, California	Shepard, Richard, S., Bon Terra Consulting	Within project area
LA-09069	1995	Cultural Resources Investigation Report for Four Loci (sc-4, Sc-5, Sc-7. Sc-8) in the Sunshine Canyon Landfill Extension Project Area	Stickel, Gary, E., John Minch & Associates, Inc.	Within 0.5-mile buffer
LA-09073	1997	A Cultural Resources Investigation of Site Locus Sc-18 Located Within the City of Los Angeles Phase Area of the Sunshine Canyon Landfill Extension Project	Stickel, Gary, E., Archaeological/Cultural Resources Management	Within 0.5-mile buffer
LA-09135	2008	Archaeological Assessment of the Pico Canyon Project, Los Angeles County, California	Glover, Amy, Gust, Sherri, Cogstone Resources Management, Inc.	Within project area
LA-09390	2005	Completion of Cultural Resource Monitoring ProgramRe: Dwo 6335-6783, Ai No. 6-6746: Big Rock 16 kV: Deer Lake Pole Relocation Project, Chatsworth Area, Los Angeles County	Schmidt, James J., Compass Rose Archaeological, Inc.	Within project area
LA-09447	2008	Oaktree Gun Club: LA-2081B	Billat, Lorna, Earth Touch, Inc.	Within 0.5-mile buffer
LA-09990	2009	Sayre Fire: Emergency Fire Damaged Pole Replacement, Gavin 16Kv Distribution Circuit, Los Angeles County, CA.	Schmidt, James, Compass Rose	Within project area
LA-10128	2002 2006	Completion of Cultural Resource Monitoring ProgramDwo 6135-7981, Ai No. 5-7941: Iverson 2.4 Kv Idle Facility Removal, Chatsworth Area, Los Angeles County Completion of Cultural Resource Monitoring ProgramRe: Dwo 6335-6783, Ai No. 6-6746: Big Rock 16 kV: Deer Lake Pole Relocation Project, Chatsworth Area, Los Angeles County	McKenna, Jeanette A., McKenna et al.	Within 0.5-mile buffer
LA-10183	2000	A Phase I Archaeological Reconnaissance Survey of a 13.27 Acre Parcel located in Chatsworth, Los Angeles County, CA	Boxt, Matthew A., Ph.D	Within project area
LA-10359	2009	Draft Program EIR for the County of Los Angeles Proposed Santa Clarita Valley Area Plan	Tebo, Susan, Charles, Judy, Decruyendere, Joe, Austin, Mark, Impact Sciences, Inc.	Within project area
LA-10458	2009	Sayre Fire: Emergency Fire Damage Pole Replacement, Gavin 16Kv Distribution Circuit, Los Angeles County, CA.	Schmidt, James, RSO Consulting	Within project area
LA-10510	2005	A Phase I Cultural Resources Investigation of Aidlin Wickham Tract No. 52796, Approximately 230 Acres in the Pico Canyon Area of Los Angeles County, California	McKenna, Jeanette, A., McKenna et al.	Within project area
LA-10577	2009	(See VN2872) TEA-21 Rural Roadside Inventory: Native American Consultation and Ethnographic Study for Caltrans District 7, Ventura County	Fortier, Jana	Within project area
LA-10578	2009	TEA-21 Rural Roadside Inventory: Native American Consultation and Ethnographic Study for Caltrans District 7, Ventura County	Fortier, Jana	Within project area
LA-10613	2001	Negative Archaeological Survey Report-State Route 118 from New Los Angeles Avenue to Iverson Road	Sylvia, Barbara, Caltrans District 7	Within project area
LA-10792	2010	Revised Draft Program EIR for the County of Los Angeles's Proposed Santa Clarita Valley Area Plan Vol. I	Impact Sciences, Inc.	Within project area
LA-11113	2011	County of Los Angeles's Proposed Santa Clarita Valley Area Plan, Final Program Environmental Impact Report Volumes I through III	Impact Sciences, Inc.	Within project area
LA-12065	2012	Chatsworth Past and Present	Vincent, Ray, Vincent, Ann, Chatsworth Historical Society	Within project area

TABLE 5.1.1-3
PREVIOUSLY RECORDED ARCHAEOLOGICAL RESOURCES

Primary Number	Trinomial	Time Period		Description	Location	NRHP Status
		Prehistoric	Historic			
P-19-000148	CA-LAN-148	x		Prehistoric shell scatter and midden	Within 0.5-mile buffer	Not Evaluated
P-19-000149	CA-LAN-149	x		Prehistoric shell scatter and midden	Within 0.5-mile buffer	Not Evaluated
P-19-000209	CA-LAN-209	x		Seasonal gathering site	Within Phase I project area	Not Evaluated
P-19-000247	CA-LAN-247		x	Historic kilns	Within 0.5-mile buffer	Not Evaluated
P-19-000249	CA-LAN-249	x		Prehistoric lithic scatter and bedrock mortar	Within 0.5-mile buffer	Not Evaluated
P-19-000251	CA-LAN-251	x		Prehistoric lithic scatter and bedrock mortar	Within 0.5-mile buffer	Not Evaluated
P-19-000253	CA-LAN-253	x		Prehistoric rock shelters and lithic scatter	Within 0.5-mile buffer	Eligible
P-19-000293	CA-LAN-293	x		Prehistoric habitation	Within 0.5-mile buffer	Not Evaluated
P-19-000651	CA-LAN-651H		x	Historic structural remains kiln	Within 0.5-mile buffer	Not Evaluated
P-19-000652	CA-LAN-652	x		Bedrock mortar	Within 0.5-mile buffer	Not Evaluated
P-19-000653	CA-LAN-653	x		Prehistoric midden	Within 0.5-mile buffer	Not Evaluated
P-19-000692	CA-LAN-0692	x		Lithic scatter	Within Phase I project area	Not Evaluated
P-19-000783	CA-LAN-0783		x	Historic kiln structures	Within 0.5-mile buffer	Not Evaluated
P-19-000784	CA-LAN-0784	x		Prehistoric rock shelter	Within 0.5-mile buffer	Not Evaluated
P-19-000802	CA-LAN-802	x		Prehistoric lithic scatter	Within Phase I project area	Not Evaluated
P-19-000823	CA-LAN-823	x	x	Late prehistoric/early historic Native American village with burials	Within 0.5-mile buffer	Eligible
P-19-000811	CA-LAN-0811	x		Lithic scatter	Within Phase I project area	Not Evaluated
P-19-000880	CA-LAN-0880	x		Grinding station, quarry and lithic workshop	Within Phase I project area	Not Evaluated
P-19-000962	CA-LAN-962		x	Historic Spanish building debris	Within 0.5-mile buffer	Not Evaluated
P-19-001020	CA-LAN-1020	x		Prehistoric lithic and shell scatter	Within 0.5-mile buffer	Not Evaluated
P-19-001592	CA-LAN-1542H		x	Historic refuse scatter	Within Phase I project area	Not Evaluated
P-19-001593H	CA-LAN-1543H		x	Historic oil drilling and refuse scatter	Within Phase I project area	Not Evaluated
P-19-001608H	CA-LAN-1608		x	Rock walls and historic trash scatter	Within 0.5-mile buffer	Not Evaluated
P-19-001740	CA-LAN-1740H		x	Roads/trails/railroad grade	Within Phase I project area	Not Evaluated
P-19-001744	CA-LAN-1744	x		Lithic scatter	Within Phase I project area	Not Evaluated
P-19-001798	CA-LAN-1798	x		Lithic scatter	Within 0.5-mile buffer	Not Evaluated
P-19-001799	CA-LAN-1799		x	Structural remains	Within 0.5-mile buffer	Not Evaluated
P-19-002240	CA-LAN-2240	x		Prehistoric rockshelter and lithic scatter	Within Phase II.a project area	Not Evaluated
P-19-002369	CA-LAN-2369	x		Lithic scatter	Within 0.5-mile buffer	Not Evaluated
P-19-002370	CA-LAN-2370	x		Lithic scatter	Within 0.5-mile buffer	Not Evaluated
P-19-002529	CA-LAN-2529	x		Lithic scatter	Within 0.5-mile buffer	Not Evaluated
P-19-002577	CA-LAN-2577		x	Adobe structural remains	Within 0.5-mile buffer	Not Evaluated
P-19-002826	CA-LAN-2826	x		Quarry and lithic workshop	Within Phase I project area	Not Evaluated
P-19-003292	CA-LAN-3292H		x	Historic oil drilling site	Within 0.5-mile buffer	Not Evaluated
P-19-003793	CA-LAN-3793H		x	Three foundations with historic refuse scatter	Within Phase I project area	Not Evaluated
P-19-003989	CA-LAN-3989	x		Pictographs, rock shelter/cave	Within Phase I project area	Eligible
P-19-004424			x	Historic foundation and reservoir	Within 0.5-mile buffer	Not Evaluated
P-19-100136	CA-LAN-100136	x		Isolated lithic core	Within 0.5-mile buffer	Not eligible
P-19-100356			x	Isolated historic structural remains	Within Phase I project area	Not Eligible
P-19-100357			x	Isolated historic oil tank	Within Phase I project area	Not Eligible
P-19-100358			x	Isolated historic well	Within Phase I project area	Not Eligible
P-19-101199			x	Isolated historic well	Within Phase I project area	Not Eligible
P-19-101200			x	Isolated historic concrete foundation	Within Phase I project area	Not Eligible
P-19-101350		x		Isolated prehistoric lithic	Within Phase I project area	Not Eligible

TABLE 5.1.1-3
PREVIOUSLY RECORDED ARCHAEOLOGICAL RESOURCES

Primary Number	Trinomial	Time Period		Description	Location	NRHP Status
		Prehistoric	Historic			
P-19-101351			x	Isolated historic glass bottle neck	Within Phase I project area	Not Eligible
P-19-186538			x	Isolated historic plaque for California's first commercial oil well	Within Phase I project area	Not Eligible
P-19-186573			x	Chatsworth Calera site	Within 0.5-mile buffer	Not Eligible

5.1.2 Previously Recorded Historical Resources

The results of the records search indicate 11 historic buildings and/or structures have been recorded within the Trails Master Plan Study Area and a 0.5-mile buffer. Descriptions of these resources are provided in Table 5.1.2-1, *Previously Recorded Historic Buildings and Structures*.

TABLE 5.1.2-1
PREVIOUSLY RECORDED HISTORIC BUILDINGS AND STRUCTURES

Primary Number	Trinomial	Description	Location	California Register Status Code
P-19-120065		Historic Corral	Within Phase I project area	Not evaluated
P-19-150419	4-LAN-H6	House, occupied in 1900	Within 0.5-mile buffer	Not evaluated
P-19-190970		Historic built resource on the campus of the California Institute of the Arts	Within 0.5-mile buffer	3S*
P-19-190315		The Old Road Bridge over Santa Clara River	Within Phase II project area	6Z**
P-19-002190	CA-LAN-2190H	1898 Southern Pacific Railroad bridge	Within 0.5-mile buffer	Not evaluated
P-19-186541		Historical Landmark bronze plaque for Oak of the Golden Dream on stone base for the location of the first gold discovery in California	Within Phase II project area	CA Historical Landmark No. 168/3D[t] (tree)
P-19-000961	CA-LAN-961	Newhall house built in 1878	Within Phase II project area	Not evaluated
P-19-186567		Historical Landmark plaque for Rancho San Francisco	Within Phase II project area	State Landmark No. 556 (plaque)
P-19-186568		Mentryville; historic home, barn, and schoolhouse [California Historical Landmark No. 516-2]	Within Phase I project area	State Landmark No. 516 (plaque)
P-19-190691		Historic house and outbuildings	Within Phase I project area	5S3º
P-19-192297		Historic check dam	Within Phase I project area	6Z

NOTE: *3S: Appears eligible for NRHP as an individual property through survey evaluation.
**6Z: Found ineligible for NRHP, CRHR, or local designation through survey evaluation.
[t]: Appears eligible for NRHP as a contributor to a NRHP eligible district through survey evaluation.
º 5S3: Not eligible for local listing but is eligible for special consideration in local planning.

5.1.3 Paleontological Resources

The results of the map review and fossil locality records searches at the NHMLAC indicate that the Trails Master Plan Study Area is characterized by a variety of sedimentary rock formations (Figure 5.1.3-1*, Geological Formations within the Trails Master Plan Study Area*; Figure 5.1.3-2, *Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation*).[97] The following rock units are known to occur within the Trails Master Plan Study Area: Santa Susana Formation (marine late Paleocene), Llajas Formation (marine middle Eocene), Sespe Formation (non-marine late Eocene to Oligocene), Monterey Formation (marine middle to late Miocene), Towsley Formation (marine late Miocene), Pico Formation (marine latest Miocene to Pliocene), Saugus Formation (non-marine Plio-Pleistocene), older Quaternary Alluvium (non-marine Pleistocene), and younger Quaternary Alluvium (non-marine Pleistocene to recent).[98] The Santa Susana Formation, Llajas Formation, Sespe Formation, Monterey Formation, Towsley Formation, Pico Formation, Saugus Formation, and older Quaternary Alluvium can be considered paleontologically sensitive geological units which are characterized by a moderate or high potential for containing unique paleontological resources.

Three fossil localities have been recorded within the Trails Master Plan Study Area.[99] One vertebrate fossil locality, LACM 7310, from the Llajas Formation, is situated in the western side of Devil Canyon in the central western portion of the Trails Master Plan Study Area. LACM 7310 produced a fossil specimen of bonito shark (*Isurus praecursor*). Two vertebrate fossil localities, LACM 5456 and 6365, from the Pico Formation, are within the Trails Master Plan Study Area. Locality LACM 6365 produced a skull of an undetermined sea lion (*Otariidae*) in the northern portion of the Trails Master Plan Study Area on the north side of Pico Canyon. Locality LACM 5456, in the south-central portion of the Trails Master Plan Study Area in Brown Canyon south of Oat Mountain, produced fossil specimens of bonito shark (*Isurus praecursor*) and white shark (*Carcharodon sulcidens*). Also within the Pico Formation, there are two vertebrate fossil localities, LACM 6145-6146, within and adjacent to the northeastern border of the Trails Master Plan Study Area near Santa Clarita, that produced fossil specimens of bat ray (*Myliobatis*), guitarfish (*Rhinobatos*), requiem shark (*Carcharhinus*), basking shark (*Cetorhinus*), and sheephead (*Semicossyphus*). Vertebrate fossil localities within the Santa Susana Formation, Sespe Formation, Monterey Formation, Towsley Formation, Saugus Formation, and older Quaternary Alluvium in the vicinity of the Trails Master Plan Study Area have produced a variety of fossil specimens, including but not limited to; fossil shark specimens, eagle ray specimens, several chimaeroids, boa snake specimens, Boidae specimens, opossum specimens, and primitive insectivores.[100]

An updated paleontological records search was completed in June 2017 for the Phase II project area.[101] Five vertebrate fossil localities occur directly within the proposed project area boundaries,

[97] McLeod, Samuel, Natural History Museum of Los Angeles County, Los Angeles, CA. 24 December 2013. Letter response to Roberta Thomas, Sapphos Environmental, Inc., Pasadena, CA

[98] McLeod, Samuel, Natural History Museum of Los Angeles County, Los Angeles, CA. 24 December 2013. Letter response to Roberta Thomas, Sapphos Environmental, Inc., Pasadena, CA

[99] McLeod, Samuel, Natural History Museum of Los Angeles County, Los Angeles, CA. 24 December 2013. Letter response to Roberta Thomas, Sapphos Environmental, Inc., Pasadena, CA

[100] Welton, B.J., and J.M. Alderson. 1981. "A Preliminary Note on the Late Cretaceous Sharks of the Chatsworth Formation at Dayton Canyon, Simi Hills, Los Angeles County, California." In *Simi Hills Cretaceous Turbidites, Southern California*, ed. M.H. Link, R.L. Squires, and I.P. Colburn. Pacific Section, Society of Economic Paleontologists and Mineralogists, Fall Field Trip Guide. Tulsa, OK: SEPM.

[101] McLeod, Samuel, Natural History Museum of Los Angeles County, Los Angeles, CA. 28 July 2017. Letter response to

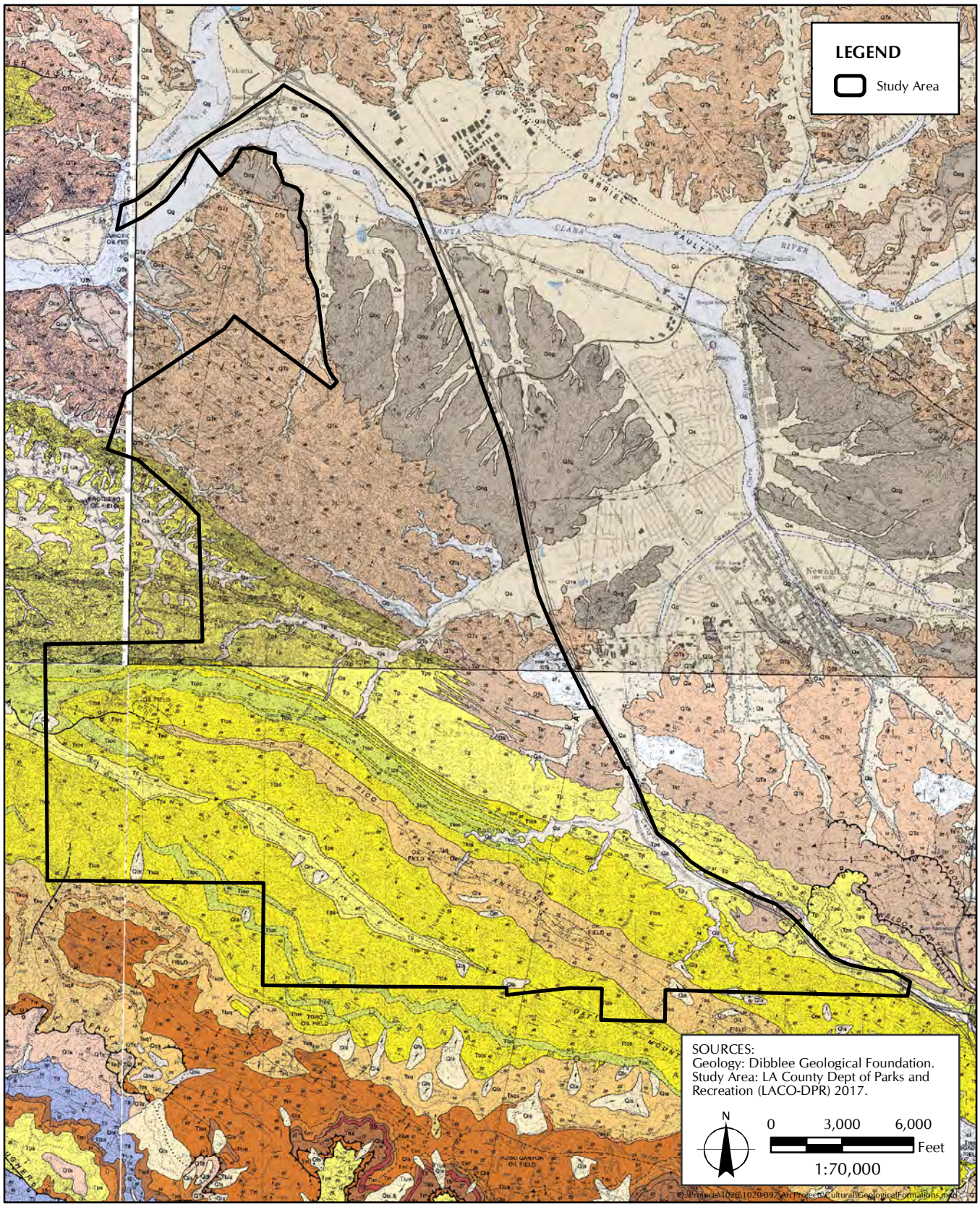

FIGURE 5.1.3-1

Geological Formations within the Trails Master Plan Study Area

CALABASAS MAP (DF-37)

LEGEND

af
Qa

SURFICIAL SEDIMENTS

af *Artificial cut and fill*
Qa *Alluvium: gravel, sand and clay of valley areas, includes gravel of stream channels, gravel and sand of alluvial fans, and slope wash; undissected to slightly dissected*

Qls

LANDSLIDE DEBRIS

Qoa

OLDER SURFICIAL SEDIMENTS

Qoa *Dissected alluvial gravel, sand and clay*

— *UNCONFORMITY* —

Tush
Tust
Tud
Tuss

UNNAMED SHALE AND SANDSTONE

(Upper part of Modelo Formation of Hoots 1931; Soper 1938; Durrell 1954; A.E.G. maps 1982; Modelo Formation of Weber 1984; Modelo and Santa Margarita Formations of Truex and Hall 1969; Trurex 1976; equivalent to Sisquoc Shale of Dibblee 1989; in Ventura vasin
Marine clastic; and biogenic; late Miocene age (Mohnian-"Delmontian" Stage)

Tust *Light gray fine grained sandstone and minor siltstone [Towsley (?) Sandstone of Weber 1984] at Laskey Mesa*
Tush *Light gray claystone and siltstone, moderately to vaguely bedded; crumbly where weathered*
Tud *Light gray, white-weathering diatomaceous shale, thin-bedded, soft, semi-punky*
Tuss *Light gray to tan sandstone, friable, vaguely bedded*

Tm
Tmss
Tmcg

MONTEREY FORMATION

(Lower part Modelo Formatin of Hoots 1931; Soper 1938; Durrell 1954; A.E.G. maps 1982; Modelo Formation of Yerkes and Campbell 1979; Weber 1984; Modelo-Monterey and lower Monterey Formation of Truex and Hall 1969, Trurex 1976; ; equivalent to Monterey Formation of Dibblee 1989, in Ventura basin)
Marine, biogenic and clastic; middle and late Miocene age [late (?) Luisian and Mohnian Stages]

Tm *Gray-brown, white weathering siliceous shale, thin bedded, moderately hard with platy fracture; includes soft fissile diatomaceous shale, hard, brittle, cherty shale, and few layers of hard, yellow-weathering calcareous concretions or lenses*
Tmss *Light gray to tan, semi-friable bedded sandstone*
Tmcg *Gray cobble conglomerate of mostly granitic detritus in sandstone matrix*

Tls
Tlsc

DETRITAL SEDIMENTS OF LINDERO CANYON

(Included in Topanga Formation of Weber 1984; unconformable on Chatsworth Formation; best exposed in Lindero Canyon, Thousand Oaks quadrangle; may be equivalent to upper Topanga Formation of Durrell 1954, or Calabasas Formation of Yerkes and Campbell 1989
Marine transgressive clastic; middle Miocene age [Luisian (?) Stage]

Tls *Light gray to nearly white massive sandstone, semi-friable, locally conglomeratic*
Tlsc *Light gray calcareous sandstone, massive to crudely bedded, with calcite veins; includes gray conglomerate composed of cobbles of metavolcanic, granitic, and quartzitic rocks and of sandstone derived from Chatsworth Formation; sparsely fossiliferous*

— *UNCONFORMITY* —

Ttuc
Ttus
Ttucg

UPPER TOPANGA FORMATION

(Of Durrell 1954; Topanga Formation of Soper 1938; Truex and Hall 1969; Truex 1976; Weber 1984; Calabasas Formation of Yerkes and Campbell 1979, 1980)
Marine clastic; middle Miocene age (Luisian Stage)

Ttuc *Gray claystone, bedded; crumbly with ellipsoidal fracture*
Ttus *Light gray sandstone, semi-friable, thick bedded*
Ttucg *Gray conglomerate of cobbles of granitic rocks, sandstone, and volcanic rocks in sandstone matrix*

Tcvab
Tcvb
Tcva

CONEJO VOLCANICS

(Of Taliaferro 1924; Yerkes and Campbell 1979; 1980; Weber 1984; middle Topanga Formation of Soper 1938; Durrell 1954; Topanga Volcanics of Truex and Hall 1969; Truex 1976)
Extrusive volcanic flows and volcaniclastic rocks; middle Miocene age

Tcvab *Andesitic breccia-conglomerate, composed of subangular to subrounded cobbles and boulders of light pinkish gray andesitic rocks in andesitic detrital matrix, moderately sorted, bedded; deposited as epiclastic (reworked) breccias*
Tcva *Andesitic breccia, brown, massive to crudely bedded autoclastic flow breccia and some mud-flow (laharic) breccias*
Tcvb *Basaltic flows and flow-breccias: dark gray to dark brown, composed of basaltic to basaltic-andesitic rocks, crudely bedded, includes some reworked breccias of basaltic detritus; moderately coherent; at Mullholland Highway gray-black, massive, fine grained basalt, weakly coherent where weathered, includes hyaloclastic basaltic breccia, massive to crudely bedded*

db

DIABASE

db *Black; fine grained diabase or basalt, intrusive as sills in* **Ttls**

Ttls
Ttlc

LOWER TOPANGA FORMATION

Of Durrell 1954; Topanga Formation of Soper 1938; Truex and Hall 1969; Weber 1984; Topanga Canyon Formation of Yerkes and Campbell 1979, 1980)
Marine transgressive clastic; early and middle Miocene age [Saucesian-Relizian (?) Stage]

Ttls *Light gray to tan sandstone, coherent, thick bedded*
Ttlc *Gray micaceous clay shale; crumbly with ellipsoidal fracture where weathered*

Tsp

SESPE FORMATION

Non-marine; primarily Oligocene age
Not exposed in quadrangle, but present in subsurface (see cross section) in southern part of area and exposed just south of this quadrangle

Tll
Tllg

LLAJAS FORMATION

(Of Cushman and McMasters 1936; Stipp 1943; Squires and Filewicz 1983)
Marine clastic; middle Eocene age (Domengine and Capay molluscan Stages)

Tll *Gray micaceous claystone and siltstone, crumbly with ellipsoidal fracture where weathered*
Tllg *Gray to brown cobble conglomerate of granitic, metavolcanic and quartzitic detritus in sandstone matrix; includes some brown sandstone strata*

Tsu
Tsus
Tsuv
Tsi

SANTA SUSANA FORMATION

(Of Cushman and McMasters 1936; Stipp 1943; Squires and Filewicz 1983)
Marine and non-marine (?) clastic; lower Eocene and Paleocene ages
(Meganos and Martinez molluscan Stages)

Tsu *Gray micaceous claystone and siltstone, few minor thin sandstone beds*
Tsus *Tan coherent fine grained sandstone; locally contains thin sheil-beds and calcareous concretions*
Tsuv *Las Virgenes Sandstone Member: lan semi-friable bedded sandstone, locally pebbly*
Tsi *Simi Conglomerate Member: gray to brown cobble conglomerate with smooth cobbles of quartzite, metavolcanic and granitic rocks in sandstone matrix that locally includes thin lenses of red clay; marine or non-marine (?)*

Kcs
Kcg
Kcsh

CHATSWORTH FORMATION

(Of Colburn et al. 1981; Weber 1984; "Chico Formation of Sage 1971)
Marine clastic; late Cretaceous age (Maastrichtian and Campanian Stages)

Kcs *Light gray to light brown sandstone, hard, coherent arkosic, micaceous, mostly medium grained, in thick strata separated by thin parings of siltstone*
Kcg *Gray conglomerate of cobbles of metavolcanic and granitic detritus in hard sandstone matrix*
Kcsh *Gray clay shale, crumbly with ellipsoidal fracture where weathered; includes some thin sandstone strata in western area*

QUATERNARY — Holocene / ? / Pleistocene
TERTIARY — Miocene
CENOZOIC — Oligocene / Eocene
MESOZOIC — CRETACEOUS — Upper — Paleocene / ?

FIGURE 5.1.3-2
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

NEWHALL MAP (DF-56)

LEGEND

af / Qg / Qa

SURFICIAL SEDIMENTS

af *Artificial cut and fill; includes areas of grading and/or development (updated from Treiman 1986, 1987a)*
Qg *Gravel and sand of major stream channels*
Qa *Alluvial gravel, sand and clay of valley areas*

Qls

LANDSLIDE DEBRIS

Does not include small landslides caused by 1994 Northridge earthquake (shown in Harp and Jibson 1995)

Qls *Landslide debris*

Qoa / Qog

OLDER SURFICIAL SEDIMENTS

Unconsolidated alluvial sediments deposited by streams; late Pleistocene age

Qoa *Low terrace remnants of alluvial gravel and sand*
Qog *Alluvial fan and high terrace deposits of gravel and sand; detritus of mostly crystalline basement rocks and some of Tertiary rocks; assigned to Pacoima Formation (of Oakeshott 1958) by Teiman 1986, 1987a*

— *UNCONFORMITY* —

QTs / Tsr

SAUGUS FORMATION

(Of Kew 1924; Winterer and Durham 1962)
Nonmarine fluviatile, weakly indurated; Pliocene and Pleistocene age

QTs *Light gray to light reddish brown pebble-cobble conglomerate, sandstone and minor siltstone; conglomerate composed of granitic, gneissic, metavolcanic, quartzitic, gabbroic and anothositic detritus in friable sandy matrix, bedded; deposited by westward flowing streams; probably mostly of Pleistocene age*
Tsr *Sunshine Ranch member of Treiman 1987b, (differentiated only in cross-section B-B') same as* **QTs**, *but includes more interbedded greenish siltstone; grades westward into unit* **Tpc** *of Pico Formation*

Holocene / Pleistocene / ? / QUATERNARY

— *UNCONFORMITY* —

(Northeast of San Gabriel fault)

Tps / Tpc / Tp

PICO FORMATION

(Of Kew 1924; Winterer and Durham 1962)
Marine clastic; weakly lithified; Pliocene age

Tpc *North of Potrero and Pico Canyons, tan to light brown, friable, medium to coarse grained sandstone and pebble-cobble conglomerate, in places hard, calcareous, brown, with molluscan shell fragments south of Potrero Canyon*
Tps *Light gray to tan, semi-friable sandstone, medium to fine grained, massive to bedded*
Tp *Gray to light gray micaceous siltstone/claystone, vaguely bedded; includes few thin sandstone layers*

Ttoc / Ttos / Tto

TOWSLEY FORMATION

(Of Winterer and Durham 1962; Stitt 1986)
(Mostly in subsurface: top exposed only at southwest corner of quadrangle)
Marine clastic; late Miocene (?) and early Pliocene age

Ttos *Mostly light gray sandstone; inclues some gray micaceous claystone*
Ttoc *Gray micaceous silty claystone and siltstone*
Tto *Undivided, in cross-sections*

Tmo

MIOCENE UNDIFFERENTIATED

(In subsurface only; "Modelo Formation" correlation with exposed lithologic units uncertain, may be equivalent to Towsley, Sisquoc and Monterey Formations of areas to west) marine clastic; Mohnian and "Delmontian" Stages, late Miocene age

Tmo *Dark gray micaceous claystone, shale and light gray sandstone, includes conglomerate at Honor Rancho oil field*

Tc

CASTAIC FORMATION

(Of Crowell 1954; Stitt 1986); northeast of San Gabriel Fault
Marine clastic; late Miocene age (Mohnian - "Delmontian" Stage)

Tc *Gray micaceous clay shale, bedded; includes thin layers of light gray to tan sandstone*

Tmc

MINT CANYON FORMATION

(Of Kew 1923, 1924); northeast of San Gabriel Fault
Nonmarine clastic; middle Miocene age, Barstovian to Clarendonian vertebrate Stages (Durham et al 1954)

Tmc *Light gray to pinkish-gray to tan, fine grained sandstone, locally pebbly and interbedded reddish to greenish-gray siltstone and claystone; base not exposed in quadrangle*

— *UNCONFORMITY* —

bc

BASEMENT COMPLEX

bc *In subsurface only: granitic rocks and biotite-actinolite schist encountered in some deep exploratory wells in eastern area of quadrangle*

? / Pliocene / Miocene / TERTIARY / CENOZOIC / PRE-TERTIARY

FIGURE 5.1.3-2
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

OAT MOUNTAIN AND NORTH 1/2 CANOGA PARK MAP (DF-36)

LEGEND

af / Qg / Qa

SURFICIAL SEDIMENTS
Unconsolidated alluvial deposits; generally undissected

af *artificial cut and fill*
Qg *gravel and sand of major stream channels*
Qa *alluvial gravel, sand and clay of valley and floodplain areas*

Qls

LANDSLIDE DEBRIS

Qos / Qoa

OLDER SURFICIAL SEDIMENTS
Dissected, weakly consolidated alluvial deposits

Qos *older sandy alluvium, including slope wash, derived from Chatsworth Formation (**Kcs**)*
Qoa *older alluvium composed largely of angular pebble-size fragments of Miocene shale and some of sandstone (**Tm, Tsq, and Ttos**) in light gray to tan silty matrix in part indurated by calcareous caliche; crudely bedded to massive; about 200 ft (60m) thick; blends northward upslope in Browns Canyon drainage area into old debris-flow landslides (**Qls**); slightly deformed and much dissected where elevated; but at Horse Flats top surface of deposition preserved; late Pleistocene age; mapped as slope wash, older alluvium, and Saugus Formation (upper member) by Barrows 1975; Evans and Miller 1978; and Saul 1979; probably in places equivalent to Pacoima Formation of Oakeshott 1958; Barrows et al. 1975; and Dibblee 1991*

— *UNCONFORMITY* —

QTs / Ts / Tsr

SAUGUS FORMATION
Mostly terrestrial, weakly consolidated; Pleistocene and Pliocene age

QTs *light gray to brown pebble-cobble conglomerate, sandstone and lesser amounts of grayish to reddish brown, soft siltstone/claystone; conglomerate composed of granitic, gneissic, metavolcanic, quartzitic, gabbroic and anorthositic detritus in sandy matrix; deposited by westward-flowing streams; Pleistocene age; south of Santa Susana fault mapped as middle member of Saugus Formation by Barrows et al. 1975, Evans and Miller 1978, and Saul 1979 [in adjacent San Fernando quadrangle (Dibblee 1991) **QTs** west of Elsmere Canyon should be shown as **Ts**]*
Ts *(in Newhall area) similar to **QTs**, but correlative in age with units **Tsr** and **Tps** in part; probably Pliocene age*
Tsr *Sunshine Ranch Member (of Hazzard 1940, in Treiman 1987; Barrows et al. 1974; Evans and Miller 1978; and Saul 1979; type area extends eastward from lower Aliso Canyon to Van Norman Reservoir, Hazzard 1940); terrestrial deposits similar to **QTs**, but south of Santa Susana fault composed largely of more indurated greenish gray claystone, siltstone and fine grained sandstone, and contains in lower part brackish marine layers of oyster shells; in exposures northwestward from San Fernando Pass, consists mostly of interbedded conglomerate and fine grained sediments that locally contain few thin layers of peat, unit intertongues westward into **Tps**; mostly Pliocene age*

Tps / Tp / Tpg

PICO FORMATION
Marine clastic; mostly Pliocene age

Tps *south of Santa Susana fault: Pico sandstone (included in Saugus Formation by Kew 1924; Pico Formatioin by Butler 1977, Lant 1977, Yeats 1979; Pico and Saugus Formatioins by Evans and Miller 1978) mostly light gray to nearly white, soft friable sandstone, locally pebbly, contains abundant whole and fragmented bivalve shells west of Browns Canyon; deposited under marine to lagoonal conditions; grades upward into terrestrial Saugus Formation; unconformable on Miocene formations*
Tpg *conglomerate in lower Limekiln Canyon: gray massive conglomerate of cobbles of granitic and metavolcanic rocks in sandstone matrix; nonmarine (?), unconformable on Monterey Shale (**Tml**), overlain by Saugus Formation*
Tp *and **Tps** north of Santa Susana fault: Pico Formation of Kew 1924, Winterer and Durham 1958, 1962; **Tps** mostly light gray semi-friable sandstone, locally pebbly; upper beds contain bivalve shell fragments; intertongues into Saugus Formations (**Ts**); **Tp** mostly gray micaceous siltstone-claystone, bedded to massive, includes few thin sandstone layers*

Ttos / Ttoc

TOWSLEY FORMATIOIN
Marine clastic; early Pliocene age (Repettian Stage) and possibly latest Miocene ("Delmontian Stage")

Ttos *light gray to tan coherent to semi-friable sandstone, medium grained to locally gritty and pebbly, bedded; includes minor micaceous siltstone; grades laterally northward into Saugus Formation (**Ts**) in San Fernando Pass area*
Ttoc *gray micaceous silty claystone and siltstone; minor sandstone*

Tsq / Tsqs

SISQUOC SHALE
(Included in Modelo Formation by Kew 1924; Winterer and Durham 1958, 1962; Saul 1979; same lithologic unit as Sisquoc Formation in northern Ventura basin)
marine clastic; late Miocene age (Mohnian to "Delmontian" Stage)

Tsq *dark gray to brownish gray clay shale, bleaches to light gray; crumbly with spheroidal to sub-platy fracture, gypsiferous in fractures, some layers contain large tan dolomitic concretions; includes some thin interbedded semi-siliceous layers; about 1000 ft (300 m) thick*
Tsqs *light gray coherent to semi-friable sandstone*

Tm / Tml

MONTEREY SHALE
(Modelo Formation of Kew 1924; Winterer and Durham 1958, 1962; Barrows et al. 1974; Evans and Miller 1978; Saul 1979; same lithologic unit as Monterey Shale of northern Ventura basin); marine biogenic; nearly 2000 ft. (610m) thick north of Santa Susana fault, very thin south of it; middle and late Miocene age

Tm *upper part: thin bedded siliceous shale, dark gray brown but weathers cream-white, hard, platy, brittle, porcelaneous, locally cherty, closely fractured, some layers fissile, about 1500 ft (485m) thick; middle and late Miocene age (mostly Mohnian Stage); south of Santa Susana fault: soft, white weathering thin-bedded, fissile diatomaceous semi-siliceous shale*
Tml *lower part: thin-bedded, fissile semi-siliceous shale to soft shaly claystone, dark brown, weathers cream white; includes some calcareous shale, and thin tan-weathering hard dolomite strata that are increasingly abundant upward, unit as thick as 500 ft (150m); middle Miocene age (Luisian-Relizian Stage)*

Tlsc

DETRITAL SEDIMENTS OF LINDERO CANYON
(Included in Topanga Formation of Weber 1984; unconformable on Chatsworth Formation; best exposed in Lindero Canyon, Thousand Oaks quadrangle)
marine transgressive clastic; Miocene age [Luisian (?) Stage]

Tlsc *crudely bedded brown to gray conglomerate composed of cobbles of metavolcanic, granitic and quartzitic rocks, and of sandstone derived from Chatsworth Formation; sparsely fossiliferous; contains minor interbeds of light gray calcareous sandstone*

Ttus / Tb / Ttls

TOPANGA FORMATION
(Of Yeats 1979; Topanga Group of Saul 1979)
marine transgressive clastic; middle Miocene age

Ttus *upper sandstone: light gray to white semi-friable, locally pebbly, massive to vaguely bedded; about 150 ft (45m) thick*
Tb *basalt flow (or diabase sill?); black, massive fine grained weakly coherent where weathered, present north of Santa Susana fault only; probably correlative with Conejo Volcanics to west*
Ttls *lower sandstone: light gray to tan, semi-friable to somewhat hard, massive to vaguely bedded; as thick as 600 ft (180m), base unexposed; present north of Santa Susana fault only*

— *UNCONFORMITY* —

Tll / Tllg

LLAJAS FORMATION
Marine clastic; middle Eocene age

Tll *gray micaceous claystone-siltstone and some interbeds of light gray to tan soft sansdstone*
Tllg *basal cobble conglomerate as thick as 50 ft (17m) with cobbles of granitic, metavolcanic and quartzitic rocks*

Tsu / Tsi

SANTA SUSANA FORMATION
Mostly marine clastic; Paleocene age

Tsu *dark gray micaceous claystone, crumbly with ellipsoidal fracture; includes few thin sandstone layers*
Tsi *Simi Conglomerate Member: gray to brown cobble conglomerate with smooth rounded cobbles up to 1 ft (1/3m) in diameter of pinkish-gray quartzite, metavolcanic and granitic rocks in gray sandstone matrix; possibly in part nonmarine, deposited as fan delta*

Kcs / Kcsh

CHATSWORTH FORMATION
(Of Colburn et al. 1981; "Chico" Formation of Kew 1924; Evans and Miller 1978)
marine clastic; late Cretaceous age (Maestrichtian and Campanian Stages)

Kcsh *gray micaceous shale and siltstone; includes some sandstone strata; included in Martinez Formation (Paleocene) by Evans and Miller 1978*
Kcs *light gray to light brown, hard, thick bedded sandstone; locally gritty; includes few thin layers of micaceous siltstone; base not exposed*

Holocene / Pleistocene / QUATERNARY
Pliocene / Miocene / TERTIARY
Eocene / Paleocene / Upper / CRETACEOUS
CENOZOIC / MESOZOIC

FIGURE 5.1.3-2
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

SANTA SUSANA MAP (DF-38)

LEGEND

af | Qa | Qg

SURFICIAL SEDIMENTS
Unconsolidated alluvial deposits; generally undissected

af Artificial cut and fill
Qg Gravel and sand of major stream channels
Qa Alluvial gravel, sand and clay of valley and floodplain areas

Qls

LANDSLIDE DEBRIS

Qoa | Qos

OLDER SURFICIAL SEDIMENTS
Dissected, weakly consolidated alluvial deposits

Qos Older sandy alluvium, including slope wash, derived from Chatsworth Formation (**Kcs**)
Qoa Older alluvial gravel, sand and silt/clay; in areas south of Santa Susana fault composed of sub-angular detritus of Miocene shale and sandstone (**Tm**, **Tsq** and **Ttos**)

— UNCONFORMITY —

QTs

SAUGUS FORMATION
(Of Kew 1924), non-marine fluviatile; Pleistocene and Pliocene (?) age

QTs Weakly consolidated light gray pebble conglomerate and sandstone composed of pebbles and few cobbles of granitic, gneissic, metavolcanic, quartzitic, gabbroic and anorthositic detritus in sandy matrix; includes minor interbeds of light greenish to light reddish silty claystone; unconformity at base near Santa Susana fault

Tp | Tps

PICO FORMATION
Marine clastic; mostly Pliocene age

Tps South of Santa Susana fault: Pico sandstone (included in Saugus Formation by Kew 1924; White 1983; in Fernando Formation by Whaley and Ricketts 1975; Yeats 1979; in Pico Formation by Butler 1977; Hanson 1981; Yeats 1987); regressive near-shore facies of Pico Formation; mostly soft, friable, nearly white, medium to coarse grained sandstone, locally pebbly and cross-bedded, contains many bivalve shells, especially in hard calcareous shell reefs, and local shell coquina; deposited in shallow marine to lagoonal conditions (White 1983); grades upward into terrestrial Saugus Formation; unconformable on Monterey Shale and older formations; not everywhere present
Tp North of Santa Susana fault (Pico Formation of Kew 1924, Winterer and Durham 1958, 1962); mostly soft gray micaceous siltstone-claystone; includes thin layers of light gray to tan sandstone; conformable on Towsley Formation

Holocene — ? — Pleistocene — ? — Pliocene | QUATERNARY — ?

Ttos | Ttoc

TOWSLEY FORMATION
(Of Winterer and Durham 1958), marine clastic; early Pliocene age (Repettian Stage) and possibly latest Miocene ("Delmontian Stage")

Ttos Light gray to tan coherent to semi-friable sandstone, medium grained to locally gritty and pebbly, bedded; includes minor micaceous siltstone
Ttoc Gray micaceous silty claystone and siltstone; minor sandstone

Tsq | Tsqs

SISQUOC SHALE
(Included in Modelo Formation by Kew 1924; Winterer and Durham 1958, 1962; Whaley and Ricketts 1975; Butler 1977; same lithologic unit as Sisquoc Formation in northern Ventura basin) marine clastic; late Miocene age (Mohnian to "Delmontian" Stage)

Tsq Dark gray to brownish gray clay shale, bleaches to light gray; crumbly with ellipsoidal to sub-platy fracture, gypsiferous in fractures, includes some thin bedded semi-siliceous layers; some layers contain large tan dolomitic concretions
Tsqs Light gray coherent to semi-friable sandstone

Tm | Tml

MONTEREY SHALE
(Modelo Formation of Kew 1924; Winterer and Durham 1958, 1962; Yeats 1987; Butler 1977; same lithologic unit as Monterey Shale of northern Ventura basin) marine biogenic; middle and late Miocene age

Tm Upper part north of Santa Susana fault: thin bedded platy siliceous shale, dark gray-brown but weathers cream-white, hard, platy, brittle, porcelaneous, locally cherty, closely fractured, some layers fissile, about 1500 ft (500m) thick; middle and late Miocene age (mostly Mohnian Stage); south of Santa Susana fault: white weathering, soft, punky to fissile, thin-bedded, semi-siliceous shale, with diatom debris and fish scales; about 600 ft (180m) thick, middle and late Miocene age (Mohnian-Luisian Stage)
Tml Lower part: thin-bedded, soft, fissile, clayey to calcareous shale about 150-200 ft (45-60m) thick; middle Miocene age (Luisian Stage, Clarke 1983); grades upward into **Tm**

Ttus

UPPER TOPANGA SANDSTONE
(Calabasas Formation of Squires 1983; Fritsche et al. 1983) marine transgressive clastic; middle Miocene age

Ttus Soft friable, massive, nearly white sandstone; up to 200 ft (60m) thick

? — Miocene | CENOZOIC

— UNCONFORMITY —

bi

INTRUSIVE ROCKS

bi Black basaltic dike or sill (?) of probable Miocene age; intrusive into Santa Susana Formation (**Tsu**)

Tsp

SESPE FORMATION
Non-marine fluviatile; Oligocene and late Eocene age

Tsp Predominantly semi-friable bedded sandstone, light gray, tan to pink, locally pebbly and cross-bedded; includes interbeds of variegated maroon-red and greenish micaceous claystone, mostly in middle part; locally includes conglomerate of scattered pebbles and cobbles of granitic, metavolcanic and quartzitic rocks in sandstone matrix; deposited by westward-flowing streams (Taylor 1983)

Tll | Tllg

LLAJAS FORMATION
(Of Squires 1983; Meganos Formation of Kew 1924), marine clastic; middle Eocene age

Tll Gray micaceous claystone-siltstone and light gray to tan, soft to semi-friable sandstone, mostly fine grained; locally with large concretions; commonly fossiliferous; claystone predominates south of Simi Valley; sandstone predominates in Las Llajas Canyon area
Tllg Basal cobble conglomerate, gray to brown, composed of cobbles of granitic, metavolcanic and quartzitic rocks in sandy matrix

Tsu | Tsus | Tsuv | Tsi

SANTA SUSANA FORMATION
(Martinez Formation of Kew 1924), mostly marine clastic; Paleocene age

Tsu Dark gray micaceous clay shale, crumbly with ellipsoidal fracture; includes siltstone and thin sandstone strata
Tsus Light gray to tan sandstone
Tsuv Las Virgenes Sandstone Member: light gray to light brown sandstone; includes some cobble conglomerate locally
Tsi Simi Conglomerate Member: gray to brown cobble conglomerate of smooth rounded cobbles up to 1 ft (1/3m) in diameter of pinkish-gray quartzite, metavolcanic and granitic rocks in gray sandstone matrix; possibly in part non-marine, deposited as fan delta

Kcs | Kcsh

CHATSWORTH FORMATION
(Of Colburn et al. 1981; "Chico" Formation of Kew 1924), marine clastic; late Cretaceous age

Kcsh Gray micaceous clay shale
Kcs Light gray to light brown, hard, thick bedded sandstone; locally gritty; includes few thin layers of micaceous siltstone: base not exposed in this quadrangle

? — Oligocene — ? — Eocene — Paleocene | TERTIARY
Upper | CRETACEOUS | MESOZOIC

FIGURE 5.1.3-2
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

SIMI MAP (DF-39)

LEGEND

af / Qa / Qg

SURFICIAL SEDIMENTS
Unconsolidated alluvial deposits; generally undissected
af *Artificial cut and fill*
Qg *Gravel and sand of major stream channels*
Qa *Alluvial gravel, sand and clay of valley and floodplain areas*

Qls

LANDSLIDE DEBRIS
In northern areas derived mostly from Monterey Shale (Tm)

Qoa

OLDER SURFICIAL SEDIMENTS
Dissected, weakly consolidated alluvial deposits
Qoa *Older alluvial gravel, sand and silt/clay; composed largely of detritus derived from formations within quadrangle*

— *UNCONFORMITY* —

QTs / QTsv

SAUGUS FORMATION
(Of Kew 1924), non-marine fluviatile; Pleistocene and Pliocene (?) age
QTs *Weakly consolidated light gray pebble conglomerate and sandstone composed of pebbles of small cobbles, mostly of granitic rocks and few of gneiss, metavolcanic rocks, quartzite, anorthosite, gabbro, and Tertiary volcanic rocks (Conejo Volcanics?), in soft sandy matrix; includes minor gray soft micaceous siltstone-claystone; unconformity at base in Moorpark area*
QTsv *Southwest corner of quadrangle only: crudely bedded to massive brown breccia-conglomerate composed of andesitic-basaltic, angular to subrounded detritus of Conejo Volcanics, and a few clasts of Monterey Shale locally*

QTlp

LOS POSAS SAND
(Of Pressler 1929), shallow marine regressive; probably early Pleistocene and possibly late Pliocene age
QTlp *Weakly indurated light gray to tan sand; locally contains molluscan shelf fragments; grades upward into Saugus Formation; about 70 ft (22m) thick near Tierra Rejada Valley; unconformity at base*

Holocene / Pleistocene / ? / QUATERNARY

Tps

PICO SANDSTONE
(Included in Pico Formation of Kew 1924; Fernando Formation by Whaley and Ricketts 1975, Yeats 1979; lower Saugus Formation by White 1983; similar to and possibly in part correlative with Los Posas Sand of Dibblee and Ehrenspeck 1990); shallow marine and lagoonal clastic; mostly Pliocene age
Tps *Light gray, tan to nearly white, soft friable sandstone, medium to coarse grained, cross-bedded, commonly pebbly with numerous smooth rounded pebbles of quartzite and some metavolcanic and granitic rocks; locally fossiliferous with bivalve seashells, locally contains calcareous shell reefs; grades westward through finer sandstone into soft gray siltstone* (**Tp/Tps**) *in Moorepark Quadrangle, grades upward into Saugus Formation* (**QTs**)

Pliocene

Tsq

SISQUOC SHALE
(Included in Modelo Formation by Kew 1924; Whaley and Ricketts 1975, Yeats 1979, 1983, 1987; same lithologic unit as Sisquoc Shale in northern Ventura basin), marine clastic and biogenic; late Miocene age (Mohnian Stage in this quadrangle)
Tsq *Dark gray to brownish gray clay shale, weathers light gray; some layers contain large, tan dolomitic concretions; includes some white-weathering, thin bedded, diatomaceous semi-siliceous shale*

Tm / Tml

MONTEREY SHALE
(Modelo Formation of Kew 1924; Canter 1973, Whaley and Ricketts 1975, Yeats 1979, 1983, 1987; same lithologic unit as Monterey Shale of northern Ventura basin) marine biogenic; middle and late Miocene age (Luisian and Mohnian Stages)
Tm *Upper part: thin-bedded platy to fissile siliceous shale, dark gray-brown, but weathers cream-white; in Oak Ridge area, in large part hard, platy brittle, porcelaneous, locally cherty, closely fractured; about 1500 ft (485m) thick; about 1200 ft (360m) thick on Big Mountain*
Tml *Lower part: thin-bedded, soft, fissile, clayey to calcareous shale; about 150 ft (45m) thick on Oak Ridge, up to 100 ft (30m) on Big Mountain; middle Miocene (Luisian) age (Clark 1983)*

CENOZOIC

Tts / Ttus / Tcvb / Ttlc / Ttls

TOPANGA FORMATION
(Vaqueros Formation of Kew 1924; Vaqueros-Topanga Formation of Whaley and Ricketts 1975); marine transgressive clastic; early to middle Miocene age (Zemorrian, Saucesian, and Relizian Stages)
Tts *Undivided sandstone, semi-friable, light gray to tan, massive to vaguely bedded; sparsely fossiliferous in places*
Ttus *Upper Topanga Sandstone, similar to* **Tts**; *correlated with Calabasas Formation (of Yerkes and Campbell 1979) in Santa Monica Mountains by Fritsche et al. 1983; middle Miocene age (Luisian and Relizian Stages)*
Tcvb *Conejo Volcanics: thin wedge of basalt south of Big Mountain (see below)*
Ttls *Lower Topanga Sandstone, similar to* **Tts**; *early Miocene age (Saucesian-Zemorrian Stage); includes Vaqueros Formation (of Kew 1924, Fritsche 1983)*
Ttlc *Sandstone similar to* **Ttls**, *but includes interbeds of soft gray micaceous siltstone*

Tcva / Tcvb / bi

CONEJO VOLCANICS
(Of Taliaferro 1924; Yerkes and Campbell 1979)
Submarine to subaerial extrusive volcanic rocks; middle Miocene age
Tcva *Predominantly andesitic-basaltic flows and breccias: gray, maroon-gray and brown aphanitic to slightly porphyritic rocks, vaguely stratified, flows range from platy to massive coherent but much fractured; deposited as flows and flow breccias; contain some epiclastic volcanic sediments and minor reddish, scoriaceous pyroclastic (?) horizons; probably emplaced subaerially*
Tcvb *Mostly basaltic rocks: gray-black to olive-brown, weathering brown, fine grained, composed of mafic minerals and plagioclase feldspar, vaguely bedded to massive, altered, crumbly and much fractured, locally vessicular, emplaced as flows and flow breccias, and in part as submarine flows, hyaloclastic breccias and marine tuffaceous sediments; fossiliferous (oyster) sandstone at base locally*
bi *Black intrusive basaltic to andesitic dikes at base of, or within Conejo Volcanics*

Miocene

Tsp

SESPE FORMATION
Non-marine fluviatile; Oligocene and late Eocene age
Tsp *Predominantly semi-friable bedded sandstone, light gray, tan to pink, locally pebbly and cross-bedded; includes interbeds of variegated maroon-red and greenish micaceous claystone, mostly in middle part; locally includes conglomerate of scattered pebbles and cobbles of granitic, metavolcanic and quartzitic rocks in sandstone matrix; about 5300 ft (1650m) thick; deposited by westward-flowing streams (Taylor 1983)*

Oligocene / ? / Eocene

Tll

LLAJAS FORMATION
(Of Cushman and McMasters 1936; Meganos Formation of Kew 1924)
Marine clastic; middle Eocene age
Tll *Gray micaceous claystone and siltstone; only uppermost part exposed at southeast corner of quadrangle*

TERTIARY

FIGURE 5.1.3-2
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

VAL VERDE MAP (DF-50)

LEGEND

af / Qg / Qa

SURFICIAL SEDIMENTS

af *Artificial cut and fill*
Qg *Gravel and sand of major stream channels*
Qa *Alluviual gravel, sand and silt of valley and floodplain areas*

Qls

LANDSLIDE DEBRIS

Qoa

OLDER DISSECTED SURFICIAL SEDIMENTS
Qoa *Older alluvial gravel, sand, and silt/clay*

— *UNCONFORMITY* —

QTs

SAUGUS FORMATION
(of Kew 1924, Winterer and Durham 1962, Yeats et al. 1985)
Nonmarine fluviatile, weakly consolidated; Pliocene(?) and Pleistocene ages; lower part intertongues westward into Pico Formation
QTs *Slightly indurated, light gray, pebble conglomerate, sandstone and claystone, most pebbles are of granitic rocks*

Tp / Tps / Tpsg / Tpc

PICO FORMATION
(Of Kew 1924; Winterer and Durham 1962, Weber 1973, Yeats et al. 1985, Stitt 1986; upper part intertongues eastward into Saugus Formation)
Marine; mostly Pliocene age
Tp *Light gray, vaguely bedded, soft, micaceous claystone and siltstone; minor thin sandstones*
Tps *Tan, semi-friable sandstone, locally pebbly*
Tpsg *Light gray to tan, massive sandstone and pebble conglomerate of mostly granitic detritus in westernmost exposures only*
Tpc *Gray, cobble conglomerate of mostly granitic and metavolcanic clasts in clayey sandstone matrix in south area*

Holocene — ? — Pleistocene — ? — Pliocene — QUATERNARY

Ttos / Ttoc / Ttog

TOWSLEY FORMATION
(Of Winterer and Durham 1962, Yeats et al. 1985, Stitt 1986; in south area included in Modelo Formation by Kew 1924, but in northwest area included by him in Pico Formation; probably correlative with lowest part of Pico Formation of areas west; in south area gradational into both Pico and Sisquoc Formations; type area - Towsley Canyon, Oat Mountain quadrangle)
Marine clastic; late Miocene to early Pliocene ages (Mohnian, "Delmontian" and Repettian Stages)
Ttos *In south area mostly light gray to tan, bedded, semi-coherent sandstone, locally pebbly, includes thin interbeds of silty shale*
Ttoc *In northwest area crumbly, gray, micaceous clay shale to siltstone; in south area includes thin strata of sandstone*
Ttog *(Hasley Conglomerate Member of Stitt 1986) basal gray conglomerate of rounded cobbles and pebbles of mostly granitic rocks, some of metavolcanic rocks in semi-coherent sandy matrix; not present in south area*

— *DISCONFORMITY in northwest area* —

Tc

CASTAIC FORMATION
Marine; late Miocene age (Mohnian Stage), probably correlative with Sisquoc Formation
Tc *Gray clay shale with thin sandstone beds; northeast of San Gabriel fault only*

Tsq

SISQUOC FORMATION
(Included in Modelo Formation by Eldridge and Arnold 1907, Kew 1924; Bailey and Jahns 1954, Winterer and Durham 1962, Weber 1973, Yeats et al. 1985, Stitt 1986; Sisquoc Formation of Dibblee 1991)
Marine; late Miocene age (Mohnian-"Delmontian" Stage)
Tsq *Gray-brown, crumbly, micaceous clay shale to siltstone, in part somewhat siliceous, bedded; contains some dolomitic lenses*

Tm / Tmss

MONTEREY SHALE
(Modelo Formation of Eldridge and Arnold 1907, Kew 1924, Bailey and Jahns 1954, Winterer and Durham 1962, Weber 1973, Yeats et al. 1985, Stitt 1986; Monterey Formation of Dibblee 1991)
Marine; late Miocene age (Mohnian Stage)
Tm *White-weathering, thin bedded, platy, siliceous to soft, fissle, semi-siliceous shale; contains thin calcareous beds*
Tmss *Tan, semifriable sandstone with thin interbeds of silty shale*

? — Miocene — TERTIARY — CENOZOIC

FIGURE 5.1.3-2
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

AGE CORRELATION CHART

AGE	ma	EPOCH	STAGE
CENOZOIC / QUAT.	.01	HOLOCENE / PLEISTOCENE	"HALLIAN"
			? WHEELERIAN ?
TERTIARY / PLIOCENE	1.6	LATE	VENTURIAN
		EARLY	REPETTIAN
			? "DELMONTIAN" ?
MIOCENE	5.3	LATE	MOHNIAN
	9.5	MIDDLE	LUISIAN
	16	EARLY	RELIZIAN
			SAUCESIAN
	24	OLIGOCENE	? ZEMORRIAN
EOCENE	38	LATE	? REFUGIAN
			NARIZIAN
		MIDDLE	? ULATISIAN
		EARLY	PENUTIAN
	56	PALEOCENE	BULITIAN
			YNEZIAN
MESOZOIC	65	CRETACEOUS	
	138	JURASSIC	
	205	TRIASSIC	
	250	PALEOZOIC	
	570	PRECAMBRIAN	
	4000+		

Radiometric ages, in millions of years (ma), are from current geological literature. Time relationships between California provincial microfaunal stages and epochs are subject to continued revision and refinement, as indicated by dashed and/or queried lines. (Neogene stages are adapted mostly from Micropaleo Consultants, Inc., 1989). Partitions between stages and epochs are diagrammatic and not to scale.

GEOLOGIC SYMBOLS

not all symbols shown on each map

FORMATION CONTACT *dashed where inferred or indefinite, dotted where concealed*

MEMBER CONTACT *between units of a formation* ..... **Prominent bed**

CONTACT BETWEEN SURFICIAL SEDIMENTS *located only approximately in places*

FAULT: *Dashed where indefinite or inferred, dotted where concealed, queried where existence 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.*

U / D — 25 — ? — . . .

FOLDS: *overturned* — ANTICLINE — SYNCLINE

arrow on axial trace of fold indicates direction of plunge; dotted where concealed by surficial sediments

Strike and dip of sedimentary rocks	18 *inclined*	20 *inclined (approximate)*	80 *overturned*	⊕ *horizontal*	*vertical*
Strike and dip of metamorphic or igneous rock foliation or flow banding or compositional layers	75 *inclined*	*inclined (approximate)*	*vertical*	80 *overturned*	

OTHER SYMBOLS: *Direction of landslide movement* — *outline of water bodies shown on map* — *water well* — *oil well* — *springs*

FIGURE 5.1.3-2
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

and other localities occur nearby from the same sedimentary deposits that occur in the proposed project areas.

In all of the drainages in the proposed project areas, most particularly in the far north with the Santa Clara River and the converging Castaic Creek drainage and in Pico Canyon and Towsley Canyon in the middle and southern portions of the northern parcels of the proposed project areas, there are surface deposits of younger Quaternary Alluvium. These deposits typically do not contain significant vertebrate fossils in the uppermost layers, but they may be underlain at relatively shallow depth by older sedimentary deposits that may well contain significant fossil vertebrate remains. Where the very northern part of the proposed project areas extends into the elevated terrain on the northern side of the Saugus Ventura Road (Highway 126), there are exposures of the Plio-Pleistocene Saugus Formation. In the northern portion of the proposed project areas in the slightly less elevated terrain west of the Golden State Freeway (I-5), north of about Pico Canyon up to immediately west of Six Flags Magic Mountain, there are surface deposits mapped as older Quaternary gravels. These coarse alluvial fan deposits are unlikely to contain significant vertebrate fossils, but they overlie the Saugus Formation that is exposed immediately to the west and southwest down to just north of Potrero Canyon and the area just south of Pico Canyon to the Golden State Freeway (I-5). From the Ridge on the northern side of Potrero and Pico Canyons southwestward there are exposures of the marine Pliocene Pico Formation. Further southwestward there are exposures of the marine latest Miocene to Pliocene Towsley Formation and then the middle of an anticline with exposures of the marine late Miocene Modelo Formation (although it may be referred to as the Monterey Shale or, for the younger upper part, the Sisquoc Formation, in this area). Continuing southwestward there are further exposures of the Towsley Formation, smaller exposures of the Pico Formation, and even some exposures of the Saugus Formation near the Golden State Freeway (I-5) northeast of Rice Canyon and East Canyon.

5.1.4 Cemeteries and Human Remains

The records searches, supplemental research, and consultation did not reveal any known cemeteries or burial sites within the Trails Master Plan Project Area. One previously recorded Native American village site with burials is located within 0.5 miles of the Trails Master Plan Study Area. No formal historic or modern cemeteries were identified within the Trails Master Plan Study Area or the 0.5-mile buffer.

Dustin Keeler, Sapphos Environmental, Inc., Pasadena, CA

5.1.5 Tribal Cultural Resources

A Native American sacred site is defined by the NAHC as an area that has been, and often continues to be, of religious significance to Native American peoples, such as an area where religious ceremonies are practiced or an area that is central to their origins as a people.[102] Consultation with NAHC identified no Native American sacred sites in the vicinity of the Trails Master Plan Study Area.[103,104] Letters to the recommended tribal organizations and individuals identified by NAHC resulted in replies from two Native American contacts, Mr. Freddie Romero of the Santa Ynez Tribal Elders Council[105] and Mr. Patrick Tumamait.[106] Neither individual identified any sacred sites within the Trails Master Plan Study Area. The NAHC requested ongoing consultation regarding the project.

Letters to the recommended tribal organizations and individuals identified by NAHC under the AB 52 consultation on behalf of the County resulted in replies from three Native American contacts. Mr. Andrew Salas of the Gabrieleno Band of Mission Indians-Kizh Nation stated that the project is in a sensitive area and may cause a substantial adverse change in the significance of tribal cultural resources. Mr. Rudy Ortega of the Fernandeño Tataviam Band of Mission Indians stated that the project is in a sensitive area and may cause a substantial adverse change in the significance of tribal cultural resources. A Chumash representative responded by phone and stated that they will not be consulting because this project is outside their ancestral territory.

There are previously recorded archaeological sites within the study area that may be considered Tribal Cultural Resources. The local tribal contacts stated during the AB 52 consultation meeting that there are traditional use areas within the study area.

5.2 IMPACT ANALYSIS

5.2.1 Archaeological and Historical Resources

Recorded archaeological resources occur within or adjacent to the Trails Master Plan Study Area, and other unknown and unrecorded archaeological and/or historical resources could be located within and adjacent to the Trails Master Plan Study Area, especially in those areas that are selected for trail construction and/or improvements. Therefore, trail-related construction activities that would entail ground disturbance may have the potential to damage or destroy intact archaeological and/or historical resources that may be eligible for the California Register of Historical Resources (CRHR). Additionally, buried resources could be inadvertently unearthed during ground-disturbing activities, resulting in demolition of or substantial damage to significant archaeological resources.

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[102] Native American Heritage Commission. Accessed 21 July 2006. "Understanding Cultural Resources." Available at: www.nahc.ca.gov/understandingcr.html

[103] Singleton, Dave, Native American Heritage Commission, Sacramento, CA. 28 December 2012. Faxed letter response to Clarus Backes, Sapphos Environmental, Inc., Pasadena, CA.

[104] Singleton, Dave, Native American Heritage Commission, Sacramento, CA. 25 November 2013. Faxed letter response to Roberta Thomas, Sapphos Environmental, Inc., Pasadena, CA.

[105] Backes, Clarus, Sapphos Environmental, Inc., Pasadena, CA. 10 January 2013. Contact Report to Patrick Tumamait, Ojai, CA.

[106] Backes, Clarus, Sapphos Environmental, Inc., Pasadena, CA. 17 January 2013. Contact Report to Freddie Romero, Santa Ynez Tribal Elders Councils, Santa Ynez, CA

Three historic built resources (P-19-190691, P-19-186568, P-19-186541) and five historic archaeological resources (P-19-000247, P-19-001593H, P-19-101351, P-19-186538, P-19-101200) are located within the proposed trails alignment and 60-foot buffer. The mitigation measures provided below in section 5.3 would serve to avoid, minimize, or substantially reduce impacts to cultural resources and tribal cultural resources.

5.2.2 Paleontological Resources

The Santa Susana Formation, Llajas Formation, Sespe Formation, Monterey Formation, Towsley Formation, Pico Formation, Saugus Formation, and older Quaternary Alluvium can be considered paleontologically sensitive geological units which are characterized by a moderate to high potential for containing unique paleontological resources. As such, substantial excavations in these geologic units have a good chance of encountering significant vertebrate fossil remains. It is unlikely that shallow excavations will encounter any significant fossil vertebrate remains. In the event that further improvements to the existing trail system located within the Trails Master Plan Study Area consist of ground disturbance in native soil at depths greater than 12 inches, a qualified paleontologist[107] should be consulted to determine if additional paleontological studies and/or monitoring are necessary.

5.2.3 Native American Sacred Sites and Human Remains

There are no known Native American sacred sites or burial sites within the Trails Master Plan Project Area. There are previously recorded archaeological sites that may be considered Tribal Resources within the Trails Master Plan Project Area. Ground-disturbing activities associated with the construction of trail elements would not be expected to directly or indirectly affect or destroy a Native American sacred site or human remains. However, because there are known prehistoric and historic archaeological sites within the Trails Master Plan Study Area, ground-disturbing work associated with the project has the potential to damage or destroy previously recorded, previously unknown, and/or buried prehistoric Native American archaeological and historic archaeological resources. The mitigation measures provided below would serve to avoid, minimize, or substantially reduce impacts to cultural resources and tribal cultural resources.

5.3 MITIGATION RECOMMENDATIONS

The following mitigation measures are recommended, as applicable, for ground disturbing

[107] A Qualified Professional Paleontologist (Principal Investigator, Project Paleontologist) is a practicing scientist who is recognized in the paleontological community as a professional and can demonstrate familiarity and proficiency with paleontology in a stratigraphic context. A paleontological Principal Investigator shall have the equivalent of the following qualifications:

1. A graduate degree in paleontology or geology, and/or a publication record in peer reviewed journals; and demonstrated competence in field techniques, preparation, identification, curation, and reporting in the state or geologic province in which the project occurs. An advanced degree is less important than demonstrated competence and regional experience.

2. At least two full years professional experience as assistant to a Project Paleontologist with administration and project management experience; supported by a list of projects and referral contacts.

3. Proficiency in recognizing fossils in the field and determining their significance.

4. Expertise in local geology, stratigraphy, and biostratigraphy.

5. Experience collecting vertebrate fossils in the field.

activities associated with trail construction and/or improvements within the Trails Master Plan. These measures, with proper implementation, will serve to avoid, minimize, or substantially reduce impacts to cultural resources and tribal cultural resources.

Mitigation Measure CULTURAL-1: *Archaeological and Historical Resources – Avoidance and Monitoring*. Completion of a Worker Education and Awareness Program for all personnel who will be engaged in ground-disturbing activities shall be required prior to the start of ground-disturbing activities. This shall include training that provides an overview of cultural resources that might potentially be found and the appropriate procedures to follow if cultural resources are identified. This requirement extends to any new staff prior to engaging in ground disturbing activities.

Prior to the initiation of ground-disturbing activities, the County of Los Angeles Department of Parks and Recreation (DPR) shall review the construction plans to ensure that any known cultural resources that are required to be avoided have been marked as "off-limits" areas for construction and construction staging. In addition, DPR shall require monitoring of all ground disturbing activities by a qualified archaeologist within 60 feet of a known extant unique archaeological resource or significant historical resource.

In the event that previously unknown unique archaeological resources or significant historical resources are encountered during construction, the resources shall either be left *in situ* and avoided through realignment of the trail, or the resources shall be salvaged, recorded, and reposited at the Los Angeles County Natural History Museum or other repository consistent with the provisions of a Phase III data recovery program and the provisions of a Cultural Resource Management Plan. Data recovery is not required by law or regulation. It is, though, the most commonly agreed-upon measure to mitigate adverse effects to cultural resources eligible or listed under Section 106 Criterion D, as it preserves important information that will otherwise be lost.

Mitigation Measure CULTURAL-2: *Pre-Construction Surveys*. At the time that any new segment of trail is proposed for development that would require ground-disturbing activities in soils that have been predominantly *in situ* during the past 50 years, records and archival information shall be reviewed to determine if there are any recorded unique archaeological resources and significant historical resources as defined in Section 15064.5(a) of the CEQA Guidelines. At a minimum, the records and archival review shall include a search of the South Central Coastal Information Center if more than two years have passed since the previous records search. The appropriate course of action shall be undertaken in light of the results of the records search:

(A) Where the project study area has been subject to a Phase I Walkover Survey within two years of the proposed activity and no unique archaeological resources or significant historical resources are known within the project footprint, work shall proceed per the provision of Mitigation Measure CULTURAL-1.

(B) Where all or a portion of the project footprint has not been surveyed for cultural resources within two years of a proposed ground-disturbing activity, a qualified archaeologist who meets the Secretary of the Interior's professional qualification standards for archaeology and shall conduct a Phase I Walkover Survey to ascertain the presence or absence of unique archaeological and/or significant historical resources, as defined in Section 15064.5(a) of the CEQA Guidelines.

a. If the survey and record searches determines no unique archaeological resources or significant historical resources, including potential Tribal

cultural resources, then the work shall proceed consistent with the provisions of Mitigation Measure CULTURAL-1.

b. If the survey determines potential unique archaeological resources or significant historical resources, then one of two courses of action shall be employed:

i. Where avoidance is feasible, the trail alignments shall be realigned to avoid the potentially significant cultural resource, and the work shall then proceed consistent with the provisions of Mitigation Measure CULTURAL-1. The new alignment shall be surveyed by a qualified archaeologist who meets the professional qualification standards of the Sectary of the Interior. An archaeological monitor under direction of a qualified archaeologist who meets the professional qualification standards of the Sectary of the Interior shall be present during ground-disturbing activities within 60 feet of previously recorded cultural resources.

ii. Where avoidance is not feasible, a Phase II evaluation of the cultural resources shall be undertaken by a qualified archaeologist who meets the professional qualification standards of the Sectary of the Interior to determine the significance of the cultural resource. If the Phase II investigation identifies a unique/eligible cultural resource within the area proposed for ground-disturbing work, the County shall determine whether to avoid the resource through redesign or to proceed with a Phase III data recovery program consistent with the provisions of a Cultural Resource Management Plan. The work shall then proceed consistent with the provisions of Mitigation Measure CULTURAL-1.

Mitigation Measure CULTURAL-3: *Paleontological Resources – Paleontological Monitoring*. Impacts to cultural resources related directly or indirectly to the destruction of a unique paleontological resource from the proposed project shall be reduced to below the level of significance by monitoring, salvage, and curation at the Los Angeles County Natural History Museum. Unanticipated paleontological resources discovered during ground-disturbing activities in previously undisturbed native soils located five or more feet below the ground surface that would have the potential to contact geologic units with a high to moderate potential to yield unique paleontological resources. Ground-disturbing activities include, but are not limited to, drilling, excavation, trenching, and grading. If paleontological resources are encountered during ground-disturbing activities, the County of Los Angeles Department of Parks and Recreation (DPR) shall require and be responsible for salvage and recovery of those resources by a qualified paleontologist consistent with standards for such recovery established by the Society of Vertebrate Paleontology.[108]

[108] A Qualified Professional Paleontologist (Principal Investigator, Project Paleontologist) is a practicing scientist who is recognized in the paleontological community as a professional and can demonstrate familiarity and proficiency with paleontology in a stratigraphic context. A paleontological Principal Investigator shall have the equivalent of the following qualifications:

1. A graduate degree in paleontology or geology, and/or a publication record in peer reviewed journals; and demonstrated competence in field techniques, preparation, identification, curation, and reporting in the state or geologic province in which the project occurs. An advanced degree is less important than demonstrated competence and regional experience.

Paleontological Resources Sensitivity Training given by a qualified paleontologist or archaeologist cross-trained in paleontology shall be required for all project personnel involved in ground disturbing activities prior to the start of ground-disturbing activities in geologic units with a moderate to high potential to yield unique paleontological resources. This shall include a brief field training that provides an overview of fossils that might potentially be found, and the appropriate procedures to follow if fossils are identified. This requirement extends to any new staff involved in earth disturbing that joins the project.

Construction monitoring by a qualified monitor (archaeologist cross-trained in paleontology or paleontologist) shall be implemented during all ground-disturbing activities that affect previously undisturbed geologic units 12 or more inches below the ground surface and have the potential to encounter geologic units with a moderate to high potential to yield unique paleontological resources. In the event that a paleontological resource is encountered during construction, all ground-disturbing activity within 100 feet of the find shall be halted until a qualified paleontologist can evaluate the significance of the discovery. Additional monitoring recommendations may be required. If the resource is found to be significant, the paleontologist shall determine the most appropriate treatment and method for stabilizing and collecting the specimen. Curation of the any significant paleontological finds shall be housed at a qualified repository, such as the Natural History Museum of Los Angeles County (LACM).

Within 90 days of the completion of any salvage operation or monitoring activities, a mitigation report shall be submitted to DPR with an appended, itemized inventory with representative snapshots of specimens. The report and inventory, when submitted to DPR, shall signify the completion of the program to mitigate impacts to paleontological resources. A copy of the report/inventory shall be filed with the County of Los Angeles Planning and Development Agency and the Natural History Museum of Los Angeles County.

Mitigation Measure CULTURAL-4: *Regulatory Requirements – Human Remains*. In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are encountered during excavation activities, the County Coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the site or any nearby areas reasonably suspected to overlie adjacent remains within 100 feet shall occur until the County Coroner has determined the appropriate treatment and disposition of the human remains.

Mitigation Measure TRIBAL-1: *Tribal Resources – Avoidance and Monitoring*. Prior to the initiation of ground-disturbing activities, the County of Los Angeles Department of Parks and Recreation (DPR) shall review the construction plans to ensure that any known tribal cultural resources that are required to be avoided have been marked as "off-limits" areas for construction and construction staging. DPR shall require monitoring of all ground disturbing activities by a Native American monitor within 60 feet of a known tribal cultural resource. In addition, consultation shall be undertaken with the Native American local Tribal contacts designated by the Native American Heritage Commission to determine if a Native American monitor shall be present

2. At least two full years professional experience as assistant to a Project Paleontologist with administration and project management experience; supported by a list of projects and referral contacts.

3. Proficiency in recognizing fossils in the field and determining their significance.

4. Expertise in local geology, stratigraphy, and biostratigraphy.

5. Experience collecting vertebrate fossils in the field.

during all or a portion of the ground-disturbing activities within additional areas that are sensitive for Tribal Resources.

In the event that previously unknown Tribal cultural resources are encountered during construction, the resources shall either be left *in situ* and avoided through realignment of the trail, or the resources shall be salvaged, recorded, and reposited at the Los Angeles County Natural History Museum or other repository consistent with the provisions of a Phase III data recovery program and the provisions of a Cultural Resource Management Plan. Data recovery is not required by law or regulation. It is, though, the most commonly agreed-upon measure to mitigate adverse effects to cultural resources eligible or listed under Section 106 Criterion D, as it preserves important information that will otherwise be lost.

Mitigation Measure TRIBAL-2: *Pre-Construction Surveys*. At the time that any new segment of trail is proposed for development that would require ground-disturbing activities in soils that have been predominantly *in situ* during the past 50 years, records and archival information shall be reviewed to determine if there are any recorded Tribal cultural resources as defined by AB52 in the project footprint. At a minimum, the records and archival review shall include a search of the South Central Coastal Information Center if more than two years have passed since the previous records search, a request for Sacred Lands File from the Native American Heritage Commission, and a request for information regarding Tribal cultural resources from the Native American local Tribal contacts designated by Native American Heritage Commission. The appropriate course of action shall be undertaken in light of the results of the records search:

(A) Where the project study area has been subject to a Phase I Walkover Survey within two years of the proposed activity and no Tribal cultural resources are known within the project footprint, work shall proceed per the provision of Mitigation Measure TRIBAL-1.

(B) Where all or a portion of the project footprint has not been surveyed for cultural resources within two years of a proposed ground-disturbing activity, a qualified archaeologist who meets the Secretary of the Interior's professional qualification standards for archaeology and shall conduct a Phase I Walkover Survey to ascertain the presence or absence of Tribal Resources, as defined in Section 15064.5(a) of the CEQA Guidelines.

a. If the survey and record searches determines no potential Tribal cultural resources, then the work shall proceed consistent with the provisions of Mitigation Measure TRIBAL-1.

b. If the survey determines potential Tribal cultural resources, then one of two courses of action shall be employed:

i. Where avoidance is feasible, the trail alignments shall be realigned to avoid the potentially significant tribal cultural resource, and the work shall then proceed consistent with the provisions of Mitigation Measure TRIBAL-1. The new alignment shall be surveyed by a qualified archaeologist who meets the professional qualification standards of the Sectary of the Interior. DPR shall require monitoring of all ground disturbing activities by a Native American monitor within 60 feet of a known tribal cultural resource. In addition, consultation shall be undertaken with the Native American local Tribal contacts designated by the Native American Heritage Commission to

determine if a Native American monitor shall be present during all or a portion of the ground-disturbing activities within additional areas that are sensitive for Tribal Resources.

ii. Where avoidance is not feasible, a Phase II evaluation of the cultural resources shall be undertaken by a qualified archaeologist who meets the professional qualification standards of the Sectary of the Interior to determine the significance of the cultural resource. If the Phase II investigation identifies a unique/eligible Tribal resource within the area proposed for ground-disturbing work, the County shall determine whether to avoid the resource through redesign or to proceed with a Phase III data recovery program consistent with the provisions of a Cultural Resource Management Plan. The work shall then proceed consistent with the provisions of Mitigation Measure TRIBAL-1.

Mitigation Measure TRIBAL-3: *Regulatory Requirements – Human Remains*. In accordance with Section 7050.5 of the California Health and Safety Code, if human remains are encountered during excavation activities, the County Coroner shall be notified within 24 hours of the discovery. No further excavation or disturbance of the site or any nearby areas reasonably suspected to overlie adjacent remains within 100 feet shall occur until the County Coroner has determined the appropriate treatment and disposition of the human remains.

If the County Coroner determines that the remains are or are believed to be Native American, s/he shall notify the Native American Heritage Commission (NAHC) in Sacramento within 24 hours. In accordance with Section 5097.98 of the California Public Resources Code, the NAHC shall immediately notify the person(s) it believes to be the most likely descendant (MLD) of the deceased Native American. The descendants shall complete their inspection and make a recommendation within 48 hours of being granted access to the site. The designated Native American representative would then determine, in consultation with the County of Los Angeles Department of Parks and Recreation (DPR), the disposition of the human remains. The MLD's recommendation shall be followed if feasible, and may include scientific removal and non-destructive analysis of the human remains and any items associated with Native American burials. If DPR rejects the MLD's recommendations, the agency shall rebury the remains with appropriate dignity on the property within a time frame agreed upon between the County and the MLD's in a location that will not be subject to further subsurface disturbance (14 California Code of Regulations §15064.5(e)).

SECTION 6.0
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APPENDIX A
RESUME OF PROJECT PERSONNEL

Sapphos environmental inc.

Dustin M. Keeler, Ph.D., RPA

Senior Archaeological Resources Coordinator

Ph.D., Anthropology, emphasis in Archaeology
State University of New York at Buffalo, Buffalo, 2010

M.A., Anthropology, emphasis in Archaeology
State University of New York at Buffalo, Buffalo, 2003

Bachelor of Arts, Anthropology
Arizona State University, Tempe, 2001

- *Project Management*
- *Principle Investigator*
- *Pedestrian Survey*
- *Data Recovery*
- *Archaeological/ Paleontological Monitoring*
- *Native American tribal consultation*
- *GPS (Trimble/Garmin)/ Geographic information systems (GIS)*
- *Lithic Analysis*
- *Prehistoric Ceramic Analysis*
- *Historical Resource Identification and Analysis*

Years of Experience: 17+

Relevant Experience:

- *CEQA/NEPA/ NHPA, Section 106 compliance*
- *Archaeological Management and Treatment Plans*
- *Central California Coast Archaeology*
- *Colorado/Mojave Desert Archaeology*
- *Southern California Coast Archaeology*
- *Great Basin Archaeology*

Dr. Dustin Keeler, Senior Archaeological Resources Coordinator for Sapphos Environmental, Inc., has more than seventeen years of experience in the field of archaeology including project management, field direction, planning, technical writing, archaeological field survey, data recovery, construction monitoring, Geographic Information Systems and laboratory analysis.

As Senior Archaeological Resources Coordinator, Dr. Keeler has undertaken and contributed to work efforts for Historic and Prehistoric Archaeology and Paleontology in Los Angeles, San Diego, Imperial, Riverside, San Bernardino, Orange, Kern, San Luis Obispo, Santa Barbara, El Dorado, and Mono Counties. He has been involved in cultural resources investigations under Section 106 of the National Historic Preservation Act (NHPA) and the California Environmental Quality Act (CEQA) and in consultation with the SHPO and Native American tribes in accordance with the Secretary of the Interior's Standards. Dr. Keeler has directed and performed archaeological field surveys, site recordation, mapping, construction monitoring, and data recovery. In addition, Dr. Keeler has performed laboratory analysis, including GIS spatial analysis, ceramic and lithic formal artifact analysis, and historical artifact analysis. He is also experienced in the management of archaeological GIS data.

Dr. Keeler has extensive experience in paleontological monitoring including recordation and reporting. Dr. Keeler is experienced using ArcGIS, GPS and Trimble. His responsibilities have included identification, analysis and interpretation of archaeological material, preparation of site records and preparation of reports. Dr. Keeler has experience collaborating with Native American Tribal representatives as well as City, County, State and Federal agencies and compliance with each of their respective regulations and codes, including but not limited to the State Historic Preservation Officer (SHPO), U.S. Army, U.S. Navy, California Department of Parks and Recreations, California Department of Public Works, Bureau of Land Management, and CALTRANS.

Dr. Keeler has presented original research at the Society for American Archaeology Annual Meetings. Current research interests include GIS intrasite and regional spatial analysis, marine adapted hunter-gatherers, and prehistoric Mojave desert archaeology. His qualifications meet the Secretary of the Interior's Professional Qualifications Standards in archaeology as a project archaeologist for both prehistoric and historic cultural remains.

Sapphos environmental inc.

Dustin Keeler, Ph.D., RPA (continued)

EXPERIENCE

California High Speed Rail, Kern and Tulare Counties, CA 2016–2017
Dr. Keeler serves as archaeological consultant in support of the California High Speed Rail project for Construction Package 4, which will run from Fresno to Bakersfield. His responsibilities include review of reporting for CEQA and Section 106 compliance as well as oversight of field work and documentation conducted by the Design-Build team.

SoCalGas ANF Span Pipeline Maintenance Project, Los Angeles County, CA 2016–2017
Dr. Keeler serves as archaeological consultant in support of the ANF Span Pipeline Maintenance Project. He conducted a record search at the ANF offices, performed the field survey and will coordinate the archaeology monitoring efforts.

SoCalGas El Horno St. Pipeline Replacement Project, San Juan Capistrano, CA 2016-2017
Dr. Keeler serves as archaeological consultant in support of the El Horno St. Pipeline Replacement Project. He coordinated the archaeology monitoring efforts and prepared the monitoring report.

SoCalGas Foothill Rd. Pipeline Maintenance Project, Santa Barbara, CA 2016–2017
Dr. Keeler serves as archaeological consultant in support of the Foothill Rd. Pipeline Maintenance Project. He performed the field survey, coordinated the archaeological and Native American monitoring efforts, and prepared the ASR and monitoring report.

SoCalGas Avila Beach Pipeline Replacement Project, Avila Beach, San Luis Obispo County, CA 2016
Dr. Keeler serves as archaeological consultant in support of the Avila Beach Pipeline Replacement Project. He performed the extended Phase I testing, coordinated the Native American monitoring efforts, and prepared the letter report.

SoCalGas Line 85 Fatal Flaw Analysis, Kern, Los Angeles, and Kings Counties, CA, 2016
Dr. Keeler served as archaeological consultant for SoCalGas for the preparation of a Fatal Flaw Analysis for Line 85.

Owens Lake Dust Control Project, Keeler, CA, 2016–2017
Dr. Keeler serves as the archaeologist/principal investigator, and is providing senior oversight and technical expertise on cultural resources located within the Owens Lake Dust Control Project. Support includes preparing reports, coordinating archaeological monitoring, and budget oversight and management.

Crenshaw/LAX Metro Project-Archaeo/Paleo Monitoring, Los Angeles, CA, 2016–2017
Dr. Keeler served as Project Manager during construction phase of this project. Sapphos Environmental, Inc. serves as subcontractor to AECOM in a joint effort to provide archaeo/paleo monitoring. Dr. Keeler was tasked with scheduling and coordination of monitors, invoicing, ensuring safety protocols are followed and all training is provided to staff. This project is conducted under CEQA regulations.

Regional Connector Metro Project Los Angeles, CA, 2016–2017
Dr. Keeler served as Project Manager and Archaeo/Paleo Monitor during construction phase of this project. Sapphos Environmental, Inc. serves as subcontractor to AECOM in a joint effort to provide archaeo/paleo monitoring. Dr. Keeler was tasked with scheduling and coordination of monitors, invoicing, ensuring safety protocols are followed and all training is provided to staff; as well as archaeo/paleo monitoring of several sites during construction phase and preparing DPR forms for archaeological discoveries. This project is conducted under CEQA regulations.

Sapphos environmental inc.

Dustin Keeler, Ph.D., RPA (continued)

Barren Ridge Transmission Line Project, Los Angeles County, CA, 2015–2016
Dr. Keeler served as Paleontological Monitor for this project from Santa Clarita, CA to Mojave, CA.

VA Long Beach Fisher House Project, Long Beach, CA. 2015
Dr. Keeler served as Field Director for mechanical archaeological excavation within prehistoric sites at the VA Long Beach. He directed the field work, coordinated archaeological and Native American monitoring efforts and prepared the testing report.

Hidden Oaks Project, Chino Hills, CA.2015
Dr. Keeler served as Principle Investigator and field director for this archaeological field survey project in Chino Hills, CA. He performed the record search, directed the field survey and prepared the assessment report.

Temecula Gateway Project, Temecula, California. Principle Investigator. Archaeological field survey. 2015
Dr. Keeler served as Principle Investigator for this archaeological field survey project in Temecula, CA. He performed the record search, directed the field survey and prepared the assessment report.

Ft Irwin TO37 Project, Ft. Irwin, California. Field Director/Data Specialist. Archaeological field survey. 2014-2015
Dr. Keeler served as Field Director for this archaeological field survey project on Fort Irwin, CA. He directed the field survey of 20,000 acres, performed Phase II testing of five prehistoric sites, and prepared the technical report.

BLM Bishop FY14 Project, Bodie Hills, California. 2014
Dr. Keeler served as Field Director and Data Specialist for this archaeological field survey project in Bodie Hills, CA. He directed the field survey and prepared the technical report.

Extended Phase I Testing for the Caltrans High Desert Corridor XPI Project, Los Angeles and San Bernardino Counties, CA. 2014
Dr. Keeler directed the field pedestrian survey and extended Phase I testing of sites along the High Desert Corridor and prepared the technical report.

Metropole Vault Replacements Project, Southern California Edison, Avalon, Catalina Island, Los Angeles County, CA. 2014
Dr. Keeler performed archaeological monitoring, Data Recovery of Native American burials and coordination with Native American monitors during ground disturbing activities of a 30,000 s.f. APE for the replacement of two underground electrical vaults. The site is located in proximity to the original Tongva tribal village on the island.

Chuckwalla Valley Emergency Response Project, Southern California Edison, Desert Center, Riverside County, CA. 2013
Dr. Keeler performed a cultural resources survey and monitoring to support the emergency removal, replacement and repair of poles damaged or destroyed by a flash flood located on land administered by the BLM and on private land. He assessed the potential for adverse effect to historic properties, per Section 106 of the National Historic Preservation Act, and impacts to cultural resources under CEQA.

Cascade Renewable Interconnection Project, Southern California Edison, Sunfair, San Bernardino County, CA. 2013
Dr. Keeler conducted archaeological and paleontological awareness training for the SCE crew. He performed monitoring during ground disturbing activities for the removal and replacement of poles.

APPENDIX B
CONFIDENTIAL NATIVE AMERICAN CONSULTATION
(REDACTED)

APPENDIX C
CONFIDENTIAL MAP OF
PREVIOUSLY RECORDED CULTURAL RESOURCES
(REDACTED)

Appendix E

2017 Geology and Soils Technical Report

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN – PHASE II

Geology and Soils Technical Report

Prepared for:

County of Los Angeles
Department of Parks and Recreation
510 S. Vermont Ave.
Los Angeles, CA 90020

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EXECUTIVE SUMMARY

This Geology and Soils Technical Report addresses potential impacts to geology and soils that could result from proposed work associated with the Santa Susana Mountains Trails Master Plan – Phase II (SSMTMP-PII, or proposed project), located within unincorporated Los Angeles County, California. This study is based on a desktop analysis using existing geologic/soils/seismic reports, records, and maps; as well as evaluation of the planned construction, recreational use, and maintenance activities associated with the proposed project. Impacts to geology and soils were considered with respect to Appendix G of the California Environmental Quality Act Guidelines and the County of Los Angeles Department of Parks and Recreation's Environmental Checklist form.

Earthquake Fault Rupture. The proposed project would result in less than significant impacts in regard to exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault. The Holser and Chatsworth fault segments could experience a few inches to several feet of ground rupture offset and related ground disturbance. Project design should not allow any facilities that may be habitable for extended periods to be built over or within 50 feet of the active or potentially fault traces. Project maintenance should consider fault displacement and severe cracking in these areas as post-earthquake maintenance issues.

Seismic Ground Shaking. The proposed project would result in less than significant impacts in regard to exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Severe shaking can be very destructive to narrow ridgelines and steep slopes, causing severe cracking and slope failures. Project maintenance should consider severe ground shaking affects in these areas as post-earthquake maintenance issues.

Seismic-Related Ground Failure/Liquefaction. The proposed project would result in less than significant impacts in regard to exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure. The larger canyon alluvial deposits are subject to liquefaction. Liquefaction would only be an issue for larger or habitable structures. If any significant structures are planned within or immediately adjacent to a potential liquefaction zone, they should be evaluated with a geotechnical study to define the potential hazards and make appropriate recommendations.

Landslides. The proposed project would result in less than significant impacts in regard to exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. Landslide and earthquake-induced landslide movement may occur along bedding planes within the bedrock formations, as rocks dislodged from exposures on steep slopes, or as surficial failures of weathered rock and soil/colluvium potentially affecting overlying facilities and facilities nearby and downslope. The proposed project design within areas of potential/mapped landslides should be evaluated with a geotechnical study to define the potential hazards and make appropriate recommendations.

Soil Erosion / Loss of Topsoil. The proposed project would result in less than significant impacts in regard to substantial soil erosion or the loss of topsoil. The proposed project could result in soil erosion or the loss of topsoil mainly in proposed SSMTMP-PII areas with numerous primary and secondary drainages. Project design should consider the effects of any significant structures or

facilities that would block, divert, or accentuate change to an existing drainage and as such cause potential soil erosion or loss of topsoil, and a geotechnical study should provide specific design recommendations to avoid these affects.

Stability of Geologic Unit / Soil. The proposed project would result in less than significant impacts in regard to being located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project. Landslide and liquefaction potential are the most significant potential hazards. With the large variation in geologic units, the relative difficulty of excavation, the suitability for safe trail or roadway surfaces, the stability of construction slopes, and the suitability of excavated materials for use as backfill would also vary. Potentially unstable areas should be evaluated with a geotechnical study to define the unstable areas and to provide appropriate project design recommendations to avoid affects from unstable areas.

Expansive Soil. The proposed project would result in less than significant impacts in regard to being located on expansive soil. Portion of the proposed project trails and related structures would overlie areas of expansive soil, which can be affected by repeated episodes of wetting and drying to cause distress to structures in contact with such soils. A geotechnical study should be performed to define these unfavorable conditions and where they cannot be avoided it could be necessary for project design to use non-expansive materials to overcome these potential effects.

Portions of the proposed SSMTMP-PII area have plugged (abandoned) wells, active and inactive wells, and buried wells that represent potential vertical migration pathways for crude oil, methane, H_2S, and other compounds. While there may be limited opportunity for exposure to these hazards, it would be advisable where possible to avoid these oil field areas and where not possible to perform an appropriate technical study to define trail- and facility-specific project design elements as necessary.

Capability of Soils to Support Wastewater Treatment Systems. The proposed project would result in less than significant impacts in regard to the capability of soils to adequately support the use of onsite wastewater treatment systems where sewers are not available for the disposal of wastewater. Areas of the proposed project could encounter soils incapable of adequately supporting the use of onsite wastewater treatment systems where sewers are not available for the disposal of wastewater. Project design and location of restroom facilities should consider groundwater depth and proximity to potentially shallow groundwater in existing drainages, as well as soils incapable of adequately supporting the use of onsite wastewater treatment systems where sewers are not available. A geotechnical study should be performed for design and construction of wastewater disposal facilities if the use of such unsuitable areas is necessary.

Conflicts with Hillside Management Area Ordinance or Hillside Design Standards. The proposed project would result in less than significant impacts in regard to conflicts with the Hillside Management Area Ordinance or hillside design standards in the County General Plan. Trails and facilities would be subject to the requirements and design standards of the Hillside Management Area Ordinance and hillside design standards in the Conservation and Open Space element of the County's General Plan, as well as in the County of Los Angeles Trails Manual.

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SECTION 1.0
INTRODUCTION

This Geology and Soils Technical Report (Report) has been prepared to support the County of Los Angeles (County) Department of Parks and Recreation (DPR) in the development of Phase II of the Santa Susana Mountains Trails Master Plan (SSMTMP-PII or proposed project), located within unincorporated Los Angeles County, California. In accordance with the California Environmental Quality Act (CEQA), this Report encompasses geologic, soils, and seismic information to address the general conditions and specific hazards that may impact the proposed project. This Report presents the results of these efforts and provides a programmatic impact analysis and mitigation recommendations related to geology and soils within the SSMTMP-PII area. While this report focuses on Phase II, it incorporates updated information for the Phase I study area.

1.1 CEQA COMPLIANCE

DPR proposes to complete the SSMTMP-PII, ultimately to amend the Parks and Recreation Element of the Los Angeles County General Plan 2035 (County General Plan) to include the SSMTMP-PII, which would guide future trail development and recommend improvements to existing trails. The proposed project would ultimately result in the construction and use of trails in public and private lands, some of which may involve the expenditure of public funds, and thus constitutes a project pursuant to the California Environmental Quality Act (CEQA). These trails would be located in the unincorporated territory of Los Angeles County; therefore, the County would be the Lead Agency pursuant to CEQA.

1.2 PURPOSE

This Report serves two purposes: (1) to provide information regarding geology and soils to inform the planning process; and (2) to provide the substantial evidence required with respect to geology and soils for consideration of the potential for environmental effects under CEQA. This Report was prepared to characterize the geology and soils conditions that would potentially be affected by construction, operation, and maintenance of the proposed project. As such, the document presents data and information to be used by the County in making a determination of effects to geology and soils resulting from the proposed project. The Report provides information in relation to the geology and soils areas identified in Appendix G of the State CEQA Guidelines and the County DPR's Environmental Checklist form.

The objective of this analysis is to provide a level of technical and regulatory background sufficient to allow the identification of trail planning concerns and constraints related to geologic, seismic, and soils conditions. Consideration of this background information should extend to trails and all trail related facilities within the SSMTMP-PII area.

1.3 INTENDED AUDIENCE

This Report provides information for consideration by DPR and the design team, Alta Planning + Design, engaged in the development of the SSMTMP-PII. The substantial evidence would be available for the responsible and trustee agencies, and the public, including property owners, during circulation of the draft environmental document for public review. Ultimately, the

Report would be used by the County Board of Supervisors to support their decision-making process related to the SSMTMP-PII. The Report would also inform the County and private parties in the ultimate development, operation, and maintenance of trails in the plan area.

1.4 SCOPE

In May 2015, the County adopted the first phase of the Santa Susana Mountains Trails Master Plan (SSMFTMP), which involved the extension of the 35.7 miles of existing County-, City-, and Conservancy-managed trails in the Phase I and Phase II study areas by approximately 35.9 miles with 22 proposed trail segments, for a total of approximately 71.5 miles of trails within the SSMFTMP area. In 2017, the County initiated planning efforts for further development of the Phase II study area, which has been expanded to Phase II.a and II.b.

1.5 SOURCES OF RELEVANT INFORMATION

Information used in the preparation of this Report was derived from a review of relevant literature, including published reports and maps, and unpublished County documents, informal consultation with cooperating agencies, and spatial analysis based on geographic information system data. Sources used in the preparation of this Report include, but are not limited to: U.S. Geological Survey (USGS) 7.5-minute quadrangle maps; Dibblee Foundation maps; data from the National Resource Conservation Service (NRCS), the California Geological Survey (CGS), California Division of Mines and Geology (CDMG), and the California Department of Conservation Division of Oil, Gas, and Geothermal resources; and information from DPR, the County of Los Angeles Trails Manual (County Trails Manual), and the California Building Standards Commission. These and any other source of relevant information used in the preparation of this GSTR are cited in footnotes and compiled in Section 6.0, *References*.

1.6 WORKING DEFINITIONS

Technical terms used in the characterization of baseline conditions and assessment of the potential for the proposed project to affect geology and soils are given below:

Alluvium: An unconsolidated accumulation of stream-deposited sediments, including sands, silts, clays or gravels.

Extrusive Igneous Rocks: Rocks that crystallize from molten magma on earth's surface.

Fault: A fracture or fracture zone in rock along which movement has occurred.

Formation: A laterally continuous rock unit with a distinctive set of characteristics that make it possible to recognize and map from one outcrop or well to another. The basic rock unit of stratigraphy.

Holocene: An interval of time relating to, or denoting the present epoch, which is the second epoch in the Quaternary period, from approximately 11,000 years ago to the present.

Miocene: An interval of time relating to, or denoting the fourth epoch of the Tertiary period, between the Oligocene and Pliocene epochs, from approximately 23 to 5.5 million years ago.

Oligocene: An interval of time relating to, or denoting the third epoch of the Tertiary period, between the Eocene and Miocene epochs, from approximately 34 to 23 million years ago.

Outcrop: A rock formation that is visible on earth's surface.

Paleocene: An interval of time, relating to, or denoting the earliest epoch of the Tertiary period, between the Cretaceous period and the Eocene epoch.

Paleozoic: An interval of time relating to, or denoting the era between the Precambrian eon and the Mesozoic era.

Pleistocene: An interval of time relating to, or denoting the first epoch of the Quaternary period, between the Pliocene and Holocene epochs, from approximately 2.6 million years ago to 11,000 years ago.

Pliocene: An interval of time relating to, or denoting the last epoch of the Tertiary period, between the Miocene and Pleistocene epochs, from approximately 5.5 to 2.6 million years ago.

Plutonic Igneous Rocks: Igneous rocks that have crystallized beneath the earth's surface.

Quaternary: The most recent period in geological time; includes the Pleistocene and Holocene Epochs.

SECTION 2.0
PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The Trails Master Plan (approximately 49 square miles) is located north and west of the San Fernando Valley in the Santa Susana Mountains, in the western portion of the unincorporated area of the County of Los Angeles (Figure 2.1-1, *Regional Vicinity Map)*. The Santa Susana Mountains are centrally located in the Transverse Ranges, a group of east-west trending mountains paralleling the Pacific Ocean between Santa Barbara and San Diego Counties. The proposed designation and improvement of a portion of the Johnson Motorway Trail is an element of the first phase of the SSMFTMP.

2.2 TRAILS MASTER PLAN STUDY AREA

Phase I Area

The northern boundary of the Trails Master Plan – Phase I is defined by the southern limits of the Newhall Ranch Specific Plan Area and the northern limits of the proposed Santa Susana Mountains / Simi Hills Significant Ecological Area (SEA). The southern boundary is defined by the northern limit of the City of Los Angeles. The eastern boundary is defined by U.S. Interstate 5 (I-5). The western boundary is defined by the corporate boundary between Los Angeles and Ventura Counties (Figure 2.2-1, *Trails Master Plan Location*). The SSMFTMP is divided into two subareas or phases. Phase I is the Northwest San Fernando Valley Study Area, and Phase II is the Southwest Santa Clarita Valley Study Area. Phase I includes 16,038.1 acres (25.1 square miles); the northern boundary is defined by the northern limits of the Los Angeles County Oat Mountain Planning Area, the southern boundary is defined by the northern limit of the City of Los Angeles, the eastern boundary is defined by the I-5 freeway, and the western boundary is defined by the boundary between Los Angeles and Ventura Counties.

Phase II Area

The Trails Master Plan – Phase II has been expanded beyond the spatial extents of Phase II in the SSMFTMP and divided into two subareas. The proposed project, including Phase II.a and Phase II.b, represents approximately 24 square miles (approximately 15,360 acres) (see Figure 2.2-1). The project study area appears on the U.S. Geological Survey (USGS) 7.5-minute series Val Verde, Newhall, Simi Valley East (Santa Susana), Oat Mountain, and Calabasas topographic quadrangles (Figure 2.2-2, *Topographic Map with USGS 7.5-minute Quadrangle Index*).

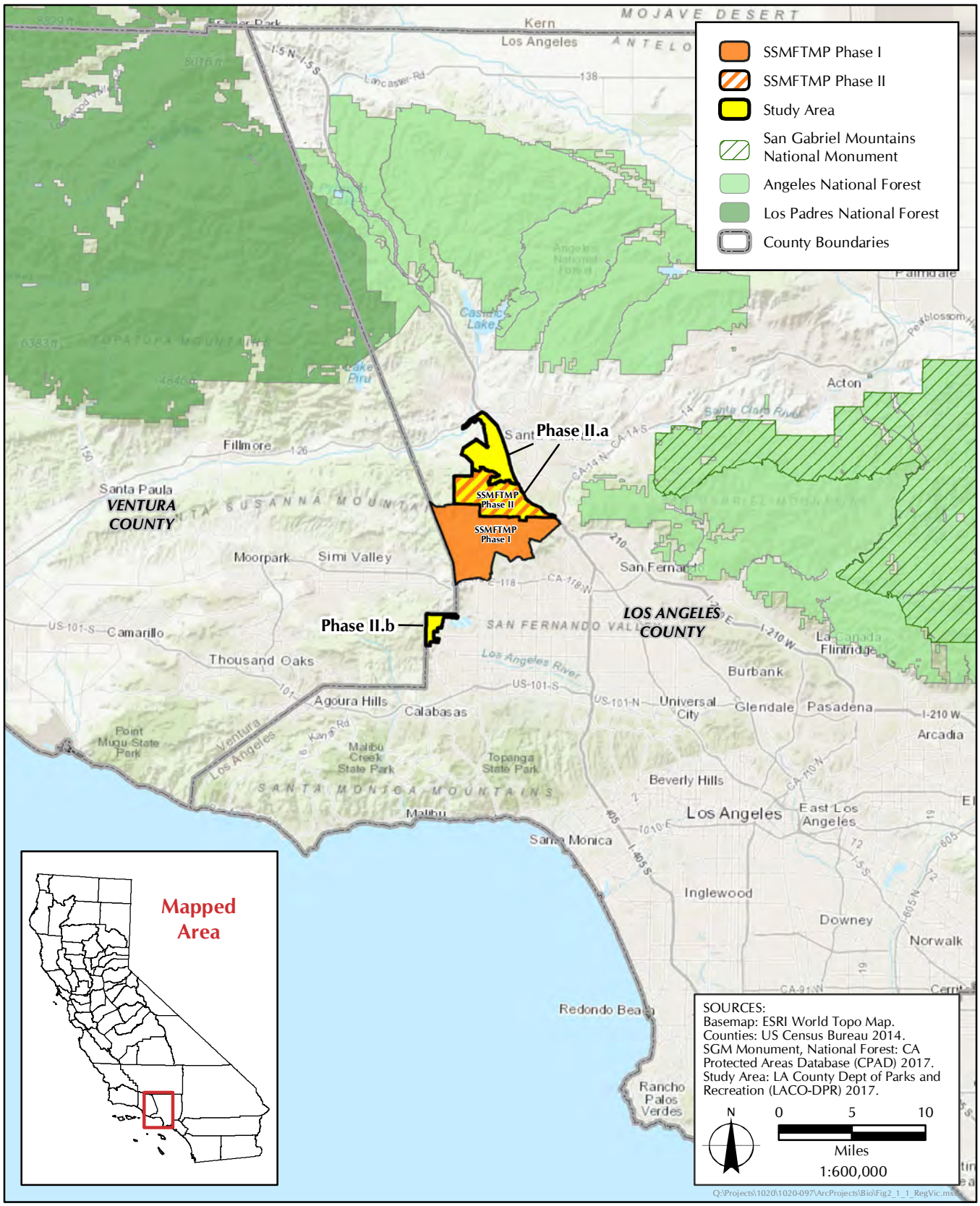


FIGURE 2.1-1

Regional Vicinity Map

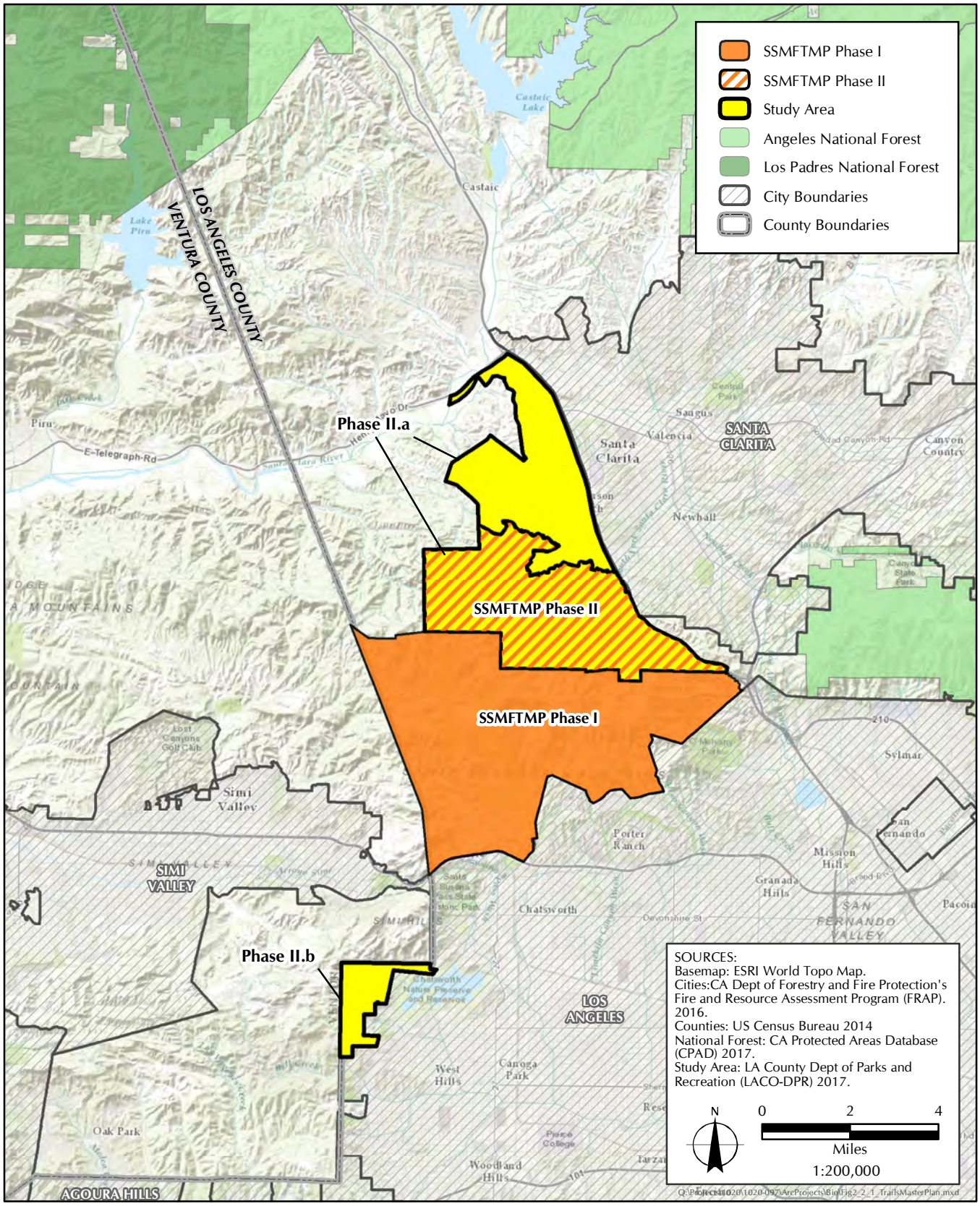


FIGURE 2.2-1

Trails Master Plan Location

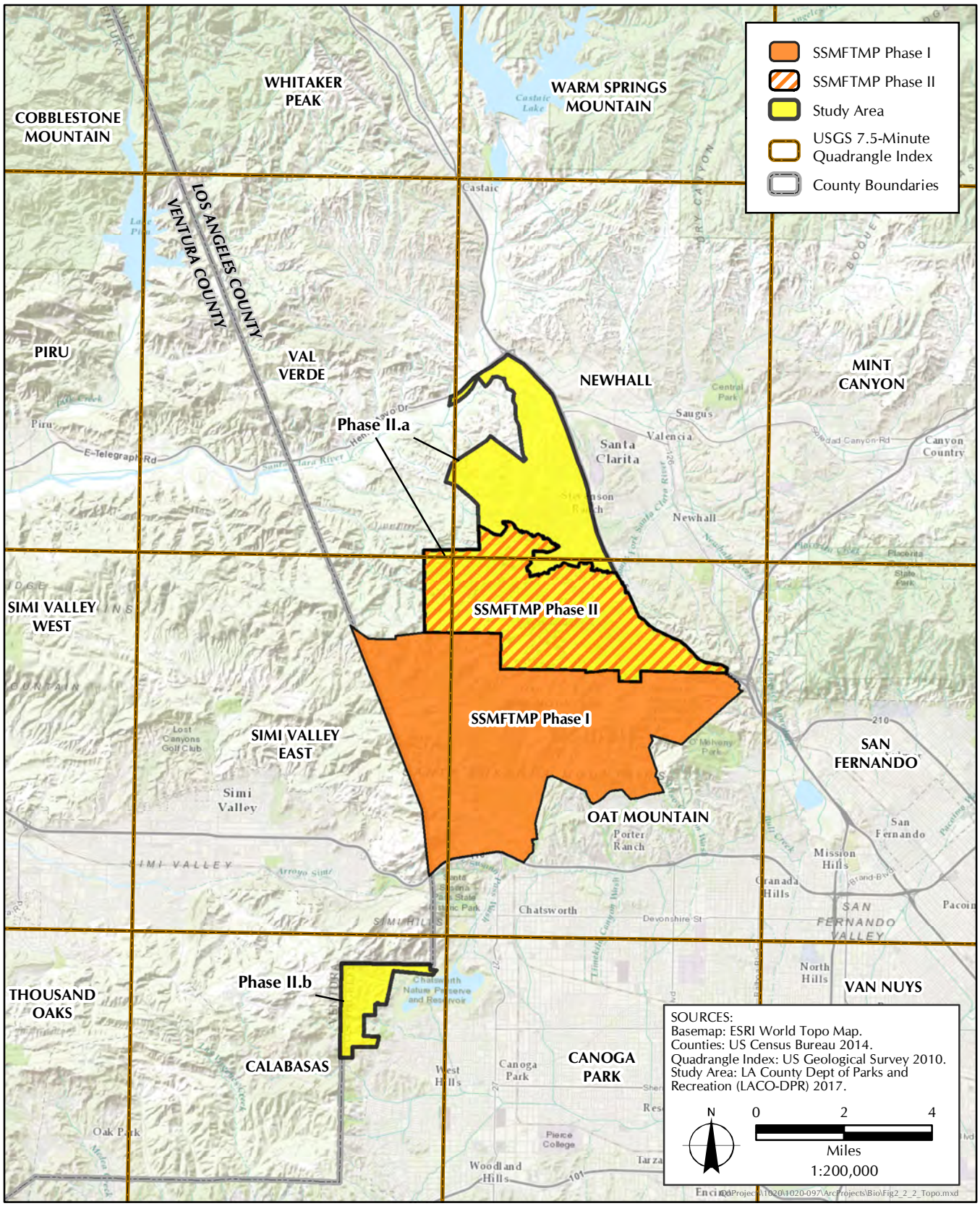


FIGURE 2.2-2

Topographic Map with USGS 7.5 Minute Quadrangle Index

Phase II.a. The Phase II.a area is an approximately 22-square-mile area located in the north-facing slopes of the Santa Susana Mountains and the Santa Clarita Valley. Phase II.a is composed of generally mountainous and valley terrain that abuts Henry Mayo Drive (State Route [SR] 126) to the north, the Interstate-5 freeway to the east, Phase I of the SSMFTMP Area to the south, and the Newhall Ranch Specific Plan Area to the west (see Figure 2.2-1). The Phase II.a area, which is located in the County of Los Angeles Fifth Supervisorial District, includes a portion (Phase II) of the SSMFTMP Area. The community of Stevenson Ranch and Six Flags Magic Mountain are located within the Phase II.a area. The elevation of the Phase II.b area ranges from 946 feet above mean sea level (MSL) within the Santa Clara River near SR-126, to 2,889 feet above MSL in Santa Clarita Woodlands Park between Dewitt Canyon and Towsley Canyon. Sand Rock Peak (2,511 feet above MSL) is located within the northwestern portion of the Phase II.a area.

Phase II.b. The Phase II.b area is an approximately 2-square-mile area located in the foothills of the Santa Monica Mountains, including Bell Canyon, Dayton Canyon, and Woolsey Canyon, west of the San Fernando Valley. The Phase II.b area, which is also located in the County of Los Angeles Fifth Supervisorial District, is composed of generally mountainous and valley terrain that abuts Ventura County to the north and west and the City of Los Angeles to the east and south (see Figure 2.2-1). The elevation of the Phase II.b area ranges from 895 feet above MSL at the northeastern corner of the Phase II.b area near Chatsworth Reservoir, to 1,867 feet above MSL near the northwestern corner of the Phase II.b area. There are no named peaks within the Phase II.b area.

Topography

The Trails Master Plan is located in the U.S. Geological Survey (7.5-minute series, Newhall, Oat Mountain, Simi Valley East, Calabasas, and Val Verde, California, topographic quadrangles, and includes portions of Township 2 North, Range 16 West (San Bernardino Baseline and Meridian [SBB&M]); Sections 6 and 7, Township 2 North, Range 17 West (SBB&M), Sections 1, 2, 11, and 12; Township 3 North, Range 16 West (SBB&M), Sections 4–10, 13–24, and 26–34; and Township 3 North, Range 17 West (SBB&M), Sections 1, 2, 11–15, 22–27, and 34–36. Phase I of the Trails Master Plan is located on the USGS 7.5-minute series Simi Valley East and Oat Mountain topographic quadrangles. Phase II of the Trails Master Plan is located on the Val Verde, Newhall, Simi Valley East (Santa Susana), Oat Mountain, and Calabasas topographic quadrangles (see Figure 2.2-2).

Situated along the southern flanks of the Santa Susana Mountains, the topography of the Trails Master Plan is characterized by a series of southwest draining canyons that are separated by steep-sloped and narrow ridge tops. The Trails Master Plan has elevations that range from 946 to 3,400 feet above MSL. The Trails Master Plan Area encompasses a distinct portion of the existing trail/unpaved/paved road system in the hills above (north of) the eastern San Fernando Valley. Some trails exist formally (e.g., national, state, and county parks) or have been defined less formally by public input, past usage, and aerial photograph interpretation (Figure 2.2-3, *Trails Master Plan Area Geology*; Figure 2.2-4, *Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation*).

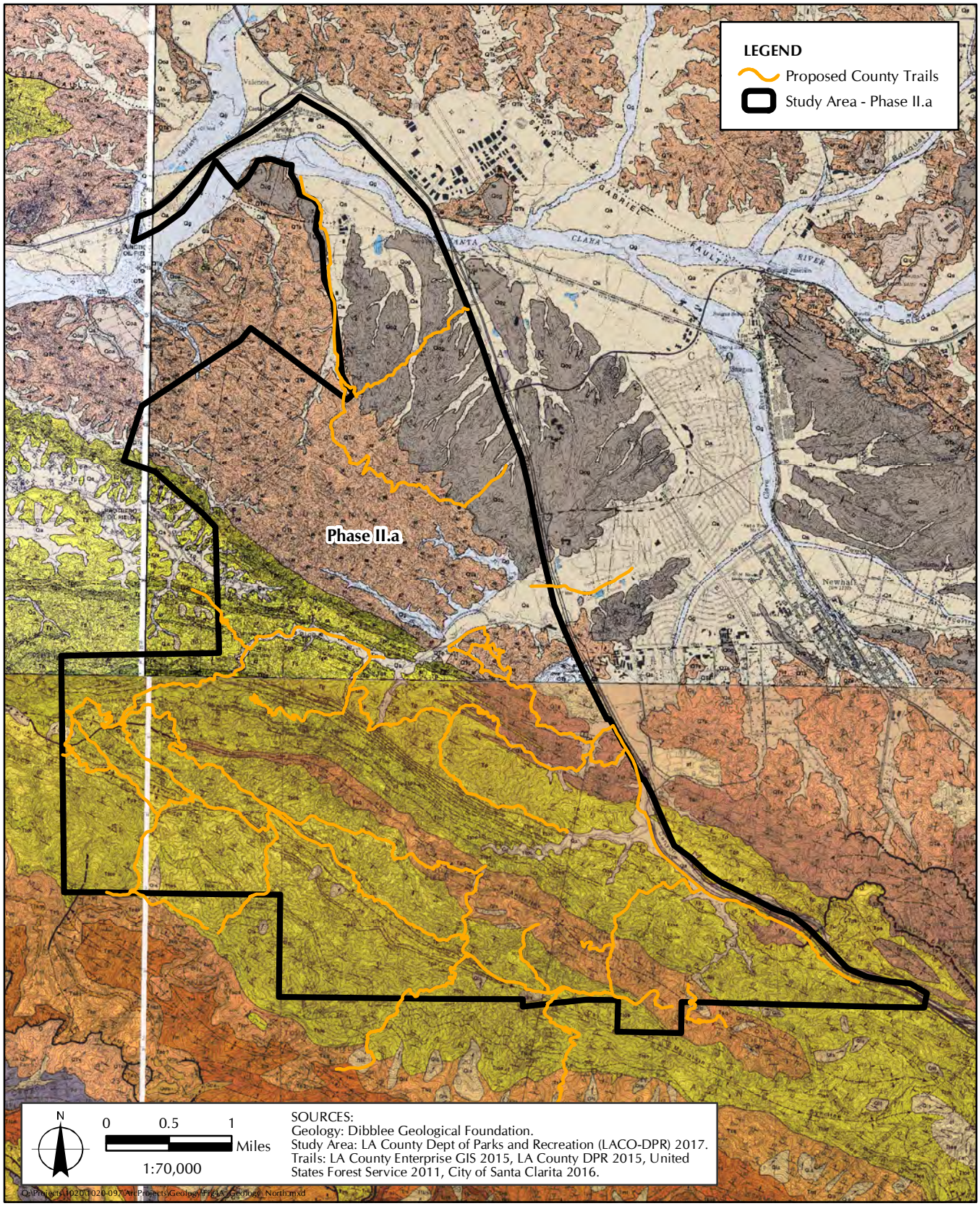


FIGURE 2.2-3a

Trails Master Plan Area Geology North

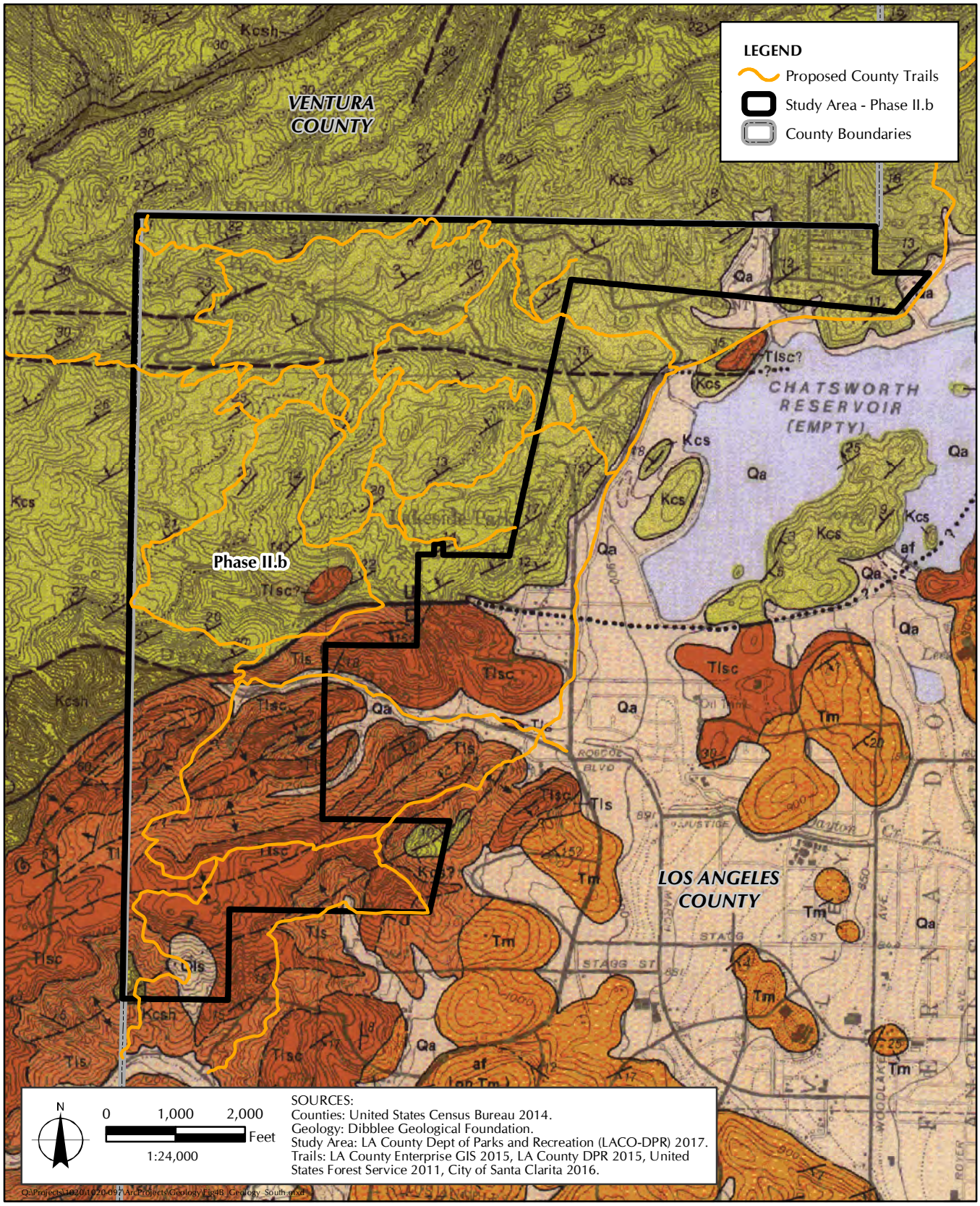


FIGURE 2.2-3b

Trails Master Plan Area Geology South

CALABASAS MAP (DF-37)

LEGEND

af
Qa

SURFICIAL SEDIMENTS

af *Artificial cut and fill*
Qa *Alluvium: gravel, sand and clay of valley areas, includes gravel of stream channels, gravel and sand of alluvial fans, and slope wash; undissected to slightly dissected*

Qls

LANDSLIDE DEBRIS

Qoa

OLDER SURFICIAL SEDIMENTS

Qoa *Dissected alluvial gravel, sand and clay*

— UNCONFORMITY —

Tush Tust Tuss Tud

UNNAMED SHALE AND SANDSTONE

(Upper part of Modelo Formation of Hoots 1931; Soper 1938; Durrell 1954; A.E.G. maps 1982; Modelo Formation of Weber 1984; Modelo and Santa Margarita Formations of Truex and Hall 1969; Trurex 1976; equivalent to Sisquoc Shale of Dibblee 1989; in Ventura vasin
Marine clastic; and biogenic; late Miocene age (Mohnian-"Delmontian" Stage)
Tust *Light gray fine grained sandstone and minor siltstone [Towsley (?) Sandstone of Weber 1984] at Laskey Mesa*
Tush *Light gray claystone and siltstone, moderately to vaguely bedded; crumbly where weathered*
Tud *Light gray, white-weathering diatomaceous shale, thin-bedded, soft, semi-punky*
Tuss *Light gray to tan sandstone, friable, vaguely bedded*

Tm Tmss Tmcg

MONTEREY FORMATION

(Lower part Modelo Formatin of Hoots 1931; Soper 1938; Durrell 1954; A.E.G. maps 1982; Modelo Formation of Yerkes and Campbell 1979; Weber 1984; Modelo-Monterey and lower Monterey Formation of Truex and Hall 1969, Truex 1976; ; equivalent to Monterey Formation of Dibblee 1989, in Ventura basin)
Marine, biogenic and clastic; middle and late Miocene age [late (?) Luisian and Mohnian Stages]
Tm *Gray-brown, white weathering siliceous shale, thin bedded, moderately hard with platy fracture; includes soft fissile diatomaceous shale, hard, brittle, cherty shale, and few layers of hard, yellow-weathering calcareous concretions or lenses*
Tmss *Light gray to tan, semi-friable bedded sandstone*
Tmcg *Gray cobble conglomerate of mostly granitic detritus in sandstone matrix*

Tlsc Tls

DETRITAL SEDIMENTS OF LINDERO CANYON

(Included in Topanga Formation of Weber 1984; unconformable on Chatsworth Formation; best exposed in Lindero Canyon, Thousand Oaks quadrangle; may be equivalent to upper Topanga Formation of Durrell 1954, or Calabasas Formation of Yerkes and Campbell 1989
Marine transgressive clastic; middle Miocene age [Luisian (?) Stage]
Tls *Light gray to nearly white massive sandstone, semi-friable, locally conglomeratic*
Tlsc *Light gray calcareous sandstone, massive to crudely bedded, with calcite veins; includes gray conglomerate composed of cobbles of metavolcanic, granitic, and quartzitic rocks and of sandstone derived from Chatsworth Formation; sparsely fossiliferous*

Holocene ? Pleistocene — QUATERNARY — CENOZOIC

— UNCONFORMITY —

Ttuc Ttus Ttucg

UPPER TOPANGA FORMATION

(Of Durrell 1954; Topanga Formation of Soper 1938; Truex and Hall 1969; Truex 1976; Weber 1984; Calabasas Formation of Yerkes and Campbell 1979, 1980)
Marine clastic; middle Miocene age (Luisian Stage)
Ttuc *Gray claystone, bedded; crumbly with ellipsoidal fracture*
Ttus *Light gray sandstone, semi-friable, thick bedded*
Ttucg *Gray conglomerate of cobbles of granitic rocks, sandstone, and volcanic rocks in sandstone matrix*

Tcvab Tcvb Tcva

CONEJO VOLCANICS

(Of Taliaferro 1924; Yerkes and Campbell 1979; 1980; Weber 1984; middle Topanga Formation of Soper 1938; Durrell 1954; Topanga Volcanics of Truex and Hall 1969; Truex 1976)
Extrusive volcanic flows and volcaniclastic rocks; middle Miocene age
Tcvab *Andesitic breccia-conglomerate, composed of subangular to subrounded cobbles and boulders of light pinkish gray andesitic rocks in andesitic detrital matrix, moderately sorted, bedded; deposited as epiclastic (reworked) breccias*
Tcva *Andesitic breccia, brown, massive to crudely bedded autoclastic flow breccia and some mud-flow (laharic) breccias*
Tcvb *Basaltic flows and flow-breccias: dark gray to dark brown, composed of basaltic to basaltic-andesitic rocks, crudely bedded, includes some reworked breccias of basaltic detritus; moderately coherent; at Mullholland Highway gray-black, massive, fine grained basalt, weakly coherent where weathered, includes hyaloclastic basaltic breccia, massive to crudely bedded*

db

DIABASE

db *Black; fine grained diabase or basalt, intrusive as sills in* **Ttls**

Ttls Ttlc

LOWER TOPANGA FORMATION

Of Durrell 1954; Topanga Formation of Soper 1938; Truex and Hall 1969; Weber 1984; Topanga Canyon Formation of Yerkes and Campbell 1979, 1980)
Marine transgressive clastic; early and middle Miocene age [Saucesian-Relizian (?) Stage]
Ttls *Light gray to tan sandstone, coherent, thick bedded*
Ttlc *Gray micaceous clay shale; crumbly with ellipsoidal fracture where weathered*

Tsp

SESPE FORMATION

Non-marine; primarily Oligocene age
Not exposed in quadrangle, but present in subsurface (see cross section) in southern part of area and exposed just south of this quadrangle

Tll Tllg

LLAJAS FORMATION

(Of Cushman and McMasters 1936; Stipp 1943; Squires and Filewicz 1983)
Marine clastic; middle Eocene age (Domengine and Capay molluscan Stages)
Tll *Gray micaceous claystone and siltstone, crumbly with ellipsoidal fracture where weathered*
Tllg *Gray to brown cobble conglomerate of granitic, metavolcanic and quartzitic detritus in sandstone matrix; includes some brown sandstone strata*

Miocene — Oligocene — Eocene — TERTIARY

Tsu Tsus Tsuv Tsi

SANTA SUSANA FORMATION

(Of Cushman and McMasters 1936; Stipp 1943; Squires and Filewicz 1983)
Marine and non-marine (?) clastic; lower Eocene and Paleocene ages
(Meganos and Martinez molluscan Stages)
Tsu *Gray micaceous claystone and siltstone, few minor thin sandstone beds*
Tsus *Tan coherent fine grained sandstone; locally contains thin shell-beds and calcareous concretions*
Tsuv *Las Virgenes Sandstone Member: tan semi-friable bedded sandstone, locally pebbly*
Tsi *Simi Conglomerate Member: gray to brown cobble conglomerate with smooth cobbles of quartzite, metavolcanic and granitic rocks in sandstone matrix that locally includes thin lenses of red clay; marine or non-marine (?)*

Kcs Kcg Kcsh

CHATSWORTH FORMATION

(Of Colburn et al. 1981; Weber 1984; "Chico Formation of Sage 1971)
Marine clastic; late Cretaceous age (Maastrichtian and Campanian Stages)
Kcs *Light gray to light brown sandstone, hard, coherent arkosic, micaceous, mostly medium grained, in thick strata separated by thin parings of siltstone*
Kcg *Gray conglomerate of cobbles of metavolcanic and granitic detritus in hard sandstone matrix*
Kcsh *Gray clay shale, crumbly with ellipsoidal fracture where weathered; includes some thin sandstone strata in western area*

? Paleocene — Upper — CRETACEOUS — MESOZOIC

FIGURE 2.2-4
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

NEWHALL MAP (DF-56)

LEGEND

af / Qg / Qa

SURFICIAL SEDIMENTS

af *Artificial cut and fill; includes areas of grading and/or development (updated from Treiman 1986, 1987a)*
Qg *Gravel and sand of major stream channels*
Qa *Alluvial gravel, sand and clay of valley areas*

Qls

LANDSLIDE DEBRIS
Does not include small landslides caused by 1994 Northridge earthquake (shown in Harp and Jibson 1995)

Qls *Landslide debris*

Qoa / Qog

OLDER SURFICIAL SEDIMENTS
Unconsolidated alluvial sediments deposited by streams; late Pleistocene age

Qoa *Low terrace remnants of alluvial gravel and sand*
Qog *Alluvial fan and high terrace deposits of gravel and sand; detritus of mostly crystalline basement rocks and some of Tertiary rocks; assigned to Pacoima Formation (of Oakeshott 1958) by Teiman 1986, 1987a*

— *UNCONFORMITY* —

QTs / Tsr

SAUGUS FORMATION
(Of Kew 1924; Winterer and Durham 1962)
Nonmarine fluviatile, weakly indurated; Pliocene and Pleistocene age

QTs *Light gray to light reddish brown pebble-cobble conglomerate, sandstone and minor siltstone; conglomerate composed of granitic, gneissic, metavolcanic, quartzitic, gabbroic and anothositic detritus in friable sandy matrix, bedded; deposited by westward flowing streams; probably mostly of Pleistocene age*
Tsr *Sunshine Ranch member of Treiman 1987b, (differentiated only in cross-section B-B') same as* **QTs**, *but includes more interbedded greenish siltstone; grades westward into unit* **Tpc** *of Pico Formation*

Holocene / Pleistocene / ? / ? / QUATERNARY

— *UNCONFORMITY* —
(Northeast of San Gabriel fault)

Tpc / Tps / Tp

PICO FORMATION
(Of Kew 1924; Winterer and Durham 1962)
Marine clastic; weakly lithified; Pliocene age

Tpc *North of Potrero and Pico Canyons, tan to light brown, friable, medium to coarse grained sandstone and pebble-cobble conglomerate, in places hard, calcareous, brown, with molluscan shell fragments south of Potrero Canyon*
Tps *Light gray to tan, semi-friable sandstone, medium to fine grained, massive to bedded*
Tp *Gray to light gray micaceous siltstone/claystone, vaguely bedded; includes few thin sandstone layers*

Ttos / Ttoc / Tto

TOWSLEY FORMATION
(Of Winterer and Durham 1962; Stitt 1986)
(Mostly in subsurface: top exposed only at southwest corner of quadrangle)
Marine clastic; late Miocene (?) and early Pliocene age

Ttos *Mostly light gray sandstone; inclues some gray micaceous claystone*
Ttoc *Gray micaceous silty claystone and siltstone*
Tto *Undivided, in cross-sections*

Tmo

MIOCENE UNDIFFERENTIATED
(In subsurface only; "Modelo Formation" correlation with exposed lithologic units uncertain, may be equivalent to Towsley, Sisquoc and Monterey Formations of areas to west) marine clastic; Mohnian and "Delmontian" Stages, late Miocene age

Tmo *Dark gray micaceous claystone, shale and light gray sandstone, includes conglomerate at Honor Rancho oil field*

Tc

CASTAIC FORMATION
(Of Crowell 1954; Stitt 1986); northeast of San Gabriel Fault
Marine clastic; late Miocene age (Mohnian - "Delmontian" Stage)

Tc *Gray micaceous clay shale, bedded; includes thin layers of light gray to tan sandstone*

Tmc

MINT CANYON FORMATION
(Of Kew 1923, 1924); northeast of San Gabriel Fault
Nonmarine clastic; middle Miocene age, Barstovian to Clarendonian vertebrate Stages (Durham et al 1954)

Tmc *Light gray to pinkish-gray to tan, fine grained sandstone, locally pebbly and interbedded reddish to greenish-gray siltstone and claystone; base not exposed in quadrangle*

— *UNCONFORMITY* —

bc

BASEMENT COMPLEX

bc *In subsurface only: granitic rocks and biotite-actinolite schist encountered in some deep exploratory wells in eastern area of quadrangle*

? / Pliocene / Miocene / TERTIARY / CENOZOIC / PRE-TERTIARY

FIGURE 2.2-4
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

OAT MOUNTAIN AND NORTH 1/2 CANOGA PARK MAP (DF-36)

LEGEND

af / Qg / Qa

SURFICIAL SEDIMENTS
Unconsolidated alluvial deposits; generally undissected

af *artificial cut and fill*
Qg *gravel and sand of major stream channels*
Qa *alluvial gravel, sand and clay of valley and floodplain areas*

Qls

LANDSLIDE DEBRIS

Qos / Qoa

OLDER SURFICIAL SEDIMENTS
Dissected, weakly consolidated alluvial deposits

Qos *older sandy alluvium, including slope wash, derived from Chatsworth Formation (**Kcs**)*
Qoa *older alluvium composed largely of angular pebble-size fragments of Miocene shale and some of sandstone (**Tm, Tsq, and Ttos**) in light gray to tan silty matrix in part indurated by calcareous caliche; crudely bedded to massive; about 200 ft (60m) thick; blends northward upslope in Browns Canyon drainage area into old debris-flow landslides (**Qls**); slightly deformed and much dissected where elevated; but at Horse Flats top surface of deposition preserved; late Pleistocene age; mapped as slope wash, older alluvium, and Saugus Formation (upper member) by Barrows 1975; Evans and Miller 1978; and Saul 1979; probably in places equivalent to Pacoima Formation of Oakeshott 1958; Barrows et al. 1975; and Dibblee 1991*

— *UNCONFORMITY* —

QTs / Ts / Tsr

SAUGUS FORMATION
Mostly terrestrial, weakly consolidated; Pleistocene and Pliocene age

QTs *light gray to brown pebble-cobble conglomerate, sandstone and lesser amounts of grayish to reddish brown, soft siltstone/claystone; conglomerate composed of granitic, gneissic, metavolcanic, quartzitic, gabbroic and anorthositic detritus in sandy matrix; deposited by westward-flowing streams; Pleistocene age; south of Santa Susana fault mapped as middle member of Saugus Formation by Barrows et al. 1975, Evans and Miller 1978, and Saul 1979 [in adjacent San Fernando quadrangle (Dibblee 1991) **QTs** west of Elsmere Canyon should be shown as **Ts**]*
Ts *(in Newhall area) similar to **QTs**, but correlative in age with units **Tsr** and **Tps** in part; probably Pliocene age*
Tsr *Sunshine Ranch Member (of Hazzard 1940, in Treiman 1987; Barrows et al. 1974; Evans and Miller 1978; and Saul 1979; type area extends eastward from lower Aliso Canyon to Van Norman Reservoir, Hazzard 1940); terrestrial deposits similar to **QTs**, but south of Santa Susana fault composed largely of more indurated greenish gray claystone, siltstone and fine grained sandstone, and contains in lower part brackish marine layers of oyster shells; in exposures northwestward from San Fernando Pass, consists mostly of interbedded conglomerate and fine grained sediments that locally contain few thin layers of peat, unit intertongues westward into **Tps**; mostly Pliocene age*

Tps / Tp / Tpg

PICO FORMATION
Marine clastic; mostly Pliocene age

Tps *south of Santa Susana fault: Pico sandstone (included in Saugus Formation by Kew 1924; Pico Formatioin by Butler 1977, Lant 1977, Yeats 1979; Pico and Saugus Formatioins by Evans and Miller 1978) mostly light gray to nearly white, soft friable sandstone, locally pebbly, contains abundant whole and fragmented bivalve shells west of Browns Canyon; deposited under marine to lagoonal conditions; grades upward into terrestrial Saugus Formation; unconformable on Miocene formations*
Tpg *conglomerate in lower Limekiln Canyon: gray massive conglomerate of cobbles of granitic and metavolcanic rocks in sandstone matrix; nonmarine (?), unconformable on Monterey Shale (**Tml**), overlain by Saugus Formation*
Tp *and **Tps** north of Santa Susana fault: Pico Formation of Kew 1924, Winterer and Durham 1958, 1962; **Tps** mostly light gray semi-friable sandstone, locally pebbly; upper beds contain bivalve shell fragments; intertongues into Saugus Formations (**Ts**); **Tp** mostly gray micaceous siltstone-claystone, bedded to massive, includes few thin sandstone layers*

Ttos / Ttoc

TOWSLEY FORMATIOIN
Marine clastic; early Pliocene age (Repettian Stage) and possibly latest Miocene ("Delmontian Stage")

Ttos *light gray to tan coherent to semi-friable sandstone, medium grained to locally gritty and pebbly, bedded; includes minor micaceous siltstone; grades laterally northward into Saugus Formation (**Ts**) in San Fernando Pass area*
Ttoc *gray micaceous silty claystone and siltstone; minor sandstone*

Tsq / Tsqs

SISQUOC SHALE
(Included in Modelo Formation by Kew 1924; Winterer and Durham 1958, 1962; Saul 1979; same lithologic unit as Sisquoc Formation in northern Ventura basin)
marine clastic; late Miocene age (Mohnian to "Delmontian" Stage)

Tsq *dark gray to brownish gray clay shale, bleaches to light gray; crumbly with spheroidal to sub-platy fracture, gypsiferous in fractures, some layers contain large tan dolomitic concretions; includes some thin interbedded semi-siliceous layers; about 1000 ft (300 m) thick*
Tsqs *light gray coherent to semi-friable sandstone*

Tm / Tml

MONTEREY SHALE
(Modelo Formation of Kew 1924; Winterer and Durham 1958, 1962; Barrows et al. 1974; Evans and Miller 1978; Saul 1979; same lithologic unit as Monterey Shale of northern Ventura basin); marine biogenic; nearly 2000 ft. (610m) thick north of Santa Susana fault, very thin south of it; middle and late Miocene age

Tm *upper part: thin bedded siliceous shale, dark gray brown but weathers cream-white, hard, platy, brittle, porcelaneous, locally cherty, closely fractured, some layers fissile, about 1500 ft (485m) thick; middle and late Miocene age (mostly Mohnian Stage); south of Santa Susana fault: soft, white weathering thin-bedded, fissile diatomaceous semi-siliceous shale*
Tml *lower part: thin-bedded, fissile semi-siliceous shale to soft shaly claystone, dark brown, weathers cream white; includes some calcareous shale, and thin tan-weathering hard dolomite strata that are increasingly abundant upward, unit as thick as 500 ft (150m); middle Miocene age (Luisian-Relizian Stage)*

Tlsc

DETRITAL SEDIMENTS OF LINDERO CANYON
(Included in Topanga Formation of Weber 1984; unconformable on Chatsworth Formation; best exposed in Lindero Canyon, Thousand Oaks quadrangle)
marine transgressive clastic; Miocene age [Luisian (?) Stage]

Tlsc *crudely bedded brown to gray conglomerate composed of cobbles of metavolcanic, granitic and quartzitic rocks, and of sandstone derived from Chatsworth Formation; sparsely fossiliferous; contains minor interbeds of light gray calcareous sandstone*

Ttus / Tb / Ttls

TOPANGA FORMATION
(Of Yeats 1979; Topanga Group of Saul 1979)
marine transgressive clastic; middle Miocene age

Ttus *upper sandstone: light gray to white semi-friable, locally pebbly, massive to vaguely bedded; about 150 ft (45m) thick*
Tb *basalt flow (or diabase sill?); black, massive fine grained weakly coherent where weathered, present north of Santa Susana fault only; probably correlative with Conejo Volcanics to west*
Ttls *lower sandstone: light gray to tan, semi-friable to somewhat hard, massive to vaguely bedded; as thick as 600 ft (180m), base unexposed; present north of Santa Susana fault only*

— *UNCONFORMITY* —

Tll / Tllg

LLAJAS FORMATION
Marine clastic; middle Eocene age

Tll *gray micaceous claystone-siltstone and some interbeds of light gray to tan soft sansdstone*
Tllg *basal cobble conglomerate as thick as 50 ft (17m) with cobbles of granitic, metavolcanic and quartzitic rocks*

Tsu / Tsi

SANTA SUSANA FORMATION
Mostly marine clastic; Paleocene age

Tsu *dark gray micaceous claystone, crumbly with ellipsoidal fracture; includes few thin sandstone layers*
Tsi *Simi Conglomerate Member: gray to brown cobble conglomerate with smooth rounded cobbles up to 1 ft (1/3m) in diameter of pinkish-gray quartzite, metavolcanic and granitic rocks in gray sandstone matrix; possibly in part nonmarine, deposited as fan delta*

Kcs / Kcsh

CHATSWORTH FORMATION
(Of Colburn et al. 1981; "Chico" Formation of Kew 1924; Evans and Miller 1978)
marine clastic; late Cretaceous age (Maestrichtian and Campanian Stages)

Kcsh *gray micaceous shale and siltstone; includes some sandstone strata; included in Martinez Formation (Paleocene) by Evans and Miller 1978*
Kcs *light gray to light brown, hard, thick bedded sandstone; locally gritty; includes few thin layers of micaceous siltstone; base not exposed*

Holocene / Pleistocene / QUATERNARY
Pliocene / Miocene / TERTIARY
CENOZOIC
Eocene / Paleocene / Upper / CRETACEOUS
MESOZOIC

FIGURE 2.2-4
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

SANTA SUSANA MAP (DF-38)

LEGEND

af | Qg | Qa

SURFICIAL SEDIMENTS
Unconsolidated alluvial deposits; generally undissected

af *Artificial cut and fill*
Qg *Gravel and sand of major stream channels*
Qa *Alluvial gravel, sand and clay of valley and floodplain areas*

Qls

LANDSLIDE DEBRIS

Qos | Qoa

OLDER SURFICIAL SEDIMENTS
Dissected, weakly consolidated alluvial deposits

Qos *Older sandy alluvium, including slope wash, derived from Chatsworth Formation* (**Kcs**)
Qoa *Older alluvial gravel, sand and silt/clay; in areas south of Santa Susana fault composed of sub-angular detritus of Miocene shale and sandstone* (**Tm**, **Tsq** *and* **Ttos**)

— *UNCONFORMITY* —

QTs

SAUGUS FORMATION
(Of Kew 1924), non-marine fluviatile; Pleistocene and Pliocene (?) age

QTs *Weakly consolidated light gray pebble conglomerate and sandstone composed of pebbles and few cobbles of granitic, gneissic, metavolcanic, quartzitic, gabbroic and anorthositic detritus in sandy matrix; includes minor interbeds of light greenish to light reddish silty claystone; unconformity at base near Santa Susana fault*

Tps | Tp

PICO FORMATION
Marine clastic; mostly Pliocene age

Tps *South of Santa Susana fault: Pico sandstone (included in Saugus Formation by Kew 1924; White 1983; in Fernando Formation by Whaley and Ricketts 1975; Yeats 1979; in Pico Formation by Butler 1977; Hanson 1981; Yeats 1987); regressive near-shore facies of Pico Formation; mostly soft, friable, nearly white, medium to coarse grained sandstone, locally pebbly and cross-bedded, contains many bivalve shells, especially in hard calcareous shell reefs, and local shell coquina; deposited in shallow marine to lagoonal conditions (White 1983); grades upward into terrestrial Saugus Formation; unconformable on Monterey Shale and older formations; not everywhere present*
Tp *North of Santa Susana fault (Pico Formation of Kew 1924, Winterer and Durham 1958, 1962); mostly soft gray micaceous siltstone-claystone; includes thin layers of light gray to tan sandstone; conformable on Towsley Formation*

Ttos | Ttoc

TOWSLEY FORMATION
(Of Winterer and Durham 1958), marine clastic; early Pliocene age (Repettian Stage) and possibly latest Miocene ("Delmontian Stage")

Ttos *Light gray to tan coherent to semi-friable sandstone, medium grained to locally gritty and pebbly, bedded; includes minor micaceous siltstone*
Ttoc *Gray micaceous silty claystone and siltstone; minor sandstone*

Tsq | Tsqs

SISQUOC SHALE
(Included in Modelo Formation by Kew 1924; Winterer and Durham 1958, 1962; Whaley and Ricketts 1975; Butler 1977; same lithologic unit as Sisquoc Formation in northern Ventura basin) marine clastic; late Miocene age (Mohnian to "Delmontian" Stage)

Tsq *Dark gray to brownish gray clay shale, bleaches to light gray; crumbly with ellipsoidal to sub-platy fracture, gypsiferous in fractures, includes some thin bedded semi-siliceous layers; some layers contain large tan dolomitic concretions*
Tsqs *Light gray coherent to semi-friable sandstone*

Tm | Tml

MONTEREY SHALE
(Modelo Formation of Kew 1924; Winterer and Durham 1958, 1962; Yeats 1987; Butler 1977; same lithologic unit as Monterey Shale of northern Ventura basin) marine biogenic; middle and late Miocene age

Tm *Upper part north of Santa Susana fault: thin bedded platy siliceous shale, dark gray-brown but weathers cream-white, hard, platy, brittle, porcelaneous, locally cherty, closely fractured, some layers fissile, about 1500 ft (500m) thick; middle and late Miocene age (mostly Mohnian Stage); south of Santa Susana fault: white weathering, soft, punky to fissile, thin-bedded, semi-siliceous shale, with diatom debris and fish scales; about 600 ft (180m) thick, middle and late Miocene age (Mohnian-Luisian Stage)*
Tml *Lower part: thin-bedded, soft, fissile, clayey to calcareous shale about 150-200 ft (45-60m) thick; middle Miocene age (Luisian Stage, Clarke 1983); grades upward into* **Tm**

Ttus

UPPER TOPANGA SANDSTONE
(Calabasas Formation of Squires 1983; Fritsche et al. 1983) marine transgressive clastic; middle Miocene age

Ttus *Soft friable, massive, nearly white sandstone; up to 200 ft (60m) thick*

— *UNCONFORMITY* —

bi

INTRUSIVE ROCKS

bi *Black basaltic dike or sill (?) of probable Miocene age; intrusive into Santa Susana Formation* (**Tsu**)

Tsp

SESPE FORMATION
Non-marine fluviatile; Oligocene and late Eocene age

Tsp *Predominantly semi-friable bedded sandstone, light gray, tan to pink, locally pebbly and cross-bedded; includes interbeds of variegated maroon-red and greenish micaceous claystone, mostly in middle part; locally includes conglomerate of scattered pebbles and cobbles of granitic, metavolcanic and quartzitic rocks in sandstone matrix; deposited by westward-flowing streams (Taylor 1983)*

Tll | Tllg

LLAJAS FORMATION
(Of Squires 1983; Meganos Formation of Kew 1924), marine clastic; middle Eocene age

Tll *Gray micaceous claystone-siltstone and light gray to tan, soft to semi-friable sandstone, mostly fine grained; locally with large concretions; commonly fossiliferous; claystone predominates south of Simi Valley; sandstone predominates in Las Llajas Canyon area*
Tllg *Basal cobble conglomerate, gray to brown, composed of cobbles of granitic, metavolcanic and quartzitic rocks in sandy matrix*

Tsu | Tsus | Tsuv | Tsi

SANTA SUSANA FORMATION
(Martinez Formation of Kew 1924), mostly marine clastic; Paleocene age

Tsu *Dark gray micaceous clay shale, crumbly with ellipsoidal fracture; includes siltstone and thin sandstone strata*
Tsus *Light gray to tan sandstone*
Tsuv *Las Virgenes Sandstone Member: light gray to light brown sandstone; includes some cobble conglomerate locally*
Tsi *Simi Conglomerate Member: gray to brown cobble conglomerate of smooth rounded cobbles up to 1 ft (1/3m) in diameter of pinkish-gray quartzite, metavolcanic and granitic rocks in gray sandstone matrix; possibly in part non-marine, deposited as fan delta*

Kcs | Kcsh

CHATSWORTH FORMATION
(Of Colburn et al. 1981; "Chico" Formation of Kew 1924), marine clastic; late Cretaceous age

Kcsh *Gray micaceous clay shale*
Kcs *Light gray to light brown, hard, thick bedded sandstone; locally gritty; includes few thin layers of micaceous siltstone: base not exposed in this quadrangle*

Holocene | Pleistocene | Pliocene | QUATERNARY | Miocene | CENOZOIC | Oligocene | Eocene | Paleocene | TERTIARY | Upper | CRETACEOUS | MESOZOIC | ?

FIGURE 2.2-4
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

SIMI MAP (DF-39)

LEGEND

af / Qa / Qg

SURFICIAL SEDIMENTS
Unconsolidated alluvial deposits; generally undissected
af *Artificial cut and fill*
Qg *Gravel and sand of major stream channels*
Qa *Alluvial gravel, sand and clay of valley and floodplain areas*

Qls

LANDSLIDE DEBRIS
In northern areas derived mostly from Monterey Shale (Tm)

Qoa

OLDER SURFICIAL SEDIMENTS
Dissected, weakly consolidated alluvial deposits
Qoa *Older alluvial gravel, sand and silt/clay; composed largely of detritus derived from formations within quadrangle*

— *UNCONFORMITY* —

QTs / QTsv

SAUGUS FORMATION
(Of Kew 1924), non-marine fluviatile; Pleistocene and Pliocene (?) age
QTs *Weakly consolidated light gray pebble conglomerate and sandstone composed of pebbles of small cobbles, mostly of granitic rocks and few of gneiss, metavolcanic rocks, quartzite, anorthosite, gabbro, and Tertiary volcanic rocks (Conejo Volcanics?), in soft sandy matrix; includes minor gray soft micaceous siltstone-claystone; unconformity at base in Moorpark area*
QTsv *Southwest corner of quadrangle only: crudely bedded to massive brown breccia-conglomerate composed of andesitic-basaltic, angular to subrounded detritus of Conejo Volcanics, and a few clasts of Monterey Shale locally*

QTlp

LOS POSAS SAND
(Of Pressler 1929), shallow marine regressive; probably early Pleistocene and possibly late Pliocene age
QTlp *Weakly indurated light gray to tan sand; locally contains molluscan shelf fragments; grades upward into Saugus Formation; about 70 ft (22m) thick near Tierra Rejada Valley; unconformity at base*

Holocene / Pleistocene / ? / QUATERNARY

Tps

PICO SANDSTONE
(Included in Pico Formation of Kew 1924; Fernando Formation by Whaley and Ricketts 1975, Yeats 1979; lower Saugus Formation by White 1983; similar to and possibly in part correlative with Los Posas Sand of Dibblee and Ehrenspeck 1990); shallow marine and lagoonal clastic; mostly Pliocene age
Tps *Light gray, tan to nearly white, soft friable sandstone, medium to coarse grained, cross-bedded, commonly pebbly with numerous smooth rounded pebbles of quartzite and some metavolcanic and granitic rocks; locally fossiliferous with bivalve seashells, locally contains calcareous shell reefs; grades westward through finer sandstone into soft gray siltstone* (**Tp/Tps**) *in Moorepark Quadrangle, grades upward into Saugus Formation* (**QTs**)

Pliocene

Tsq

SISQUOC SHALE
(Included in Modelo Formation by Kew 1924; Whaley and Ricketts 1975, Yeats 1979, 1983, 1987; same lithologic unit as Sisquoc Shale in northern Ventura basin), marine clastic and biogenic; late Miocene age (Mohnian Stage in this quadrangle)
Tsq *Dark gray to brownish gray clay shale, weathers light gray; some layers contain large, tan dolomitic concretions; includes some white-weathering, thin bedded, diatomaceous semi-siliceous shale*

Tm / Tml

MONTEREY SHALE
(Modelo Formation of Kew 1924; Canter 1973, Whaley and Ricketts 1975, Yeats 1979, 1983, 1987; same lithologic unit as Monterey Shale of northern Ventura basin) marine biogenic; middle and late Miocene age (Luisian and Mohnian Stages)
Tm *Upper part: thin-bedded platy to fissile siliceous shale, dark gray-brown, but weathers cream-white; in Oak Ridge area, in large part hard, platy brittle, porcelaneous, locally cherty, closely fractured; about 1500 ft (485m) thick; about 1200 ft (360m) thick on Big Mountain*
Tml *Lower part: thin-bedded, soft, fissile, clayey to calcareous shale; about 150 ft (45m) thick on Oak Ridge, up to 100 ft (30m) on Big Mountain; middle Miocene (Luisian) age (Clark 1983)*

CENOZOIC

Tts / Ttus / Tcvb / Ttlc / Ttls

TOPANGA FORMATION
(Vaqueros Formation of Kew 1924; Vaqueros-Topanga Formation of Whaley and Ricketts 1975); marine transgressive clastic; early to middle Miocene age (Zemorrian, Saucesian, and Relizian Stages)
Tts *Undivided sandstone, semi-friable, light gray to tan, massive to vaguely bedded; sparsely fossilferous in places*
Ttus *Upper Topanga Sandstone, similar to* **Tts**; *correlated with Calabasas Formation (of Yerkes and Campbell 1979) in Santa Monica Mountains by Fritsche et al. 1983; middle Miocene age (Luisian and Relizian Stages)*
Tcvb *Conejo Volcanics: thin wedge of basalt south of Big Mountain (see below)*
Ttls *Lower Topanga Sandstone, similar to* **Tts**; *early Miocene age (Saucesian-Zemorrian Stage); includes Vaqueros Formation (of Kew 1924, Fritsche 1983)*
Ttlc *Sandstone similar to* **Ttls**, *but includes interbeds of soft gray micaceous siltstone*

Tcva / Tcvb / bi

CONEJO VOLCANICS
(Of Taliaferro 1924; Yerkes and Campbell 1979)
Submarine to subaerial extrusive volcanic rocks; middle Miocene age
Tcva *Predominantly andesitic-basaltic flows and breccias: gray, maroon-gray and brown aphanitic to slightly porphyritic rocks, vaguely stratified, flows range from platy to massive coherent but much fractured; deposited as flows and flow breccias; contain some epiclastic volcanic sediments and minor reddish, scoriaceous pyroclastic (?) horizons; probably emplaced subaerially*
Tcvb *Mostly basaltic rocks: gray-black to olive-brown, weathering brown, fine grained, composed of mafic minerals and plagioclase feldspar, vaguely bedded to massive, altered, crumbly and much fractured, locally vessicular, emplaced as flows and flow breccias, and in part as submarine flows, hyaloclastic breccias and marine tuffaceous sediments; fossilferous (oyster) sandstone at base locally*
bi *Black intrusive basaltic to andesitic dikes at base of, or within Conejo Volcanics*

Miocene

Tsp

SESPE FORMATION
Non-marine fluviatile; Oligocene and late Eocene age
Tsp *Predominantly semi-friable bedded sandstone, light gray, tan to pink, locally pebbly and cross-bedded; includes interbeds of variegated maroon-red and greenish micaceous claystone, mostly in middle part; locally includes conglomerate of scattered pebbles and cobbles of granitic, metavolcanic and quartzitic rocks in sandstone matrix; about 5300 ft (1650m) thick; deposited by westward-flowing streams (Taylor 1983)*

Oligocene / ? / Eocene

Tll

LLAJAS FORMATION
(Of Cushman and McMasters 1936; Meganos Formation of Kew 1924)
Marine clastic; middle Eocene age
Tll *Gray micaceous claystone and siltstone; only uppermost part exposed at southeast corner of quadrangle*

TERTIARY

FIGURE 2.2-4
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

VAL VERDE MAP (DF-50)

LEGEND

af / Qg / Qa

SURFICIAL SEDIMENTS

af *Artificial cut and fill*
Qg *Gravel and sand of major stream channels*
Qa *Alluviual gravel, sand and silt of valley and floodplain areas*

Qls

LANDSLIDE DEBRIS

Qoa

OLDER DISSECTED SURFICIAL SEDIMENTS
Qoa *Older alluvial gravel, sand, and silt/clay*

— *UNCONFORMITY* —

QTs

SAUGUS FORMATION
(of Kew 1924, Winterer and Durham 1962, Yeats et al. 1985)
Nonmarine fluviatile, weakly consolidated; Pliocene(?) and Pleistocene ages; lower part intertongues westward into Pico Formation
QTs *Slightly indurated, light gray, pebble conglomerate, sandstone and claystone, most pebbles are of granitic rocks*

Tp / Tps / Tpsg / Tpc

PICO FORMATION
(Of Kew 1924; Winterer and Durham 1962, Weber 1973, Yeats et al. 1985, Stitt 1986; upper part intertongues eastward into Saugus Formation)
Marine; mostly Pliocene age
Tp *Light gray, vaguely bedded, soft, micaceous claystone and siltstone; minor thin sandstones*
Tps *Tan, semi-friable sandstone, locally pebbly*
Tpsg *Light gray to tan, massive sandstone and pebble conglomerate of mostly granitic detritus in westernmost exposures only*
Tpc *Gray, cobble conglomerate of mostly granitic and metavolcanic clasts in clayey sandstone matrix in south area*

Holocene / ? / Pleistocene / ? / Pliocene — QUATERNARY

Ttos / Ttoc / Ttog

TOWSLEY FORMATION
(Of Winterer and Durham 1962, Yeats et al. 1985, Stitt 1986; in south area included in Modelo Formation by Kew 1924, but in northwest area included by him in Pico Formation; probably correlative with lowest part of Pico Formation of areas west; in south area gradational into both Pico and Sisquoc Formations; type area - Towsley Canyon, Oat Mountain quadrangle)
Marine clastic; late Miocene to early Pliocene ages (Mohnian, "Delmontian" and Repettian Stages)
Ttos *In south area mostly light gray to tan, bedded, semi-coherent sandstone, locally pebbly, includes thin interbeds of silty shale*
Ttoc *In northwest area crumbly, gray, micaceous clay shale to siltstone; in south area includes thin strata of sandstone*
Ttog *(Hasley Conglomerate Member of Stitt 1986) basal gray conglomerate of rounded cobbles and pebbles of mostly granitic rocks, some of metavolcanic rocks in semi-coherent sandy matrix; not present in south area*

— *DISCONFORMITY in northwest area* —

Tc

CASTAIC FORMATION
Marine; late Miocene age (Mohnian Stage), probably correlative with Sisquoc Formation
Tc *Gray clay shale with thin sandstone beds; northeast of San Gabriel fault only*

Tsq

SISQUOC FORMATION
(Included in Modelo Formation by Eldridge and Arnold 1907, Kew 1924; Bailey and Jahns 1954, Winterer and Durham 1962, Weber 1973, Yeats et al. 1985, Stitt 1986; Sisquoc Formation of Dibblee 1991)
Marine; late Miocene age (Mohnian-"Delmontian" Stage)
Tsq *Gray-brown, crumbly, micaceous clay shale to siltstone, in part somewhat siliceous, bedded; contains some dolomitic lenses*

Tm / Tmss

MONTEREY SHALE
(Modelo Formation of Eldridge and Arnold 1907, Kew 1924, Bailey and Jahns 1954, Winterer and Durham 1962, Weber 1973, Yeats et al. 1985, Stitt 1986; Monterey Formation of Dibblee 1991)
Marine; late Miocene age (Mohnian Stage)
Tm *White-weathering, thin bedded, platy, siliceous to soft, fissle, semi-siliceous shale; contains thin calcareous beds*
Tmss *Tan, semifriable sandstone with thin interbeds of silty shale*

? / ? / Miocene — TERTIARY — CENOZOIC

FIGURE 2.2-4
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

AGE CORRELATION CHART

AGE	ma	EPOCH	STAGE
CENOZOIC / QUAT.	.01	HOLOCENE / PLEISTOCENE	"HALLIAN" ? ?
			WHEELERIAN
TERTIARY	1.6	PLIOCENE LATE	VENTURIAN
		PLIOCENE EARLY	REPETTIAN ? ?
	5.3	MIOCENE LATE	"DELMONTIAN" ? ?
	9.5	MIOCENE MIDDLE	MOHNIAN
			LUISIAN
	16	MIOCENE EARLY	RELIZIAN
			SAUCESIAN ?
	24	OLIGOCENE	ZEMORRIAN ?
	38	EOCENE LATE	REFUGIAN
			NARIZIAN ?
		EOCENE MIDDLE	ULATISIAN
		EOCENE EARLY	PENUTIAN
	56	PALEOCENE	BULITIAN
			YNEZIAN
	65	CRETACEOUS	
MESOZOIC	138	JURASSIC	
	205	TRIASSIC	
	250	PALEOZOIC	
	570	PRECAMBRIAN	
	4000+		

Radiometric ages, in millions of years (ma), are from current geological literature. Time relationships between California provincial microfaunal stages and epochs are subject to continued revision and refinement, as indicated by dashed and/or queried lines. (Neogene stages are adapted mostly from Micropaleo Consultants, Inc., 1989). Partitions between stages and epochs are diagrammatic and not to scale.

GEOLOGIC SYMBOLS

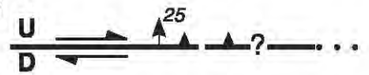
not all symbols shown on each map

FORMATION CONTACT *dashed where inferred or indefinite, dotted where concealed*

MEMBER CONTACT *between units of a formation* ..... **Prominent bed**

CONTACT BETWEEN SURFICIAL SEDIMENTS *located only approximately in places*

FAULT: *Dashed where indefinite or inferred, dotted where concealed, queried where existence 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.*



FOLDS: *overturned* — **ANTICLINE** — **SYNCLINE**

arrow on axial trace of fold indicates direction of plunge; dotted where concealed by surficial sediments

Strike and dip of sedimentary rocks	18 *inclined*	20 *inclined (approximate)*	80 *overturned*	⊕ *horizontal*	┼ *vertical*
Strike and dip of metamorphic or igneous rock foliation or flow banding or compositional layers	75 *inclined*	*inclined (approximate)*	*vertical*	80 *overturned*	

OTHER SYMBOLS: *Direction of landslide movement* — *outline of water bodies shown on map* — *water well* — *oil well* — *springs*

FIGURE 2.2-4
Geologic Map Explanation Unit Descriptions, Symbols, and Age Correlation

2.3 PROJECT SUMMARY

The SSMTMP-PII would guide future trail development and recommend improvements to existing trails. The Trails Master Plan would provide trail users and local populations with seamless transitions throughout the proposed study area to trails of adjacent jurisdictions and prime destinations within and adjacent to the study area. The goals of the plan are to:

1. Develop a complete multi-use trail system connecting user groups and local populations to desired recreation destinations and experiences, with seamless transitions to the trails of adjacent jurisdictions, compatibility with adjacent land uses and environmental resources, and a safe and sustainable design that is consistent with the County of Los Angeles Trails Manual.

2. Develop a recreational trail system that supports low-intensity use, including mountain biking, equestrian use, and hiking, to accommodate the population increase anticipated in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area through the 2035 planning horizon consistent with the Parks and Recreation Element of the Los Angeles County General Plan 2035.

The overall work efforts would include a trails master plan and associated CEQA documentation. Individual trail alignments would be developed at a later phase of this project, which is intended to provide a trail planning framework for the study area.

The SSMTMP-PII involves approximately 70 miles of proposed new multi-use trails in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area (Figure 2.3-1, *Existing and Proposed Trails*). The trails would be multi-use and range from 3 to 11 feet wide based on site conditions, with adequate space for combined pedestrian, equestrian, and mountain biking use, in accordance with the County Trails Manual guidelines (Table 2.3-1, *County Trail Types*). The proposed trails would provide connections to the proposed Rim of the Valley Trail, trails in the City of Los Angeles, trails in the City of Santa Clarita, and trails in the Newhall Ranch Specific Plan, and trails within other jurisdictions as identified in the Trails Master Plan. There are no existing County trails within the Phase II.b area.

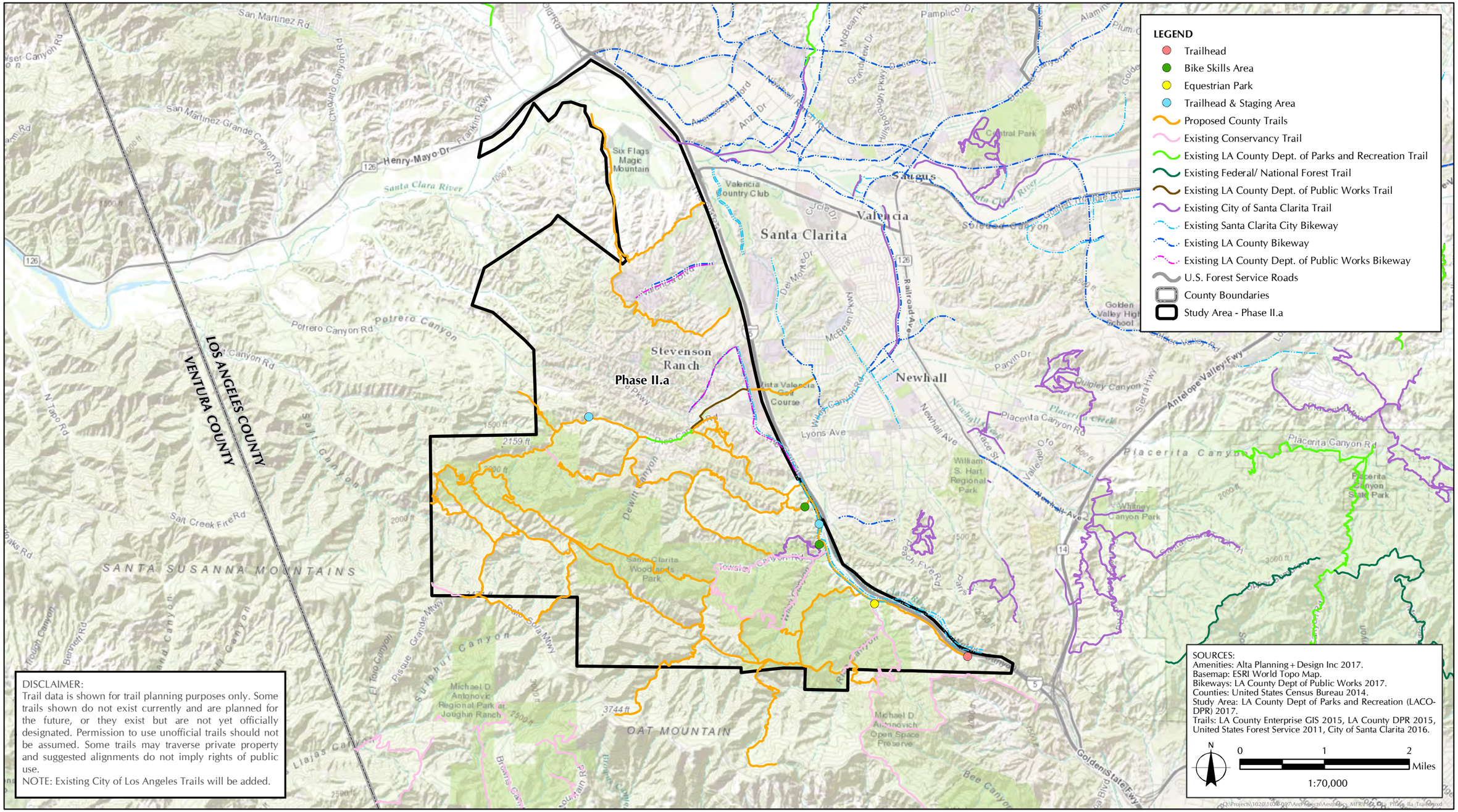


FIGURE 2.3-1a

Existing and Proposed Trails (Phase II.a)

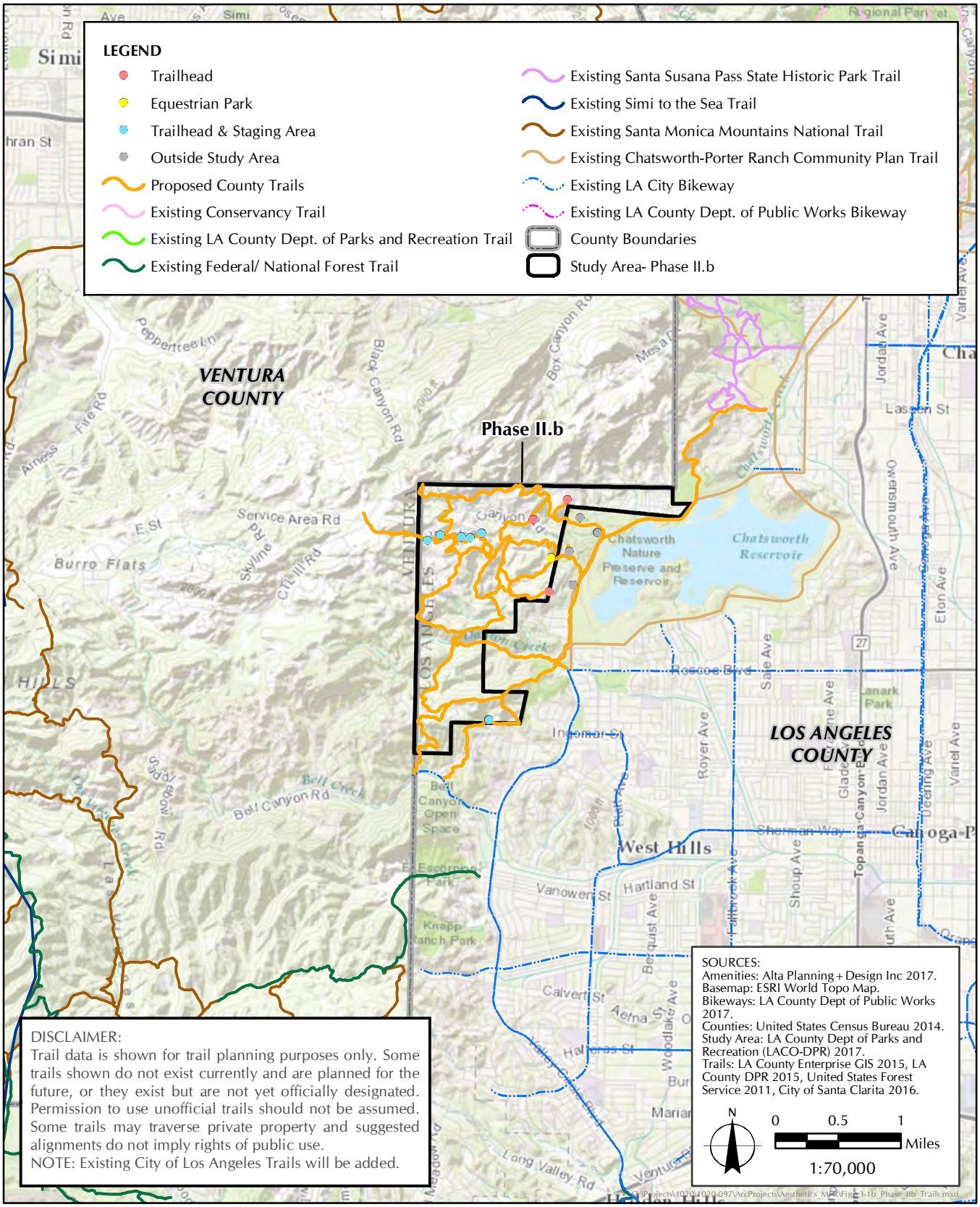


FIGURE 2.3-1b

Existing and Proposed Trails (Phase II.b)

TABLE 2.3-1
COUNTY TRAIL TYPES

Trail Type	Tread / Trail Width[1]	Intensity of Use[1]	Impact[1]	Surface Type[1,2]	Trail Grade[2]	Outslope[2]
Urban Pedestrian Trail[2]	10–11 feet	High	High	Asphalt*; Crusher fines*; Decomposed granite	< 5% < 8% for < 100 feet (ft) of trail with rail	2%
Recreational Trailway[2]	8–10 feet	High	High	Natural surface	< 5% < 8% for < 100 ft < 12% for < 50 ft.	2% < 4%
Natural Trail 1[1]	7–10 feet	High	Medium	Natural surface	< 5% < 8% for < 150 ft < 12% for < 50 ft.	2% < 4%
Natural Trail 2[1]	5–8 feet	Medium to high	Low	Natural surface	< 5% < 8% for < 100 ft < 12% for < 50 ft.	2% < 4%
Natural Trail 3[1]	2–3 feet	Low	Minimal	Natural surface	< 5% < 8% for < 200 ft < 12 % for < 50 ft < 15% for < 20 ft	2% < 5%

NOTE: *Asphalt and crusher fines used in trail surfaces cannot be road based and cannot contain toxic chemicals.
SOURCES:
[1] County of Los Angeles Department of Parks and Recreation. [Adopted 17 May 2011] Revised June 2013. *County of Los Angeles Trails Manual*. Available at: https://trails.lacounty.gov/Files/Documents/69/LA%20County%20Trails%20Manual%20%28Revised%2006-20-13%29.compressed.pdf
[2] County of Los Angeles Department of Parks and Recreation. Adopted October 2016. *Castaic Area Multi-Use Trails Plan*. Prepared by Alta Planning + Design in association with Sapphos Environmental, Inc. Available at: https://trails.lacounty.gov/Files/Documents/124/Castaic%20Area%20MUTP%20-%20FINAL.pdf

The SSMTMP-PII identifies up to 20 potential locations for proposed facilities, including 4 trailheads, 2 bike skills areas, 2 equestrian parks, 8 trailhead and staging areas, and 4 additional trailheads within the City of Los Angeles that would need to be developed by the City of Los Angeles (see Figure 2.3-1). As the recommended City of Los Angeles trailheads would not be developed under jurisdiction of the County, this Report considers the 16 proposed facilities located within the SSMTMP-PII area.

SECTION 3.0
REGULATORY FRAMEWORK

3.1 FEDERAL

Federal Regulations

The model building code that is predominantly adopted in the United States is the International Building Code (IBC) from the International Code Council (ICC), a nongovernmental organization. The ICC produces other model codes such as the International Residential Code (IRC). The IBC and its companion ICC documents form the basis of the building codes in most states and have been adopted by local governments within all states.

The National Earthquake Hazards Reduction Program (NEHRP) supports the development of seismic provisions in building codes. The NEHRP's "Recommended Provision for Seismic Regulations for New Buildings and Other Structures" presents state of the art earthquake engineering research and practices in a form that is usable by the engineering community and provides a nationally applicable resource document for all model codes and standards. The *2015 NEHRP Provisions* have adopted by reference the American Structural Engineers Association (ASCE) / Structural Engineering Institute (SEI) standard ASCE/SEI 7-10: Minimum Design Loads for New Buildings and Other Structures as the baseline.[1] A 2014 series of National Seismic Hazard Maps by the USGS shows the severity of expected earthquake shaking for a particular level of probability; for example, levels of earthquake shaking that have a 2-in-100 chance of being exceeded in a 50-year period. The time period of 50 years is commonly used because it represents a typical building lifetime, while the 2 percent probability level is usually considered an acceptable hazard level for the building codes. Maps also show seismic shaking levels using a number of different measures that apply to designing earthquake-resistant buildings of different heights, which respond to different frequencies of ground motion.

3.2 STATE

State Regulations

Building Codes

Development in the State of California is governed by the 2016 California Building Code. These regulations include provisions for site work, demolition, and construction, which include excavation and grading, as well as provisions for foundations, retaining walls, and expansive and compressible soils. The 2017 County of Los Angeles Building Code amendments are based on the 2016 CBC and the 2015 IBC. Building regulations are adopted by reference and incorporated into Title 26 of the Los Angeles County Code as Sections 119.1.2 through 119.1.14, respectively of Chapter 1 of Title 26 of the Los Angeles County Code. Standard residential, commercial, and light industrial construction is governed by the CBC, which the County may amend. The 2016 CBC

[1] Federal Emergency Management Agency. 2015. 2015 NEHRP Provisions. Washington, DC.

(defined in CCR Part 2 of Title 24 of the California Administrative Code) includes additions to the previous building code that make it more stringent, particularly with regard to seismic and earthquake conditions for critical structures such as essential facilities, public schools, and hospitals.

The Los Angeles County Building Official may require an engineering geology and/or soils engineering report when the Building Official believes they are essential for the evaluation of the safety of the site. Either or both reports shall discuss hazard from landslide, settlement, or slippage and shall make a finding regarding the potential effects of the proposed work on stability outside the SMMTMP-PII area.

Alquist-Priolo Earthquake Fault Zoning Act

The Alquist-Priolo Geologic Hazards Zone Act was enacted by the State of California in 1972 to address the hazard and damage caused by surface fault rupture during an earthquake. The act has been amended 10 times and renamed the Alquist-Priolo Earthquake Fault Zoning Act, effective January 1, 1994. The act, revised in 2007, defines an active fault as one that has had surface displacements within Holocene time (about the last 11,000 years). Initially, faults were defined in the Alquist-Priolo Act as "potentially active," and were zoned if they showed evidence of surface displacement during Quaternary time (last 1.6 million years). Beginning in 1977, evidence of Quaternary surface displacement was no longer used as a criterion for zoning. Since 1975, the State of California defined the terms "sufficiently active" and "well defined" for application in zoning faults. These two terms constitute the present criteria used by the State Geologist in determining if a given fault should be zoned under the Alquist-Priolo Act and are defined as follows:

> Sufficiently active - A fault is deemed sufficiently active if there is evidence of Holocene surface displacement along one or more of its segments or branches. Holocene surface displacement may be directly observable or inferred; it need not be present everywhere along a fault to qualify that fault for zoning.
>
> Well-defined - A fault is considered well-defined if its trace is clearly detectable by a trained geologist as a physical feature at or just below the ground surface. The fault may be identified by direct observation or by indirect methods (e.g., geomorphic evidence; Appendix C). The critical consideration is that the fault, or some part of it, can be located in the field with sufficient precision and confidence to indicate that the required site specific investigations would meet with some success.

The act requires the State Geologist to establish earthquake fault zones (EFZs) along known active faults in the state. Cities and counties that include EFZs are responsible to regulate most development projects within the EFZs, as described in the act, but may enact regulations that are more stringent. Certain smaller residential developments can be exempt. The San Gabriel fault is zoned in a portion of the Trails Master Plan Area.

Seismic Hazards Mapping Act

The Seismic Hazard Mapping Act (SHMA) of 1990 was enacted, in part, to address seismic hazards not included in the Alquist-Priolo Act, including strong ground shaking, landslides, and

liquefaction. Under this act, the State Geologist is assigned the responsibility of identifying and mapping seismic hazards zones.

The State of California Geologic Survey (CGS) has also adopted seismic design provisions in Special Publication 117, Guidelines for Evaluating and Mitigating Seismic Hazards in California, on March 13, 1997 (revised 2008). The CGS provides guidance with regard to seismic hazards under the Seismic Hazards Mapping Act; seismic hazard zones are to be identified and mapped to assist local governments in planning and development purposes. The intent of this publication is to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, as well as other hazards caused by earthquakes. Lead agencies with the authority to approve development projects shall ensure the following:

> The geotechnical report shall be prepared by a registered civil engineer [practicing the in field of geotechnical engineering] or certified engineering geologist, having competence in the field of seismic hazard evaluation and mitigation. The geotechnical report shall contain site-specific evaluations of the seismic hazard affecting the project, and shall identify portions of the project site containing seismic hazards. The report shall also identify any known off-site seismic hazards that could adversely affect the site in the event of an earthquake.
>
> Prior to approving the project, the lead agency shall independently review the geotechnical report to determine the adequacy of the hazard evaluation and proposed mitigation measures and to determine the requirements of Section 3724(a) above, are satisfied. Such reviews shall be conducted by a certified engineering geologist or registered civil engineer, having competence in the field of seismic hazard evaluation and mitigation.

The County and City of Los Angeles have been mapped pursuant to the SHMA, and there are zones of required investigation for liquefaction and earthquake-induced landslide hazards in and adjacent to the SSMTMP-PII area (Figure 3.2-1, *Earthquake-Induced Landslides and Liquefaction*).

Natural Hazards Disclosure Act

The Natural Hazards Disclosure Act (effective June 1, 1998), requires "that sellers of real property and their agents provide prospective buyers with a 'Natural Hazard Disclosure Statement' when the property being sold lies within one or more state-mapped hazard areas, including a Seismic Hazard Zone." The SHMA specifies two ways in which this disclosure can be made: "In all transactions that are subject to Section 1103 of the Civil Code, the disclosure required by subdivision (a) of this section shall be provided by either of the following means:

1) The Local Option Real Estate Transfer Disclosure Statement as provided in Section 1102.6a of the Civil Code
2) The Natural Hazard Disclosure Statement as provided in Section 1103.2 of the Civil Code"

The Local Option Real Estate Disclosure Statement can be substituted for the Natural Hazards Disclosure Statement if it contains substantially the same information and substantially the same warning as the Natural Hazards Disclosure Statement. Both the APEFZ Act and the SHMA require that real estate agents, or sellers of real estate acting without an agent, disclose to prospective

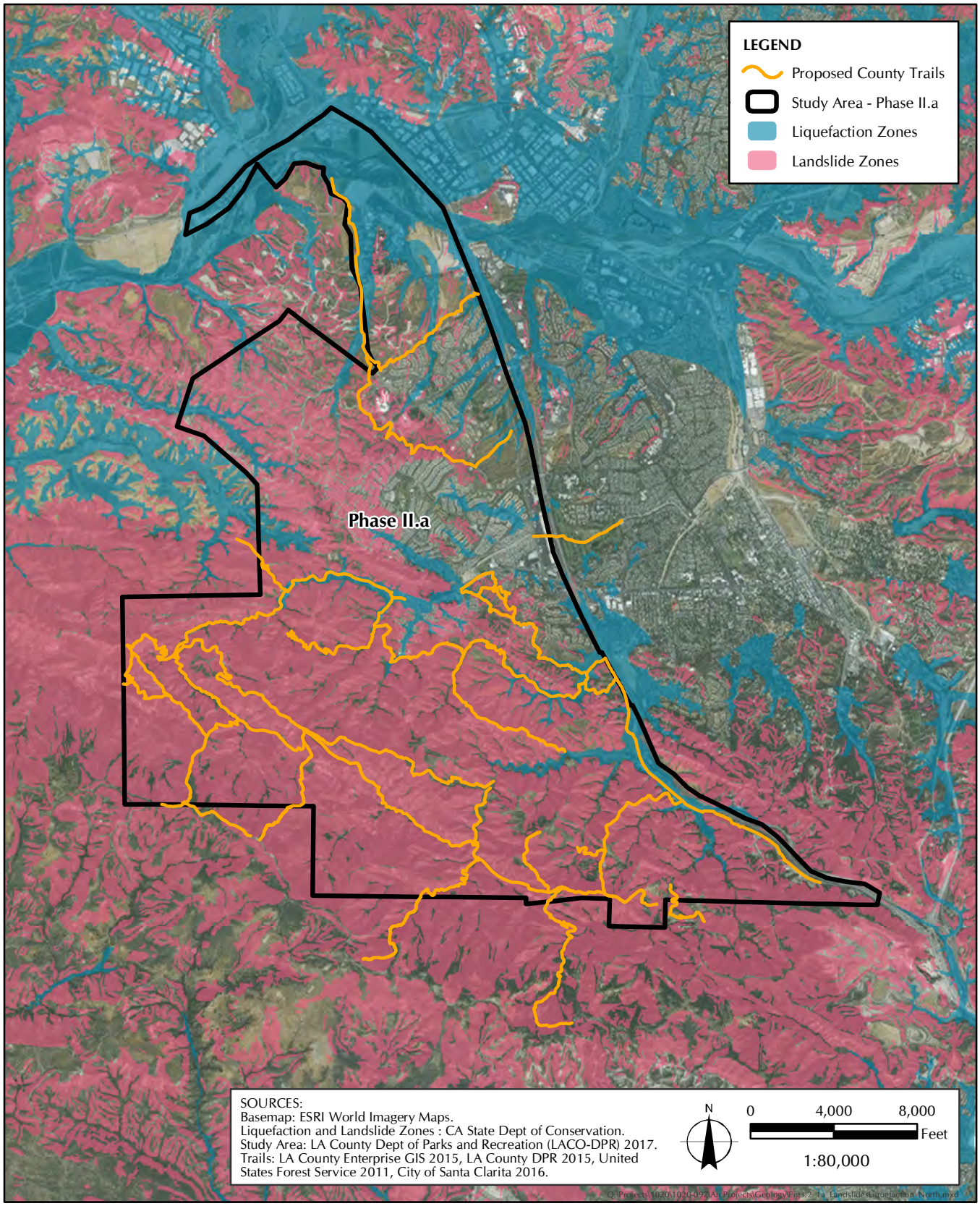


FIGURE 3.2-1a

Earthquake-Induced Landslide and Liquefaction Map North

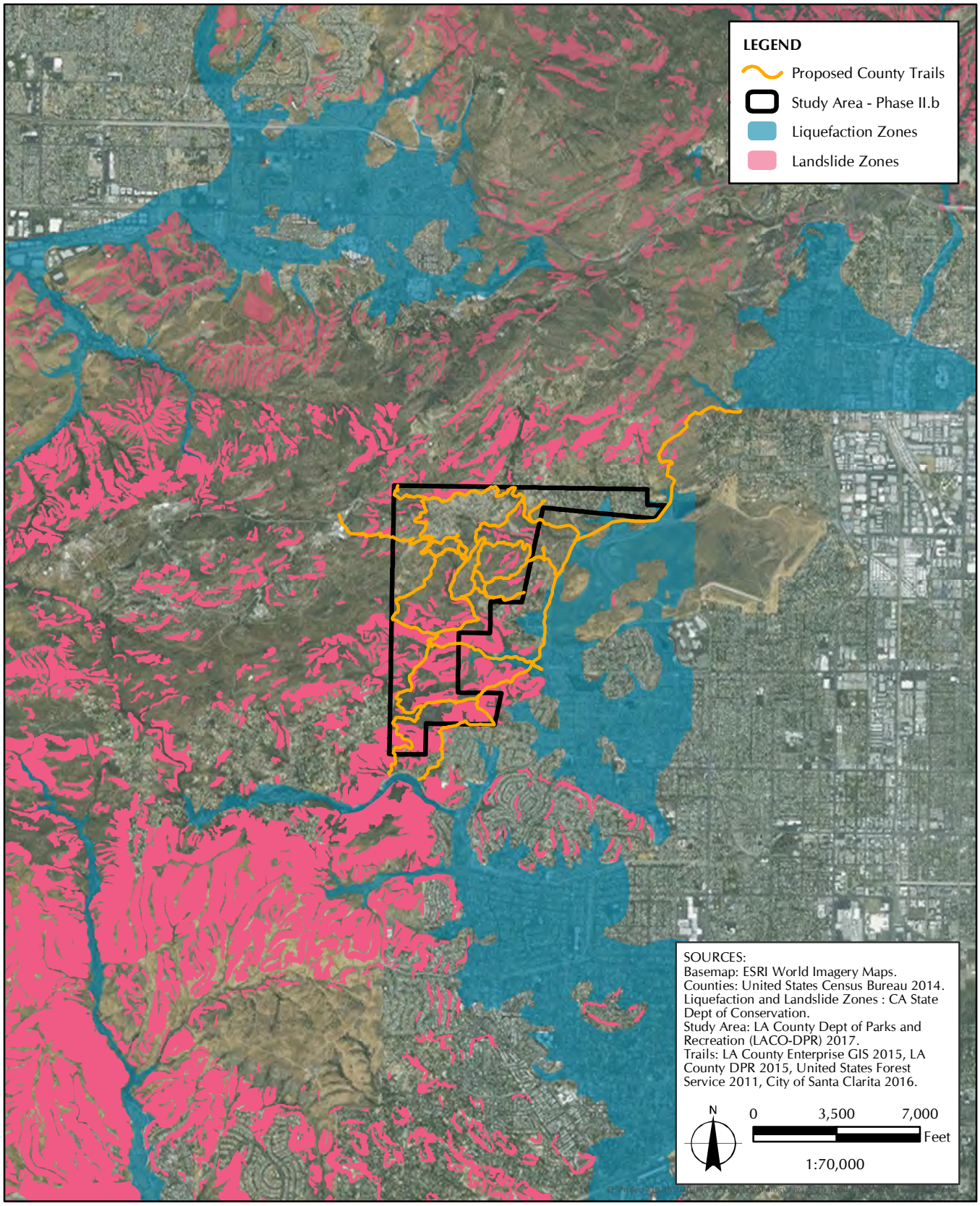


FIGURE 3.2-1b

Earthquake-Induced Landslide and Liquefaction Map South

buyers that the property is located in an APEFZ or SHMZ. There are APEFZ and SHMZ hazards within the SSMTMP-PII area.

California Environmental Quality Act (CEQA)

CEQA ensures that local agencies consider and review the environmental impacts of projects within their jurisdictions. CEQA requires that an environmental document (e.g., Environmental Impact Report [EIR] or Mitigated Negative Declaration [MND]) be prepared for projects that are judged in an Initial Study (IS) to have potentially significant effects on the environment and that these effects are disclosed to the public through an open public review process. Environmental documents (IS, MND, EIR) must consider and analyze, as deemed appropriate, geologic, soil, and seismic hazards. If impacts are considered potentially significant, recommendations for mitigation measures/monitoring are made to prevent or minimize environmental damage by reducing geologic and seismic hazards to less than significant. This allows early public review of development projects and provides lead agencies the authority to regulate development projects in the early stages of planning.

CEQA provides guidance during issuance of permits and approval of projects, and applies to all discretionary projects proposed to be conducted or approved by a California public agency, including private projects requiring discretionary government approval.

Los Angeles County has its 1987 "Environmental Document Reporting Procedures and Guidelines"[2] that are considered for CEQA analysis of trails projects and related developments. The materials associated with the procedures and guidelines were updated December 15, 2016.

2015 California Supreme Court CEQA Ruling

In 2015, the California Supreme Court,[3] in *California Building Industry Association v. Bay Area Air Quality Management District*, held that "CEQA generally does not require an analysis of how existing environmental conditions would impact a project's future use of residents."

The revised thresholds are intended to comply with this decision, which held that an impact from the existing environment to the project including future users and/or residents, is not an impact for the purposes for CEQA. However, if the project exacerbates existing conditions that already exist, that impact must be assessed, including how it might affect future users and/or residents of the project.

This ruling provided for several exceptions to the general rule where an analysis of the project on the environment is warranted, including if the project would exacerbate existing environmental hazards (e.g., exposing hazardous waste that is currently buried).

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[2] County of Los Angeles. 2017. Environmental Document Reporting Procedures and Guidelines. Available at: http://planning.lacounty.gov/view/ceqa_guidelines

[3] California Building Industry Association v. Bay Area Air Quality Management District. 62 Cal. 4th 369, Case No. S213478 (2015).

3.3 LOCAL

County of Los Angeles

General Plan Safety Element

California State Law (Government Code 65300) requires that each city and county prepare and adopt a comprehensive, long-term general plan for its physical development. It must contain seven mandatory elements including land use, circulation, housing, conservation, open space, noise, and safety. California Government Code Section 65302.g requires that a general plan contain a "safety element for the protection of the community from any unreasonable risks associated with the effects of seismically induced surface rupture, ground shaking, ground failure, tsunami, seiche, and dam failure; slope instability leading to mud slides and landslides; subsidence and other geologic hazards known to the legislative body; flooding; and wild land and urban fires." The existing 2014 public review draft updates the adopted 1990 Los Angeles County Safety Element; the safety element outlines the above issues and covers the Trails Master Plan Area. In October 2015 Los Angeles County updated its General Plan through 2035. Proposed activities within the SSMTMP-PII area must consider the public health and safety, as well as the safety of County facilities developed in the context of the currently applicable Safety Element.

General Plan Hillside Management Areas and Hillside Design Guidelines

The Hillside Management Areas (HMAs)[4] are defined in the HMA Ordinance in General Plan specifically for the Santa Susana Mountains. Within HMAs there are designated significant primary and secondary ridgelines many of which cross proposed trails within the SSMTMP-PII area. Hillside Design Guidelines have been established that are divided into five major design categories containing a variety of sensitive hillside design measures and a corresponding checklist. One of the categories is Grading and Facilities which has 12 items in the checklist (2.1 through 2.12). Most of these measures would apply more directly to developments with grading disturbance over a somewhat contiguous area (e.g., several acres for residential or commercial uses) and having facilities/buildings within the disturbed areas. These measures could be applied to trails.

County of Los Angeles Trails Manual

The County Trails Manual[5] outlines various issues affecting trail feasibility (Section 2.5) including geology and soils. Factors include soil erosion, earthquake faults, geologic formation characteristics, slope stability, landslides, and slope gradient. These factors can also affect design methods, construction techniques, and trail maintenance. The stated purpose of the County Trails Manual is:

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[4] County of Los Angeles. 2015. Los Angeles County General Plan 2035. Hillside Management. Available at: http://planning.lacounty.gov/assets/upl/project/gp_2035_2015-FIG_9-8_hillside_management_areas.pdf

[5] County of Los Angeles Department of Parks and Recreation. [Adopted 17 May 2011] Revised June 2013. County of Los Angeles Trails Manual. Available at: https://trails.lacounty.gov/Files/Documents/69/LA%20County%20Trails%20Manual%20%28Revised%2006-20-13%29.compressed.pdf

> to provide guidance to County departments, specifically LACO-DPR, that interface with trail planning, design, development, and maintenance of hiking, equestrian, and mountain biking recreational trails, while addressing physical and social constraints and opportunities associated with the diverse topographic and social conditions that occur in the unincorporated territory of the County. LACO-DPR would use the planning process delineated in the Trails Manual in considering the development of future trails.

The County Trails Manual also defines trail alignment feasibility as follows:

> A "feasible" alignment would not require substantial engineering specifications or review. A "feasible, but constrained" alignment would require increased excavation, grading, installation of a bridge, drainage, and erosion control, leading to design modifications to trail specifications. An "infeasible" alignment is one that physically could not be constructed using standard design engineering constraints are based on geology and soils parameters for the proposed project site.

SECTION 4.0
METHODS

This section describes the methods employed in the characterization and evaluation of geology and soils in the SSMTMP-PII area.

The evaluation of the potential for the proposed project to result in impacts to geology and soils was undertaken in accordance with the DPR's Environmental Checklist Form and Appendix G of the State CEQA Guidelines, considering these key variables: rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure (e.g., liquefaction and landslides), substantial soil erosion or the loss of topsoil, unstable geologic unit or soil (e.g., landslide, lateral spreading, subsidence, liquefaction, or ground collapse), expansive soil, and soils incapable of adequately supporting the disposal of wastewater.

This environmental analysis was performed using existing published information. No new studies or analyses were conducted, and no site- or area-specific studies (within or immediately adjacent to the SSMTMP-PII area) were used for this programmatic level evaluation.

SECTION 5.0
RESULTS

This section provides the characterization and evaluation of the potential for the proposed project to affect, or be affected by, geology and soils conditions within the SSMTMP-PII area. The results described in this section provide the substantial evidence required to address the CEQA scope of analysis, related to rupture of a known earthquake fault, strong seismic ground shaking, seismic-related ground failure (e.g., liquefaction and landslides), substantial soil erosion or the loss of topsoil, unstable geologic unit or soil (e.g., landslide, lateral spreading, subsidence, liquefaction, or ground collapse), expansive soil, and soils incapable of adequately supporting the disposal of wastewater.

5.1 EXISTING CONDITIONS

5.1.1 Earthquake Fault Rupture

Faulting, Earthquakes, and Ground Shaking Potential

Plate tectonics and the forces that cause these plates to move within the earth's crust affect all of Southern California geology and seismicity. Faults are formed at the plate boundaries and other stress points within tectonic plates. Faults adjacent to, within, and beneath the County and City of Los Angeles and San Fernando Valley areas may be classified as inactive, potentially active, or active. Figure 5.1.1-1, *Regional Fault Map*, identifies faults in the region.[6] Faults classified as inactive (no demonstrated movement in the past 2 million years) are of no present concern as earthquake sources and are not discussed further. Potentially active faults (green) show evidence of Quaternary movement and may be possible earthquake sources, but no data are known to demonstrate conclusively Holocene (within the past 10,000–1,200 years) fault movement. Active faults (orange and red [historically active]) are of most concern for earthquake generation and fault rupture potential since they have documented Holocene fault movement or are clearly associated with historic seismicity. Alquist-Priolo Earthquake Fault Zone (APEFZ) Maps delineate active faults and potentially active faults considered by the State to be "sufficiently active" and "well-defined." Fault Rupture Study Areas (FRSAs) are defined by the City of Los Angeles in addition to the APEFZs where fault rupture potential is less well known than required for the APEFZ designation process.

[6] California Geological Survey. 2010. 2010 Fault Activity Map of California. Available at: http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html

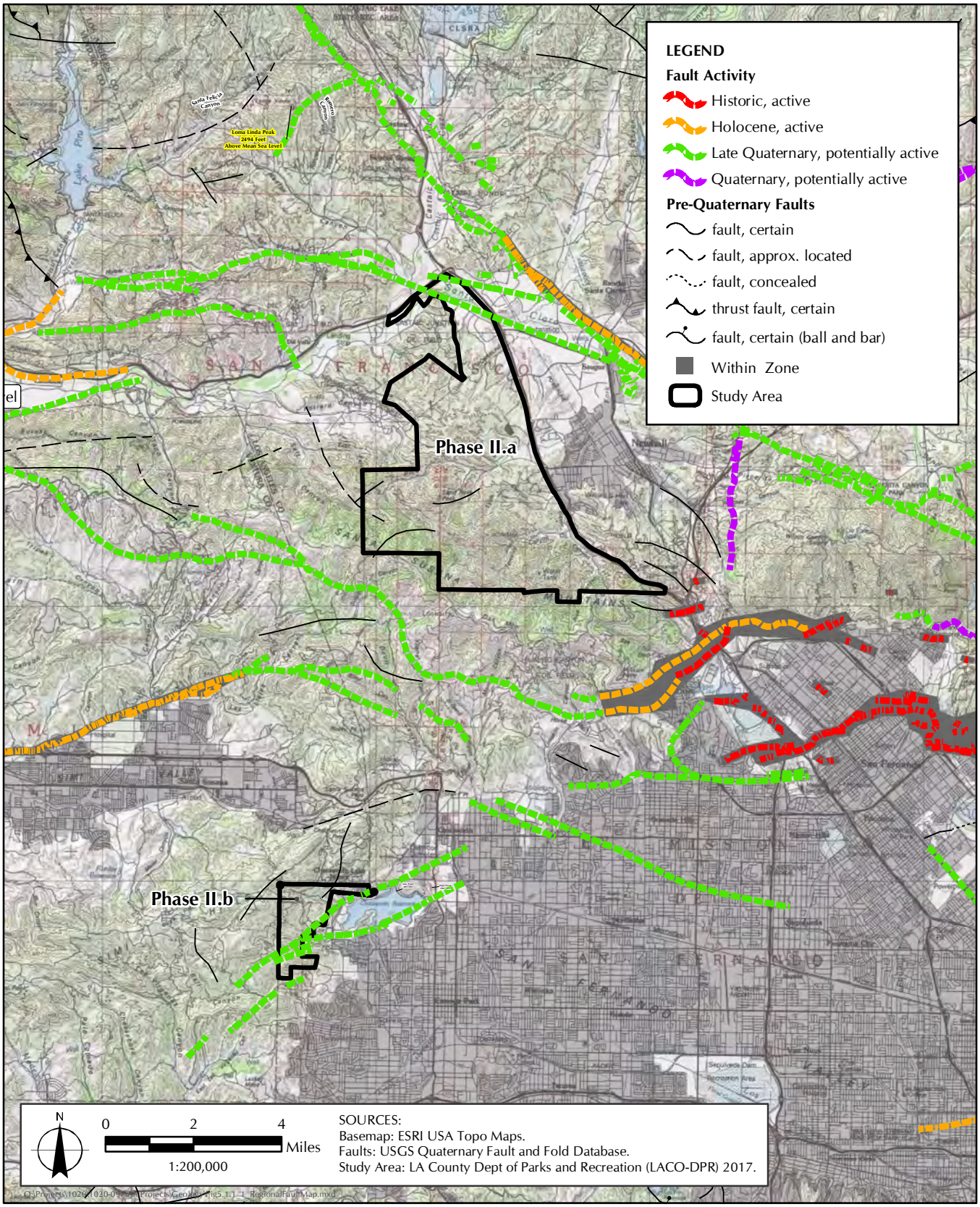

FIGURE 5.1.1-1

Regional Fault Map

Numerous regional and local faults contribute to the strong earthquake ground shaking potential for the SSMTMP-PII area. Faults along which rocks slip horizontally past one another are strike slip faults (e.g., San Andreas, San Jacinto, Elsinore, Newport-Inglewood), while mainly vertical movement is found along normal, as well as reverse and thrust faults (e.g. Oak Ridge, San Cayetano/Holser/Del Valle, Santa Susana, Sierra Madre-San Fernando, Santa Monica-Hollywood, Palos Verdes, Raymond, Verdugo). Abrupt movements along faults cause earthquakes deep in the crust and may result in subsurface fault rupture, surface deformation (folding), or differential uplift along buried (blind) thrust faults (e.g., Northridge Hills, Puente Hills, and Elysian Park). Mountains built by these processes include the Transverse Ranges (Santa Susana-Santa Monica-San Gabriel-San Bernardino) and the Peninsular Ranges (Santa Ana Mountains-San Joaquin Hills-Palos Verdes Hills-Signal Hill). This seismotectonic setting has been a part of the evolution of the Los Angeles County landscape for the past 5 million years or so.

Surface faults of most concern for the SSMTMP-PII area with respect to strong ground shaking are the San Fernando, Oak Ridge, San Cayetano/Holser/Del Valle, San Gabriel, Simi-Santa Rosa, and San Andreas faults. Other smaller faults are of lesser concern due to their lower likelihood of independently generating moderate to large earthquakes. Because they are buried, there remains more uncertainty with regard to the earthquake characteristics of blind thrust faults. The San Cayetano/Holser/Del Valle faults (not mapped by Dibblee) pass through the extreme northern portion of the SSMTMP-PII area. The potential for earthquake activity and ground rupture, though possible, are not likely for the San Cayetano/Holser/Del Valle faults (see Figure 5.1.1-1).

The San Gabriel and San Cayetano/Holser faults are the only fault zones of concern to the SSMTMP-PII area with regard to ground rupture. The fault zones within or very near the proposed SSMTMP-PII area, which are considered as potential ground rupture or earthquake ground shaking hazards, are discussed briefly below.

San Cayetano/Holser/Del Valle Fault Zone. The San Cayetano is a north-dipping reverse/thrust fault, is approximately 45 kilometers long, has a seismic slip rate of between 1.3 and 9 millimeters (mm)/year, ruptured less than 5,000 years ago, and is capable of producing a magnitude (M) 6.5 to 7.3 earthquake. The fault lies west of the SSMTMP-PII area and appears to merge with the Holser and Del Valle faults, the former being just within the SSMTMP-PII area.

The Del Valle and Holser faults appear to be eastward extensions of the San Cayetano fault. The Del Valle fault trends eastward from the Los Angeles-Ventura County line and turns southward before crossing San Martinez Grande Canyon. The eastward-trending part of the fault trace is a southward dipping reverse fault and the southward-trending part is thought to be a tear fault. To the north of the Del Valle the Holser fault is a southward dipping that can be traced to Castaic Valley, is inferred to intersect the San Gabriel fault, and is considered an active fault trace.[7] The Holser fault is also a north dipping reverse fault and is approximately 20 kilometers long. An average slip rate Holser fault is 0.4 mm per year (+/–0.4 mm), and future earthquake of 6.5 are estimated for this fault zone.[8]

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[7] County of Los Angeles. 2015. Los Angeles County General Plan 2035. Hillside Management. Available at: http://planning.lacounty.gov/assets/upl/project/gp_2035_2015-FIG_9-8_hillside_management_areas.pdf

[8] California Geological Survey. July 2017. Peak Ground Acceleration Map – 10% Probability of Being Exceeded in 50

Chatsworth Reservoir. Gravity, aeromagnetic and seismic reflection data (the Los Angeles Region Seismic Experiment II[9] suggests that the Chatsworth Reservoir fault may be the western boundary of the San Fernando Valley basin sediments. Dibblee compiled previous mapping and shows two faults extending northeast from Chatsworth Reservoir through the Phase II.b area. The northerly fault appears to coincide roughly with the northwest edge of Chatsworth Reservoir. The southern projection of the fault does not exactly match the trend of the FRSA defined by the City of Los Angeles;[10] however, it does project through an area where historically high groundwater contours[11] show an anomalous change in depth, becoming deeper (from 10 to 90 feet deep) over a relatively short distance. It appears that the Baldwin et al.[12] Chatsworth fault location does fit more closely the trend of the FRSA.

Santa Susana Fault. The Santa Susana fault lies near the base of the Santa Susana and San Gabriel Mountains west and south of the SSMTMP-PII area just north of the 210 Freeway and south of the SSMTMP-PII area from near the I-5/SR-14 intersection on the east. The Santa Susana is a possible earthquake source; it includes three subsections separated by lateral thrust fault ramps, although there is little evidence that these segments are seismogenically separate. Toward its east end, the fault zone overlaps the San Fernando fault zone and on the west extends toward the south-dipping Oak Ridge fault. The fault offsets Late-Quaternary older alluvium and terrace deposits. It is poorly expressed due to the low angle of the fault and widespread landslides. Topographic contrasts may have as much to do with juxtaposition of contrasting bedrock types as with fault displacement.

San Fernando Fault. Mapped San Fernando faults within the APEFZ lie immediately southeast of the SMMTMP-PII area. The San Fernando fault (also divided by some into the San Fernando, Mission Wells, and Reservoir fault segments) ruptured most significantly in the 1971 San Fernando earthquake. The overall ratio of horizontal to vertical movement across the San Fernando fault zone in the 1971 earthquake was 1.9:1.39 (horizontal:vertical) and the maximum oblique displacement was 2.4 meters (7.9 feet). Based on the 1971 USGS[13] report, vertical movement within limited areas appears to have been greater in magnitude for bedrock sites (1 meter/3.3 feet), less for older alluvium sites (0.5 meter/1.6 feet), and substantially less for younger alluvium sites (0.06 meter/2+ inches).

Years (July 2017). Available at: http://www.consrv.ca.gov/CGS/rghm/psha/pga.htm#PGA

[9] Langenheim V., A. Griscom, R. Jachens, and T. Hildenbrand. 2000. Preliminary Potential-Field Constraints on the Geometry of the San Fernando Basin Southern California. USGS OFR 00-219.

[10] City of Los Angeles. Adopted 26 November 1996. Safety Element of the Los Angeles City General Plan.

[11] California Division of Mines and Geology. [1997]. Revised 2001. Seismic Hazard Evaluation of the Calabasas 7.5-minute Quadrangle, Los Angeles County, California. California Department of Conservation, Division of Mines and Geology Open-File Report 006.

[12] Baldwin, J.N., Kelson, K.I., and Randolph, C.E. 2000. Late Quaternary Fold Deformation along the Northridge Hills Fault, Northridge, California: Deformation Coincident with Past Northridge Blind Thrust Earthquakes and Other Nearby Structures: Seismol. Geological Society of America Bulletin 90:629-642.

[13] U.S. Geological Survey. 1971. The San Fernando, California, Earthquake of February 9, 1971. A Preliminary Report Published Jointly by the U.S. Geological Survey and the National Oceanic and Atmospheric Administration Professional Paper 733.

Northridge Hills Fault. The 2010 State fault map (Figure 5.1.1-1) shows the western end of the Northridge Hills fault southwest of the SSMTMP-PII area; the fault is not shown by Dibblee.[14] The 1990 Los Angeles General Plan Safety Element (Plate 1) shows the fault continuing northwest away from the SSMTMP-PII area to where it might connect with the Simi fault. Baldwin and others[15] performed a paleoseismic evaluation of the Northridge Hills fault nearer the center of the fault's trend in the community of Northridge. They describe the Northridge Hills fault as fault-propagation fold above an underlying blind thrust fault dipping northward at about 45 degrees based on previous work; the fault is considered potentially active. This means that the fault has not yet broken the ground to the surface, but could cause local uplift, tilting, and ground deformation.

Mission Hills Fault. The Mission Hills fault is similarly north dipping, but is not known to be linked to the San Fernando fault zone and may well be linked to the Verdugo fault. The San Fernando fault experienced surface rupture and the Mission Hills fault experienced related ground disturbance affects during the M6.6 1971 San Fernando earthquake. Less is known about the Mission Hills fault, which lies just south of the western portion of the San Fernando fault, but for purposes of this study, it is considered potentially active. It was associated with ground cracking, suggested by Holzer and others[16] to be secondary faulting that occurred during the 1994 M6.7 Northridge earthquake along Balboa Boulevard between Rinaldi and Lorilard Streets. It is believed that the Mission Hills fault is connected in the subsurface to the Verdugo fault and may be associated with the Devonshire fault as shown by Dibblee.

San Gabriel Fault. The San Gabriel fault zone is a right-lateral strike slip fault that traces a long arcuate path through the Transverse ranges. It is at least 72 kilometers long. Several echelon strands, in zones up to 0.5 kilometer wide, comprise this fault zone, which crosses the SSMTMP-PII area. Both Late Quaternary (between Newhall and Big Tujunga Canyon) and Holocene (near Castaic) fault offsets have been documented along various segments.[17] The A-P fault zone portion of the San Gabriel fault passes to the east of the proposed Phase II.a SSMTMP-PII area located between Castaic Valley and San Francisquito Canyon.[18] An average slip rate of 1 to 5 mm per year is estimated by the Southern California Earthquake Center,[19] and the fault is capable of an M7.2 earthquake.

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[14] California Geological Survey. 2010. 2010 Fault Activity Map of California. Available at: http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html

[15] Baldwin, J.N., Kelson, K.I., and Randolph, C.E. 2000. Late Quaternary Fold Deformation along the Northridge Hills Fault, Northridge, California: Deformation Coincident with Past Northridge Blind Thrust Earthquakes and Other Nearby Structures: Seismol. Geological Society of America Bulletin 90:629-642.

[16] Holzer, T. L., M. J. Bennett, D. J. Ponti, and J. C. Tinsley. 1999. Liquefaction and Soil Failure during the 1994 Northridge Earthquake. JGGE 125 (6): 438–52.

[17] Ziony, J.I., and Yerkes, R.F. 1985. Evaluating Earthquake and Surface-Faulting Potential. In Evaluating Earthquake Hazards in the Los Angeles Region, USGS Professional Paper 1360, pp. 43-91.

[18] California Geological Survey. 1995. Revised Official Map, Alquist-Priolo Earthquake Fault Zones, 7.5-minute series Newhall topographic quadrangle, Los Angeles County, California, California Division of Mines and Geology.

[19] Southern California Earthquake Center. 2010. Website. Available at: www.scec.org

Oak Ridge Fault. A westward extension from the San Cayetano is the active Oak Ridge fault (not shown on Figure 5.1.1-1), a south-dipping reverse/thrust fault concealed beneath Santa Clara River alluvium approximately. The fault is approximately 90 kilometers long, has a seismic slip rate of between 3.5 and 6 mm per year, and is believe to be capable of producing an M6.5 to 7.5 earthquake. The Oak Ridge fault continues offshore to the west with associated seismicity, while to the east Holocene surface rupture is found between the towns of Bardsdale and Fillmore. The SCEC 2017 "Historical Earthquakes and Significant Faults Map in Southern California" shows the Oak Ridge fault along the north side of the Santa Clara River.

San Andreas Fault Zone (Mojave and 1857 Rupture Segments). The San Andreas fault zone is considered the boundary between two major crustal plates (Pacific and North American). Historic earthquakes along the San Andreas fault zone have caused extensive surface rupture and major damage to structures and engineered facilities. The San Andreas fault zone (Mojave and 1857 Rupture segments) is located about 13 miles northeast of the site. The overall fault zone trends generally northwest for almost the entire length of California, from Cape Mendocino south to beyond the Mexican border. These two segments of the fault are approximately 103 and 345 kilometers long, respectively, extending north from Cajon Pass. Past work estimated the recurrence interval for an M8.0 earthquake along the entire fault zone is between 50 and 200 years, and a 140- to 200-year recurrence interval for major (M7.0 to 7.9) to great (M8.0 or larger) earthquakes along the southern fault zone segment. The 1857 M8.0 Fort Tejon earthquake was the last "great" earthquake along the San Andreas fault zone near Southern California. An average slip rate of about 30 mm per year (+/– 7 mm) and a future earthquake magnitude range of 7.4 and 7.8 for the Mojave and 1857 Rupture segments of the San Andreas fault are estimated by the CGS.[20]

Verdugo Fault. The northwest-southeast trending Verdugo fault is the major bounding structure of the east San Fernando Valley and is considered active, although not within an APEFZ. Weber and others[21] reported possible fault scarps 6 to 10 feet high in Holocene-Late Pleistocene-age deposits in the Burbank area. Southeast of the SSMTMP-PII area in Sun Valley, Weber and others report minor fault offset 130 feet deep in sand and gravel pit deposits. The Verdugo fault may turn to the west and merge with the Mission Hills fault.[22,23]

Sierra Madre-San Fernando Fault. The Sierra Madre-San Fernando fault zone trends nearly east-west through the southern Transverse Ranges; the fault nearly enters the SSMTMP-PII area at its southeast corner. The San Fernando segment is about 18 kilometers long and is one of five major strands comprising the overall Sierra Madre fault zone. The site is approximately 12 miles northwest of this fault zone. This segment of the fault zone is the source of the 1971 M6.6 San Fernando earthquake. An average slip rate of 1 to 3 mm per year and a future earthquake

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[20] California Geological Survey. July 2017. Peak Ground Acceleration Map – 10% Probability of Being Exceeded in 50 Years (July 2017). Available at: http://www.consrv.ca.gov/CGS/rghm/psha/pga.htm#PGA.

[21] Weber, F.H., et al. 1980. Earthquake Hazards Associated with the Verdugo-Eagle Rock and Benedict Canyon Fault Zones, Los Angeles County, California. California Division of Mines and Geology Open File Report 80-10.

[22] Langenheim V., A. Griscom, R. Jachens, and T. Hildenbrand. 2000. Preliminary Potential-Field Constraints on the Geometry of the San Fernando Basin Southern California. USGS OFR 00-219.

[23] California Geological Survey. 2010. 2010 Fault Activity Map of California. Available at: http://www.quake.ca.gov/gmaps/FAM/faultactivitymap.html

magnitude range of 6.7 for the San Fernando segment of the Sierra Madre fault zone are estimated by the CGS[24] for this A-P fault zone.

Simi-Santa Rosa Fault Zone. The North and South Simi faults within the Simi-Santa Rosa fault zone west of the SSMTMP-PII area are characterized by moderate to high-angle north-dipping reverse faults that probably also have a left-lateral component of displacement.[25] This zone extends for 40 kilometers from near Camarillo on the west in an east-northeast direction within the southern California Transverse Ranges and shows evidence of continued Quaternary activity. The fault displays compressional features, but in the eastern half of the section near the SSMTMP-PII area a left-lateral component of displacement may be more predominant. The Simi fault generally has a high dip angle (up to 90°). It is associated with shallower reverse and thrust faults with local south dips related to inferred flower structure and backthrusts.

Surface Faulting/Ground Rupture Hazard

The anticipated (average) amount of surface fault rupture on any given fault trace for the maximum earthquake can be inferred from measurements of offsets caused by past earthquakes. In general, these estimates range from zero to about one foot for magnitudes under M6.0, and from 1 foot to 10 feet or more for magnitudes between M6.0 and 7.5. Many variables affect the amount of surface rupture, including the depth of the earthquake hypocenter where the strain energy is released. Site-specific study is normally conducted to refine such estimates for a fault segment at a given project site.

The most recent earthquake with clearly defined surface rupture is the 1971 San Fernando earthquake that had roughly 3 to 6 feet of vertical and lesser horizontal surface displacements. An estimate of the potential range of displacements for the San Cayetano/Holser/Del Valle faults could be made based on site-specific analysis. Lacking such analysis, the San Fernando earthquake offsets could be considered representative of the active reverse faults within and very near the SSMTMP-PII area. In addition, smaller disruptions from co-seismic uplift, ground tilting, and ground disturbance, similar to that associated with the Mission Hills fault in the 1994 Northridge earthquake, could result, for example on the Chatsworth Reservoir and Northridge Hills faults.

Using the estimated earthquakes for Holser and Del Valle faults suggests a potential for 3 to 6 feet of vertical and lesser horizontal surface displacements. An estimate of the range of displacements for the nearby San Gabriel fault would be larger, potentially as much as 10 to 20 feet. Lacking specific analysis, these offsets are considered representative of similar active reverse faults and strike slip faults in the vicinity of the SSMTMP-PII area. In addition, smaller disruptions from co-seismic uplift, ground tilting, and ground disturbance could result.

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[24] California Geological Survey. July 2017. Peak Ground Acceleration Map – 10% Probability of Being Exceeded in 50 Years (July 2017). Available at: http://www.consrv.ca.gov/CGS/rghm/psha/pga.htm#PGA

[25] Treiman, J.A. 1998. Simi-Santa Rosa Fault Zone in the Moorpark, Newbury Park, Simi Valley East, Simi Valley West, and Thousand Oaks Quadrangles, Ventura County, California. California Division of Mines and Geology Fault Evaluation Report FER-244.

5.1.2 Seismic Ground Shaking

Earthquakes and Potential Ground Shaking

Numerous earthquakes have occurred in historic time in the Southern California region. Historic events are both pre-instrumental (all information is very approximate) and instrumental events. The primary earthquakes associated with the Northridge Hills and San Fernando faults are the 1994 magnitude 6.7 and 1971 magnitude 6.6 events, respectively. Clearly, older pre-instrumental events are based on written accounts that may not be very accurate with regard to location and magnitude.

The SSMTMP-PII area is very near the Verdugo fault, the San Fernando fault, the Northridge Hills fault, and crossed by the Holser fault, part of the Oak Ridge/San Cayetano fault system. A review of estimates from seismic hazard mapping for California[26] indicates that the peak ground acceleration (PGA--what is experienced by a particle on the ground) with a 10 percent chance that this acceleration may be exceeded within a 50-year period for the SSMTMP-PII area, ranges from approximately 0.5g (g = the force of gravity) to 0.6g considering three ground conditions (firm rock, soft rock, and alluvium).

Violent shaking occurs not only next to the earthquake's epicenter, but for many miles in all directions. The Modified Mercalli Intensity (MMI) Scale is a qualitative scale of how earthquakes are felt by people and how they affect buildings. It is a 12-point scale ranging from Intensity I, which is rarely felt by people, to Intensity XII, where damage to structures is total and objects are thrown into the air. An acceleration of 0.35 to 0.65g corresponds roughly to an intensity of VIII on the MMI Scale.[27] Several earthquakes in the region within the last 200 years are estimated to have caused Intensity VIII ground shaking on the site. In an Intensity VIII earthquake damage is slight in specially designed structures; ordinary substantial buildings are damaged considerably and partially collapse; and damage is great in poorly built structures. Historic earthquakes in the region estimated to have caused significant ground shaking on the site include the M7.5 1952 Kern County/Tehachapi Earthquake, the M6.6 1971 Sylmar Earthquake, and the M6.7 1994 Northridge Earthquake.

Based on the fault discussed above and a review of estimates from seismic hazard mapping for California[28] the SSMTMP-PII area peak ground acceleration (PGA; what is experienced by a particle on the ground) with a 10 percent chance that this acceleration may be exceeded within a 50-year period for the central portion of the SSMTMP-PII area, is approximately 0.52g (g = the force of gravity) considering typical soft bedrock ground conditions of the area.

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[26] California Geological Survey. July 2017. Peak Ground Acceleration Map – 10% Probability of Being Exceeded in 50 Years (July 2017). Available at: http://www.consrv.ca.gov/CGS/rghm/psha/pga.htm#PGA

[27] Wald, D.J., Heaton, T.H., and Kanamori, H. August 1999. Relationships between Peak Ground Acceleration, Peak Ground Velocity, and Modified Mercalli Intensity in California. Earthquake Spectra 15: 3.

[28] California Geological Survey. July 2017. Peak Ground Acceleration Map – 10% Probability of Being Exceeded in 50 Years (July 2017). Available at: http://www.consrv.ca.gov/CGS/rghm/psha/pga.htm#PGA.

5.1.3 Seismic Related Ground Failure/Liquefaction

Liquefaction

Liquefaction occurs when saturated, cohesionless (low relative density) materials (usually sand or silty sand) are transformed from a solid to a near liquid state. This phenomenon occurs when moderate to severe seismic ground shaking causes pore-water pressure to increase. The expected level of ground shaking in the SSMTMP-PII area is high enough to initiate liquefaction. Liquefaction can cause overlying structures (e.g., bridges, buildings, storage tanks) to settle non-uniformly, and buried structures (e.g., fuel tanks, pipelines) to float. In either situation, severe damage to the structure is highly likely.

In addition to sufficiently high seismic shaking levels, the two other key conditions conducive to liquefaction, shallow groundwater, and cohesionless sands are potentially present within several portions of the SSMTMP-PII area. It is generally considered that there is a low potential (although there may be some) for liquefaction where water is greater than about 40 feet below the ground surface; there is a very high potential where less than 10 feet.

Various maps show potential liquefaction areas in the SSMTMP-PII area.[29,30,31,32,33,34] The representation of liquefaction potential presented on Figure 3.2-1 considers the maps prepared by the CDMG (green shading); the line designating liquefaction areas corresponds to the 40-foot groundwater depth contour. For Phase II.b, there is only a very small area where Box Canyon enters Chatsworth Reservoir. For Phase II.a, the liquefaction area is extensive on the north within the Santa Clara River floodplain and the broad unnamed canyons north to the river and east toward the valley occupied by I-5. Phase II liquefaction areas are concentrated in the prominent canyons, for example, Potrero, Pico, Wickham, Dewitt, Lyon, Gavin, Towsley, and a few smaller unnamed canyons.

5.1.4 Landslides

Earthquake Induced Landslides

Most (an estimated 80 percent to 90 percent) of the mountains and hills of the SSMTMP-PII area are potential earthquake-induced landslide areas. These areas correspond to bedrock and to a lesser

[29] California Division of Mines and Geology. 7 April 1997. Seismic Hazard Zone Map—Simi Valley East Quadrangle, 1:24000.

[30] California Division of Mines and Geology. 1 February 1998. Seismic Hazard Zone Map—Newhall Quadrangle, 1:24000.

[31] California Division of Mines and Geology. 1 February 1998. Seismic Hazard Zone Map—Oat Mountain Quadrangle, 1:24000.

[32] California Division of Mines and Geology. 7 November 2001. Seismic Hazard Zone Map—Calabasas Quadrangle, 1:24000.

[33] California Division of Mines and Geology. 20 December 2002. Seismic Hazard Zone Map—Val Verde Quadrangle, 1:24000.

[34] City of Los Angeles. Adopted 26 November 1996. Safety Element of the Los Angeles City General Plan.

extent older alluvium with steep slopes (see Figure 3.2-1). Landslide movement along bedding planes within these formations, as rocks dislodged from exposures on steep slopes, or as surficial failures of weathered rock and soil/colluvium could cause rock masses to dislocate and damage overlying facilities, and facilities nearby and down slope from these bedrock and older alluvium areas.

5.1.5 Soil Erosion/Loss of Topsoil

Mudflow

The City of Los Angeles General Plan Safety Element classifies low hill areas adjacent to and within the SSMTMP-PII area as Hillside Areas that are more prone to slope instability than the flatter valley floor areas. The Hillside Areas encompass the area south of the SR-118 through Phase II.b and Chatsworth Reservoir. Mudflows (also debris flows) develop when saturated, loose surface materials (e.g., soil, colluvium/slope wash, and weathered bedrock formations) in hillside areas become unstable and, due to gravitational forces, slide down the hillside slopes. Although mudflow events would be uncommon and no specific mudflows have been mapped within the SSMTMP-PII area, the steep topography in the soil- and colluvium-covered bedrock terrain may generate mud- or debris-flows that could enter the SSMTMP-PII area from the Hillside Areas.

5.1.6 Stability of Geologic Unit/Soil

Geologic Units/Structure - Northeastern San Fernando Valley

Geologic Units. The SSMTMP-PII area is located at the northeastern edge of the San Fernando Valley and within the foothills of the Santa Susana Mountains. This portion of the Santa Susana Mountains rises locally to approximately 3,747 feet (unnamed peak) and the northeast base of the mountains in the SSMTMP-PII area is at an elevation of approximately 1,300 feet adjacent to the I-5 within Gavin Canyon Chatsworth Reservoir[35,36,37,38,39] (see Figure 2.2-2). The Santa Susana Mountains and adjacent San Fernando Valley are underlain by a thick (several thousand feet) sequence of Tertiary and Mesozoic age sedimentary bedrock overlain by younger and older alluvial deposits (Table 5.1.6-1, *Approximate Trail Lengths within Each Geologic Unit for All Phases*). From oldest to youngest, these bedrock formations include the Chatsworth (map symbol Kcs), Lindero Canyon (Tls and Tlsc), Sisquoc (Tsq), Towsley (Ttoc and Ttos), Pico (Tp and Tps), and Saugus (Ts, Tsr, and QTs) Formations that are underlain by crystalline basement not exposed at the ground surface.[40,41,42,43,44] Each bedrock formation is comprised of rock layers alternating between

[35] U.S. Geological Survey. 1967. 7.5-minute series Calabasas topographic quadrangle, Los Angeles County, California.

[36] U.S. Geological Survey. 1969. 7.5-minute series Oat Mountain topographic quadrangle, Los Angeles County, California.

[37] U.S. Geological Survey. 1969. 7.5-minute series Simi Valley East topographic quadrangle, Los Angeles County, California.

[38] U.S. Geological Survey. 1995. 7.5-minute series Val Verde topographic quadrangle, Los Angeles County, California.

[39] U.S. Geological Survey. 1995. 7.5-minute series Newhall topographic quadrangle, Los Angeles County, California.

[40] Dibblee, T.W.m and H.E. Ehrenspeck. 1992. Geologic Map of the Oat Mountain and Canoga Park (north1/2) Quadrangles, Los Angeles and Ventura Counties, California, Dibblee Foundation Map DF-36, scale 1:24,000.

sandstone, conglomerate, and siltstone. Figure 2.2-3 shows the bedrock and surficial geologic units across the SSMTMP-PII area, and Figure 2.2-4 provides the explanation and unit descriptions. Table 5.1.6-1 provides a relationship between the geologic units present, the geologic units physical characteristics, the length of the proposed trails within each unit, and the percentage of the total trail length within each geologic unit. This information can be used for estimating the level of accommodation in the design of the project facilities due to the characteristics of each geologic unit. For example, the Towsley Formation comprises approximately 27 percent, is associated with landslides and possible unstable bedding, and contains clay-rich units that may be expansive and cause other concerns for trail construction.

TABLE 5.1.6-1
APPROXIMATE TRAIL LENGTHS WITHIN EACH GEOLOGIC UNIT FOR ALL PHASES

Formation Name (Map Symbol) (Age)	Estimated Trail in Each Formation		Formation Description (Very Rough Percentage of Aerial Coverage of Each Formation within the Multi-Use Trails Area)
	Length in Miles (+/−10%)	Percent of Total Trails*	
Alluvium (Qa/Qg) and Artificial fill (af) (Holocene)	13.81	19.6	Gravel and sand, generally loose to medium dense; the overall length for this formation is ≤25%
Landslide Deposits (Qls) (Holocene)	1.54	2.2	Variable depending upon the underlying bedrock formation, generally siltstone, sandstone, and claystone/shale (≤1% based on Dibblee and others; CDMG maps show ≤15%)
Older Dissected Surficial Sediments (Qog) (Pleistocene)	1.74	2.5	Gravel with sand (≤1%)
Saugus Formation (QTs) (Pleistocene-Pliocene)	4.29	6.1	Light gray pebble conglomerate, sandstone, and minor siltstone (includes a small percentage of claystone) (≤35%)
Saugus Formation (Ts/Tsr) (Pliocene)	1.39	2.0	Light gray pebble conglomerate, sandstone, and minor siltstone (includes a small percentage of claystone) (≤35%)
Pico Formation (Tp/Tps) (Pliocene)	6.75	8.9	Gray siltstone and claystone, crumbly and light gray to tan sandstone, fine to medium grained and thickly bedded (≤25%)
Towsley Formation (Ttos/Tpc/Ttoc) (Pliocene-Miocene)	21.55	30.1	Gray claystone and siltstone, vaguely bedded, crumbly and a basal gray conglomerate with rounded cobbles (≤10%)

[41] Dibblee, T.W. 1992. Geologic Map of the Calabasas Quadrangle, Los Angeles and Ventura Counties, California, Dibblee Foundation Map DF-37, scale 1:24,000.

[42] Dibblee, T.W. and H.E. Ehrenspeck. 1992. Geologic Map of the Simi Quadrangle, Ventura County, California, Dibblee Foundation Map DF-39, scale 1:24,000.

[43] Dibblee, T.W. and H.E. Ehrenspeck. 1993. Geologic Map of the Val Verde Quadrangle, Los Angeles and Ventura Counties, California, Dibblee Foundation Map DF-50, scale 1:24,000.

[44] Dibblee, T.W. and H.E. Ehrenspeck. 1996. Geologic Map of the Newhall Quadrangle, Los Angeles County, California, Dibblee Foundation Map DF-56, scale 1:24,000.

TABLE 5.1.6-1
APPROXIMATE TRAIL LENGTHS WITHIN EACH GEOLOGIC UNIT FOR ALL PHASES

Formation Name (Map Symbol) (Age)	Estimated Trail in Each Formation		Formation Description (Very Rough Percentage of Aerial Coverage of Each Formation within the Multi-Use Trails Area)
	Length in Miles (+/−10%)	Percent of Total Trails*	
Sisquoc Shale(Tsq)(Late Miocene)	3.64	5.2	Tsq Dark gray to brownish gray clay shale, bleaches to light gray; crumbly with ellipsoidal to sub-platy fracture, gypsiferous in fractures, includes some thin bedded semi-siliceous layers; some layers contain large tan dolomitic concretions
Monterey Shale(Tm/Tml)(Middle and Late Miocene)	0.26	0.4	Tm upper part: thin bedded siliceous shale, dark gray brown but weathers cream-white, hard, platy, brittle, porcelaneous, locally chart); closely fractured, some layers fissile, about 1500 ft (485m) thick; middle and late Miocene age (mostly Mohnian Stage); south of Santa Susana fault: soft, white weathering thin-bedded fissile diatomaceous semi-siliceous shale Tml lower part: thin-bedded, fissile semi-siliceous shale to soft shaly claystone, dark brown, weathers cream white; includes some calcareous shale, and thin tan-weathering hard dolomite strata that are increasingly abundant upward, unit as thick as 500 ft (150m); middle Miocene age (Luisian-Relizian Stage)
Chatsworth Formation (Kcs,Kcsh)(Late Cretacous)	12.92	18.4	Kcs Light gray to light brown sandstone, hard, coherent arkosic, micaceous, mostly medium grained, In thick strata separated by thin parings of siltstone Kcsh Gray clay shale, crumbly with ellipsoidal fracture where weathered; includes some thin sandstone strata In western area
Detrital Sediments of Lindero Canyon (Tls/Tlsc)(Miocene)	4.35	6.2	Light gray to nearly white massive sandstone, semi-friable, locally conglomeratic Tlec Light gray calcareous sandstone, massive to crudely bedded, with calcite veins; Includes gray conglomerate composed of cobbles of metavolcanic, granitic, and quartzitic rocks and of sandstone derived from Chatsworth Formation; sparsely fossiliferous

NOTE: * Does not sum to 100 due to rounding.

Quaternary (Holocene through early Pleistocene) alluvial fan and younger bedrock deposits (Saugus Formation-QTs) cover the Tertiary bedrock formations. Holocene alluvial deposits (Qa and Qg) cover a relatively small portion of the SSMTMP-PII area at the base of the mountains and in the bottom of canyons. Older alluvial deposits (Qog) cover a relatively large area between the valley floor and the steeper mountains. These alluvial deposits consist predominantly of sand, silt, and gravel/boulders, along with smaller amounts of clay-rich materials. Landslide deposits (Qls) are scattered across the SSMTMP-PII area and consist of unstable bedrock formations listed above.

Geologic Structure. Geologic structure includes folding, tilting, and faulting of the geologic units. These portions of the Santa Susana Mountains are tectonically active and have been subject to these structural effects for tens of millions of years. Therefore, the geologic structure is very complex with numerous faults (discussed below), fractures, and disturbed bedrock layers. Bedding orientation and angles are controlled by two major northwest-southeast trending anticlinal (up fold) and synclinal (down fold) structures, the Pico anticline and the Oat Mountain syncline. Bedding

dip angles range from very shallow (less than 20 degrees), into and out-of-slope, to vertical (90 degrees) and overturned. Due to the recent nature of tectonic activity, even the older Pleistocene portions of the Saugus Formation unit are folded and faulted. Often fault zones form crushed zones of bedrock that is weaker than the unfaulted materials.

SSMTMP-PII Area Geology Conditions

Based on a review of available documents describing the geology of the SSMTMP-PII area, it is underlain by (1) younger Quaternary-age (Holocene) alluvium/surficial sediments (map symbol af, Qa and Qg), (2) landslide deposits (Qls-Holocene), (3) older Quaternary-age (Holocene-Pleistocene) alluvium/surficial sediments (Qog), (4) Quaternary-age-age (Pleistocene) softer bedrock formations (QTs), (5) Tertiary-age hard to very hard sedimentary bedrock formations, and (6) an older (Cretaceous) hard to very hard sedimentary bedrock formation[45,46,47,48,49] (Table 4.1-1; see Figures 2.2-3 and 2.2-4). The young alluvium and landslide deposits make up less than less than 1 percent of the SSMTMP-PII area, while older alluvium and soft bedrock comprise upwards of 10 percent of the deposits, with the Tertiary and Cretaceous harder bedrock formations making up the remaining approximately 80 to 90 percent of the SSMTMP-PII area.

All geologic formations are covered by some thickness of unmapped soil and colluvium that can range from several inches to several feet. Some soils within the SSMTMP-PII area have been modified and disturbed by grading and earthmoving associated with development; however, most soils are undisturbed in the SSMTMP-PII area. Available soil maps and reports suggest that most soil materials in the SSMTMP-PII area are sand, clay, and silt, with much smaller amounts of gravel. Although a small percentage of artificial fill (af) is found in the SSMTMP-PII area associated with man-made structures, roadways, and the I-5, one larger area deposit is found at the southeast corner of the Phase II.a area where it covers QTs present in the lower hillside areas.

The geologic units are described briefly below from youngest through oldest formations. This analysis uses unit names and symbols are from Dibblee's maps as noted above (see Figure 2.2-4). The California Division of Mines and Geology (CDMG; currently California Geological Survey [CGS]) seismic hazard reports[50,51,52,53,54] have detail in their subdivision of the surficial/alluvial formations and uses different symbols for some units.

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[45] Dibblee, T.W. and H.E. Ehrenspeck. 1992. Geologic Map of the Oat Mountain and Canoga Park (north1/2)Quadrangles, Los Angeles and Ventura Counties, California, Dibblee Foundation Map DF-36, scale 1:24,000.

[46] Dibblee, T.W. 1992. Geologic Map of the Calabasas Quadrangle, Los Angeles and Ventura Counties, California, Dibblee Foundation Map DF-37, scale 1:24,000.

[47] Dibblee, T.W. and H.E. Ehrenspeck. 1992. Geologic Map of the Simi Quadrangle, Ventura County, California, Dibblee Foundation Map DF-39, scale 1:24,000.

[48] Dibblee, T.W. and H.E. Ehrenspeck. 1993. Geologic Map of the Val Verde Quadrangle, Los Angeles and Ventura Counties, California, Dibblee Foundation Map DF-50, scale 1:24,000.

[49] Dibblee, T.W. and H.E. Ehrenspeck, H. E. 1996. Geologic Map of the Newhall Quadrangle, Los Angeles County, California, Dibblee Foundation Map DF-56, scale 1:24,000.

[50] California Division of Mines and Geology. [1997] Revised 2001. Seismic Hazard Evaluation of the 7.5-minute series Calabasas topographic quadrangle, Los Angeles County, California, California Department of Conservation, Division of Mines and Geology Open-File Report 006.

The proposed trails would be developed in man-made artificial fill and 10 natural geologic formations as described by Dibblee and cited below (see Table 5.1.6-1). The artificial fill and younger/older alluvial formations would generally have poorer geotechnical characteristics relative to stability and foundation suitability. These comprise roughly 20 percent of the total trail lengths. Bedrock formations would generally have good to excellent geotechnical characteristics relative to trail surfaces, cut slopes, and foundation suitability. On the other hand, bedrock can be subject to expansive soils, rockfall, difficult excavation, and bedding plane slope instability. Bedrock formations comprise roughly 80 percent of the total trail lengths. Landslide deposits associated with bedrock comprise less than 1 percent of the trail lengths.

Quaternary Formations

af – Artificial Fill. Artificial fill is found along the I-5 Freeway in one large subdivision in the mid-eastern portion of the Phase II.a area, as well as in some canyon bottoms, and along roads and trails where grading was necessary for construction. These fills may be engineered and compacted to modern standards or may be undocumented with unknown properties. In general, it can be expected that the engineered fill materials would be predominantly sand, silt, and fine gravel due to the ease of compaction. Locally present undocumented fills may contain larger materials (cobble, boulders) and trash (organic matter, metal, concrete, wood, etc.). These materials would not be suitable for use in future trails development projects. None of the proposed staging areas or skills parks are located within the artificial fill area. Currently it is estimated that none of the proposed trails lies within artificial fill (Table 5.1.6-1).

Qls – Landslide Deposits (Holocene). Landslide deposits are present, but not abundant, within the SSMTMP-PII area bedrock formations and are considered unstable masses (see Figures 2.2-3 and 2.2-4). These deposits result from mass movements of bedrock materials down slope due to some or all of (1) out-of-slope bedding planes, (2) weak materials properties, and (3) steep slopes. Dibblee[55,56,57,58,59] shows numerous landslides with the Saugus, Pico, and Towsley Formations

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[51] California Division of Mines and Geology. 1997. Seismic Hazard Evaluation of the 7.5-minute series Newhall topographic quadrangle, Los Angeles County, California, California Department of Conservation, Division of Mines and Geology Open-File Report 97-11.

[52] California Division of Mines and Geology. [1997]. Revised 2001. Seismic Hazard Zone Report for the 7.5-minute series Oat Mountain topographic quadrangle, Los Angeles County, California, California Department of Conservation, Division of Mines and Geology Seismic Hazard Zone Report 005.

[53] California Division of Mines and Geology. [1997]. Revised 2001. Seismic Hazard Zone Report for the 7.5-minute series Simi Valley West and Simi Valley East topographic quadrangles, Ventura and Los Angeles Counties, California, California Department of Conservation, Division of Mines and Geology Seismic Hazard Zone Report 002.

[54] California Division of Mines and Geology. 2002. Seismic Hazard Zone Report for the 7.5-minute series Val Verde topographic quadrangle, Los Angeles and Ventura Counties, California, California Department of Conservation, Division of Mines and Geology Seismic Hazard Zone Report 076.

[55] Dibblee, T.W. and H.E. Ehrenspeck. 1992. Geologic Map of the Oat Mountain and Canoga Park (north1/2) Quadrangles, Los Angeles and Ventura Counties, California, Dibblee Foundation Map DF-36, scale 1:24,000.

[56] Dibblee, T.W. 1992. Geologic Map of the Calabasas Quadrangle, Los Angeles and Ventura Counties, California, Dibblee Foundation Map DF-37, scale 1:24,000.

[57] Dibblee, T.W. and H.E. Ehrenspeck. 1992. Geologic Map of the Simi Quadrangle, Ventura County, California, Dibblee

primarily in the Phase II.a area as described below. Many of these landslide masses have their upper areas located immediately below prominent ridgelines. In addition, the CDMG seismic hazard report maps referenced above show landslides from various sources and indicate a much greater number than Dibblee (Figure 5.1.6-1, *Hydrology Map*). Since the sources vary, there is not complete agreement between the two maps. We assume the greater number of landslides for planning purposes (Table 5.1.6-1).

Figure 5.1.6-1 shows landslides scattered across Phase II.a and intersect with (or pass very near) several proposed trails south of Pico Canyon and one trail north of Pico Canyon in the Saugus Formation. The southernmost trail within the Phase II.b area appears to cross a landslide at the western edge of the area in the Lindero Canyon Formation. None of the six proposed staging areas or skills parks is located within mapped landslides in the Phase II.a or II.b areas.

Qa and Qg – Young Alluvial Deposits (Holocene). The Qa deposits occur within the larger canyons extending north and west within the SSMTMP-PII area (e.g., Potrero, Pico, Lyons, Rice, Towsley, East, Gavin, and extensions from Pico and unnamed tributary canyons to the Santa Clara River in the Phase II.a area). The map view of these deposits (see Figure 5.1.6-1) is typically an irregular linear ribbon, some of which pass beneath portions of each SSMTMP-PII area. Qa and Qg deposits generally consist of unconsolidated bouldery, cobbley, gravelly, sandy, or silty alluvial deposits within active and recently active alluvial channels/fans. Qa and Qg loose to medium dense, subject to erosion, and generally poorly suited for foundations and retaining structures. Phase II.b area has limited deposits (Table 5.1.6-1). A substantial portion of the trail segments in the Phase II.a area north of McBean Parkway are located within young alluvial deposits in an unnamed canyon. South of McBean Parkway trails are within mainly alluvium in portions of Pico, Towsley, East, Wiley, and Gavin Canyons. Within the Phase II.b area, there are a few areas with trails in younger alluvial deposits. Three of the six proposed Phase II.a staging areas or skills parks are located within mapped younger alluvial deposits and none within the Phase II.b area.

Qog – Older Alluvial Deposits (Late-Middle Pleistocene). Qog is an undifferentiated older alluvial fan deposit derived from the Saugus Formation (see Figure 5.1.6-1) in a large portion of the northeastern portion of the Phase II.a area adjacent to the I-5.[60] Qog consists largely of alluvial fan and high terrace deposits of gravel and sand crystalline basement rocks and the Saugus Formation (QTs). Alluvial fan surfaces can show moderately to well-developed pedogenic soils. None of the proposed staging areas or skills parks are located within the older alluvial deposits area in Phase II.a. As shown in Table 5.1.6-1, a small portion of the proposed trails in the Phase II.a area lie within the older alluvial deposits.

Foundation Map DF-39, scale 1:24,000.

[58] Dibblee, T.W. and H.E. Ehrenspeck. 1993. Geologic Map of the Val Verde Quadrangle, Los Angeles and Ventura Counties, California, Dibblee Foundation Map DF-50, scale 1:24,000.

[59] Dibblee, T.W. and H.E. Ehrenspeck. 1996. Geologic Map of the Newhall Quadrangle, Los Angeles County, California, Dibblee Foundation Map DF-56, scale 1:24,000.

[60] Dibblee, T. W., and Ehrenspeck, H. E. 1996. Geologic Map of the Newhall Quadrangle, Los Angeles County, California, Dibblee Foundation Map DF-56, scale 1:24,000.

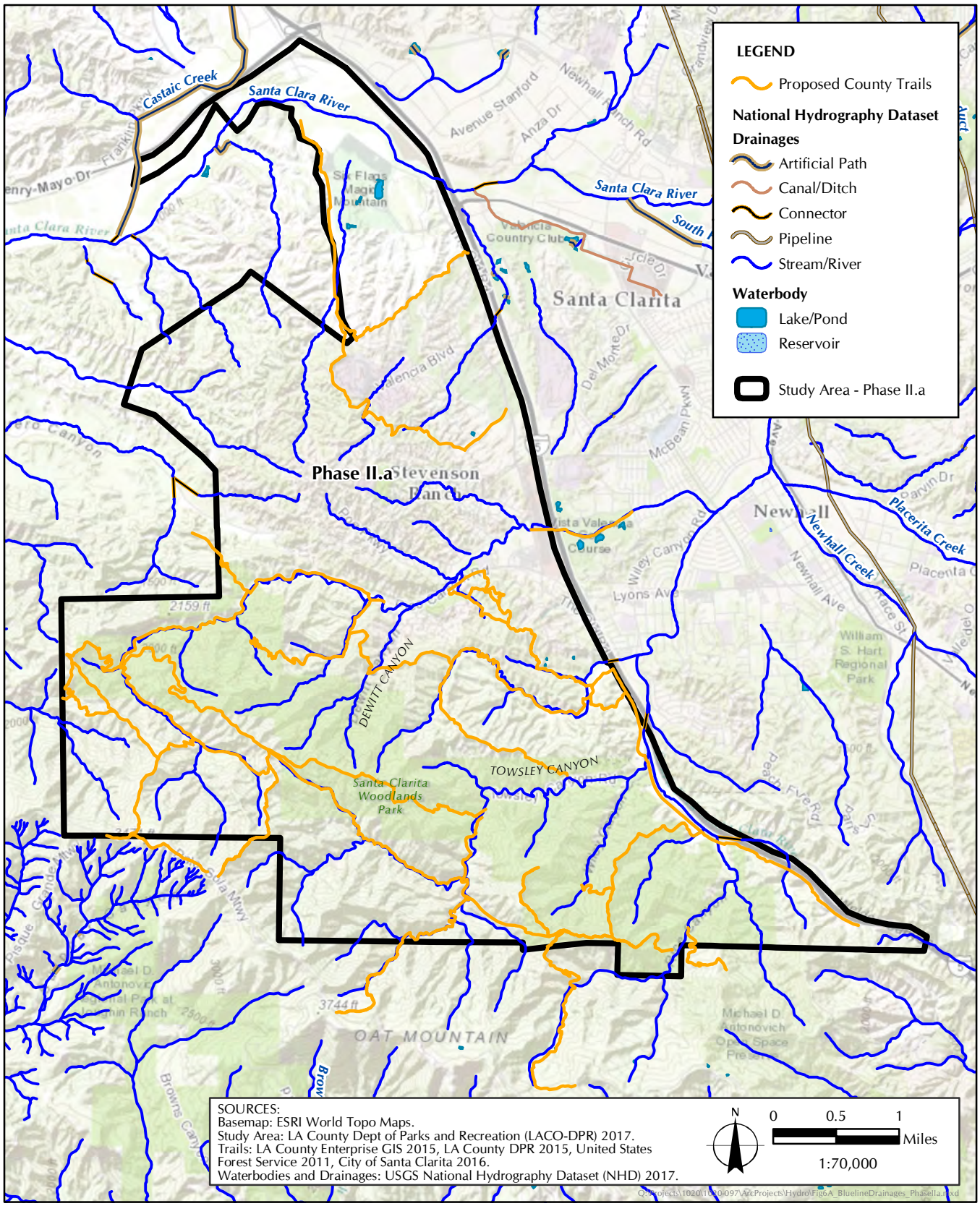

FIGURE 5.1.6-1a

Hydrology Map North

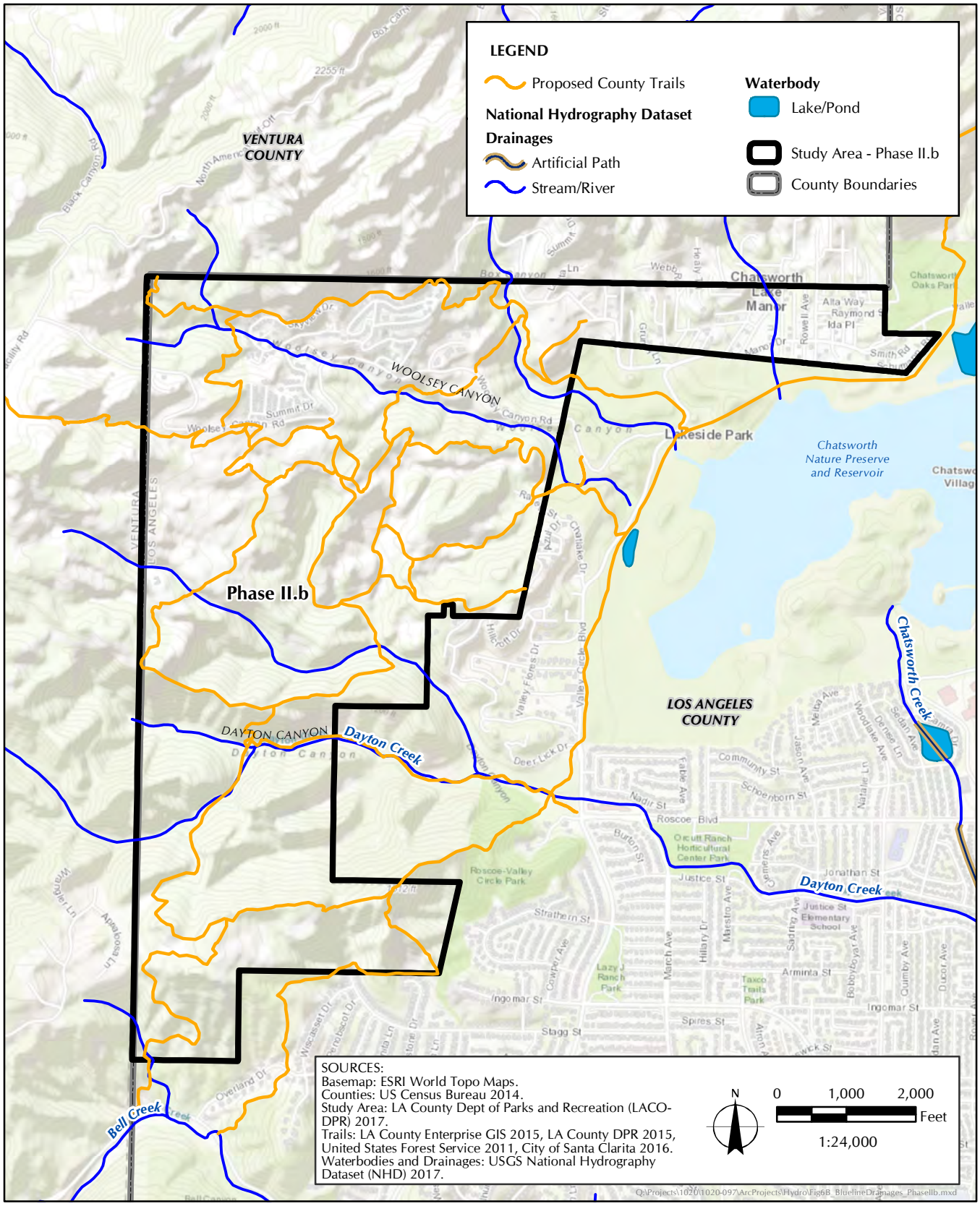

FIGURE 5.1.6-1b

Hydrology Map South

QTs-Saugus Formation (Early Pleistocene-Late Pliocene). QTs (Saugus Formation) is found in extensive exposures in the northwest portion of the Phase II.a area associated with Qog as described above, and adjacent to I-5 at Pico Canyon (see Figure 5.1.6-1). The formation consists of light gray and reddish brown slightly consolidated, poorly sorted, coarse-grained, cross-bedded sandstone and pebble conglomerate with minor amounts of soft siltstone overlying Pico Formation (Tp—discussed below). None of the proposed staging areas or skills parks is located within the Saugus Formation (QTs) and as shown in Table 5.1.6-1, less than 8 percent of the proposed trails in the Phase II.a lie within the Saugus Formation deposits.

Tertiary Bedrock Formations

Ts and Tsr – Saugus Formation and Sunshine Ranch Member (Upper Pliocene). The Sunshine Ranch Member (Tsr) of the Saugus Formation is found in a fairly limited area in the east-central portion of the Phase II.a areas extending west from I-5 (see Figure 5.1.6-1). The Tsr consists of fine-grained pebbly to cobbley conglomerate, and greenish-gray claystone and siltstone. The Saugus Formation (Ts) is found in a very limited area along the southeast boundary of Phase II.a where it is crossed by I-5 and is similar in composition to QTs. Due to the limited nature of the Saugus Formation (Tsr) exposures east of Towsley Canyon to the I-5, only a small percentage of the proposed trails are planned within this formation (Table 5.1.6-1) and one of the proposed skills parks is located within the Saugus Formation (Tsr) in the Phase II.a area.

Tp and Tps – Pico Formation (Pliocene). Tp and Tps consist of white to light gray poorly cemented semi-friable fine- to very fine-grained sandstone and some gray bedded to massive micaceous claystone-siltstone (Tp). It is found associated with Towsley Formation (Ttoc described below), and is exposed both in the northeast edge and along the axis of an anticline trending northwest through the south and western portions of the Phase II.a area (see Figure 5.1.6-1). A very substantial portion of the trail segments in the Phase II.a area south of McBean Parkway are located within Pico Formation bedrock (Table 5.1.6-1). One of the six proposed Phase II.a trailhead and staging areas is located within Pico Formation (and possibly some younger alluvium) in the Potrero-Pico Canyon area.

Ttos and Ttoc – Towsley Formation (Early Pliocene – Late Miocene). The Towsley Formation (Ttos/Ttoc) is the most prevalent bedrock formation in the Phase II.a area and underlies most of the central and southern portions of the area (see Figure 5.1.6-1). Ttoc consists of predominantly gray to brown thin-bedded micaceous claystone and siltstone, and contains minor interbeds of very fine-grained to coarse-grained sandstone. It is found in relatively narrow bands in the south and southcentral portions of the Phase II.a area. Ttos, the more extensive of the two members, consists of light gray and tan poorly to moderately cemented fine-grained sandstone with interbeds of pebbly sandstone, coarse-grained sandstone, and minor siltstone. The Towsley Formation, along with to the Pico Formation, underlies a substantial portion of the trail segments in the Phase II.a area south of McBean Parkway (Table 5.1.6-1). None of the six proposed Phase II.a trailhead and staging areas is located within Towsley Formation.

Tsq – Sisquoc Formation (Miocene). The Sisquoc Formation (Tsq) is exposed along the axis of the Pico Anticline trending northwest through the southcentral portion of the Phase II.a area (see Figure 5.1.6-1). Sisquoc Formation consists of a dark gray to brownish gray clay-rich shale that weathers to gravel- and cobble-size rock fragments. The Newhall oil field within the Phase II.a area is located along this axis. The Sisquoc Formation has a relatively limited exposure in the Phase II.a area, although a number of trails meet along the ridge adding more than would be expected from the

limited exposure of this formation (Table 5.1.6-1). None of the proposed staging areas or skills parks is located within the Sisquoc Formation.

Tls/Tlsc – Detrital Sediments in Lindero Canyon (Lindero Canyon Formation - Miocene). The Lindero Canyon Formation (Tls) consists of light gray to white massive sandstone that is semi-friable and locally contains conglomerate. Tls is exposed over approximately 11 percent of the southern one half of the Phase II.b area (see Figure 5.1.6-1). Tlsc is approximately 8 percent of this area and is composed of light gray calcareous sandstone that is massive to poorly bedded with gray conglomerate that is sparsely fossiliferous. Tls/Tlsc is exposed mainly south of Dayton Canyon. Within the southern one-third of the Phase II.b area two connected trail segments overlie the Lindero Canyon Formation, about evenly divided between the two members (Table 5.1.6-1). One proposed access area is underlain by Tlsc (and possibly some younger alluvium) along the southern boundary line.

Kcs – Chatsworth Formation (Upper Cretaceous). The Chatsworth Formation consists of a sandstone unit (Kcs) and very minor exposures of a shale unit (Kcsh). The shale is gray micaceous shale with siltstone and minor sandstone interbeds. Kcs is widespread in the upper roughly two-thirds of the Phase II.b area and consists of light gray to light brown medium grained sandstone that is hard, thick bedded, and contains minor layers of siltstone. The Chatsworth Formation underlies the trail segments in the upper two-thirds of the Phase II.b area north of Dayton Canyon (see Figure 5.1.6-1; Table 5.1.6-1). Nine of the 10 proposed Phase II.b access areas, trailhead and staging areas, and equestrian parks are located within Chatsworth Formation.

USDA Soil Classifications

There are nearly 60 U.S. Department of Agriculture (USDA) soil classification types within the SSMTMP-PII area.[61] Considering only those soils comprising more than 1 percent of the SSMTMP-PII area (representing over 90 percent of the area) reduces the number of soils (Table 5.1.6-2, *Approximate Trail Lengths/Miles within Soil Unit Class*).

The USDA website can provide general ratings (limitations and no limitations) for trail suitability are based on the properties of each soil type that affect trafficability and erodibility. The properties are "stoniness," depth to a water table, ponding, flooding, slope, and the texture of the surface layer. An erosion factor K is provided to indicate the susceptibility of a soil to sheet and rill erosion by water. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water. The estimates are modified by the presence of rock fragments. In general, the SSMTMP-PII area soils indicate substantial trail related limitations due to slope and the soil texture.

[61] U.S. Department of Agriculture. Accessed 28 July 2017. Online Web Soil Surveys. Available at: http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/survey/

TABLE 5.1.6-2
APPROXIMATE TRAIL LENGTHS/MILES WITHIN SOIL UNIT CLASSES

Soil Class Description	Estimated Trail Length/Miles in Each Soil Class		Total Trail Length in Miles in Each Soil Class
	Phase II.a	Phase II.b	
Anacapa sandy loam, 2 to 9 percent slopes total		0.19	0.19
Badland total		0.71	0.71
Balcom silty clay loam, 15 to 30 percent slopes, MLRA 20 total		0.17	0.17
Castaic and Saugus soils, 30 to 65 percent slopes, severely eroded total	3.62		3.62
Castaic-Balcom silty clay loams, 30 to 50 percent slopes total	1.78		1.78
Castaic-Balcom silty clay loams, 30 to 50 percent slopes, eroded total	6.44		6.44
Chualar-Urban land complex, 2 to 9 percent slopes total		2.06	2.06
Gaviota rocky sandy loam, 30 to 50 percent slopes, eroded total	15.44		15.44
Gaviota sandy loam, 30 to 50 percent slopes, warm MAAT, MLRA 20 total		2.87	2.87
Gaviota sandy loam, 9 to 30 percent slopes, MLRA 20 total		0.49	0.49
Gazos clay loam, 30 to 50 percent slopes total	3.34		3.34
Gazos silty clay loam, 15 to 30 percent slopes total	0.18	0.16	0.34
Hanford sandy loam, 0 to 2 percent slopes total	0.01		0.01
Hanford sandy loam, 2 to 9 percent slopes total	0.63		0.63
Metz loam, 2 to 5 percent slopes total	0.06		0.06
Millsholm rocky loam, 30 to 50 percent slopes, eroded total	7.89		7.89
Mocho loam, 0 to 2 percent slopes total	0.16		0.16
Ojai-Zamora loams, 15 to 30 percent slopes total	0.33		0.33
Riverwash total	0.06		0.06
Rock outcrop-Gaviota complex, 30 to 75 percent slopes, warm MAAT, MLRA 20 total		11.95	11.95
Saugus loam, 15 to 30 percent slopes total		0.49	0.49
Saugus loam, 30 to 50 percent slopes total	3.23		3.23
Saugus loam, 30 to 50 percent slopes, eroded total	1.51		1.51
Sedimentary rock land total		0.60	0.60
Sorrento loam, 2 to 5 percent slopes total	0.44		0.44
Xerorthents, 0 to 30 percent slopes total		0.22	0.22
Yolo loam, 2 to 9 percent slopes total	2.98		2.98
Yolo loam, fan piedmont, 0 to 9 percent slopes, MLRA 20 total	1.416		1.416
(Blank) total	0.47	0.28	0.75
Grand Total	**49.99**	**20.19**	**70.18**

NOTE: Numbers are rounded down to two decimal places.

Oil Fields

Portions of the SSMTMP-PII area overlie State-designated oil fields. These are from north to south the Castaic Junction, Newhall-Potrero, Lyons Canyon, and Newhall Oil Fields (Figure 5.1.6-2, *Oil Wells Map*). This portion of the Santa Susana Mountains/Santa Clara River Valley has a long history of oil and gas exploration and some subsequent development. The first wells in the area were drilled in the early 1900s. Most attempts to find commercial crude oil reserves were unsuccessful and wells that were not economical were plugged and abandoned. Unsuccessful exploratory holes were abandoned as "dry holes." It is possible that not all wells and dry holes within the SSMTMP-PII area were documented during the early development history, and also that some were not properly abandoned. Also, wells are not confined to within the designated oil field boundaries.

Figure 5.1.6-2 shows the approximate outline of the designated administrative oil field boundaries and the classifications of wells associated with each oil field. Within the designated Castaic Junction Oil Field boundaries (Phase II.a area), all wells are designated as plugged (not active). The Newhall-Potrero Oil Field (Phase II.a and Phase II areas) have mostly plugged wells, but two are inactive and four are active. Lyons Canyon has only plugged wells. Newhall is the largest field with five separately designated oil fields, no active wells, and with over a hundred plugged and buried wells depicted by the State Division of Oil, Gas, and Geothermal Resources.[62]

Each of these oil fields is associated with structural features (e.g., anticlines or elongated domes) that trap petroleum and related compounds (crude oil and natural gas). Although some minor surface subsidence and ground settlement may have occurred related to oil extraction, its distribution across a broad area is likely to have limited its potential effects and no substantial effects are known to have occurred. Similarly, the potential for future surface subsidence effects from oil extraction is considered very low.

Wells are classified as active, buried, inactive, new, plugged, and unknown. Most of the wells are plugged, and the second most common are inactive. There are a few unknown, buried, and new wells. Abandoned wells and dry holes (inactive and plugged) can represent potential hazards for areas with nearby buildings and occupants. Prior to regulations, many early wells and dry holes were plugged with telephone poles, railroad ties, or other debris before being buried. These holes represent potential vertical migration pathways for crude oil, methane, H_2S, and other compounds. In undeveloped areas, these holes may be an attractive nuisance that could pose a risk from these contaminants for nearby areas. DOGGR regulates drilling and abandonment of wells and dry holes. DOGGR regulations evolved over time to address problems and hazards identified in older wells. As a result, there are fewer problems associated with recently plugged wells and dry holes. Nevertheless, even when a well is plugged in accordance with DOGGR regulations, leaks can occur later.

[62] California Department of Conservation, Division of Oil, Gas, and Geothermal Resources (DOGGR). 2001. Oil Field Maps W1-1, W1-2, 253, and 254.

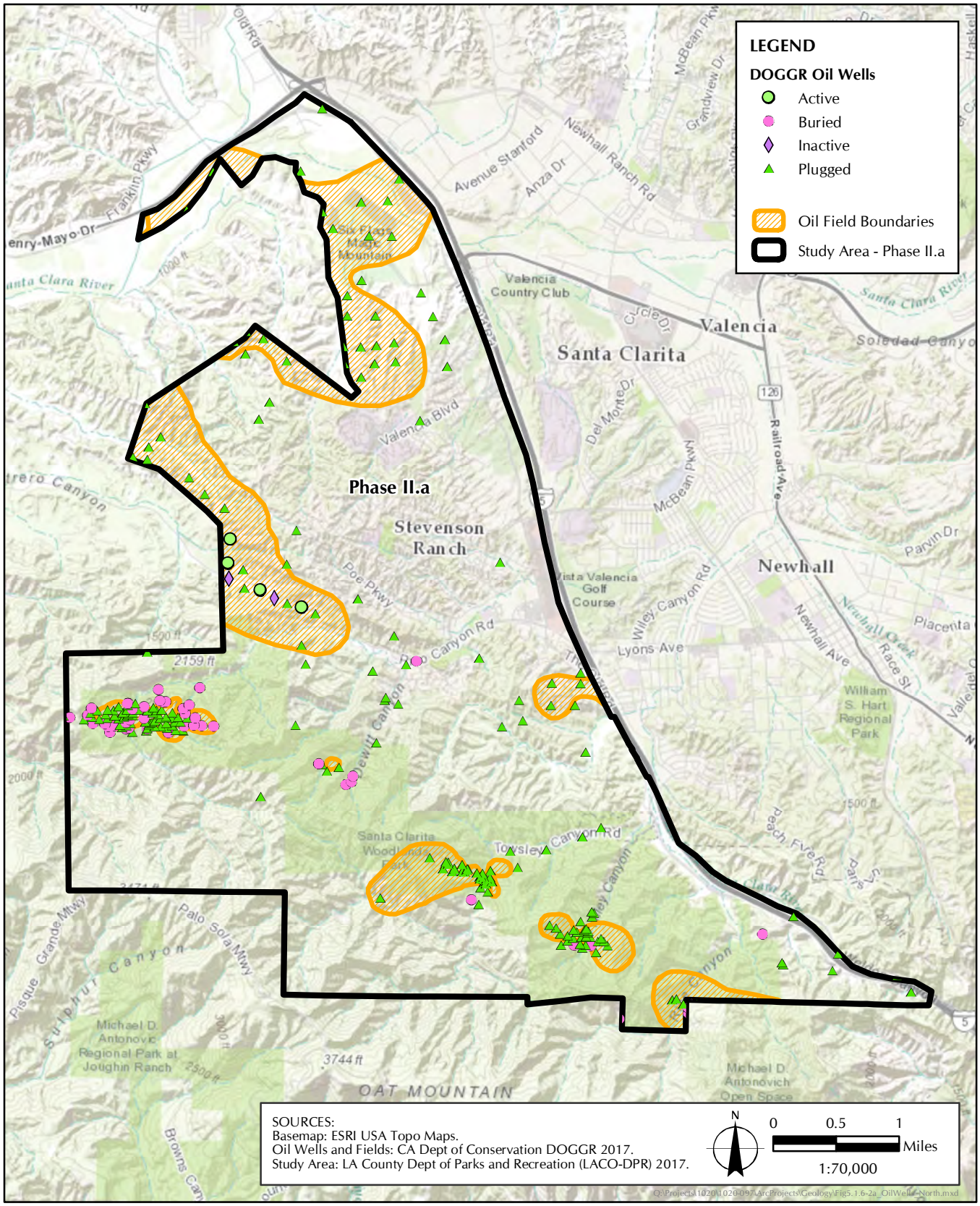

FIGURE 5.1.6-2a

Oil Wells Map North

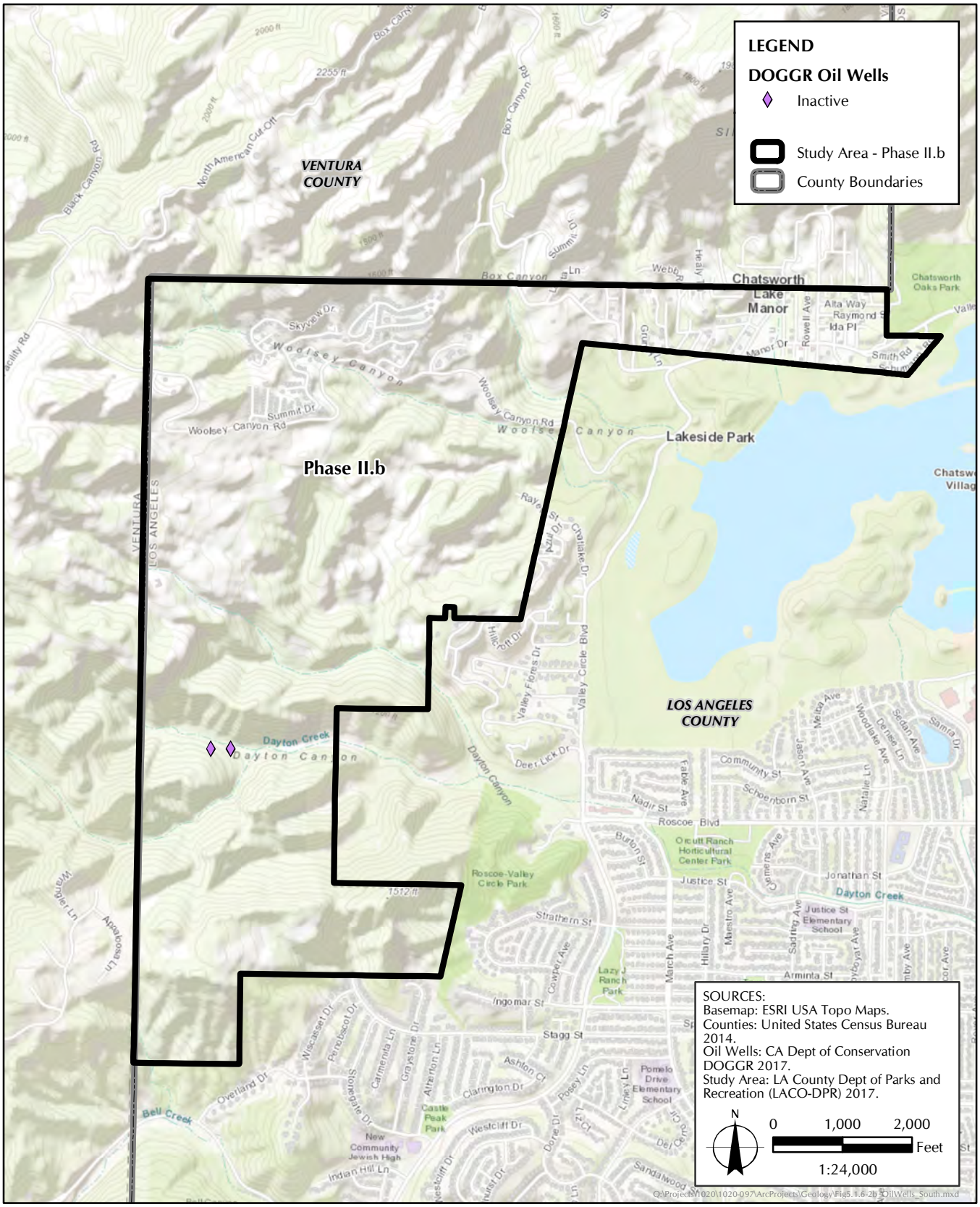

FIGURE 5.1.6-2b

Oil Wells Map South

Other forms of surface subsidence/settlement may occur in the SSMTMP-PII area if it is found to have soil susceptible to expansion/contraction (very clay-rich soils) and possibly hydroconsolidation (fine-grained granular soils). When present, moderate to high expansion indices indicate that there is a substantial amount of clay in the soils and repeated episodes of wetting and drying would cause distress to structures in contact with such soils. Consolidation (and long-term settlement) is most prominent in clay-rich and silt-rich soils, resulting from loading pressure created by overlying structures, including buildings or artificial fill. This added weight could collapse internal void spaces within the soils, causing overlying structures to settle, and possible damage. This consolidation and settlement can be much more dramatic under severe seismic shaking (dynamic settlement). Hydroconsolidation would also lead to settlement, but includes the addition of water into the soil structure causing more rapid and more substantial settlements.

5.1.7 Expansive Soil

Surface Subsidence and Settlement

Other surface subsidence/settlement may occur in the SSMTMP-PII area if it is found to have soil susceptible to expansion/contraction (very clay-rich soils) and possibly hydroconsolidation (fine-grained granular soils). When present, moderate to high expansion indices indicate that there is a substantial amount of clay in the soils and repeated episodes of wetting and drying would cause distress to structures in contact with such soils. Consolidation (and long-term settlement) is most prominent in clay-rich and silt-rich soils, resulting from loading pressure created by overlying structures, including buildings or artificial fill. This added weight could collapse internal void spaces within the soils, causing overlying structures to settle, and possible damage. This consolidation and settlement can be much more dramatic under severe seismic shaking (dynamic settlement). Hydroconsolidation would also lead to settlement, but includes the addition of water into the soil structure causing more rapid and more substantial settlements. Based on the generally clayey nature of the surface soils, it is concluded that expansion indices should be moderate to high. Non-engineered artificial fill and younger alluvial deposits are likely poorly consolidated and could be subject to hydroconsolidation.

5.1.8 Capability of Soils to Support Wastewater Treatment Systems

Groundwater

The vast majority of the SSMTMP-PII area is underlain by bedrock formations that store and transmit groundwater in permeable sedimentary beds such as sandstone, conglomerate, and siltstone, and through fractures caused by faulting, uplift, and folding of these older units. The bedrock "aquifers" usually produce springs and seeps in the hillsides and higher canyon areas or discharge into the larger canyon alluvial materials. In the larger drainages alluvial sand, gravel, and silt store and transmit water laterally down gradient toward the Santa Clara River and the San Fernando Valley. In the broader valley areas a complex system of alternating aquifers (highly permeable sand and gravel beds) and aquicludes (relatively low permeability sediments with a high proportion of clay and silt) characterizes the geology underlying the Santa Clara River and San Fernando Valleys. In some parts of the San Fernando Valley groundwater basin, aquicludes are discontinuous and "leaky," allowing groundwater to move upward or downward through/around them, depending on local conditions. Due to this leakage, precipitation, and surface water infiltration, localized perched water zones may accumulate above the regional groundwater level.

Historically highest (not necessarily present) groundwater depths are summarized by the CDMG[63,64,65,66,67] in studies to evaluate the liquefaction potential in the SSMTMP-PII area; these data do not continue into the bedrock or narrower canyon alluvial areas. Water levels in the SSMTMP-PII area vary generally between zero and 25 feet, but predominantly are around 10 feet deep. The Phase II.b alluvial areas appear to have had groundwater depth of <10 feet. In the Phase II.a area groundwater at the far north varies from zero at the Santa Clara River to ~10 feet in the adjacent flood plains and lower canyons, while at the mouth of Pico Canyon depths have been 55 to 75 feet deep. Phase II has some wells in Gavin Canyon with no groundwater contours, but groundwater is expected to be less than 50 feet deep due to liquefaction potential. These data do not preclude the possibility that some localized shallow "perched" groundwater could be encountered in areas immediately adjacent to the Holser fault. It is most likely that "perched" water zones would be associated with springs or seeps, and occurrences of water in these areas would be seasonal. Such occurrences would not likely be significant on ridgelines.

It is understood that trail-related facilities would include restrooms that would rely on natural soil seepage and infiltration potential. The alluvial/existing drainage areas would nearly all have groundwater in the 10- to 20-foot depth range suggesting that local contamination of seepage could reach the groundwater surface. Bedrock and older alluvial deposits are elevated above the existing drainages with groundwater correspondingly deeper or not present at all due to the low material permeabilities. Restroom facilities should be planned in locations away from the existing drainages and at elevations several tens of feet above these drainage elevations.

5.1.9 Conflicts with Hillside Management Area Ordinance or Hillside Design Standards

Topography, Slopes, and Major Drainage Courses

The SSMTMP-PII area is covered by five U.S. Geological Survey 15-minute quadrangle maps; these are the Calabasas,[68] Oat Mountain,[69] Simi Valley East,[70] Val Verde,[71] and Newhall[72] maps. Surface

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[63] California Division of Mines and Geology. [1997] Revised 2001. Seismic Hazard Evaluation of the 7.5-minute series Calabasas topographic quadrangle, Los Angeles County, California, California Department of Conservation, Division of Mines and Geology Open-File Report 006.

[64] California Division of Mines and Geology. 1997. Seismic Hazard Evaluation of the 7.5-minute series Newhall topographic quadrangle, Los Angeles County, California, California Department of Conservation, Division of Mines and Geology Open-File Report 97-11.

[65] California Division of Mines and Geology. [1997] Revised 2001. Seismic Hazard Zone Report for the 7.5-minute series Oat Mountain quadrangle, Los Angeles County, California, California Department of Conservation, Division of Mines and Geology Seismic Hazard Zone Report 005.

[66] California Division of Mines and Geology. [1997] Revised 2001. Seismic Hazard Zone Report for the 7.5-minute series Simi Valley West and Simi Valley East topographic quadrangles, Ventura and Los Angeles Counties, California, California Department of Conservation, Division of Mines and Geology Seismic Hazard Zone Report 002.

[67] California Division of Mines and Geology. 2002. Seismic Hazard Zone Report for the 7.5-minute series Val Verde quadrangle, Los Angeles and Ventura Counties, California, California Department of Conservation, Division of Mines and Geology Seismic Hazard Zone Report 076.

[68] U.S. Geological Survey. 1967. 7.5-minute series Calabasas topographic quadrangle, Los Angeles County, California.

[69] U.S. Geological Survey. 1969. 7.5-minute series Oat Mountain topographic quadrangle, Los Angeles County,

elevations in the overall Phase II areas range from approximately 3,430 feet above MSL at the southwest portion of Phase II.a to approximately 896 feet above MSL along the north edge of Chatsworth Reservoir in Phase II.b, and 920 feet above MSL at the far north adjacent to the Santa Clara River. The main drainages receiving runoff from the SSMTMP-PII area include the Santa Clara River, which receives drainage from Phase II.a, Gavin Canyon along the east edge of Phase II, and Chatsworth Reservoir at the east edge of Phase II.b. These drainages are shown on Figure 5.1.6-1 in the SSMTMP-PII area. The high and low elevations within each area are as follows (Table 5.1.9-1, *Approximate High and Low Elevations within Phase II.a and II.b Areas*):

TABLE 5.1.9-1
APPROXIMATE HIGH AND LOW ELEVATIONS

Phase II Sub-Area	Approximate Elevation (above mean sea level)	
	High	**Low**
Phase II.a	3,431 feet	946 feet
Phase II.b	1,877 feet	896 feet
SSMTMP-PII area	**3,431 feet**	**896 feet**

Each of the major and secondary canyons has corresponding ridgelines separating the adjacent canyons. Many of these ridgelines have been classified as significant primary or secondary ridgeline within the Hillside Management Area defined by the County of Los Angeles.[73] Ground surface slopes in the SSMTMP-PII are relatively steep, with most greater than 20 percent in the upper elevation hills and mountains and approximately 1 percent reaching greater than 40 percent adjacent to ridges. Slopes in the lowest foothills immediately adjacent to the mountains, in canyons, valley and active drainages designated above are generally less than 20 percent and predominantly less than 6 percent. Sensitive hillside design measures (2.1 through 2.12) would be applied to the trail and facilities (e.g., restrooms) designs to minimize the impact on the ridgelines.

Within the SSMTMP-PII area, most drainage areas form relatively narrow canyons at higher elevations and transition to the broader floodplains. With regard to drainage area size[74,75] the larger drainages in the SSMTMP-PII area are: for Phase II.a, the Santa Clara River and unnamed north-flowing drainages; for Phase II Potrero, Pico, Towsley, Lyon, Rice and Gavin; and for Phase II.b Box, Woolsey, Dayton, and Bell (see Figure 2.2-2 and Figure 5.1.6-1).

California.

[70] U.S. Geological Survey. 1969. 7.5-minute series Simi Valley East topographic quadrangle, Los Angeles County, California.

[71] U.S. Geological Survey. 1995. 7.5-minute series Val Verde topographic quadrangle, Los Angeles County, California.

[72] U.S. Geological Survey. 1995. 7.5-minute series Newhall topographic quadrangle, Los Angeles County, California.

[73] County of Los Angeles. 2015. Los Angeles County General Plan 2035. Hillside Management. Available at: http://planning.lacounty.gov/assets/upl/project/gp_2035_2015-FIG_9-8_hillside_management_areas.pdf

[74] U.S. Geological Survey 1995. 7.5-minute series Val Verde topographic quadrangle, Los Angeles County, California.

[75] U.S. Geological Survey. 1995. 7.5-minute series Newhall topographic quadrangle, Los Angeles County, California.

5.2 IMPACT ANALYSIS

The following issue areas (Sections 5.1.1–5.1.9) are consistent with the County DPR Environmental Checklist Form and Appendix G of the State CEQA Guidelines for geology and soils. In accordance with the *California Building Industry Association v. Bay Area Air Quality Management District* decision discussed above (Section 3.2), a project would have a significant impact related to geology and soils if it would result in any of the following impacts for future users or residents on the project site:

a) Exacerbate existing hazardous conditions by bringing people or structures into areas that are susceptible to potential substantial adverse effects, including the risk of loss, injury, or death involving:
   i. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area based on other substantial evidence of a known fault? Refer to Division of Mines and Geology (now the California Geological Survey) Special Publication 42.
   ii. Strong seismic ground shaking
   iii. Seismic-related ground failure, including liquefaction
   iv. Landslides
b) Result in substantial soil erosion or the loss of topsoil
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse caused in whole or in part by the project's exacerbation of the existing environmental conditions.
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property caused in whole or in part by the project exacerbating the expansive soil conditions.
e) Have soils incapable of adequately supporting the use of septic tanks or alternative waste water disposal systems where sewers are not available for the disposal of waste water.

In addition, the County Trails Manual sets forth a process for analyzing the feasibility of each trail segment and this process should be followed. It indicates:

> This analysis sets forth a process for assessing the feasibility of accommodating multi-use trails on a case-by-case basis. Further, for this analysis, a geological ranking system should be developed to evaluate the geological conditions of each trail segment. The ranking system should utilize collected geologic information, including geologic formations, streams and drainage crossings, earthquake-induced landslide areas, and the surface gradients (slope).

5.2.1 Fault Rupture

The proposed project would result in less than significant impacts in regard to exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault. Therefore, no mitigation measures would be required. Although the SSMTMP-PII area is not located within a designated Alquist-Priolo zone, the Holser fault segment of the San Cayetano/Holser/Del Valle fault is of concern to the SSMTMP-PII area with regard to ground rupture. Active and potentially active faults may be sources of large earthquakes that would produce severe ground shaking within the SSMTMP-PII area. Severe shaking from a large earthquake

on the Holser fault centered near the Phase II.a area could cause ground rupture that would be very destructive to narrow ridgelines and steep slopes, causing severe cracking and slope failures. Therefore, the potential for such an event is very low, and the proposed project would not exacerbate existing fault hazard conditions. Any facilities that may be habitable for extended periods should not be built over or within 50 feet of any known or suspected active fault traces and should be built in accordance with the then applicable Los Angeles County and State of California Building Codes, and the guidelines set forth in the County Trails Manual.

5.2.2 Strong Seismic Ground Shaking

The proposed project would result in less than significant impacts in regard to exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving strong seismic ground shaking. Therefore, no mitigation measures would be required. The San Andreas, San Gabriel and San Cayetano/Holser/Del Valle faults are fault zones of most concern to the SSMTMP-PII area with regard to strong seismic ground shaking as a result of the potential for M6 to 8+ events. Active and potentially active faults may be sources of large earthquakes that would produce severe ground shaking within the SSMTMP-PII area. Local active strike-slip, reverse and thrust faults (e.g. San Fernando, Oak Ridge, San Cayetano/Holser/Del Valle, San Gabriel, and San Andreas faults) and more distant buried (blind) thrust faults (e.g., Northridge Hills, Puente Hills, and Elysian Park) have this potential as well. Severe shaking can be very destructive to narrow ridgelines and steep slopes, causing severe cracking and slope failures. Therefore, the potential for strong seismic ground shaking does exist. However, the proposed project would not exacerbate these existing seismic-related hazard conditions, assuming any project-related grading and/or construction is conducted in accordance with the applicable Los Angeles County and State of California Building Codes, and the guidelines set forth in the County Trails Manual.

5.2.3 Seismic-Related Ground Failure, Including Liquefaction and Lateral Spreading

The proposed project would result in less than significant impacts in regard to exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving seismic-related ground failure. Therefore, no mitigation measures would be required. The expected level of ground shaking in the SSMTMP-PII area is high enough to initiate liquefaction in non-bedrock areas with groundwater less than 40 feet deep in cohesionless sands as a result of expected high seismic shaking levels. Therefore, the potential for seismic-related ground failure, including liquefaction and lateral spreading, does exist. However, the proposed project would not exacerbate these existing seismic-related hazard conditions, assuming any project-related grading and/or construction is conducted in accordance with the applicable Los Angeles County and State of California Building Codes, and the guidelines set forth in the County Trails Manual.

5.2.4 Landslides

The proposed project would result in less than significant impacts in regard to exposure of people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving landslides. Therefore, no mitigation measures would be required. An estimated 80 to 90 percent of the mountains and hills of the SSMTMP-PII area are potential earthquake-induced landslide areas. These areas correspond to bedrock and to a lesser extent older alluvium with steep slopes. Landslide movement may occur along bedding planes within these formations, as rocks dislodged from exposures on steep slopes, or as surficial failures of weathered rock and soil/colluvium. Such movement could cause rock masses to dislocate and damage overlying facilities, and facilities

nearby and downslope from these bedrock and older alluvium areas. Therefore, the potential for landslide movement within the SSMTMP-PII area does exist. However, the proposed project would not exacerbate these existing landslide features or potentially unstable bedding plane hazard conditions, assuming any project-related grading and/or construction is conducted in accordance with the applicable Los Angeles County and State of California Building Codes, and the guidelines set forth in the County Trails Manual.

5.2.5 Substantial Soil Erosion or the Loss of Topsoil

The proposed project would result in less than significant impacts in regard to substantial soil erosion or the loss of topsoil. Therefore, no mitigation measures would be required. The SSMTMP-PII area has numerous primary and secondary drainages. Within the SSMTMP-PII area, most drainage areas form relatively narrow canyons at higher elevations and transition to the broader floodplains. In the Phase II.b area this is true where Box Canyon enters Chatsworth Reservoir. For Phase II.a, the liquefaction area is extensive on the north within the Santa Clara River floodplain and the broad unnamed canyons north to the river and east toward the valley occupied by I-5. Phase II liquefaction areas are concentrated in the prominent canyons, for example, Potrero, Pico, Wickham, Dewitt, Lyon, Gavin, Towsley, and a few smaller unnamed canyons. All eventually empty into north draining canyons, such as Gavin Canyon, and then to the Santa Clara River. Therefore, the potential for soil erosion and loss of topsoil within the SSMTMP-PII area does exist. However, the proposed project would not exacerbate these existing soil conditions, assuming any project related grading and/or construction is conducted in accordance with the applicable Los Angeles County and State of California Building Codes, and the guidelines set forth in the County Trails Manual.

5.2.6 Unstable Geologic or Soil Unit

The proposed project would result in less than significant impacts in regard to being located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project. Landslide and liquefaction potential are the most significant potential hazards. Therefore, no mitigation measures would be required. Oil field activity in the SSMTMP-PII area could lead to local subsidence that could manifest as cracks and areas of ground settlement. However, due to the likely limited extent of trails in these areas, to the years over which pumping has already occurred and to the relatively low level of oil extraction, this would have a minimal impact. Affected areas can be repaired to level ground and eliminate ground cracks that may form. As a result, the proposed project may result in trails or facilities that may be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction or collapse, possibly requiring specific project design features. Therefore, the potential for unstable geologic units and soils within the SSMTMP-PII area does exist. However, the proposed project would not exacerbate these existing seismic-related hazard conditions, assuming any project-related grading and/or construction is conducted in accordance with the applicable Los Angeles County and State of California Building Codes, and the guidelines set forth in the County Trails Manual.

5.2.7 Expansive Soil

The proposed project would result in less than significant impacts in regard to being located on expansive soil. Therefore, no mitigation measures would be required. The proposed project may result in the placement of trails or structures in areas of expansive soil. Surface

subsidence/settlement may occur in the SSMTMP-PII area where it is found to have soil susceptible to expansion/contraction (very clay-rich soils) and possibly hydroconsolidation (fine-grained granular soils). When present, moderate to high expansion indices indicate that there is a substantial amount of clay in the soils and repeated episodes of wetting and drying would cause distress to structures in contact with such soils. As a result, specific project design features could be required. Therefore, the potential for expansive soils within the SSMTMP-PII area does exist. However, the proposed project would not exacerbate these existing seismic-related hazard conditions, assuming any project-related grading and/or construction is conducted in accordance with the applicable Los Angeles County and State of California Building Codes, and the guidelines set forth in the County Trails Manual.

5.2.8 Onsite Wastewater Treatment Systems

The proposed project would result in less than significant impacts in regard to the capability of soils to adequately support the use of onsite wastewater treatment systems where sewers are not available for the disposal of wastewater. Therefore, no mitigation measures would be required. All proposed restrooms and any other areas where wastewater would be generated are within sanitation districts and thus would be connected to sanitary sewer lines. The proposed project may result in having soils incapable of adequately supporting the use of onsite wastewater treatment systems where sewers are not available for the disposal of wastewater. The proposed project plans for restroom facilities at trailheads that may require siting within soil types that would not support onsite water treatment systems, thus requiring specific project design features. Therefore, the potential for having soils incapable of adequately supporting the use of onsite wastewater treatment systems within the SSMTMP-PII area does exist. However, the proposed project would not exacerbate these existing seismic-related hazard conditions, assuming any project-related grading and/or construction is conducted in accordance with the applicable Los Angeles County and State of California Building Codes, and the guidelines set forth in the County Trails Manual.

5.2.9 Hillside Management Area Ordinance

The proposed project would result in less than significant impacts in regard to conflicts with the Hillside Management Area Ordinance or hillside design standards in the County General Plan. Therefore, no mitigation measures would be required. The Los Angeles County Hillside Management Ordinance applies to areas greater than 25 percent slope. Of the total of approximately 14,808-acre study area, approximately 11 acres, or <1 percent of the total study area, consists of slopes greater than 25 percent. Portions of proposed recreational trails may cross through the areas with a greater than 25 percent slope. Trails that cross through these areas would be subject to the requirements and design standards of the Hillside Management Ordinance and hillside design standards in the Conservation and Open Space element of the General Plan. Specifically, sensitive hillside design measures (2.1 through 2.12) would be applied to the trail and facilities (e.g., restrooms). Further, the Hillside Management Ordinance requires that all new development in areas over 25 percent obtain a conditional use permit as part of the entitlement process. Therefore, the proposed project would not result in. Therefore, the potential for conflict with the Hillside Management Area Ordinance or the hillside design standards in the Conservation and Open Space Element of the County's General Plan within the SSMTMP-PII area does exist. However, the proposed project would not be in violation, assuming any project-related grading and/or construction is conducted in accordance with the applicable Los Angeles County and State of California Building Codes, and the guidelines set forth in the County Trails Manual.

5.3 PROJECT DESIGN FEATURES

The project would not require mitigation measures if all project design features are implemented for all project elements associated with ground disturbing activities and with trail construction and/or improvements based on necessary geotechnical and geologic studies in accordance with the applicable Los Angeles County and State of California Building Codes, and the guidelines set forth in the County Trails Manual. The County Trails Manual, in particular Chapter 4.0, *Trail Design*, describes project design features that, with proper implementation, would serve to avoid, minimize, or substantially reduce impacts due to geology and soils.

5.3.1 Faulting and Earthquakes, Seismic Ground Shaking, Liquefaction/Seismic-Related Ground Failure, and Landslides

Although the SSMTMP area is not located within a designated Alquist-Priolo zone, the Holser fault segment of the San Cayetano/Holser/Del Valle fault could experience ground rupture and related ground disturbance. It is possible that fault movement of a few inches to several feet could occur with potential M6.0 to 7.0 events. Project design should not allow any facilities that may be habitable for extended periods to be built over or within 50 feet of the active or potentially fault traces in the Phase II.a area adjacent to the Holser fault and the Phase II.b area adjacent to the Chatsworth fault. Project maintenance should consider fault displacement and severe cracking in these areas as post-earthquake maintenance issues.

Active and potentially active faults (red, orange, and green) may be sources of large earthquakes (M6.0 to 7.0) that would produce severe ground shaking within the SSMTMP-PII area. Local active strike-slip, reverse and thrust faults (e.g. San Fernando, Oak Ridge, San Cayetano/Holser/Del Valle, San Gabriel, and San Andreas faults) and more distant buried (blind) thrust faults (e.g., Northridge Hills, Puente Hills, and Elysian Park) have this potential. Severe shaking can be very destructive to narrow ridgelines and steep slopes, causing severe cracking and slope failures. Project maintenance should consider severe ground shaking affects in these areas as post-earthquake maintenance issues.

The expected level of ground shaking in the SSMTMP-PII area is high enough to initiate liquefaction as a result of expected high seismic shaking levels, areas of shallow groundwater, and cohesionless sands. As a result, in liquefaction prone areas (alluvial valley and floodplains), the proposed project may experience seismic-related ground failure, including settlement, liquefaction, and lateral spreading. Any significant structures planned within or immediately adjacent to a potential liquefaction should be evaluated with a geotechnical study to define the potential hazards. Appropriate recommendations would be made possibly including:

- Avoidance of the area
- Special foundations (piles or reinforced mats)

An estimated 80 to 90 percent of the mountains and hills of the SSMTMP-PII area are potential earthquake-induced landslide areas. These areas correspond to bedrock and to a lesser extent older alluvium with steep slopes. Landslide movement may occur along bedding planes within these formations, as rocks dislodged from exposures on steep slopes, or as surficial failures of weathered rock and soil/colluvium. Such movement could cause rock masses to dislocate and damage overlying facilities and facilities nearby and downslope from these bedrock and older alluvium areas. As a result, the proposed project design within areas of potential seismically induced

landslides should be evaluated with a geotechnical study to define the potential hazards. Appropriate recommendations would be made possibly including:

- Avoidance of the area
- Up slope and down slope retaining structures
- Rock fences

5.3.2 Substantial Soil Erosion or the Loss of Topsoil

The proposed project could result in soil erosion or the loss of topsoil. The SSMTMP-PII area has numerous primary and secondary drainages as discussed above. Project design should consider the affects of any significant structures or facilities that would block, divert, or accentuate change to an existing drainage and as such cause potential soil erosion or loss of topsoil. A geotechnical study may be performed to define the potential soil erosion risks and provide specific design recommendations to avoid or minimize affects possibly including:

- Engineered swales,
- Culverts, and
- Catchment basins.

5.3.3 Unstable Geologic or Soil Unit

The proposed project could be constructed on or near a geologic unit or soil that is unstable, or that would become unstable as a result of the project. Based on a review of available documents describing the geology of the SSMTMP-PII area, it is underlain by (1) younger Quaternary-age artificial fill/alluvium/surficial sediments (map symbols af, Qa and Qg, (2) landslide deposits (Qls), (3) older alluvium/surficial sediments (Qog), (4) Quaternary-age soft bedrock formations (QTs), (5) Tertiary-age hard to very hard sedimentary bedrock formations, and (6) an older hard to very hard sedimentary bedrock formation.[76,77,78,79,80] Artificial fill may be present in selected areas not yet mapped. With this large variation in geologic units, the relative difficulty of excavation, the suitability for safe trail or roadway surfaces, the stability of construction slopes, and the suitability of excavated materials for use as backfill would also vary. It is believed that all units except artificial fill and young alluvium should meet minimum requirements for the items listed. Potentially unstable areas should be evaluated with a geotechnical study to define the unstable

[76] Dibblee, T.W. and H.E. Ehrenspeck. 1992. Geologic Map of the Oat Mountain and Canoga Park (north1/2) Quadrangles, Los Angeles and Ventura Counties, California, Dibblee Foundation Map DF-36, scale 1:24,000.

[77] Dibblee, T.W. 1992. Geologic Map of the Calabasas Quadrangle, Los Angeles and Ventura Counties, California, Dibblee Foundation Map DF-37, scale 1:24,000.

[78] Dibblee, T.W. and H.E. Ehrenspeck. 1992. Geologic Map of the Simi Quadrangle, Ventura County, California, Dibblee Foundation Map DF-39, scale 1:24,000.

[79] Dibblee, T.W. and H.E. Ehrenspeck. 1993. Geologic Map of the Val Verde Quadrangle, Los Angeles and Ventura Counties, California, Dibblee Foundation Map DF-50, scale 1:24,000.

[80] Dibblee, T.W. and H.E. Ehrenspeck. 1996. Geologic Map of the Newhall Quadrangle, Los Angeles County, California, Dibblee Foundation Map DF-56, scale 1:24,000.

areas and to provide appropriate design recommendations would be made to avoid affects from unstable areas possibly including:

- Avoidance of the area
- Up slope and down slope retaining structures
- Rock fences

Geologic structure includes folding, tilting, and faulting of the geologic units. The geologic structure is very complex with numerous faults, folds, fractures and disturbed bedrock layers with bedding (dip) angles range from very shallow (less than 20 degrees), into and out of slope, to vertical (90 degrees). This indicates that the orientation and height of natural slopes would control in many cases the preferred trail path and gradient, that is, certain orientations and heights may exposed unfavorable bedding, fault features, and fracture planes that may render a slope unstable and, therefore, unsafe. It is expected that most proposed graded slopes would not be extensive in height or width so that this project-induced slope stability concern should be limited. However, a geotechnical study should be performed to define these unfavorable conditions and necessary design and construct stabilization features to overcome these potential instabilities possibly including:

- Avoidance of the area
- Reduced slope angle
- Retaining structure
- Slope reorientation

5.3.4 Expansive Soil

The proposed project trails or structures would be in part constructed in areas of expansive soil. When present, moderate to high expansion indices indicate that there is a substantial amount of clay in the soils and repeated episodes of wetting and drying could cause distress to structures in contact with such soils. A geotechnical study should be performed to define these unfavorable conditions and the necessary facility design and construct measures possibly including:

- Avoidance of the area
- Use non-expansive materials

5.3.5 Groundwater/Wastewater and Landslides/Mudflows

The proposed project could encounter soils incapable of adequately supporting the use of onsite wastewater treatment systems where sewers are not available for the disposal of wastewater. The vast majority of the SSMTMP-PII area is underlain by bedrock formations that store and transmit groundwater in permeable sedimentary beds such as sandstone, conglomerate, and siltstone and through fractures caused by faulting, uplift, and folding of these older units. This flow can produce springs and seeps in the hillsides and higher canyon areas or discharge into the larger canyon alluvial materials. Where sewers are available at such facilities no project design considerations are required for the disposal of wastewater. In other areas design and location of restroom facilities should consider groundwater depth and proximity to potentially shallow groundwater in existing drainages, as well as soils incapable of adequately supporting the use of onsite wastewater treatment systems. A geotechnical study should be performed to define these unsuitable conditions

and the necessary wastewater disposal facility design and construction measures possibly including:

- Avoidance of the area
- Septic systems

Mapped landslides are common throughout the SSMTMP-PII area and the steeper slopes are subject to mudflows and earthquake-induced slope failures. Areas where landslides are mapped provide the most concern for suitability and could affect design and construction. The project design for trails, roadways, and facilities should consider avoidance of theses areas as the most prudent option. For potential mudflow areas project design should consider:

- Avoidance of the area
- Up slope and down slope retaining structures
- Upslope structures/fences to capture or deflect the debris

5.3.6 Oil Fields and Wells

Portions of the SSMTMP-PII area overlie state-designated oil fields, specifically the Castaic Junction, Newhall-Potrero, Lyons Canyon, and Newhall Oil Fields, that have plugged (abandoned) wells, active and inactive wells, and buried wells. Prior to regulations, many early wells and dry holes were plugged with telephone poles, railroad ties, or other debris before being buried. These holes represent potential vertical migration pathways for crude oil, methane, H_2S, and other compounds. It is likely, due to the open space nature of the proposed project, that there would be limited opportunity for exposure to the named hazards. In undeveloped areas, these holes may be an attractive nuisance that could pose a risk from these contaminants for nearby areas. However, it would be advisable to avoid these oil field areas and as part of the project design to provide signage warning of the dangers. An appropriate technical study should be performed in oil field well areas to define trail- and facility-specific concerns for consideration in project design measures possibly including:

- Avoidance of the area
- Warning signs
- Fencing around problem areas
- Re-plug/abandon problems wells

5.3.7 Hillside Management Area Ordinance and Hillside Design Standards (Topography, Slopes, Significant Ridgelines, and Major Drainage Courses

The Los Angeles County Hillside Management Ordinance applies to areas greater than 25 percent slope. Of the total of approximately 14,808-acre study area, approximately 11 acres, or less than 1 percent of the total study area consists of slopes greater than 25 percent. Ground surface slopes in the SSMTMP-PII area are relatively steep with most greater than 20 percent in the upper elevation hills and mountains, reaching greater than 40 percent adjacent to ridges. Slopes in the lowest foothills immediately adjacent to the mountains, in canyons, valley and active drainages designated above are generally less than 20 percent and predominantly less than 6 percent. Portions of proposed recreational trails may cross through the areas with a greater than 25 percent slope. As a result, trails that cross through these areas would be subject to the requirements and

design standards of the Hillside Management Ordinance and hillside design standards in the Conservation and Open Space element of the General Plan. Specifically, sensitive hillside design measures (2.1 through 2.12) would be applied to the trail and facilities (e.g., restrooms). Further, the Hillside Management Ordinance requires that all new development in areas over 25 percent obtain a conditional use permit as part of the entitlement process. Therefore, compliance with existing regulations would not result in conflict with the Hillside Management Area Ordinance or the hillside design standards in the Conservation and Open Space Element of the County's General Plan.

SECTION 6.0
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APPENDIX A
1:24,000 SCALE USGS TOPOGRAPHIC MAPS

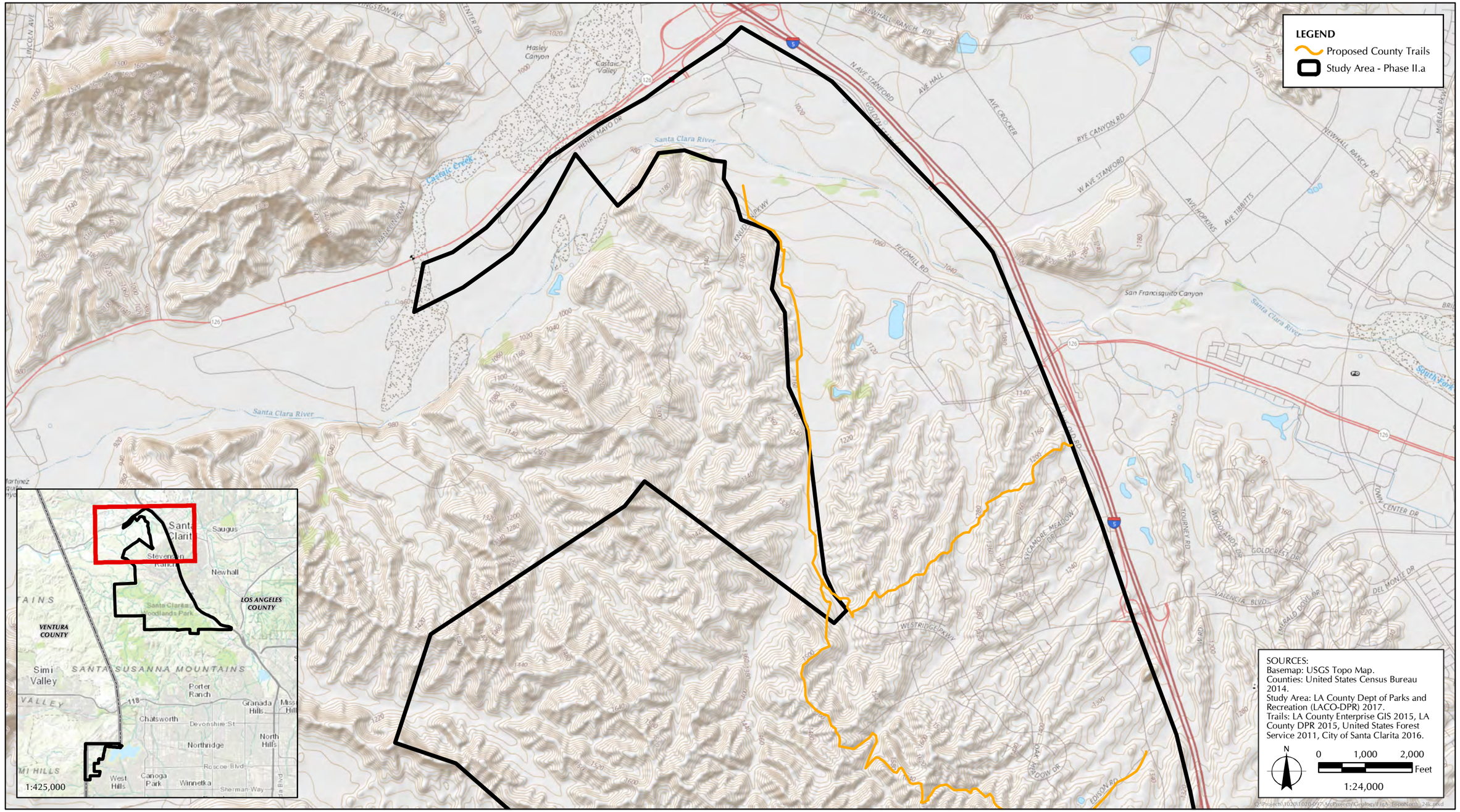

FIGURE A-1

1:24,000 Scale USGS Topographic Map North

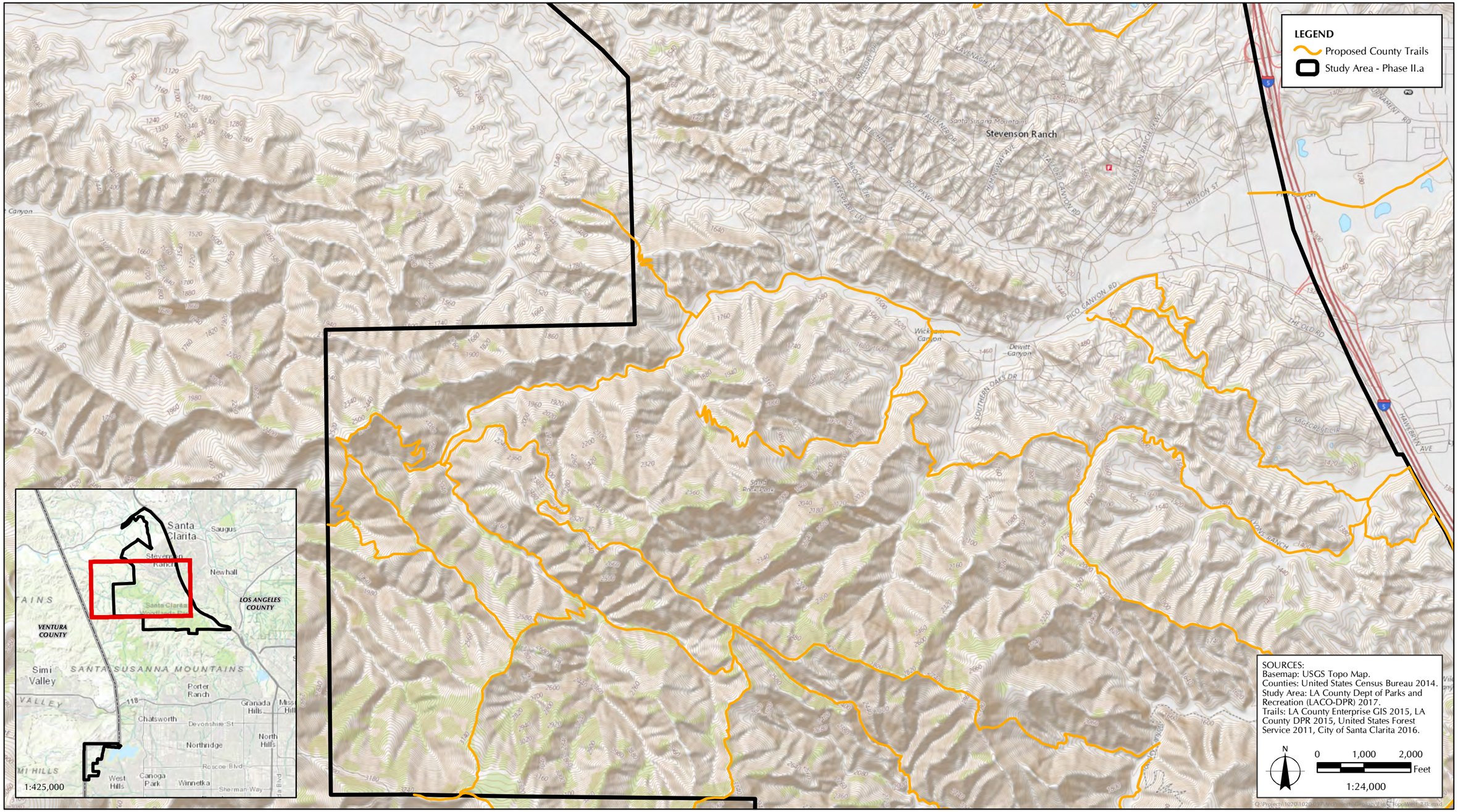

FIGURE A-2

1:24,000 Scale USGS Topographic Map West

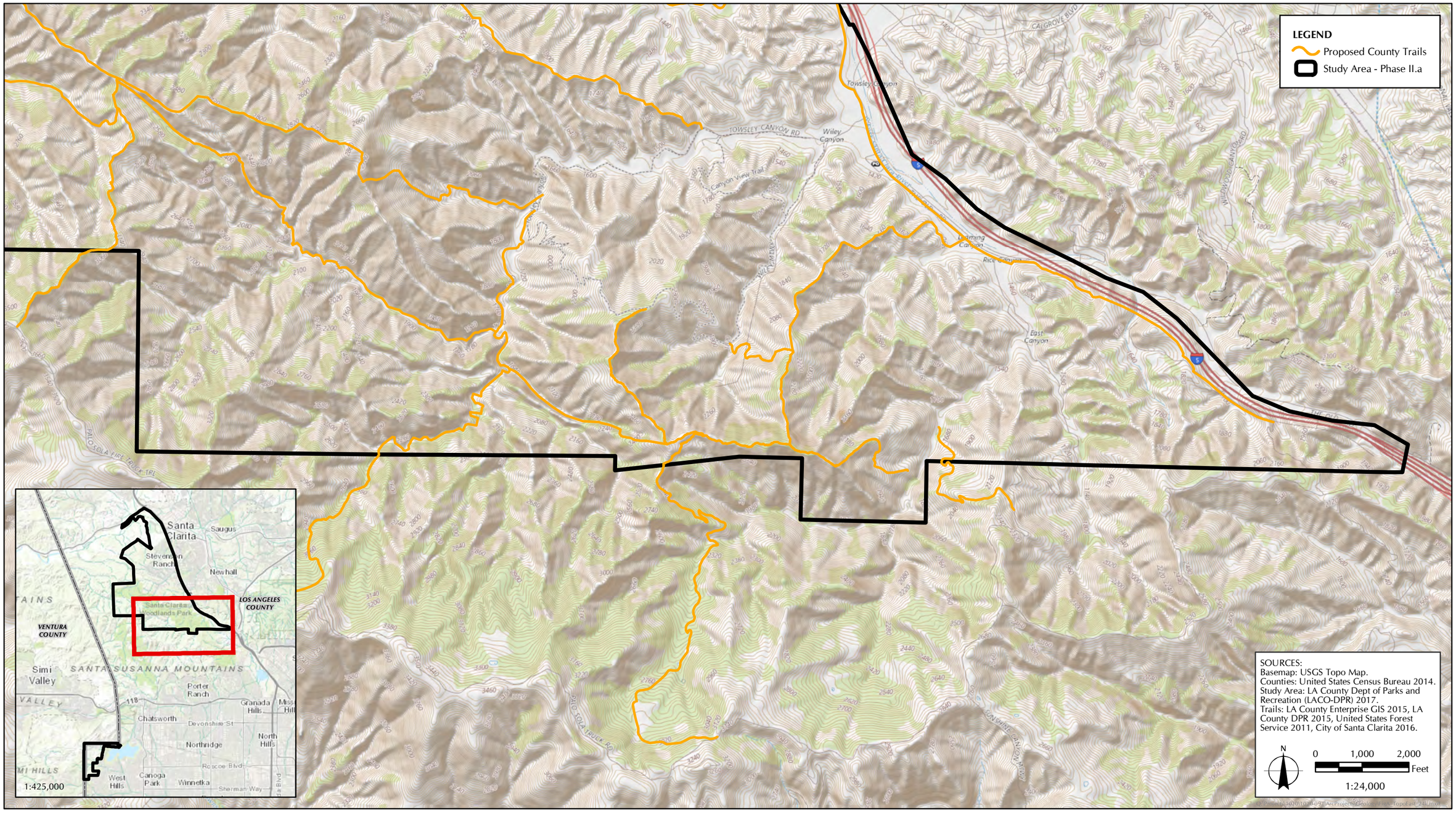

FIGURE A-3

1:24,000 Scale USGS Topographic Map East

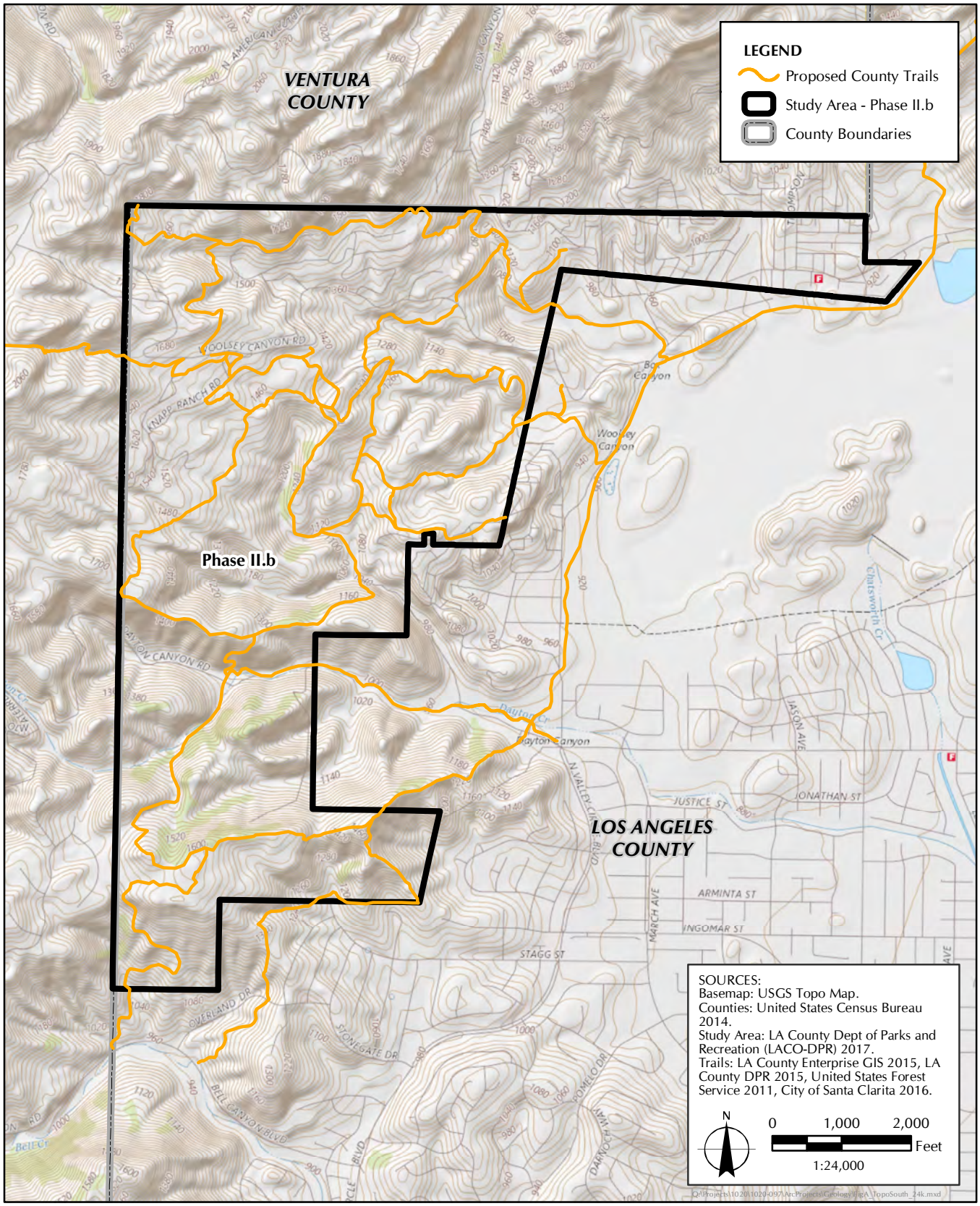

FIGURE A-4

1:24,000 Scale USGS Topographic Map South

The soils information below was extracted from a full report for all soils within the Castaic Multi-Use Trails Area. Only those predominant soils with greater than 4 percent areal coverage (~80% of all soils present) were selected for presentation here.

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Engineering Properties

This table gives the engineering classifications and the range of engineering properties for the layers of each soil in the survey area.

Hydrologic soil group is a group of soils having similar runoff potential under similar storm and cover conditions. The criteria for determining Hydrologic soil group are found in the National Engineering Handbook, Chapter 7 issued May 2007 (http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx?content=17757.wba). Listing HSGs by soil map unit component and not by soil series is a new concept for the engineers. Past engineering references contained lists of HSGs by soil series. Soil series are continually being defined and redefined, and the list of soil series names changes so frequently as to make the task of maintaining a single national list virtually impossible. Therefore, the criteria are now used to calculate the HSG using the component soil properties and no such national series lists will be maintained. All such references are obsolete and their use should be discontinued. Soil properties that influence runoff potential are those that influence the minimum rate of infiltration for a bare soil after prolonged wetting and when not frozen. These properties are depth to a seasonal high water table, saturated hydraulic conductivity after prolonged wetting, and depth to a layer with a very slow water transmission rate. Changes in soil properties caused by land management or climate changes also cause the hydrologic soil group to change. The influence of ground cover is treated independently. There are four hydrologic soil groups, A, B, C, and D, and three dual groups, A/D, B/D, and C/D. In the dual groups, the first letter is for drained areas and the second letter is for

undrained areas.

The four hydrologic soil groups are described in the following paragraphs:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

Depth to the upper and lower boundaries of each layer is indicated.

Texture is given in the standard terms used by the U.S. Department of Agriculture. These terms are defined according to percentages of sand, silt, and clay in the fraction of the soil that is less than 2 millimeters in diameter. "Loam," for example, is soil that is 7 to 27 percent clay, 28 to 50 percent silt, and less than 52 percent sand. If the content of particles coarser than sand is 15 percent or more, an appropriate modifier is added, for example, "gravelly."

Classification of the soils is determined according to the Unified soil classification system (ASTM, 2005) and the system adopted by the American Association of State Highway and Transportation Officials (AASHTO, 2004).

The Unified system classifies soils according to properties that affect their use as construction material. Soils are classified according to particle-size distribution of the fraction less than 3 inches in diameter and according to plasticity index, liquid limit, and organic matter content. Sandy and gravelly soils are identified as GW, GP, GM, GC, SW, SP, SM, and SC; silty and clayey soils as ML, CL, OL, MH, CH, and OH; and highly organic soils as PT. Soils exhibiting engineering properties of two groups can have a dual classification, for example, CL-ML.

The AASHTO system classifies soils according to those properties that affect roadway construction and maintenance. In this system, the fraction of a mineral soil that is less than 3 inches in diameter is classified in one of seven groups from A-1 through A-7 on the basis of particle-size distribution, liquid limit, and plasticity index. Soils in group A-1 are coarse grained and low in content of fines (silt and clay). At the other extreme, soils in group A-7 are fine grained. Highly organic soils are classified in group A-8 on the basis of visual inspection.

If laboratory data are available, the A-1, A-2, and A-7 groups are further classified as A-1-a, A-1-b, A-2-4, A-2-5, A-2-6, A-2-7, A-7-5, or A-7-6. As an additional refinement, the suitability of a soil as subgrade material can be indicated by a group index number. Group index numbers range from 0 for the best subgrade material to 20 or higher for the poorest.

Rock fragments larger than 10 inches in diameter and 3 to 10 inches in diameter are indicated as a percentage of the total soil on a dry-weight basis. The percentages are estimates determined mainly by converting volume percentage in the field to weight percentage.

Percentage (of soil particles) passing designated sieves is the percentage of the soil fraction less than 3 inches in diameter based on an oven dry weight. The sieves, numbers 4, 10, 40, and 200 (USA Standard Series), have openings of 4.76, 2.00, 0.420, and 0.074 millimeters; respectively. Estimates are based on laboratory tests of soils sampled in the survey area and in nearby areas and on estimates made in the field.

Liquid limit and *plasticity index* (Atterberg limits) indicate the plasticity characteristics of a soil. The estimates are based on test data from the survey area or from nearby areas and on field examination.

References:

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Absence of an entry indicates that the data were not estimated. The asterisk '*' denotes the representative texture; other possible textures follow the dash. The criteria for determining the hydrologic soil group for individual soil components is found in the National Engineering Handbook, Chapter 7 issued May 2007(http://directives.sc.egov.usda.gov/OpenNonWebContent.aspx? content=17757.wba).

Map Unit Symbol and Soil Name (Approximate % of Trails Area)	% of Map Unit	Hydrologic Group	Depth	USDA Texture	Classification		Fragments		Percentage Passing Sieve Number				Liquid Limit	Plasticity Index
					Unified	AASHTO	>10 Inches	3–10 Inches	4	10	40	200		
CmE—Castaic-Balcom silty clay loams, 15 to 30 percent slopes (4.2%)														
Castaic	50	C	0-9	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-83-95	65-75-85	40-45-50	10-15-20
			9-26	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-83-95	65-75-85	40-45-50	10-15-20
			26-30	Weathered bedrock	—	—	—	—	—	—	—	—	—	—
Balcom	40	C	0-10	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-85-95	65-75-85	40-45-50	10-15-20
			10-28	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-85-95	65-75-85	40-45-50	10-15-20
			28-32	Weathered bedrock	—	—	—	—	—	—	—	—	—	—

Map Unit Symbol and Soil Name (Approximate % of Trails Area)	% of Map Unit	Hydrologic Group	Depth	USDA Texture	Classification		Fragments		Percentage Passing Sieve Number				Liquid Limit	Plasticity Index
					Unified	AASHTO	> 10 Inches	3–10 Inches	4	10	40	200		
			In				*Pct*	*Pct*					*Pct*	
CmF—Castaic-Balcom silty clay loams, 30 to 50 percent slopes (11.9%)														
Castaic	50	C	0-11	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-83-95	65-75-85	40-45-50	10-15-20
			11-28	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-83-95	65-75-85	40-45-50	10-15-20
			28-32	Weathered bedrock	—	—	—	—	—	—	—	—	—	—
Balcom	40	C	0-10	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-85-95	65-75-85	40-45-50	10-15-20
			10-28	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-85-95	65-75-85	40-45-50	10-15-20
			28-32	Weathered bedrock	—	—	—	—	—	—	—	—	—	—
CmF2—Castaic-Balcom silty clay loams, 30 to 50 percent slopes, eroded (14.5%)														
Castaic	50	C	0-9	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-83-95	65-75-85	40-45-50	10-15-20
			9-26	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-83-95	65-75-85	40-45-50	10-15-20
			26-30	Weathered bedrock	—	—	—	—	—	—	—	—	—	—
Balcom	40	C	0-7	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-85-95	65-75-85	40-45-50	10-15-20
			7-25	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-85-95	65-75-85	40-45-50	10-15-20
			25-29	Weathered bedrock	—	—	—	—	—	—	—	—	—	—
			In				*Pct*	*Pct*					*Pct*	

Map Unit Symbol and Soil Name (Approximate % of Trails Area)	% of Map Unit	Hydrologic Group	Depth	USDA Texture	Classification		Fragments		Percentage Passing Sieve Number				Liquid Limit	Plasticity Index
					Unified	AASHTO	> 10 Inches	3–10 Inches	4	10	40	200		
CmG2—Castaic- Balcom silty clay loams, 50 to 65 percent slopes, eroded (4.7%)														
Castaic	50	C	0-9	Silty clay loam	ML	A-7	0-0-0	0-0-0	95-98-100	85-90-95	70-83-95	65-75-85	40-45-50	10-15-20
			9-26	Silty clay loam	ML	A-7	0-0-0	0-0-0	95-98-100	85-90-95	70-83-95	65-75-85	40-45-50	10-15-20
			26-30	Weathered bedrock	—	—	—	—	—	—	—	—	—	—
Balcom	40	C	0-7	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-85-95	65-75-85	40-45-50	10-15-20
			7-25	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-85-95	65-75-85	40-45-50	10-15-20
			25-29	Weathered bedrock	—	—	—	—	—	—	—	—	—	—
CnG3—Castaic and Saugus soils, 30 to 65 percent slopes, severely eroded (8.4%)														
Castaic	45	C	0-9	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-83-95	65-75-85	40-45-50	10-15-20
			9-26	Silty clay loam	ML	A-7	0-0-0	0-0-0	90-95-100	85-90-95	70-83-95	65-75-85	40-45-50	10-15-20
			26-30	Weathered bedrock	—	—	—	—	—	—	—	—	—	—
Saugus	35	B	0-8	Loam	SM	A-2	0-0-0	0-0-0	80-90-100	75-80-85	45-55-65	20-28-35	0-0 -0	NP
			8-40	Loam, sandy loam	SM	A-2	0-0-0	0-0-0	80-90-100	75-80-85	45-55-65	20-28-35	0-0 -0	NP
			40-44	Weathered bedrock	—	—	—	—	—	—	—	—	—	—
			In				*Pct*	*Pct*					*Pct*	
HcC—Hanford sandy loam, 2 to 9 percent slopes (4.9%)														
Hanford	85	A	0-8	Sandy loam	SM	A-2, A-4	0-0-0	0-0-0	85-93-100	75-88-100	50-63-75	25-38-50	20-25-30	NP-3 -5
			8-70	Fine sandy loam, sandy loam	SM	A-2, A-4	0-0-0	0-0-0	85-93-100	75-88-100	50-63-75	25-38-50	20-25-30	NP-3 -5

Map Unit Symbol and Soil Name (Approximate % of Trails Area)	% of Map Unit	Hydrologic Group	Depth	USDA Texture	Classification		Fragments		Percentage Passing Sieve Number				Liquid Limit	Plasticity Index
					Unified	AASHTO	> 10 Inches	3–10 Inches	4	10	40	200		
MhF2—Millsholm rocky loam, 30 to 50 percent slopes, eroded (5.2%)														
Millsholm	85	D	0-16	Loam	CL-ML, ML	A-4	0-0-0	0-0-0	80-90-100	75-88-100	70-83-95	50-63-75	25-30-35	5-8 -10
			16-20	Unweathered bedrock	—	—	—	—	—	—	—	—	—	—
ScF2—Saugus loam, 30 to 50 percent slopes, eroded (24.2%)														
Saugus	85	B	0-15	Loam	SM	A-2, A-4	0-0-0	0-0-0	90-95-100	85-90-95	45-55-65	25-38-50	0-0-0	NP
			15-42	Loam, sandy loam	SM	A-2, A-4	0-0-0	0-0-0	90-95-100	85-90-95	45-55-65	25-38-50	0-0-0	NP
			42-46	Weathered bedrock	—	—	—	—	—	—	—	—	—	—

Appendix F

2017 Hydrology and Water Quality Technical Report

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN – PHASE II

Hydrology and Water Quality Technical Report

Prepared for:

County of Los Angeles
Department of Parks and Recreation
510 S. Vermont Ave.
Los Angeles, CA 90020

Prepared by:

Sapphos Environmental, Inc.
430 North Halstead Street
Pasadena, California 91107

November 2, 2017

SECTION ES
EXECUTIVE SUMMARY

This Hydrology and Water Quality Technical Report addresses potential impacts to hydrology and water quality that could result from proposed work associated with the Santa Susana Mountains Trails Master Plan (Trails Master Plan), including Phase II (SSMTMP-PII), located within unincorporated Los Angeles County, California. This study is based on the results of the records and archival research and map review conducted by Sapphos Environmental, Inc. Construction, recreational use, and maintenance activities associated with the proposed project would have the potential to result in impacts to hydrology and water quality, but these impacts would be reduced to below the level of significance with the incorporation of mitigation measures. Impacts on hydrology and water quality were evaluated in relation to the thresholds articulated in Appendix G of the California Environmental Quality Act Guidelines (State CEQA Guidelines) and the County of Los Angeles Department of Parks and Recreation's Environmental Checklist Form.

Water Quality Standards and Discharge Requirements

Construction or maintenance of trails that require grading in excess of 1 acre have the potential to violate water quality standards, particularly in relation to total dissolved sediments and be subject to the Construction General Permit. Impacts would be reduced to below the level of significance through preparation and implementation, of a Stormwater Pollution Prevention Plan (SWPPP). In addition, construction or maintenance of trails that require grading in a Significant Ecological Area (SEA) have the potential to violate water quality standards in a manner that would be deleterious for native fish and wildlife. Impacts would be reduced to below the level of significance through compliance with the County's Low Impact Development (LID) ordinance, requiring the use of two Best Management Practices (BMPs). Implementation of BMPs, required pursuant to the County's LID Ordinance, would be expected to reduce impacts to below the level of significance.

Groundwater Recharge Areas

The proposed project would result in no impacts to groundwater recharge or groundwater quality. The depth to groundwater within the Santa Clara River Valley Groundwater Basin has been reported at 10 to 100 feet below the ground surface in the SSMTMP-PII project area. The near surface grading required to accommodate new trails and improvements to existing trails would not impact the groundwater recharge areas.

Natural Drainages in Relation to Erosion and Flood Conveyance

The discharge of dredged or fill materials into wetlands and waters of the United States or the alteration of a natural drainage subject to the jurisdiction of the U.S. Army Corps of Engineers and/or subject to the jurisdiction of the California Department of Fish and Wildlife would have the potential to result in or erosion of compromise the natural flood conveyance functions, constituting a significant impact. Conformance with the mitigation measures required to use a Nationwide Permit, or obtain an individual permit under Section 404 of the Clean Water Act, or a Lake and Streambed Alteration Agreement under Section 1600 of the State Fish and Game Code, would reduce impacts to below the level of significance. Impacts would be further reduced through compliance with the County's LID ordinance.

Increase Habitat for Mosquitoes and Other Vectors that Transmit Diseases

The proposed project would result in no impacts related to increasing habitat for mosquitoes or other vectors that transmit diseases. The proposed project would not add water features or create conditions in which standing water would accumulate or that would increase habitat for mosquitoes and other vectors that transmit diseases such as the West Nile virus and result in increased pesticide use. Additionally, Los Angeles County has a "pack it in…pack it out" policy. This common saying is a simple yet effective way to get hikers to take their trash home with them.

Stormwater Drainage Systems

There would be no anticipated impact to existing stormwater drainage systems. The proposed project would be required to be designed in accordance with the recommendations of the County Trails Manual, including the use of erosion control devices. The proposed project would consist of primarily natural pervious surfaces and would not be expected to increase stormwater runoff.

Generate Construction or Post-Construction Runoff that would Violate Applicable Stormwater NPDES Permits or Otherwise Significantly affect Surface Water or Groundwater Quality

The proposed project would not generate construction or post-construction runoff that would violated existing National Pollutant Discharge Elimination System (NPDES) permits or otherwise significant affect surface water or groundwater quality. The proposed project would be required to be designed in accordance with the recommendations of the County Trails Manual. Impacts would be reduced to below the level of significance through preparation and implementation of a SWPPP and through compliance with the County's LID ordinance.

Conflicts with the Los Angeles County Low Impact Development Ordinance

Procedures from the County's LID Standards Manual would be followed to determine the difference in the proposed project's pre- and post-development runoff volumes and potential pollutant loads. All development would occur in compliance with the County's LID Ordinance.

Water Quality

Construction or maintenance of trails that require grading in excess of 1 acre have the potential to violate water quality standards, particularly in relation to total dissolved sediments and be subject to General Construction Permit. Impacts would be reduced to below the level of significance through preparation, and implementation, of a Stormwater Pollution Prevention Plan (SWPPP). There is one impaired water body within the proposed project study area: the Santa Clara River (in the Phase II.a. area). Recreation is an allowable use pursuant to the Basin Plan; therefore, the proposed project would be consistent with the Basin Plan.

Use Onsite Wastewater Treatment Systems in Areas with Known Geological Limitations

The proposed project would result in no impacts related to the use of onsite wastewater treatment systems in areas of known geological systems. The proposed project would not use onsite wastewater treatment systems.

Place Housing within a 100-Year Flood Hazard Area

The proposed project would have no impacts related to placing housing with a 100-year flood hazard area. The proposed project would not include the construction of new or relocation of existing housing.

Seiche, Tsunami, or Mudflows

The proposed project would not place structures in areas subject to inundation by seiche or tsunami. Although mudflow events likely would be relatively uncommon, the steep topography in the soil- and colluvium-covered bedrock terrain may generate mud- or debris-flows that could enter the project area from the hillside areas. However, the proposed project would be required to be designed in accordance with the recommendations of the County Trails Manual, which would reduce impacts to below the level of significance.

TABLE OF CONTENTS

SECTION 1.0
INTRODUCTION

This Hydrology and Water Quality Technical Report has been prepared to support the County of Los Angeles (County) Department of Parks and Recreation (DPR) in the development of Phase II of the Santa Susana Mountains Trails Master Plan (SSMTMP), located within unincorporated Los Angeles County, California. This report is based on archival research for the entire Trails Master Plan study area. In accordance with CEQA, this report presents the results of these efforts and provides a programmatic impact analysis and mitigation recommendations related to hydrology and water quality within the study area. While this report focuses on Phase II, it incorporates updated information for the Phase I study area.

1.1 CEQA COMPLIANCE

The County of Los Angeles Department of Parks and Recreation (DPR) proposes to complete the SSMTMP-PII, ultimately to amend the Parks and Recreation Element of the Los Angeles County General Plan 2035 (County General Plan) to include the SSMTMP-PII, which would guide future trail development and recommend improvements to existing trails. The proposed project would ultimately result in the construction and use of trails in public and private lands, some of which may involve the expenditure of public funds, and thus constitutes a project pursuant to the California Environmental Quality Act (CEQA). These trails would be located in the unincorporated territory of Los Angeles County; therefore, the County would be the Lead Agency pursuant to CEQA.

1.2 PURPOSE

The purpose of the Hydrology and Water Quality Technical Report is to support the County in development of a Master Plan that would minimize the impacts on the surrounding community. It is understood that the County expects to move forward with Phase II of the Trails Master Plan and seeks funding for construction, operation, and maintenance of the Trails Master Plan. This technical report provides the requisite information related to hydrology and water quality to support the County's decision-making process in relation to the Trails Master Plan. The evaluation of the proposed project's potential to result in significant impacts to hydrology and water quality was undertaken in accordance with Appendix G of the CEQA Guidelines, the County DPR Environmental Checklist Form, and the County General Plan. The analysis contained herein for Phase II can be extrapolated to assess the potential for the larger Trails Master Plan to result in significant impacts to hydrology and water quality as currently conceived by the County.

1.3 INTENDED AUDIENCE

This report provides information for consideration by DPR and the design team, Alta Planning + Design, engaged in the development of the SSMTMP-PII. The substantial evidence will be available for the responsible and trustee agencies, and the public, including property owners during circulation of the draft environmental document for public review. Ultimately, the Hydrology and Water Quality Technical Report will be used by the County Board of Supervisors to support their decision-making process related to the SSMTMP-PII. The technical report will also inform the County and private parties in the ultimate development, operation, and maintenance of trails in the plan area.

1.4 SCOPE

In May 2015, the County adopted the first phase of the Santa Susana Mountains Trails Master Plan (SSMFTMP), which involved the extension of the 35.7 miles of existing County-, City-, and Conservancy-managed trails in the Phase I and Phase II study areas by approximately 35.9 miles with 22 proposed trail segments, for a total of approximately 71.5 miles of trails within the SSMFTMP Area. In 2017, the County initiated planning efforts for further development of the Phase II study area, which has been expanded to Phase II.a and II.b. This technical report provides the requisite information related to hydrology and water quality to support the County's decision-making process in relation to the proposed project: regulatory framework; methods; existing conditions; thresholds of significance; and the consideration of the potential for direct, indirect, and cumulative impacts. This assessment is based on literature and database review to determine impacts to hydrology and water quality within or adjacent to the project area. The County of Los Angeles Trails Manual was consulted for best management practices which would be required . As the proposed project is a plan, the analysis was conducted a programmatic level of detail, consistent with the provisions of the State CEQA Guidelines.

1.5 WORKING DEFINITIONS

There are a number of technical terms used in the characterization of baseline conditions and assessment of the potential for the project to affect hydrology and water quality.

General Construction Activity Storm Water Permit: Where the U.S. Environmental Protection Agency (EPA) is the permitting authority, or in California acting through the State Water Resources Control Board (SWRCB) and Regional Water Quality Control Boards (RWQCBs), construction stormwater discharges are almost all regulated under the Construction General Permit (CGP), that requires compliance with effluent limits and other permit requirements, such as the development of a Storm Water Pollution Prevention Plan (SWPPP). Construction operators intending to seek coverage under General Construction Activity Storm Water Permit must submit a Notice of Intent (NOI) certifying that they have met the permit's eligibility conditions and that they will comply with the permit's effluent limits and other requirements.

Impaired Waters: Under section 303(d) of the Clean Water Act, states, territories, and authorized tribes are required to develop lists of impaired waters. These are waters that are too polluted or otherwise degraded to meet the water quality standards set by states, territories, or authorized tribes. The law requires that these jurisdictions establish priority rankings for waters on the lists and develop Total Maximum Daily Loads (TMDLs) for these waters.

Los Angeles Regional Water Quality Control Board (LA-RWQCB): The LARWQCB is one of nine statewide regional boards. The LA-RWQCB protects ground and surface water quality in the Los Angeles Region, including the coastal watersheds of Los Angeles and Ventura Counties, along with very small portions of Kern and Santa Barbara Counties. In order to carry out its mission "to preserve and enhance water quality in the Los Angeles Region for the benefit of present and future generations," the LA-RWQCB conducts a broad range of activities to protect ground and surface waters under its jurisdiction, including the development of the 303(d) list for impaired water bodies

Mudflow: Mudflows result from the downslope movement of soil and/or rock under the influence of gravity.

Non-Point Source Runoff: Runoff that occurs on surfaces before reaching a channel is also called a nonpoint source. If a nonpoint source contains man-made contaminants, the runoff is called nonpoint source pollution. A land area that produces runoff that drains to a common point is called a drainage basin. When runoff flows along the ground, it can pick up soil contaminants including, but not limited to petroleum, pesticides, or fertilizers that become nonpoint source pollution.

Runoff: Runoff is the water flow that occurs when the soil is infiltrated to full capacity and excess water from rain, meltwater, or other sources flows over the land. This is a major component of the water cycle, and the primary agent in water erosion. In addition to causing erosion and pollution, surface runoff in urban areas is a primary cause of urban flooding which can result in property damage, damp and mold in basements, and street flooding.

Safe Yield Limits: Safe yield limits define the amount of groundwater that can be extracted from a basin without causing negative long-term effects on the basin.

Seiche: A seiche is an oscillation of a body of water in an enclosed or semi-enclosed basin, such as a reservoir, harbor, lake, or storage tank.

State Water Resources Control Board: The federal Clean Water Act (CWA) is administered and enforced by the SWRCB, which develops regulations to implement water-quality control programs mandated at the federal and state levels. To implement these programs, California has nine RWQCBs.

Storm Water and Stormwater Runoff: Stormwater runoff is generated when precipitation from rain and snowmelt events flows over land or impervious surfaces and does not percolate into the ground. As the runoff flows over the land or impervious surfaces (e.g., paved streets, parking lots, and building rooftops), it accumulates debris, chemicals, sediment or other pollutants that could adversely affect water quality if the runoff is discharged untreated. The term *storm water* is used when employed by the cited source of information. In all other instances, *stormwater* is used, consistent with the provision of Appendix G of the State CEQA Guidelines and as defined by the EPA.

Stormwater Best Management Practices (BMPs): As defined by the California Stormwater Quality Association (CASQA), Stormwater BMPs include schedules of activities, prohibitions of practices, maintenance procedures, and other management practices to prevent, eliminate, or reduce the amount of pollution that reaches the receiving waters.

Stormwater Pollution Prevention Plan (SWPPP): A plan that provides site specific BMPs for sediment and erosion control. Typically, these plans are part of an overall design that details procedures to be followed during various phases of construction. This is required by a federal regulation governing stormwater runoff from active construction sites that are more than one acre in area, pursuant to the CGP.

Total Maximum Daily Loads (TMDLs): Under section 303(d) of the Clean Water Act, states, territories, and authorized tribes are required to develop TMDLs that calculate the maximum amount of a pollutant that a water body can receive and still safely meet water quality standards.

Tsunami: A tsunami is a great sea wave produced by a significant undersea disturbance.

Urban Water Management Plan: As defined by the SWRCB, Urban Water Management Plans (UWMPs) are prepared by California's urban water suppliers to support their long-term resource planning and ensure adequate water supplies are available to meet existing and future water demands. Every urban water supplier that either provides over 3,000 acre-feet of water annually or serves more than 3,000 or more connections is required to assess the reliability of its water sources over a 38-year planning horizon considering normal, dry, and multiple dry years. This assessment is to be included in its UWMP, which are to be prepared every five years and submitted to the Department of Water Resources (DWR). DWR then reviews the submitted plans to make sure they have completed the requirements identified in the UWMP Act (Division 6 Part 2.6 of the Water Code §10610–10656).

Water Resources Plans (WRP): A WRP provides a comprehensive overview of water resources and demands in the region; an overview of the water resources portfolio, or available resources; the approach used for forecasting water demand; recommendations for demand management and strategy for meeting long-term resources needs, including a plan of action for times of declared shortages. A WRP will normally include a discussion of the environmental issues that will influence future supply and demand.

Waters of the United States: Surface waters such as navigable waters and their tributaries, all interstate waters and their tributaries, natural lakes, all wetlands adjacent to other waters, and all impoundments of these waters, as defined by the CWA.

SECTION 2.0
PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The County adopted the SSMFTMP in May 2015, which proposed trails within a Phase I study area in the San Fernando Valley and a Phase II study area in the Santa Clarita Valley.[1] Phase II is the northerly part of the plan area. In 2017, the County initiated planning efforts for further development of the Phase II study area, which has been expanded to Phase II.a and II.b. The Trails Master Plan (approximately 49 square miles, inclusive of Phase I) is located north and west of the San Fernando Valley in the Santa Susana Mountains, in the western portion of the unincorporated area of the County of Los Angeles (Figure 2.1-1, *Regional Vicinity Map*). The Santa Susana Mountains are centrally located in the Transverse Ranges, a group of east-west trending mountains paralleling the Pacific Ocean between Santa Barbara and San Diego Counties.

2.2 TRAILS MASTER PLAN STUDY AREA

The SSMTMP-PII is the second phase of the previously approved SSMFTMP. The Trails Master Plan is located in the U.S. Geological Survey (USGS) 7.5-minute series, Newhall, Oat Mountain, Simi Valley East, and Val Verde, California, topographic quadrangles.

Phase I Area. Phase I of the Trails Master Plan is located on the USGS 7.5-minute series Simi Valley East and Oat Mountain topographic quadrangles. The northern boundary of the Trails Master Plan – Phase I, as described in the SSMFTMP approved in May 2015, is defined by the southern limits of the County's Newhall Ranch Specific Plan Area and the northern limits of the proposed Santa Susana Mountains / Simi Hills Significant Ecological Area (SEA). The southern boundary is defined by the northern limit of the City of Los Angeles. The eastern boundary is defined by U.S. Interstate 5 (I-5). The western boundary is defined by the corporate boundary between Los Angeles and Ventura Counties (Figure 2.2-1, *Trails Master Plan Location*). The SSMFTMP is divided into two subareas or phases (see Figure 2.2-1). Phase I is the Northwest San Fernando Valley Study Area, and Phase II is the Southwest Santa Clarita Valley Study Area. Phase I includes 16,038.1 acres (25.1 square miles); the northern boundary is defined by the northern limits of the Los Angeles County Oat Mountain Planning Area, the southern boundary is defined by the northern limit of the City of Los Angeles, the eastern boundary is defined by the I-5 freeway, and the western boundary is defined by the boundary between Los Angeles and Ventura Counties.

Phase II Area. Phase II from the SSMFTMP includes 8,084.4 acres (12.6 square miles). The northern boundary is defined by the northern limits of the proposed Santa Susana Mountains / Simi Hills SEA. The southern boundary is defined by the southern limits of the proposed Santa Susana Mountains / Simi Hills SEA. The eastern boundary is defined by the I-5 freeway. The western boundary is defined by the southern and eastern boundaries of the Newhall Ranch Specific Plan area.

[1] County of Los Angeles Department of Parks and Recreation. May 2015. *Santa Susana Mountains Final Trails Master Plan*. Available at: https://trails.lacounty.gov/Documents

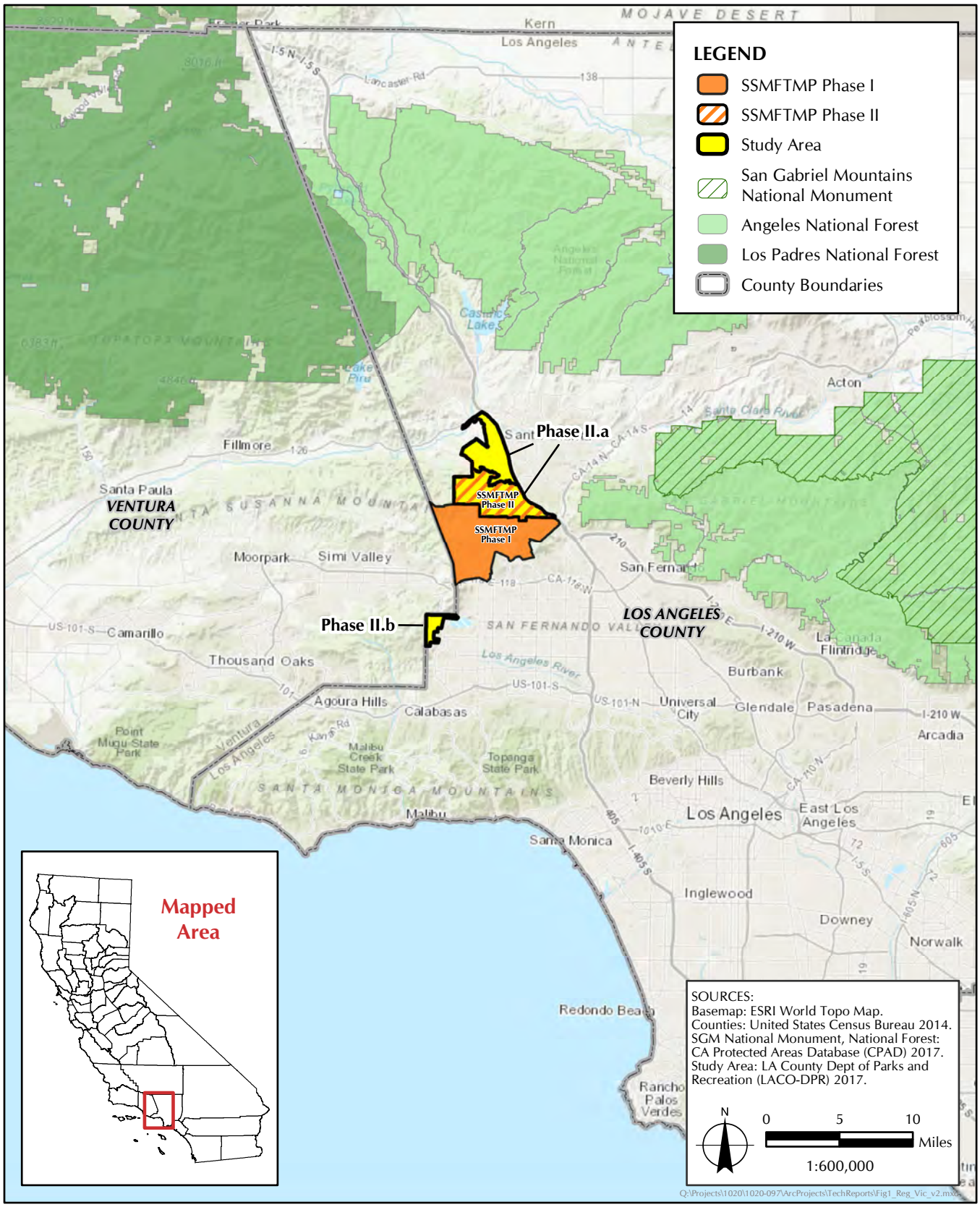

FIGURE 2.1-1

Regional Vicinity Map

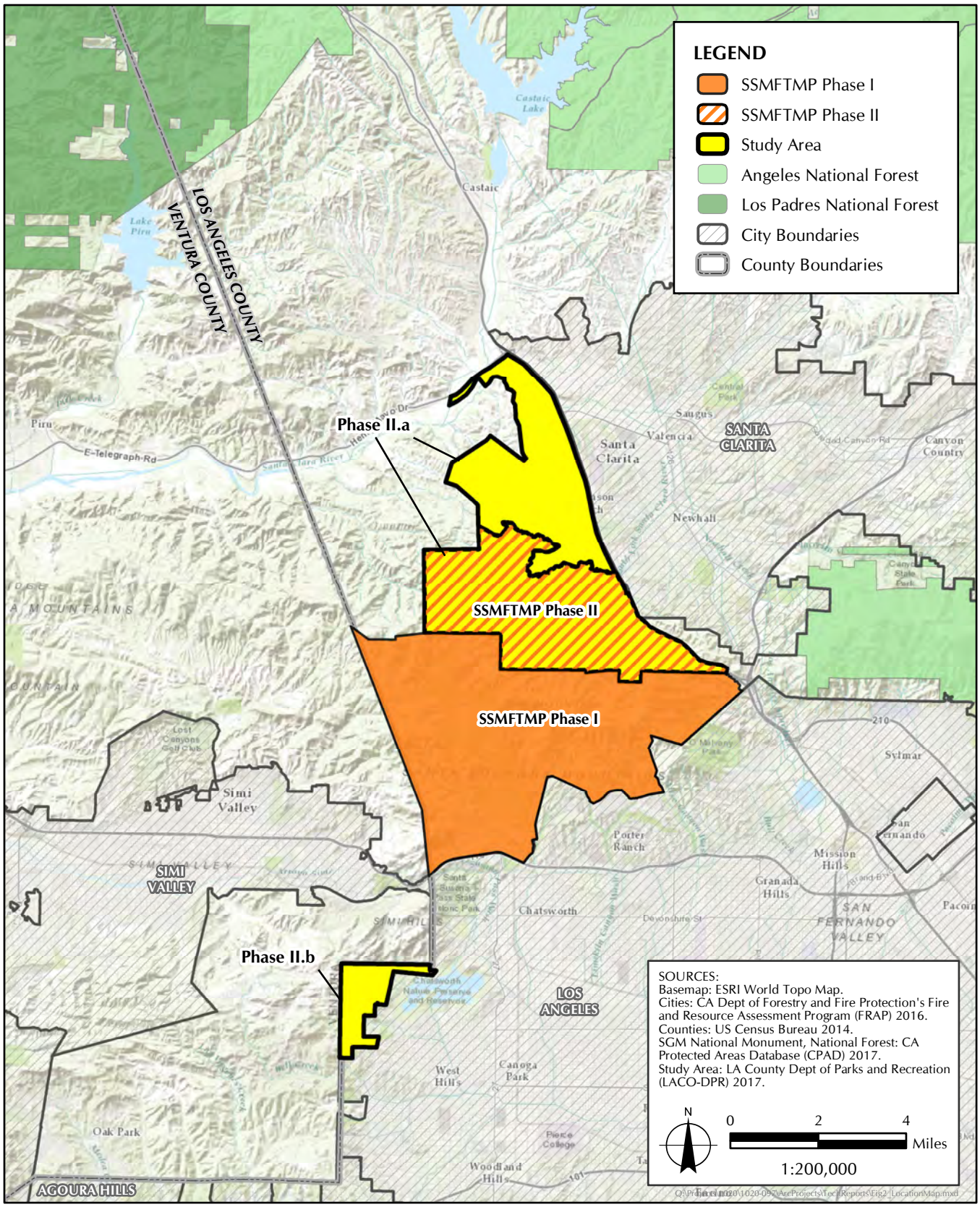

FIGURE 2.2-1

Trails Master Plan Location

The Trails Master Plan – Phase II has been expanded beyond the spatial extents of Phase II in the SSMFTMP and divided into two subareas. The Phase II.a area is an approximately 22-square-mile area located in the north-facing slopes of the Santa Susana Mountains and the Santa Clarita Valley that is bound by Henry Mayo Drive (State Route [SR] 126) to the north, the I-5 freeway to the east, Phase I of the adopted SSMFTMP Area to the south, and the Newhall Ranch Specific Plan Area to the west. The Phase II.b area is an approximately 2-square-mile area located in the foothills of the Santa Monica Mountains, including Bell Canyon, Dayton Canyon, and Woolsey Canyon, west of the San Fernando Valley, which is bound by Ventura County to the north and west and the city of Los Angeles to the east and south. The expanded Phase II of the Trails Master Plan is located on the Val Verde, Newhall, Simi Valley East (Santa Susana), Oat Mountain, and Calabasas topographic quadrangles (Figure 2.2-2, *Topographic Map with USGS 7.5-minute Quadrangle Index*). Situated along the southern flanks of the Santa Susana Mountains, the topography of the Trails Master Plan is characterized by a series of southwest draining canyons that are separated by steep-sloped and narrow ridge tops.

Topography. The Trails Master Plan is located in the U.S. Geological Survey (USGS) 7.5-minute series, Newhall, Oat Mountain, Simi Valley East, and Val Verde, California, topographic quadrangles[2,3] and includes portions of Township 2 North, Range 16 West (San Bernardino Baseline and Meridian [SBB&M]); Sections 6 and 7, Township 2 North, Range 17 West (SBB&M), Sections 1, 2, 11, and 12; Township 3 North, Range 16 West (SBB&M), Sections 4–10, 13–24, and 26–34; and Township 3 North, Range 17 West (SBB&M), Sections 1, 2, 11–15, 22–27, and 34–36 (Figure 2.2-2, *Topographic Map with USGS 7.5-minute Quadrangle Index*). Phase I of the Trails Master Plan is located on the USGS 7.5-minute series Simi Valley East and Oat Mountain topographic quadrangles. Phase II of the Trails Master Plan is located on the Val Verde, Newhall, Simi Valley East (Santa Susana), Oat Mountain, and Calabasas topographic quadrangles. Situated along the southern flanks of the Santa Susana Mountains, the topography of the Trails Master Plan is characterized by a series of southwest draining canyons that are separated by steep-sloped and narrow ridge tops. The Trails Master Plan has elevations that range from 946 to 3,430 feet above mean sea level (msl). Vegetation in the area is characterized by a Sage and Chaparral plant communities with scattered yucca plants. Although small areas of exposed bedrock are seen along the trail corridor, much of the proposed project area is characterized by thick vegetative coverage, which is particularly dense in the canyon bottoms and at lower elevations.

[2] U.S. Geological Survey. 1969. 7.5-Minute Series, Oat Mountain, California, Topographic Quadrangle. Scale 1:24,000. Reston, VA.

[3] U.S. Geological Survey. 1969. 7.5-Minute Series, Willow Springs, California, Topographic Quadrangle. Reston, VA.

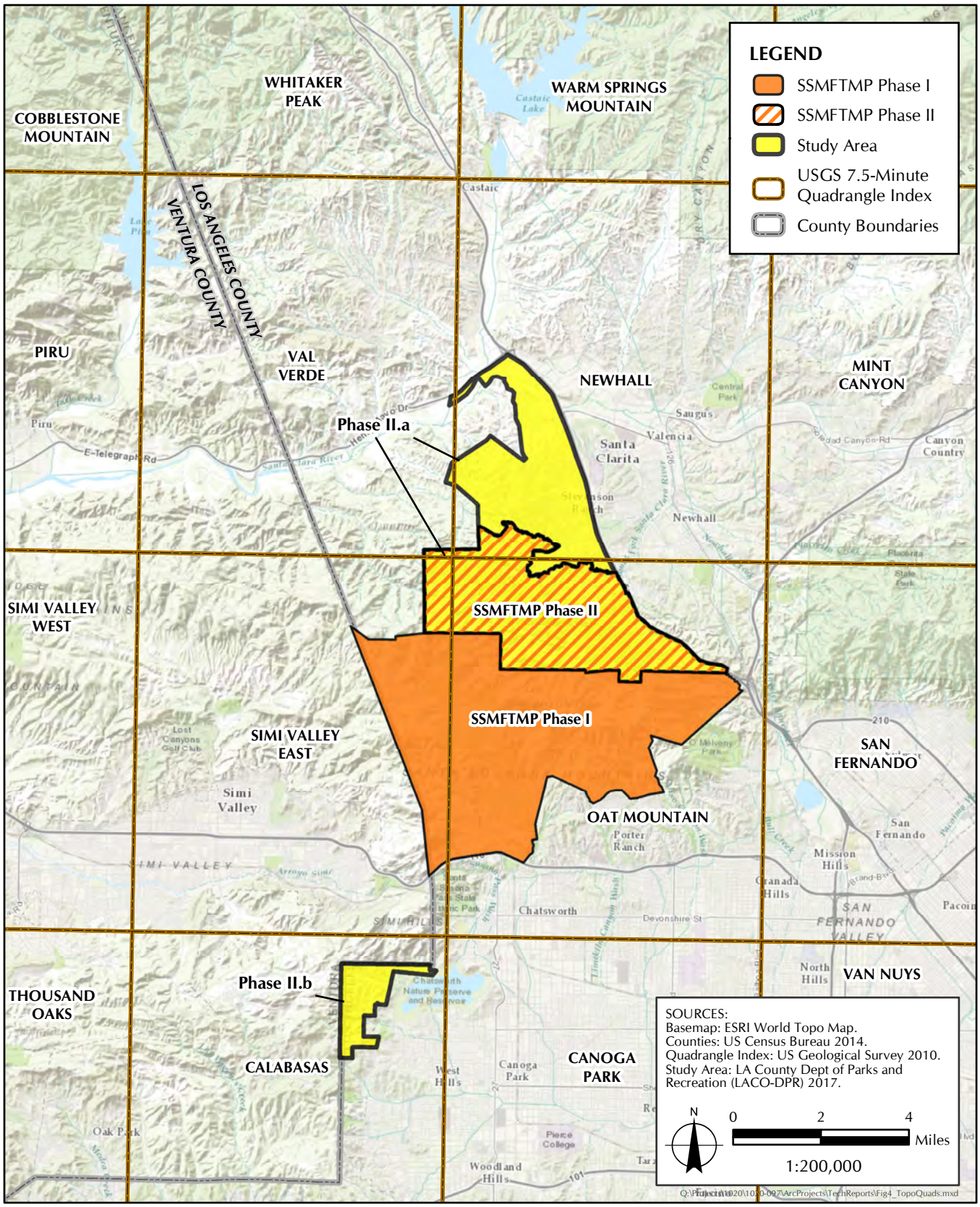

FIGURE 2.2-2

Topographic Map with USGS 7.5 Minute Quadrangle Index

2.3 PROJECT SUMMARY

The SSMTMP-PII would guide future trail development and recommend improvements to existing trails. The Trails Master Plan will provide trail users and local populations with seamless transitions throughout the proposed study area to trails of adjacent jurisdictions and prime destinations within and adjacent to the study area. The goals of the plan are to:

1. Develop a complete multi-use trail system connecting user groups and local populations to desired recreation destinations and experiences, with seamless transitions to the trails of adjacent jurisdictions, compatibility with adjacent land uses and environmental resources, and a safe and sustainable design that is consistent with the County of Los Angeles Trails Manual.

2. Develop a recreational trail system that supports low-intensity use, including mountain biking, equestrian use, and hiking, to accommodate the population increase anticipated in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area through the 2035 planning horizon consistent with the Parks and Recreation Element of the Los Angeles County General Plan 2035.

The overall work efforts include a trails master plan and associated CEQA documentation. Individual trail alignments would be developed at a later phase of this project, which is intended to provide a trail planning framework for the study area.

SECTION 3.0
REGULATORY FRAMEWORK

3.1 FEDERAL

Clean Water Act

The Clean Water Act (CWA)was enacted to restore and maintain the chemical, physical, and biological integrity of the nation's waters by regulating point and non-point pollution sources, providing assistance to publicly owned treatment works for the improvement of wastewater treatment, and maintaining the integrity of wetlands. This includes the creation of the National Pollutant Discharge Elimination System (NPDES), a program that requires states to establish discharge standards specific to water bodies.

Section 401 of the CWA established the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Under the CWA, the EPA has implemented pollution control programs such as setting wastewater standards for surface waters. The CWA made it unlawful to discharge any pollutant from a point source into navigable waters, unless a permit is obtained. The EPA's NPDES permit program controls these discharges. Point sources are discrete conveyances such as pipes or manmade ditches. In California, Section 401 of the CWA is administered and enforced by the SWRCB, which develops regulations to implement water-quality control programs mandated at the federal and state levels. To implement these programs, California has nine RWQCBs. The Trails Master Plan Study Area is located within the jurisdiction of the LA- RWQCB.

Section 404 of the CWA establishes a program to regulate the discharge of dredged and fill material into waters of the United States, including wetlands. The U.S. Army Corps of Engineers (USACE) administers the day-to-day program, including individual permit decisions and jurisdictional determinations; develops policy and guidance; and enforces Section 404 provisions.

Section 303(d) of the CWA requires states to identify and establish a list of water bodies for which technology-based NPDES effluent limitations required by the CWA are not stringent enough to attain and maintain applicable water quality standards. Those water bodies on the 303(d) list are termed "impaired water bodies." For each impaired water body, states are required to develop a TMDL, which is the pollutant limit a water body can receive and still attain water quality standards. Any pollution above the maximum TMDL has to be "budgeted," meaning that the residual pollution is allocated for reduction among the various sources of the pollutant in order to regain the beneficial uses of the water body.

3.2 STATE

Section 1600 of the State Fish and Game Code

The California Department of Fish and Wildlife (CDFW) is responsible for conserving, protecting, and managing California's fish, wildlife, and native plant resources. To meet this responsibility, the Fish and Game Code (Section 1602) requires an entity to notify CDFW of any proposed activity that may substantially modify a river, stream, or lake. Notification is required by any person, business, state, or local government agency, or public utility that proposes an activity that will:

- Substantially divert or obstruct the natural flow of any river, stream or lake
- Substantially change or use any material from the bed, channel, or bank of, any river, stream, or lake
- Deposit or dispose of debris, waste, or other material containing crumbled, flaked, or ground pavement where it may pass into any river, stream, or lake

The notification requirement applies to any work undertaken in or near a river, stream, or lake that flows at least intermittently through a bed or channel. This includes ephemeral streams, desert washes, and watercourses with a subsurface flow. It may also apply to work undertaken within the flood plain of a body of water. If CDFW determines that the activity may substantially adversely affect fish and wildlife resources, a Lake or Streambed Alteration Agreement is required. The Agreement includes reasonable conditions necessary to protect those resources and must comply with CEQA. The entity may proceed with the activity in accordance with the final Agreement.

California Porter-Cologne Water Quality Act

This state law provides a comprehensive water quality management system for the protection of California waters. Porter-Cologne designated the SWRCB as the ultimate authority over state water rights and water quality policy and also established the nine RWQCBs to oversee water quality on a day-to-day basis at the local/regional level, including preparation and implementation of Water Quality Control Plans (Basin Plans).

The Basin Plans contain water quality standards that are the basis for each RWQCBs' regulatory programs. The water quality standards consist of up to 24 designated beneficial uses (e.g., municipal and domestic supply, wildlife habitat, recreation, and groundwater recharge) for individual surface water bodies and groundwater, as well as the water quality objectives to be maintained or attained to protect those beneficial uses. The Basin Plans also contain waste discharge prohibitions and other implementation measures to achieve water quality objectives. Water quality control measures include TMDLs required by the federal CWA.

3.3 LOCAL

Water Quality Control Plan for the Los Angeles Region

The LA-RWQCB has prepared a Basin Plan for the Los Angeles Region, which includes the Coastal Watersheds of Los Angeles and Ventura Counties. The first essentially complete Basin Plan, which was established under the requirements of California's 1969 Porter-Cologne Water Quality Control Act (Section 13000 [Water Quality] et seq. of the California Water Code), was adopted in 1975 and revised in 1984. The latest version was adopted in 1994.

The LA-RWQCB is involved is the regulation of a number of activities that are relevant to the Trails Master Plan including:

- Prepares, monitors compliance with, and enforces Waste Discharge Requirements, including NPDES Permits
- Implements and enforces local storm water control efforts
- Enforces water quality laws, regulations, and waste discharge requirements

Storm water discharges that are composed entirely of runoff from qualifying construction activities may require regulation under the General Construction Activity Storm Water Permit issued by the

SWRCB. Construction activities that qualify include clearing, grading, excavation, reconstruction, and dredge-and-fill activities that result in the disturbance of at least 1 acre and less than 5 acres of total land area.

Los Angeles County General Plan 2035

The Trails Master Plan Study Area is located within unincorporated Los Angeles County and is subject to the County of Los Angeles General Plan 2035.

Goal C/NR 5: Protected and useable local surface water resources.

- **Policy C/NR 5.1:** Support the LID [Low Impact Development] philosophy, which seeks to plan and design public and private development with hydrologic sensitivity, including limits to straightening and channelizing natural flow paths, removal of vegetative cover, compaction of soils, and distribution of naturalistic BMPs at regional, neighborhood, and parcel-level scales.
- **Policy C/NR 5.2:** Require compliance by all County departments with adopted Municipal Separate Storm Sewer System (MS4), General Construction, and point source NPDES permits.
- **Policy C/NR 5.3:** Actively engage with stakeholders in the formulation and implementation of surface water preservation and restoration plans, including plans to improve impaired surface water bodies by retrofitting tributary watersheds with LID types of BMPs.
- **Policy C/NR 5.4:** Actively engage in implementing all approved Enhanced Watershed Management Programs/Watershed Management Programs and Coordinated Integrated Monitoring Programs/Integrated Monitoring Programs or other County-involved TMDL implementation and monitoring plans.
- **Policy C/NR 5.5:** Manage the placement and use of septic systems in order to protect nearby surface water bodies.
- **Policy C/NR 5.6:** Minimize point and non-point source water pollution.
- **Policy C/NR 5.7:** Actively support the design of new and retrofit of existing infrastructure to accommodate watershed protection goals, such as roadway, railway, bridge, and other—particularly—tributary street and greenway interface points with channelized waterways.

Goal C/NR 6: Protected and usable local groundwater resources.

- **Policy C/NR 6.1:** Support the LID philosophy, which incorporates distributed, post-construction parcel-level stormwater infiltration as part of new development.
- **Policy C/NR 6.2**: Protect natural groundwater recharge areas and regional spreading grounds.
- **Policy C/NR 6.3:** Actively engage in stakeholder efforts to disperse rainwater and stormwater infiltration BMPs at regional, neighborhood, infrastructure, and parcel-level scales.
- **Policy C/NR 6.4:** Manage the placement and use of septic systems in order to protect high groundwater.
- **Policy C/NR 6.5:** Prevent stormwater infiltration where inappropriate and unsafe, such as in areas with high seasonal groundwater, on hazardous slopes, within 100 feet of drinking water wells, and in contaminated soils.

Goal C/NR 7: Protected and healthy watersheds.

- **Policy C/NR 7.1:** Support the LID philosophy, which mimics the natural hydrologic cycle using undeveloped conditions as a base, in public and private land use planning and development design.
- **Policy C/NR 7.2:** Support the preservation, restoration and strategic acquisition of available land for open space to preserve watershed uplands, natural streams, drainage paths, wetlands, and rivers, which are necessary for the healthy function of watersheds.
- **Policy C/NR 7.3:** Actively engage with stakeholders to incorporate the LID philosophy in the preparation and implementation of watershed and river master plans, ecosystem restoration projects, and other related natural resource conservation aims, and support the implementation of existing efforts, including Watershed Management Programs and Enhanced Watershed Management Programs.
- **Policy C/NR 7.4:** Promote the development of multi-use regional facilities for stormwater quality improvement, groundwater recharge, detention/attenuation, flood management, retaining non-stormwater runoff, and other compatible uses.

Goal S 2: An effective regulatory system that prevents or minimizes personal injury, loss of life, and property.

- **Policy S 2.1:** Discourage development in the County's Flood Hazard Zones.
- **Policy S 2.2:** Discourage development from locating downslope from aqueducts.
- **Policy S 2.3:** Consider climate change adaptation strategies in flood and inundation hazard planning.
- **Policy S 2.4:** Ensure that developments located within the County's Flood Hazard Zones are sited and designed to avoid isolation from essential services and facilities in the event of flooding.
- **Policy S 2.5:** Ensure that the mitigation of flood related property damage and loss limits impacts to biological and other resources.
- **Policy S 2.6:** Work cooperatively with public agencies with responsibility for flood protection, and with stakeholders in planning for flood and inundation hazards.
- **Policy S 2.7:** Locate essential public facilities, such as hospitals and fire stations, outside of Flood Hazard Zones, where feasible.

Los Angeles County Flood Control Act

This act was adopted by the state legislature in 1915. The act established the Los Angeles County Flood Control District (LACFCD) and empowered it to provide flood protection, water conservation, recreation, and aesthetic enhancement within its boundaries. The LACFCD is governed, as a separate entity, by the County of Los Angeles Board of Supervisors. In 1985, the responsibilities and authority vested in the LACFCD were transferred to the County of Los Angeles Department of Public Works.

Los Angeles County Trails Manual

The County Trails Manual is a guidance document for the County which outlines various issues affecting trail feasibility (Section 2.5), including hydrology and water quality. Factors include soil erosion, surface runoff, flooding, slope gradient, and water quality. These factors can also affect design methods, construction techniques, and trail maintenance. The stated purpose of the County Trails Manual is

> "to provide guidance to County departments, specifically Los Angeles County Department of Parks and Recreation (LACO-DPR), that interface with trail planning, design, development, and maintenance of hiking, equestrian, and mountain biking recreational trails, while addressing physical and social constraints and opportunities associated with the diverse topographic and social conditions that occur in the unincorporated territory of the County. LACO-DPR will use the planning process delineated in the Trails Manual in considering the development of future trails."

Santa Clarita Valley Area Plan

The Phase I and Phase II.a. areas of the Trails Master Plan Study Area are located within the unincorporated portion of the Santa Clarita Valley and subject to the 2012 Santa Clarita Valley Area Plan. Relevant guiding principles stated in the Santa Clarita Valley Area Plan include:

<u>Environmental Resources.</u>

- **11.** New development shall be designed to improve energy efficiency, reducing energy and natural resource consumption by such techniques as … capture of storm runoff on-site, … native and drought-tolerant landscape.

<u>Objective LU-7.3: Protect surface and ground water quality through design of development sites and drainage improvements.</u>

- **Policy LU-7.3.1:** Promote the use of permeable paving materials to allow infiltration of surface water into the water table.
- **Policy LU-7.3.2:** Maintain stormwater runoff onsite by directing drainage into rain gardens, natural landscaped swales, rain barrels, permeable areas and use of drainage areas as design elements, where feasible and reasonable.
- **Policy LU-7.3.3:** Seek methods to decrease impermeable site area where reasonable and feasible, in order to reduce stormwater runoff and increase groundwater infiltration, including use of shared parking and other means as appropriate.
- **Policy LU-7.3.4:** Implement best management practices for erosion control throughout the construction and development process
- **Policy LU-7.3.5:** Limit development within flood-prone areas to minimize down-stream impacts.
- **Policy LU-7.3.6:** Support emerging methods and technologies for the on-site capture, treatment, and infiltration of stormwater and greywater, and amend the County Code to allow these methods and technologies when they are proven to be safe and feasible.

Los Angeles County Low Impact Development Ordinance (L.A. County Code, Title 12, Ch. 12.84)

The project is in the County of Los Angeles and subject to Low Impact Development standards outlined in L.A. County Code, Title 12, Chapter 12.84. The purpose of the standards is:

- To lessen the adverse impacts of stormwater runoff from development and urban runoff on natural drainage systems, receiving waters and other water bodies.
- Minimize pollutant loadings from impervious surfaces by requiring development projects to incorporate proper designed, technically appropriate BMPs and other LID strategies.
- Minimize erosion and other hydrologic impacts on natural drainage systems by requiring development projects to incorporate properly designed, technically appropriated hydromodification control development principles and technologies.

The LID standards of this chapter include:

- Mimic undeveloped stormwater runoff rates and volumes in any storm event up to and including the Capital Flood.
- Prevent pollutants of concern from leaving the development site in stormwater as the result of storms, up to and including a Water Quality Design Storm Event.
- Minimize hydromodification impacts to natural drainage systems.

SECTION 4.0
METHODS

This report assesses the inherent hydrology and water quality conditions of the proposed project area based on a desktop analysis. This assessment is based on archival research for the entire Trails Master Plan Study Area. In accordance with CEQA, this Hydrology and Water Quality Technical Report presents the results of these efforts and provides a programmatic impact analysis and mitigation recommendations related to hydrology and water quality within the Trails Master Plan Study Area. While this report focuses on Phase II, it incorporates updated information for the Phase I study area. Information used in the preparation of this report was derived from a Class I literature review, including published and gray literature, and spatial analysis based on geographic information system data.

The potential for trails constructed within the proposed project study area, to result in impacts related to hydrology and water quality was analyzed in relation to the questions in Appendix G of the California Environmental Quality Act Guidelines (State CEQA Guidelines) and the County of Los Angeles Department of Parks and Recreation's Environmental Checklist Form. Trails constructed within the study area would be considered to have a significant impact to hydrology and water quality when the potential for any one of the following thresholds occurs:

- Violate any water quality standards or waste discharge requirements?
- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?
- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?
- Add water features or create conditions in which standing water can accumulate that could increase habitat for mosquitoes and other vectors that transmit diseases such as the West Nile virus and result in increased pesticide use?
- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?
- Generate construction or post-construction runoff that would violate applicable stormwater NPDES permits or otherwise significantly affect surface water or groundwater quality?Conflict with the Los Angeles County Low Impact Development Ordinance (L.A. County Code, Title 12, Ch. 12.84)?

- Result in point or nonpoint source pollutant discharges into State Water Resources Control Board-designated Areas of Special Biological Significance?

- Use onsite wastewater treatment systems in areas with known geological limitations (e.g. high groundwater) or in close proximity to surface water (including, but not limited to, streams, lakes, and drainage course)?

- Otherwise substantially degrade water quality?

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, or within a floodway or floodplain?

- Place structures, which would impede or redirect flood flows, within a 100-year flood hazard area, floodway, or floodplain?

- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

- Place structures in areas subject to inundation by seiche, tsunami, or mudflow?

SECTION 5.0
RESULTS

5.1 EXISTING CONDITIONS

Surface Water

Rainfall in the Trails Master Plan Study Area drains to three major watersheds: Los Angeles River, Santa Clara River, and Calleguas Creek (Figure 5.1-1, *Blue Line Drainages and Surface Water Quality*). All are within the South Coast Hydrological Region and under the jurisdiction of the LARWQCB.

Surface Water Quality

The Trails Master Plan Area is located within the Basin Plan for the LARWQCB. The development and implementation of the Basin Plan is a requirement under the federal CWA and is a resource for the use of water and/or discharge of wastewater within the LARWQCB boundaries, as well as providing valuable information to the public about local water quality issues. The Basin Plan is designed to preserve and enhance water quality and protect the beneficial uses of all regional waters. Specifically, the Basin Plan (1) designates beneficial uses for surface and ground waters, (2) sets narrative and numerical objectives that must be attained or maintained to protect the designated beneficial uses and conform to the state's anti-degradation policy, and (3) describes implementation programs to protect all waters in the region. In addition, the Basin Plan incorporates (by reference) all applicable state and regional board plans and policies and other pertinent water quality policies and regulations. A TMDL is a regulatory term in the federal CWA, describing a value of the maximum amount of a pollutant that a body of water can receive while still meeting water quality standards. Alternatively, TMDL is an allocation of that water pollutant deemed acceptable to the subject receiving waters. The Basin Plan set TMDLs for bacteria, nutrients, trash, and metals for the Los Angeles River; bacteria, trash, chloride, nutrients, and salts for the Santa Clara River; and nutrients, toxics, metals, and salts for Calleguas Creek (Table 5.1-1, *Los Angeles River, Santa Clara River, and Calleguas Creek TMDLs*).

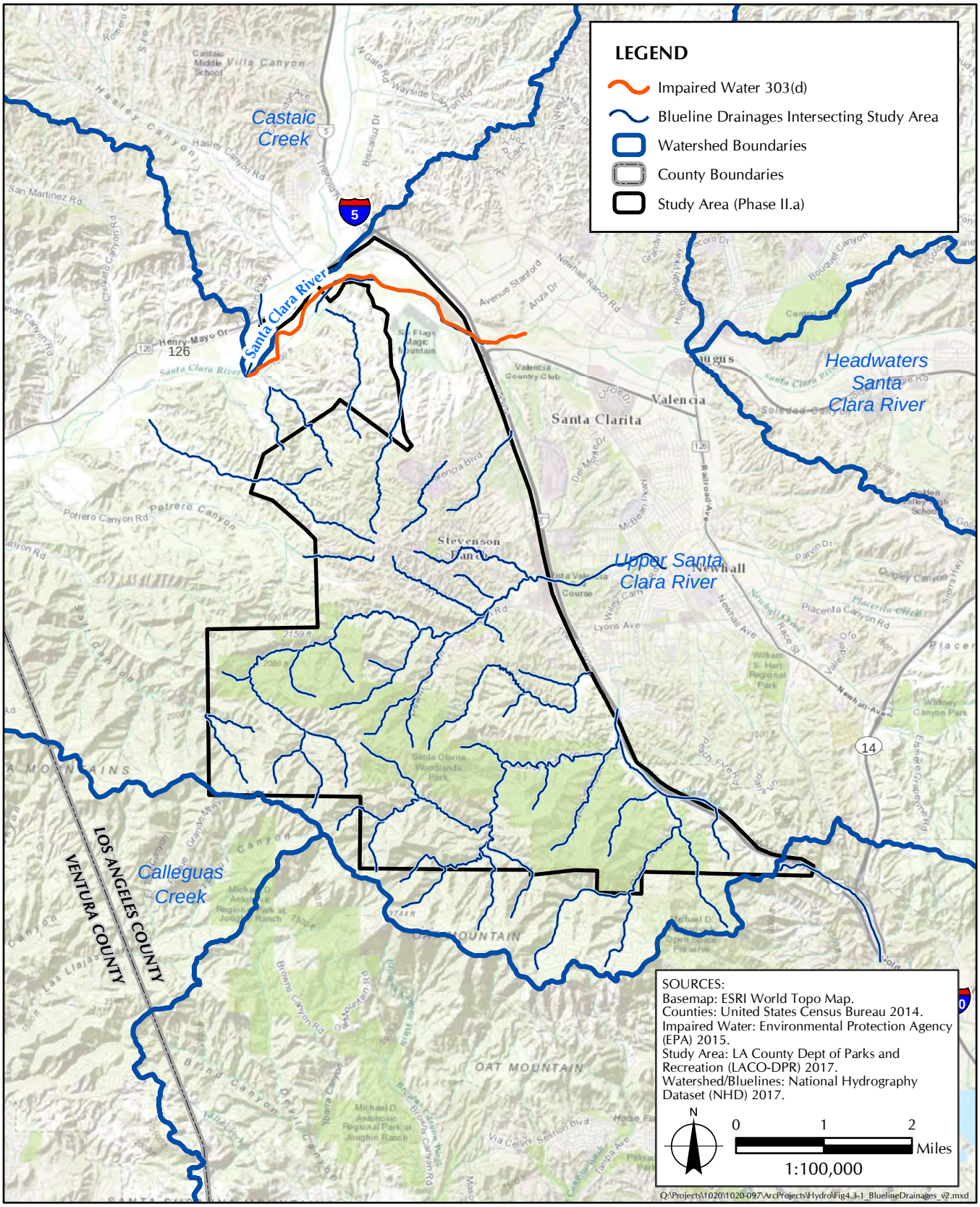

FIGURE 5.1-1A

Blue Line Drainages and Surface Water Quality

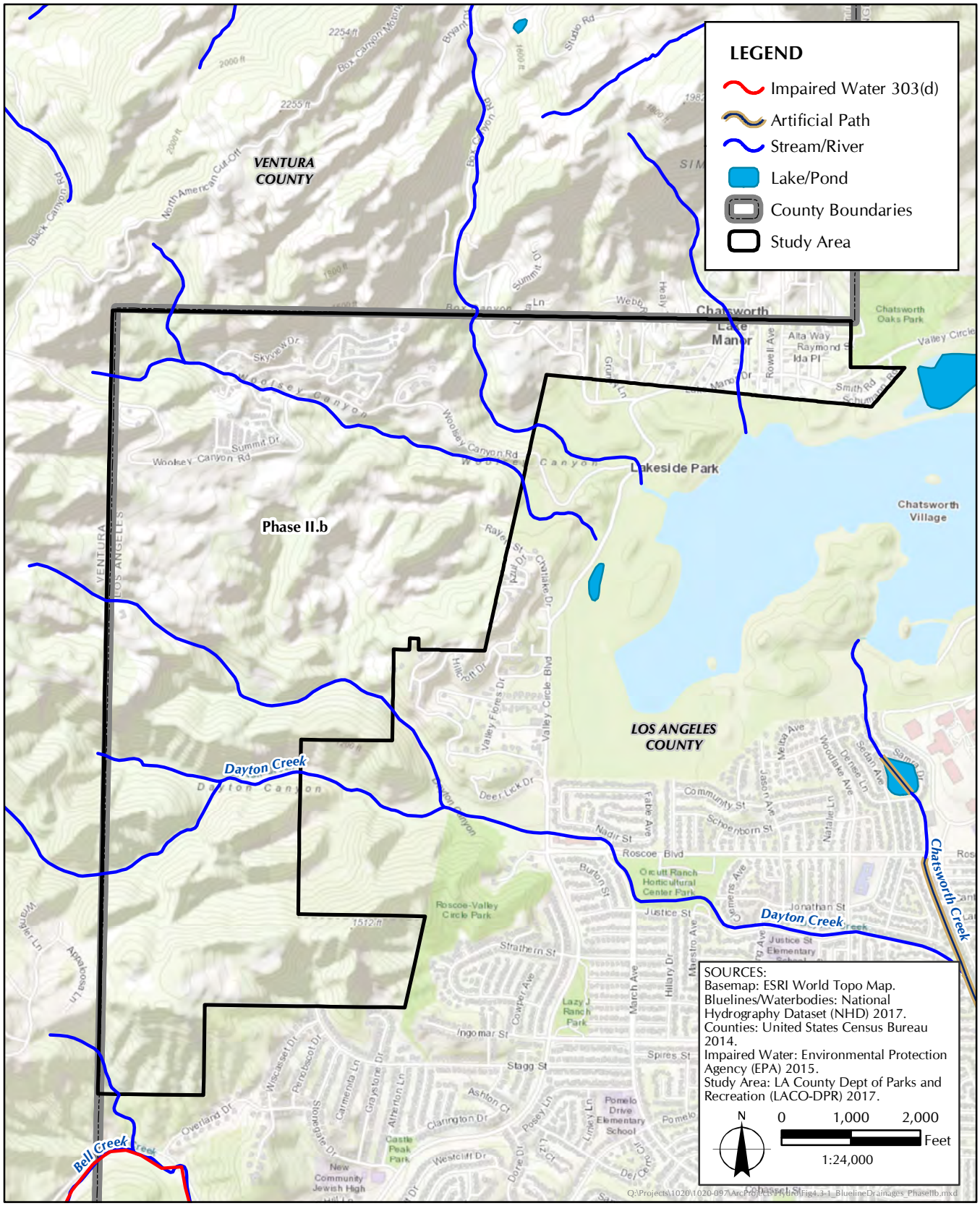

FIGURE 5.1-1B

Blue Line Drainages and Surface Water Quality

TABLE 5.1-1
LOS ANGELES RIVER, SANTA CLARA RIVER, AND CALLEGUAS CREEK TMDLs

	Resolution No.	Watershed	Pollutant	Resolution Name	Status
Los Angeles River					
1	R12-010	Los Angeles River	Nutrients	Reconsideration of Los Angeles River Nitrogen and Related Effects TMDL to Incorporate Site-Specific Objectives for Ammonia	Approved by Regional Board on Dec. 6, 2012
2	R10-007	Los Angeles River	Bacteria	Los Angeles River Bacteria TMDL	TMDL in Effect on Mar. 23, 2012
3	R10-003	Los Angeles River	Metals	Reconsideration of Los Angeles River Metals TMDL	TMDL in Effect on Nov. 3, 2011
4	2007-014	Los Angeles River	Metals	Los Angeles Metals TMDL	TMDL in Effect on Oct. 29, 2008
5	2007-012	Los Angeles River	Trash	Trash TMDL for the Los Angeles River Watershed	TMDL in Effect on Sep. 23, 2008
6	2006-013	Los Angeles River	Trash	Proposed Resolution to set aside the Los Angeles River Trash TMDL	TMDL in Effect on Jul. 17, 2006
7	2003-016	Los Angeles River	Nutrients	Los Angeles River Nutrient TMDL (Revision of Interim WLAs)	TMDL in Effect on Sep. 27, 2004
8	2003-009	Los Angeles River	Nutrients	Los Angeles River Nutrients TMDL	TMDL in Effect on Mar. 23, 2004
9	2001-013	Los Angeles River	Trash	Los Angeles River Trash TMDL	TMDL in Effect on Aug. 28, 2002
Santa Clara River					
1	R10-006	Santa Clara River	Bacteria	Santa Clara River Bacteria TMDL	TMDL in Effect on Mar. 21, 2012
2	2008-012	Santa Clara River	Chloride	Reconsideration of the Upper Santa Clara River Chloride TMDL Implementation Plan & Revise Chloride WQ Objectives	TMDL in Effect on Apr. 6, 2010
3	2007-009	Santa Clara River	Trash	Lake Elizabeth, Munz Lake, Lake Hughes Trash TMDL	TMDL in Effect on Mar. 6, 2008
4	2006-016	Santa Clara River	Salts	Upper Santa Clara River Chloride TMDL Implementation Plan Re-Consideration	TMDL in Effect on Jun. 12, 2008
5	2004-004	Santa Clara River	Salts	Upper Santa Clara River Chloride TMDL	TMDL in Effect on May 4, 2005
6	2003-011	Santa Clara River	Nutrients	Santa Clara River Nutrients TMDL	TMDL in Effect on Mar. 23, 2004
Calleguas Creek					
1	2008-009	Calleguas Creek	Nutrients	Revision of WLAs for Calleguas Creek Nitrogen TMDL	TMDL in Effect on Oct. 15, 2009
2	2007-016	Calleguas Creek	Salts	Calleguas Creek Watershed Salts TMDL	TMDL in Effect on Dec. 2, 2008
3	2007-007	Calleguas Creek	Trash	Revolon Slough & Beardsley Wash Trash TMDL	TMDL in Effect on Mar. 6, 2008
4	2006-012	Calleguas Creek	Metals	Calleguas Creek Watershed Metals TMDL	TMDL in Effect on Mar. 26, 2007
5	2005-010	Calleguas Creek	Toxics	Calleguas Creek OC Pesticides & PCBs TMDL	TMDL in Effect on Mar. 24, 2006

TABLE 5.1-1
LOS ANGELES RIVER, SANTA CLARA RIVER, AND CALLEGUAS CREEK TMDLs

	Resolution No.	Watershed	Pollutant	Resolution Name	Status
6	2005-009	Calleguas Creek	Toxicity	Calleguas Creek Toxicity TMDL	TMDL in Effect on Mar. 24, 2006
7	2002-017	Calleguas Creek	Nutrients	Calleguas Creek Nitrogen TMDL	TMDL in Effect on Jul. 16, 2003

Groundwater

Groundwater resources have not been developed in the Trails Master Plan Area, but groundwater production occurs in both adjacent valleys: the San Fernando Valley to the south and the Santa Clara River Valley to the north.

The San Fernando Valley supplements drinking water supply for the City of Los Angeles.[4] The San Fernando groundwater basin was adjudicated in 1979 and includes the water-bearing sediments beneath the San Fernando Valley, Tujunga Valley, Browns Canyon, and the alluvial areas surrounding the Verdugo Mountains near La Crescenta and Eagle Rock. Depth to groundwater in the San Fernando Basin typically ranges from approximately 24 to 400 feet.[5]

The Santa Clara River Valley East Groundwater Basin to the north of the Trails Master Plan Area is an important groundwater source, and groundwater from two subbasins is the largest source of water in the Santa Clarita region.[6] Depth to groundwater above the basin ranges from 10 to 50 feet in the areas nearest the Trails Master Plan Area.[7]

Phase II.a

The Santa Clara River Valley Groundwater Basin is within the Phase II.a area (Figure 5.1-2, *Groundwater Basins*). Newhall County Water District (NCWD), the Santa Clarita Water Division of CLWA (SCWD), and Valencia Water Company (VWC) provide groundwater and imported water to portions of the City of Santa Clarita and unincorporated communities in Los Angeles County. There is one water wholesaler, Castaic Lake Water Agency, and several water retailers. There are rural areas where the supply comes from private wells. The water supply source in the Santa Clarita Valley is diverse. There are two sources of local groundwater, accounting for roughly half of the local supply. Those two sources are the alluvium and the Saugus Formation.

[4] Metropolitan Water District of Southern California, 2007. Groundwater Assessment Study Report Number 1308

[5] Department of Water Resources. 2003. California's Groundwater, Bulletin 118. Update 2003.

[6] Department of Water Resources. 2009. California Water Plan Update 2009 South Coast Integrated Water Management Volume 3 Regional Reports. Bulletin 160-09.

[7] Department of Water Resources. 2003. California's Groundwater, Bulletin 118. Update 2003.

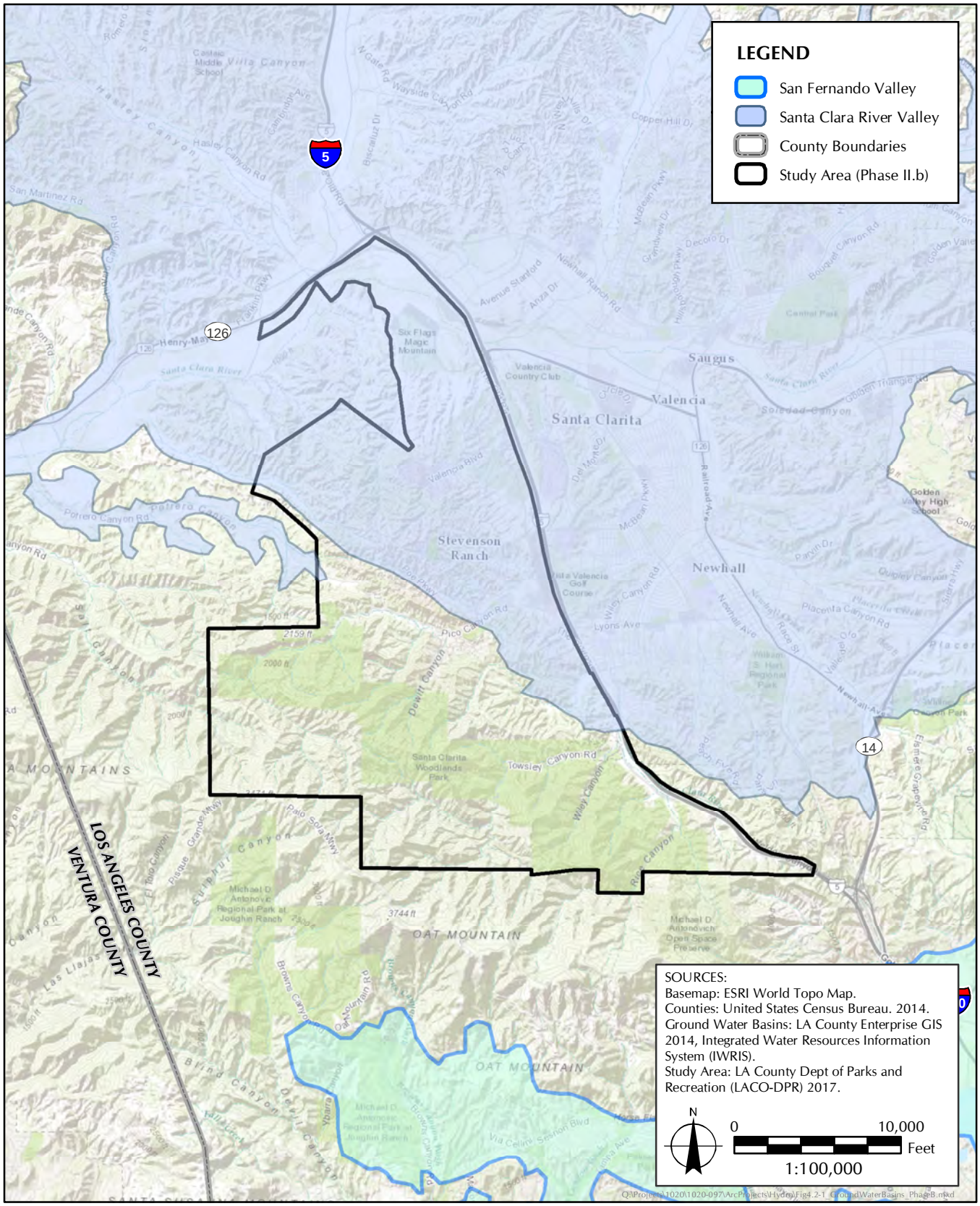

FIGURE 5.1-2A

Groundwater Basins

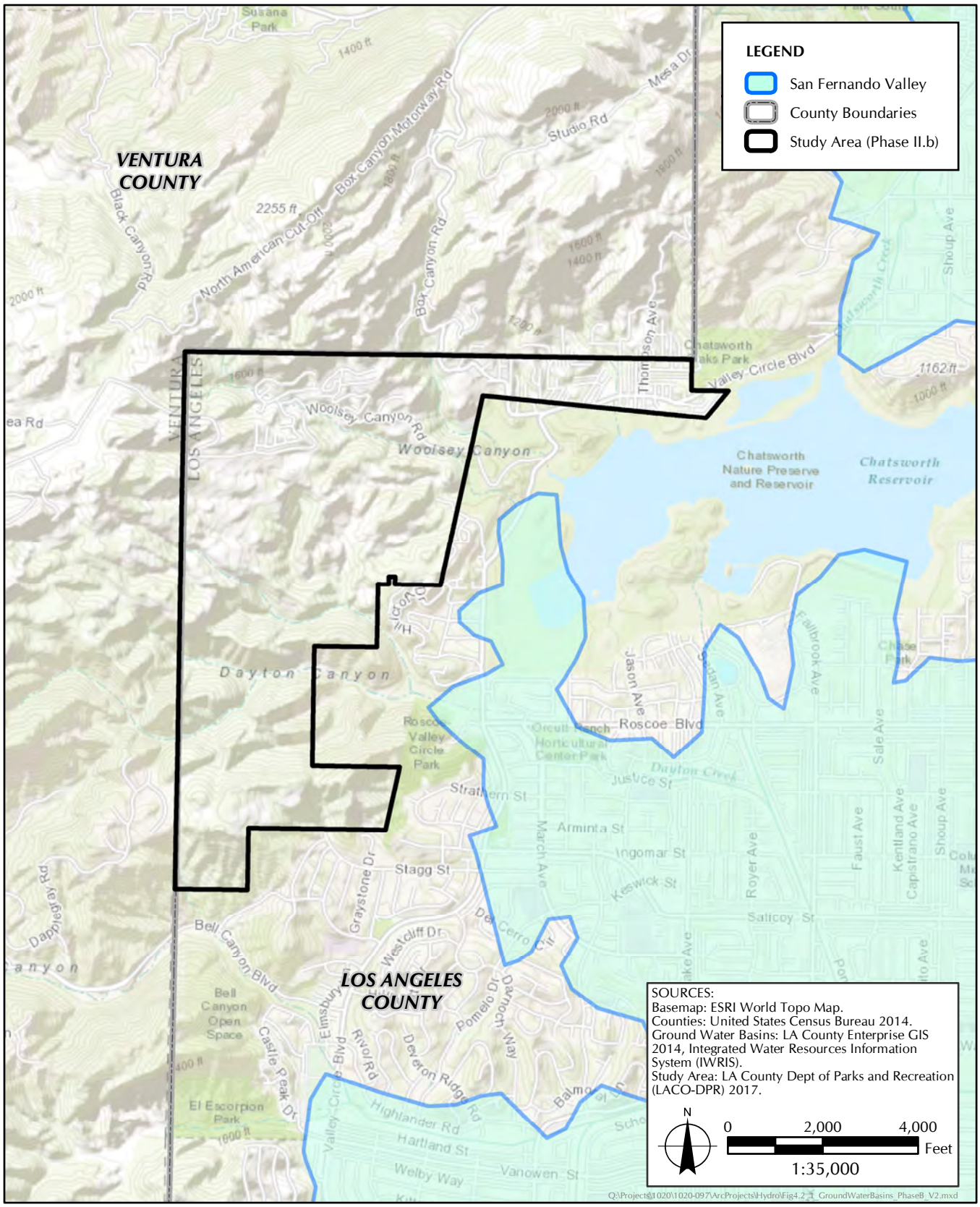

FIGURE 5.1-2B

Groundwater Basins

Pumping from the alluvium in a given year is governed by local hydrologic conditions in the eastern Santa Clara River watershed. Pumping ranges between 30,000 and 40,000 acre-feet per year (AFY) during normal and above-normal rainfall years. However, due to hydrogeologic constraints in the eastern part of the subbasin, pumping is reduced to between 30,000 and 35,000 AFY during locally dry years. Pumping from the Saugus Formation in a given year is tied directly to the availability of other water supplies, particularly from the State Water Project (SWP). During average year conditions within the SWP system, Saugus pumping ranges between 7,500 and 15,000 AFY. Planned dry-year pumping from the Saugus Formation ranges between 15,000 and 25,000 AFY during a drought year and can increase to between 21,000 and 25,000 AFY if SWP deliveries are reduced for two consecutive years and between 21,000 and 35,000 AFY if SWP deliveries are reduced for three consecutive years. Such high pumping would be followed by periods of reduced (average-year) pumping, at rates between 7,500 and 15,000 AFY, to further enhance the effectiveness of natural recharge processes that would recover water.[8]

Phase II.b

There are no groundwater basins within the Phase II.b area. The nearest groundwater basin is the San Fernando Valley Groundwater Basin (Figure 5.1-2).

Existing Drainage Pattern

Surface elevations related to drainages in the Trails Master Plan Area range from approximately 3,700 feet above MSL at Lookout Peak in the Oat Mountain ridge area to approximately 1,100 feet above MSL where the Santa Susana Mountains meet the San Fernando Valley floor at Browns Canyon Wash. The Oat Mountain ridgeline is oriented primarily northwest-southeast, and the canyons originate on the face of the ridge and drain either toward the south and southwest on the south-facing slopes, or to the northeast or north on the north-facing slopes.

Phase II.a

Drainage patterns in the Phase II.a study area go north to the Upper Santa Clara River watershed. The Santa Clara River Watershed (Watershed) consists of approximately 1,634 square miles and contains the upper reaches of the Santa Clara River. This river, which is the largest natural river remaining in Southern California, travels through two counties: Los Angeles and Ventura. The Upper Basin of the Santa Clara River is bounded by the San Gabriel Mountains to the south and southeast, the Santa Susana Mountains to the southwest, the Transverse Ranges to the northeast, the Sierra Pelona Mountains to the east, and the Ventura County Line to the west. The Phase II.a area encompasses the City of Santa Clarita, the unincorporated communities of Castaic, Stevenson Ranch, West Ranch, Agua Dulce, and Acton, as well as portions of the Angeles National Forest.[9] There are existing stormdrains in the unincorporated Los Angeles County area of Stevenson Ranch. The Upper Santa Clara River Enhanced Watershed Management Program Group (USCR EWMP Group), which includes the City of Santa Clarity, Los Angeles County, and Los Angeles County Flood Control District, collaboratively developed an Enhanced Watershed Management Program (EWMP) to comply with requirements in their Municipal Separate Storm Sewer System (MS4) Permit.[10] The EWMP allows collaboration among agencies on multi-benefit regional projects to

[8] Upper Santa Clara River Watershed Management Group. February 2016. Enhanced Watershed Management Program.

[9] Upper Santa Clara River Regional Water Management Plan. February 2014.

[10] Upper Santa Clara River Watershed Management Group. February 2016. Enhanced Watershed Management Program.

retain both non-stormwater and stormwater runoff, as well as to facilitate flood control and increase water supply. The permit requires the identification of strategies, control measures, and BMPs, collectively referred to in the permit as Watershed Control Measures (WCMs), which could be implemented individually or collectively at the watershed-scale to comply with water quality objectives. The EWMP incorporates existing and planned stormwater BMPs, and also includes evaluations of additional potential control measures. Two overarching categories of BMPs are included in the EWMP:

- Structural BMPs that retain, divert or treat stormwater and/or non-stormwater, and include low-impact development (LID), green streets/green infrastructure, and regional BMPs.
- Institutional BMPs that encompass the Minimum Control Measures (MCMs) outlined in the Permit, other non-structural BMP's, and any other source control measures.

Phase II.b

Bell Creek (also known as Escorpión Creek) passes through the Phase II.b. study area. It is a 10-mile-long tributary of the Los Angeles River, and flows through the Simi Hills of Ventura County and the San Fernando Valley of Los Angeles County and City, in Southern California. It then flows as a creek southeast through Bell Canyon (the community and geographic feature), Bell Canyon Park, and El Escorpión Park in a natural streambed. It then is altered to flow in a concrete channel. Moore Creek joins in from the west, and then it flows east, channelized through West Hills, where it is joined by the South Fork and South Branches of the same name and by Dayton Creek. Then it goes through Canoga Park to join Arroyo Calabasas (Calabasas Creek) and becomes the Los Angeles River.[11]

Precipitation and Floods

Rainfall in the Trails Master Plan Area primarily occurs during late fall through early spring (the official season is October 15 through May 15). The average annual rainfall in the San Fernando Valley immediately south of the Trails Master Plan Area is 17.7 inches. The San Fernando Valley received 25.2 inches of precipitation in the measuring year 2010–2011, approximately 42 percent more than its normal seasonal average. In the Santa Clara region, the average annual rainfall is slightly less at 17.1 inches.[12]

Flooding hazards are directly related to precipitation (rainfall) intensity and duration. Other contributing factors to flooding include the regional topography, type and extent of vegetation coverage, amount of impermeable surfaces, local slope characteristics, and available drainage facilities. Discharge during rainfall events in the Trails Master Plan Area tends to be rapid due to the steep terrain. High-intensity rainfalls, in combination with alluvial soils, sparse vegetation, erosion, and steep gradients, can result in significant debris-laden flash floods.

[11] U.S. Geological Survey. Accessed 16 March 2011. National Hydrography Dataset high-resolution flowline data. The National Map Archived 2012-04-05 at WebCite.

[12] County of Los Angeles. 2012. http://www.laalmanac.com/weather/we13.php

Flood Control Systems

The County of Los Angeles Department of Public Works maintains flood channel and debris basins between the Trails Master Plan Area and the confluences with the main stem of the Los Angeles River. The debris basins nearest the Trails Master Plan Area are the Limekiln Debris Basin (capacity 172,000 cubic yards) and Aliso Debris Basin (capacity 42,000 cubic yards) that capture debris before it flows to the Los Angeles River, and Greensbriar Debris Basin (capacity 44,500 cubic yards) that captures debris prior to it entering the Santa Clara River.[13]

In addition, the Department of Public Works utilizes a sediment placement site (SPS) near Browns Canyon for the placement of the sediment removed from the cleanout of the debris basins, reservoirs, and spreading facilities maintained by the County. Of an original capacity of 405,000 cubic yards at the Browns Canyon SPS, approximately 60,000 cubic yards of capacity remains).[14]

Additionally, the Los Angeles County Flood Control district operates a runoff station, F92C, at Santa Clara River at Old Road Bridge.[15]

100 Year Floodplain

The Federal Emergency Management Agency (FEMA) maps flood risk areas within the United States as part of the National Flood Insurance Program (NFIP). The NFIP is a federal program that allows property owners in areas of participating communities to purchase insurance against possible loss due to flooding. There are six canyons within the Trails Master Plan Area that have mapped 100-year floodplains, indicating these areas have a 1 percent chance of flooding in any given year (shown on Figure 5.1-3, *FEMA Special Flood Hazard Areas*). These canyons all drain towards the Santa Clara River and include portions of Rice Canyon, Towsley Canyon, Gavin Canyon, Lyon Canyon, and Pico Canyon. Additionally, Potrero Canyon is within the Phase II.a. area, and also drains to the Santa Clara River. There are no flood risk areas within the Phase II.b. area.

Levees or Dams

Castaic Dam is an embankment dam in northern Los Angeles County, California, near the rural unincorporated community of Castaic, located in the northern part of Los Angeles County, California. Although located on Castaic Creek, a major tributary of the Santa Clara River, Castaic Creek provides little of its water. The lake is the terminus of the West Branch of the California Aqueduct, part of the State Water Project. The dam was built by the California Department of Water Resources and construction was completed in 1973. The lake has a capacity of 325,000 acre-feet (401,000,000 square meters) and stores drinking water for the western portion of the Greater Los Angeles Area.

[13] County of Los Angeles. April 2012. The Los Angeles County Flood Control District Draft Sediment Management Strategic Plan 2012 – 2032. Department of Public Works.

[14] County of Los Angeles. August 2012. Hydrologic Report 2010–2011. Department of Public Works Water Resources Division.

[15] See http://egisgcx.isd.lacounty.gov/dpw/m/?viewer=fcs

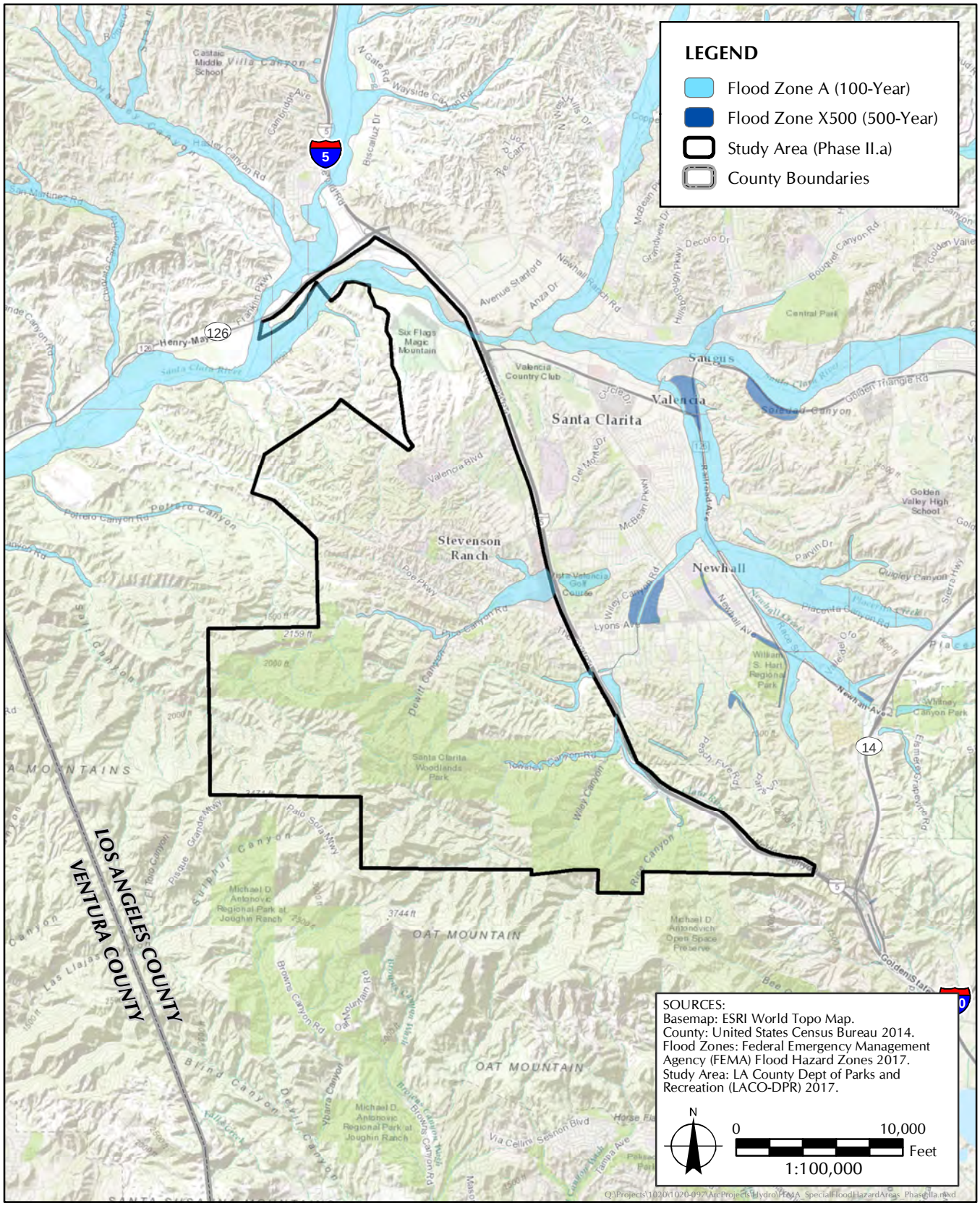

FIGURE 5.1-3A

FEMA Special Flood Hazard Areas

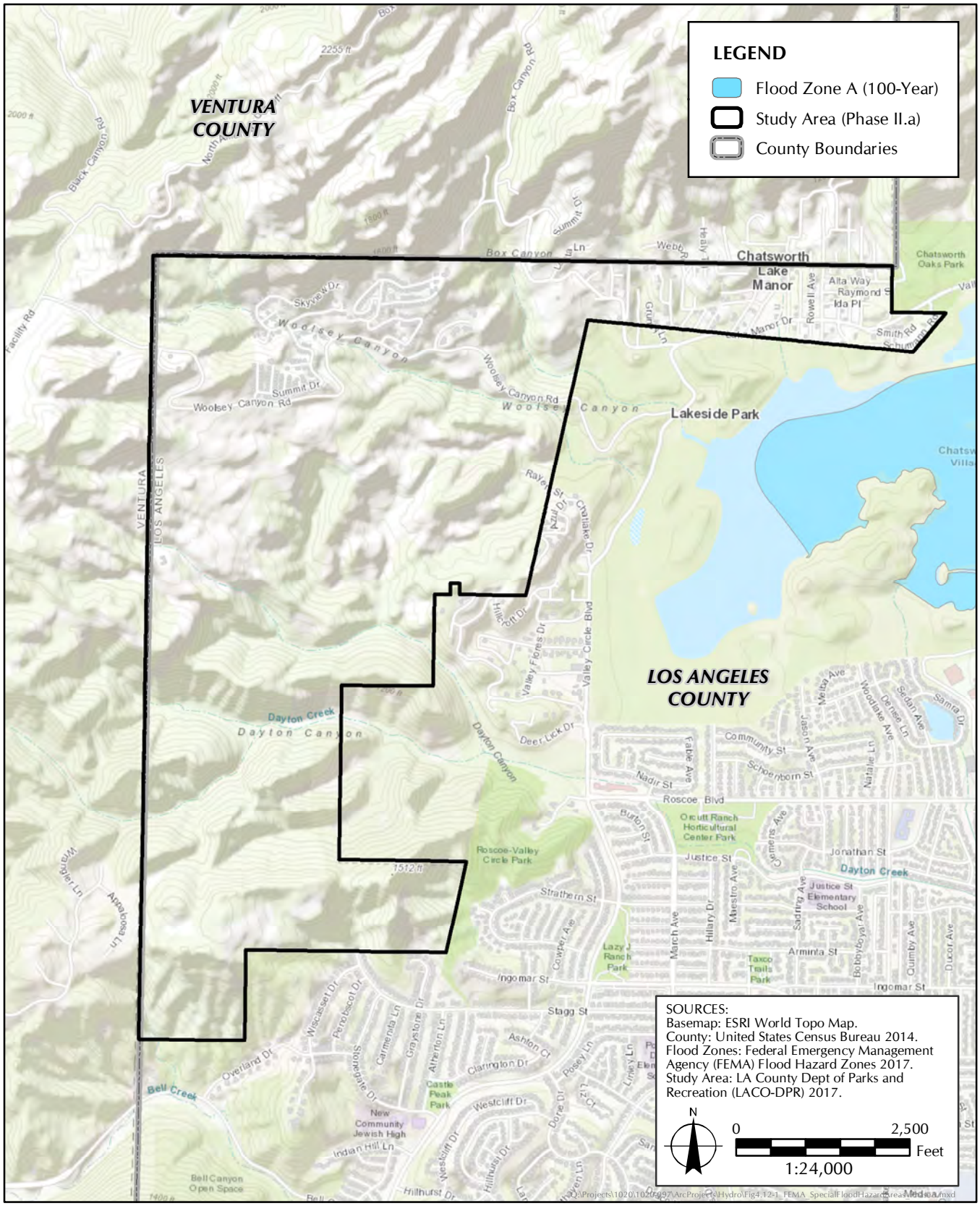

FIGURE 5.1-3B

FEMA Special Flood Hazard Areas

Seiche and Tsunami or Mudflows

A seiche is a standing wave in an enclosed or partially enclosed body of water that is triggered by a seismic event or by the constant blowing wind from the same direction over a period of time. There are no bodies of water that can produce a seiche in the Trails Master Plan Area.

A tsunami is a series of water waves caused by the displacement of a large volume of water in the ocean that have the potential to cause damage at shorelines. Earthquakes, volcanic eruptions, landslides, glacier carvings, meteorite impacts and other disturbances above or below water can cause tsunamis. There is no risk of tsunami in the Trails Master Plan Area.

Mudflows (also debris flows) develop when saturated, loose surface materials (e.g., soil, colluvium, and weathered bedrock formations) in hillside areas become unstable and, due to gravitational forces, slide down the hillside slopes. Although mudflow events likely would be relatively uncommon, the steep topography in the soil- and colluvium-covered bedrock terrain may generate mud- or debris-flows that could enter the project area.[16]

5.2 IMPACT ANALYSIS

The potential for the proposed project to result in impacts related to hydrology and water quality was analyzed in relation to the questions in Appendix G of the State CEQA Guidelines[17] and the County of Los Angeles Department of Parks and Recreation's Environmental Checklist Form. Would the project:

- Violate any water quality standards or waste discharge requirements?

- Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

- Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

- Add water features or create conditions in which standing water can accumulate that could increase habitat for mosquitoes and other vectors that transmit diseases such as the West Nile virus and result in increased pesticide use?

[16] City of Los Angeles Department of City Planning. November 1996. Safety Element of the City of Los Angeles General Plan.

[17] *California Code of Regulations*, Title 14, Division 6, Chapter 3, Sections 15000–15387, Appendix G.

- Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

- Generate construction or post-construction runoff that would violate applicable stormwater NPDES permits or otherwise significantly affect surface water or groundwater quality?
- Conflict with the Los Angeles County Low Impact Development_Ordinance (L.A. County Code, Title 12, Ch. 12.84)?

- Result in point or nonpoint source pollutant discharges into State Water Resources Control Board-designated Areas of Special Biological Significance?

- Use onsite wastewater treatment systems in areas with known geological limitations (e.g. high groundwater) or in close proximity to surface water (including, but not limited to, streams, lakes, and drainage course)?

- Otherwise substantially degrade water quality?

- Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, or within a floodway or floodplain?

- Place structures, which would impede or redirect flood flows, within a 100-year flood hazard area, floodway, or floodplain?

- Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

- Place structures in areas subject to inundation by seiche, tsunami, or mudflow?

Violate any water quality standards or waste discharge requirements?

Where grading is required to construct the trail improvements is in excess of 1 acre, it would be subject to Construction General Permit and require preparation of a SWPPP. Additionally, grading that occurs in the vicinity of an SEA may be subject to stormwater controls at the discretion of the County Building Department when disturbance is less than an acre. Most of the main drainages in the proposed project area are classified on USGS topographic maps as blue-line streams, indicating that under certain conditions the streams convey water flows. A blue-line stream would be classified as either a positive or negative control point for planning the path of a new trail. In some instances, blue-line streams can be identified as negative control points because the stream can pose a hazard to users or cause excessive damage to natural resources. However, blue-line streams can also provide access to water bodies where the Basin Plan identifies the water body as being suitable for body contact recreation or the water body provides an important visual or aesthetic experience, and the blue-line stream would then be considered a positive control point. Impacts would be reduced to below the level of significance through compliance with the County's Low Impact Development (LID) ordinance, requiring the use of two Best Management Practices (BMPs). Furthermore, all trail amenities would be designed, constructed, and maintained in accordance

with the recommendations of the County Trails Manual. Therefore, impacts would be less than significant, and mitigation would not be required.

Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?

Depth to groundwater has been reported at 24 to 100 feet below the ground surface from the limited investigations that have been undertaken in the Trails Master Plan Area and should not be an issue for near surface grading required to accommodate new trails and improvements to existing trails. Construction water would be hauled to the site or delivered from the nearest source of domestic water supplies. The project does not include the development or use of groundwater wells.

Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?

Construction activities associated with trail development would include excavation, grading, and construction of trails and small structures at trailheads and trail staging areas. These construction activities have the potential to occur within and adjacent to state and federal wetlands and or waters of the United States on-site. Impacts would include disruption of streams and wetlands as new trails are developed and dredge and fill activities associated with trail development. The discharge of dredged or fill materials in to wetlands and "waters of the United States" would be subject to the jurisdiction of the USACE pursuant to Section 404 of the CWA and would require a Water Quality Certification or Waiver of Water Quality Certification from the LARWQCB. It is possible that the work could be authorized pursuant to one of the preauthorized Nationwide Permits. The alteration of any water of the State would be subject to the jurisdiction of the CDFW pursuant to Section 1600 of the State Fish and Game Code. Conformance with the mitigation measures required to use a Nationwide Permit, or obtain an individual permit under Section 404 of the Clean Water Act, or a Lake and Streambed Alteration Agreement under Section 1600 of the State Fish and Game Code, would reduce impacts to below the level of significance. Impacts would be further reduced through compliance with the County's LID ordinance. Therefore, impacts would be less than significant, and mitigation would not be required.

Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or off-site?

Construction activities associated with trail development would include excavation, grading, and construction of trails and small structures at trailheads and trail staging areas. These construction activities have the potential to occur within and adjacent to state and federal wetlands and or waters of the United States on-site. Impacts would include disruption of streams and wetlands as new trails are developed and dredge and fill activities associated with trail development. The discharge of dredged or fill materials in to wetlands and waters of the United States would be subject to the jurisdiction of the USACE pursuant to Section 404 of the CWA and would require a Water Quality Certification or Waiver of Water Quality Certification from the LARWQCB. It is possible that the work could be authorized pursuant to one of the pre-authorized Nationwide Permits. The alteration of any water of the State would be subject to the jurisdiction of the CDFW

pursuant to Section 1600 of the State Fish and Game Code. Conformance with the mitigation measures required to use a Nationwide Permit, or obtain an individual permit under Section 404 of the Clean Water Act, or a Lake and Streambed Alteration Agreement under Section 1600 of the State Fish and Game Code, would reduce impacts to below the level of significance. Impacts would be further reduced through compliance with the County's LID ordinance. Therefore, impacts would be less than significant, and mitigation would not be required.

Add water features or create conditions in which standing water can accumulate that could increase habitat for mosquitoes and other vectors that transmit diseases such as the West Nile virus and result in increased pesticide use?

The proposed project would result in no impacts related to increasing habitat for mosquitoes or other vectors that transmit diseases. The proposed project would not add water features or create conditions in which standing water would accumulate or that would increase habitat for mosquitoes and other vectors that transmit diseases such as the West Nile virus and result in increased pesticide use. Additionally, Los Angeles County has a "pack it in…pack it out" policy. This common saying is a simple yet effective way to get hikers to take their trash home with them. Furthermore, all trail amenities would be designed in accordance with the recommendations of the County Trails Manual. Therefore, there would be no impact, and mitigation would not be required.

Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?

The proposed project would not create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff. Most of the jurisdiction areas are ephemeral areas that can be crossed without engineered solutions. The proposed project would not include the construction of stormdrains. Procedures from the County's Low Impact Development (LID) Standards Manual would be followed to determine the difference in the proposed project's pre- and post-development runoff volumes and potential pollutant loads. Therefore, there would be no impact, and mitigation would not be required.

Generate construction or post-construction runoff that would violate applicable stormwater NPDES permits or otherwise significantly affect surface water or groundwater quality?

Procedures from the County's LID Standards Manual would be followed to determine the difference in the proposed project's pre- and post-development runoff volumes and potential pollutant loads. Where grading is required to construct the trail improvements is in excess of 1 acre, it would be subject to General Construction Permit and require preparation of a SWPPP. Additionally, grading that occurs in the vicinity of an SEA may be subject to storm water controls at the discretion of the County Building Department when disturbance is less than an acre. Therefore, impacts would be less than significant, and mitigation would not be required.

Conflict with the Los Angeles County Low Impact Development Ordinance (L.A. County Code, Title 12, Ch. 12.84)?

The County's LID Standards Manual requires developments to manage stormwater runoff. Developments are categorized as Designated or Non-Designated. The proposed project is considered new development located in or directly adjacent to or discharging directly to an SEA, as defined in Section 22.08.190 of Title 22 of the LID Development Standards, which will discharge

stormwater runoff that is likely to impact a sensitive biological species or habitat and create 2,500 square feet or more of impervious surface area. The County's LID ordinance does not require a specific reduction in pollutant discharges. BMPs listed for Non-Designated Projects are not required to meet a specific pollutant load reduction or to retain a specified amount of runoff. They are only intended to reduce a development's pollutant load, but not necessarily to reduce all pollutant loads to a pre-development condition. Development of the proposed project would result in an increase of pollutant discharges. Procedures from the County's LID Standards Manual would be followed to determine the difference in the proposed project's pre- and post-development runoff volumes and potential pollutant loads. All development would occur in compliance with the County's LID Ordinance. Therefore, there would be no impact, and mitigation would not be required.

Result in point or nonpoint source pollutant discharges into State Water Resources Control Board–designated Areas of Special Biological Significance?

The proposed project would result in no impact to hydrology and water quality regarding resulting in a point or nonpoint pollutant discharge into State Water Resources Control Board (SWRCB)-designated Areas of Special Biological Significance. Areas of special biological significance (ASBS) "are a subset of state water quality protection areas, and require special protection as determined by the State Water Board pursuant to the California Ocean Plan...." (emphasis added). The Ocean Plan states that: "Waste shall not be discharged to areas designated as being of special biological significance. Discharges shall be located a sufficient distance from such designated areas to assure maintenance of natural water quality conditions in these areas." This absolute discharge prohibition in the Ocean Plan applies unless an "exception" is granted.[18] The closest area of ASBS is Area 24, Laguna Point to Latigo Point.[19] There are no Areas of Special Biological Significance within the study area, and drainages within the study area are not tributaries into Areas of Special Biological Significance. Therefore, impacts would be less than significant, and mitigation would not be required.

Use onsite wastewater treatment systems in areas with known geological limitations (e.g. high groundwater) or in close proximity to surface water (including, but not limited to, streams, lakes, and drainage course)?

The proposed project would not use onsite wastewater treatment systems in areas with known geological limitations or in close proximity to surface water. Therefore, impacts would be less than significant, and mitigation would not be required.

Otherwise substantially degrade water quality?

The Santa Clara River is an impaired water body within the Phase II.a boundary (see Figure 5.1-1). Where grading is required to construct the trail improvements in excess of 1 acre, it would be subject to the General Construction Permit and require preparation of a SWPPP. Additionally, grading that occurs in the vicinity of an SEA may be subject to storm water controls at the discretion of the County Building Department when disturbance is less than an acre. Furthermore, all trail amenities would be designed, constructed, and maintained in accordance with the

[18] State Water Resources Control Board. 21 February 2012. ASBS Program Final Environmental Impact Report. Pp. 6–7.

[19] State Water Resources Control Board. Accessed 19 October 2017. Map of California's Areas of Special Biological Significance. Available at: https://www.waterboards.ca.gov/water_issues/programs/ocean/asbs_map.shtml

recommendations of the County Trails Manual. Therefore, impacts would be less than significant, and mitigation would not be required.

Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map, or within a floodway or floodplain?

The proposed project would have no impacts related to placing housing with a 100-year flood hazard area. The proposed project would not include the construction of new or relocation of existing housing.

Place structures, which would impeded or redirect flood flows, within a 100-year flood hazard area, floodway, or floodplain?

The proposed project would result in less than significant impacts to hydrology and water quality regarding placing structures within a 100-year flood hazard area. There are six canyons within the project study area that have mapped 100-year floodplains, indicating these areas have a 1 percent chance of flooding in any given year (see Figure 5.1-3, *FEMA Special Flood Hazard Areas*, in Appendix F). These canyons all drain towards the Santa Clara River and include portions of Rice Canyon, Towsley Canyon, Gavin Canyon, Lyon Canyon, and Pico Canyon. Additionally, Potrero Canyon is within the Phase II.a area, and also drains to the Santa Clara River. There are no flood risk areas within the Phase II.b area. The proposed project would include the construction of new or relocation of existing structures. However, the proposed structures would be required to be designed, constructed, and maintained in accordance with the recommendations of the County Trails Manual, which would reduce impacts to below the level of significance. Therefore, impacts would be less than significant, and mitigation would not be required.

Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?

The proposed project would result in less than significant impacts to hydrology and water quality regarding exposing people or structures to risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam. The project area is near the Castaic Dam. The Castaic Dam is an embankment dam in northern Los Angeles County, California, near the rural unincorporated community of Castaic, located in the northern part of Los Angeles County, California. The dam was built by the California Department of Water Resources and construction was completed in 1973. The lake has a capacity of 325,000 acre-feet (401,000,000 square meters) and stores drinking water for the western portion of the Greater Los Angeles Area. The distance from Castaic Dam to the Phase II.a area is 5.2 miles south; the distance from Castaic Dam to Phase II.b area is 19.3 miles south; the distance from Castaic Dam to the nearest proposed trail corridor (segment ESC1 of "Entrada to Santa Clara River" trail corridor) is 5.8 miles south. Floods that could result from failure of the Castaic Dam could expose people or structures to a significant risk of loss, injury or death involving flooding. However, the proposed project would not substantially affect this risk. Furthermore, all trail amenities would be designed in accordance with the recommendations of the County Trails Manual. Therefore, impacts would be less than significant, and mitigation would not be required.

Place structures in areas subject to inundation by seiche, tsunami, or mudflow?

The proposed project would not place structures in areas subject to inundation by seiche or

tsunami. The project area is approximately 12 miles from a tsunami zone. Mudflows (also debris flows) develop when saturated, loose surface materials (e.g., soil, colluvium, and weathered bedrock formations) in hillside areas become unstable and, due to gravitational forces, slide down the hillside slopes. Although mudflow events likely would be relatively uncommon, the steep topography in the soil- and colluvium-covered bedrock terrain may generate mud- or debris-flows that could enter the project area from the hillside areas. However, the proposed project would be required to be designed in accordance with the recommendations of the County Trails Manual, which would reduce impacts to below the level of significance.

5.3 MITIGATION RECOMMENDATIONS

No mitigation measures would be required.

Level of Significance after Mitigation

Impacts to hydrology and water quality would be less than significant.

SECTION 6.0
REFERENCES

California Code of Regulations, Title 14, Division 6, Chapter 3, Sections 15000–15387, Appendix G.

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Appendix G

2017 Noise Technical Report

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN – PHASE II

Noise Technical Report

Prepared for:

County of Los Angeles
Department of Parks and Recreation
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November 2, 2017

EXECUTIVE SUMMARY

This Noise Technical Report documents the results of the noise evaluation that was undertaken in support of the proposed Santa Susana Mountains Trails Master Plan – Phase II (SSMPMP-PII, or proposed project). Based on the results of the noise monitoring and modelling conducted by Sapphos Environmental, Inc. in June 2017, the location of sensitive receptors, and construction and operation activities associated with the proposed project, there would be no anticipated significant impacts related to the construction, operation, or maintenance of the proposed trail elements related to exceeding the standard for ambient noise established by the County of Los Angeles Noise Ordinance or as a result of the exposure of sensitive receptors to excessive noise or ground-borne vibration, a substantial permanent increase in ambient noise levels, a substantial temporary increase in noise levels, or exposure to excessive noise from public or private airports for people residing or working in new structures. All impacts related to noise and vibration from construction, operation, and maintenance of trails would be avoided by complying with the County Noise Ordinance by limiting construction and maintenance activities to 7:00 a.m. to 7:00 p.m. on weekdays and Saturdays, and prohibiting work on federal holidays and Sundays, along with limiting noise levels to below 75 dBA for mobile equipment and 60 dBA for stationary equipment at sensitive receptor locations through the use of noise-attenuating barriers, baffles, or blankets.

The evaluation identified 510 parcels with potentially sensitive receptors (primarily residential land uses) within 251 feet of the proposed trail alignments in the northeast portion of the Phase II.a study area in the Stevenson Ranch community of Santa Clarita Valley, California; and the northern and southwest portion of the Phase II.b study area near the Canoga Park, Chatsworth, and West Hills communities of the City of Los Angeles, California. The results of the noise monitoring and modeling demonstrated that, when compared to trail operations and maintenance, trail construction activities generate the greatest increases in ambient noise levels and that a separation of a minimum of 251 feet between construction and the nearest sensitive receptor is sufficient to avoid significant impacts to ambient noise levels and sensitive receptors. Impacts to sensitive receptors within 251 feet would be avoided through the use of noise-attenuating barriers, baffles, or blankets.

The proposed project would not result in noise impacts in relation to exposure to persons residing or working near airports to excessive noise levels. The proposed project area is not located within 2 miles of an airport land use area. There are no public or private airports within 2 miles of the proposed project area. The proposed project study area is sufficiently removed from public and private airports to protect workers engaged in construction or maintenance of the trails from exposure to excessive noise levels. Similarly, recreational users would not be exposed to excessive noise levels from an airport.

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SECTION 1.0
INTRODUCTION

This Noise Technical Report provides the County of Los Angeles (County) with the substantial evidence used to make a determination that there would be no anticipated significant impacts related to the construction, operation, or maintenance of the proposed Santa Susana Mountains Trails Master Plan – Phase II (SSMTMP-PII or proposed project). All impacts related to noise and vibration from construction, operation, and maintenance of trails would be avoided by complying with the County Noise Ordinance by limiting construction and maintenance activities to 7:00 a.m. to 7:00 p.m. on weekdays and Saturdays, and prohibiting work on federal holidays and Sundays, along with limiting noise levels to below 75 A-weighted decibels (dBA) for mobile equipment and 60 dBA for stationary equipment at sensitive receptor locations.

1.1 CEQA COMPLIANCE

The County of Los Angeles Department of Parks and Recreation (DPR) proposes to complete the SSMTMP-PII, ultimately to amend the Parks and Recreation Element of the Los Angeles County General Plan 2035 (County General Plan) to include the SSMTMP-PII, which would guide future trail development and recommend improvements to existing trails. The proposed project would ultimately result in the construction and use of trails in public and private lands, some of which may involve the expenditure of public funds, and thus constitutes a project pursuant to the California Environmental Quality Act (CEQA). These trails would be located in the unincorporated territory of Los Angeles County; therefore, the County would be the Lead Agency pursuant to CEQA.

1.2 PURPOSE

The purpose of the Noise Technical Report is to support the County in development of a Master Plan that would minimize the impacts on the surrounding community. It is understood that the County expects to move forward with Phase II of the Trails Master Plan and seeks funding for construction, operation, and maintenance of the Trails Master Plan. This Noise Technical Report provides the requisite information related to noise impacts to support the County's decision-making process in relation to the Trails Master Plan. The evaluation of Phase II of the Trails Master Plan to result in significant impacts to noise was undertaken in accordance with Appendix G of the State of California Environmental Quality Act (CEQA) Guidelines and the Los Angeles County General Plan 2035. The analysis contained herein for Phase II can be extrapolated to assess the potential for the larger Trails Master Plan to result in significant impacts to noise as currently conceived by the County.

1.3 INTENDED AUDIENCE

This Noise Technical Report provides information for consideration by DPR and the design team, Alta Planning + Design, engaged in the development of the proposed project. The substantial evidence will be available for the responsible and trustee agencies, and the public, including property owners, during circulation of the draft environmental document for public review. Ultimately, the Noise Technical Report will be used by the County Board of Supervisors to support their decision-making process related to the proposed project. The Noise Technical Report will also inform the County and private parties in the ultimate development, operation, and maintenance of trails in the plan area.

1.4 SCOPE

In May 2015, the County adopted the first phase of the Santa Susana Mountains Trails Master Plan (SSMFTMP), which involved the extension of the 35.7 miles of existing County-, City-, and Conservancy-managed trails in the Phase I and Phase II study areas by approximately 35.9 miles with 22 proposed trail segments, for a total of approximately 71.5 miles of trails. In 2017, the County initiated planning efforts for further development of the Phase II study area, which has been expanded to Phase II.a and II.b. This assessment is based on a review of the Noise Element of the Los Angeles County General Plan 2035, Los Angeles County Municipal Code, the Santa Clarita Valley Area Plan, and the Santa Clarita City Municipal Code as well as a site survey performed to measure and record baseline data to characterize noise levels within the proposed project area.

1.5 TECHNICAL TERMINOLOGY

Sensitive Receptors. Areas with noise-sensitive receptors are locations in which the presence of unwanted sound could adversely affect or disrupt activities associated with the land use at the specified location. Land uses such as residences, schools, libraries, churches, and hospitals are generally more sensitive to noise than industrial and commercial land uses. These particular locations are considered to be noise-sensitive receptors. Baseline data are collected at the locations of existing noise-sensitive receptors to determine the ambient noise levels and if noise from the implementation of the proposed plan would result in significant increases to these levels.

Noise Characteristics. Noise is defined as unwanted sound (Table 1.5-1, *Definitions*). The human response to environmental noise is subjective and varies considerably from individual to individual. The effects of noise can range from interference with sleep, concentration, and communication, to the causation of physiological and psychological stress, and, at the highest intensity levels, hearing loss.

TABLE 1.5-1
DEFINITIONS

dBA	A-weighted decibels (dBA) are an expression of the relative loudness of sounds in air as perceived by the human ear. In the A-weighted system, the decibel values of sounds at low frequencies are reduced compared with unweighted decibels, in which no correction is made for audio frequency.
L_{eq}	The equivalent-continuous sound (L_{eq}) is the level of a constant sound, expressed in decibels (dB), which in a given time period ($T = T_2 - T_1$) has the same energy as a time varying sound.
CNEL	The Community Noise Equivalent Level (CNEL) is the average sound level over a 24-hour period, with a penalty of 5 dB added between the hours of 7:00 p.m. and 10:00 p.m., and a penalty of 10 dB added for the nighttime hours between 10:00 p.m. and 7:00 a.m. These increases account for reduced ambient noise levels during these time periods and increased human sensitivity to noise during the quieter periods of the day.
Ambient noise	The level of the total noise in an area.
Point source	A single identifiable, localized source of noise.
Sensitive receptors	Sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, playgrounds, long-term health care facilities, elderly housing and convalescent facilities. These are areas where the occupants are more susceptible to noise impacts.
TWA	A constant sound level lasting 8 hours that would result in the equivalent sound energy as the noise that was sampled for a given threshold.

Noise Attenuation. Noise is attenuated as it propagates from the source to the receiver. Attenuation is logarithmic, rather than linear, which means:

- For line sources, such as streets, noise levels decrease by 3 to 5 dBA for every doubling of distance from the source.
- For point sources, noise levels decrease quicker, about 6 dBA, for every doubling of distance from the source
- Topography and the type of surface (paved or vegetated) also play a role in noise attenuation characteristics.

One way of estimating a person's subjective reaction to a new noise is to compare the new noise with the existing noise environment to which the person has become adapted, that is, the increase over the so-called "ambient" noise level. Research in the area of perceived impacts of various degrees of increase in dBA indicates the following:

- Except in carefully controlled laboratory experiments, a change of 1 dBA cannot be perceived.
- Outside of the laboratory, a 3-dBA change is considered a just-perceivable difference.
- A change in noise level of at least 5 dBA is required before any noticeable change in community response would be expected. A 5-dBA increase is often considered a significant impact.
- A 10-dBA increase is subjectively heard as approximately a doubling in loudness and almost always causes an adverse community response.

In assessing the impact of noise upon the environment, the nature and level of activities that generate the noise, the pathway through which the noise travels, the sensitivity of the receptor, the period of exposure, and the increase over the ambient noise levels are all considered. For the purposes of this analysis, sensitive receptors are defined to include single-family residences, convalescent homes, schools, auditoriums, and other similar land uses that may be affected to a greater degree by increased noise levels than industrial, manufacturing, or commercial land uses.

The noise evaluation identified sensitive noise receptors located inside and in proximity of the SSMTMP-PII project study area and included residences, schools, short-term accommodations (hotels, motels, and camps), churches, hospitals and healthcare facilities, and day-care centers. Therefore, an evaluation was undertaken to determine if such development would likely result in significant impacts, necessitating the consideration of mitigation measures. The noise evaluation not only informs the proposed project planning process, it provides the County with the information that would serve as the basis for assessment of noise in the Initial Study, pursuant to CEQA. The evaluation of noise was undertaken in accordance with Appendix G of the State CEQA Guidelines. This assessment focuses on the potential for the proposed project to exceed the standards for noise established for the County or result in the exposure of sensitive receptors to excessive ground-borne vibration, a substantial permanent increase in noise levels, or exposure to excessive noise from public or private airports for people residing or working in new structures.

Ground-Borne Vibration. Vibration is an oscillatory motion, which can be described in terms of the displacement, velocity, or acceleration. Because motion is oscillatory, there is no net movement of the vibrating element and the average of any of the motion descriptors is zero. Displacement is the easiest descriptor to understand. For a vibrating floor, the displacement is simply the distance that a point on the floor moves away from its static position. The velocity represents the instantaneous speed of the movement and the acceleration the rate of change of speed.

Although displacement is easier to understand than velocity and acceleration, it is rarely used for describing ground-borne vibration. This is because most transducers used for ground-borne vibration use either velocity or acceleration, and even more important, the response of humans, buildings, and equipment to vibration is more accurately described using velocity or acceleration.

The effects of ground-borne vibration include fellable movements of the building floors, rattling of windows, shaking of items on shelves or hangings on walls. The rumble is the noise radiated from the motion of the room surfaces. In essence, the room surfaces act like a loudspeaker. This is called ground-borne noise. In extreme cases, vibrations can cause damage to buildings.

Ground-borne vibration is almost never annoying to people who are outdoors, although the motion of the ground may be perceived.

Propagation of vibration from source to the receiver is dependent on soil conditions and on the receiving building. Vibration propagation is more efficient in stiff clay soils and shallow rocks seem to concentrate the vibration energy close to the surface and can result in ground-borne vibration problem at large distances. Factors such as layering of the soil and depth to water table can have significant effects on the propagation of ground-borne vibration. The vibration levels inside a building depend on the energy that reaches the building foundation, the coupling of the building foundation to the soil, and the propagation of vibration through the building. The general guideline is that the heavier the building is the lower the response would be to the incident vibration.

SECTION 2.0
PROJECT DESCRIPTION

2.1 PROJECT LOCATION

The Trails Master Plan (approximately 49 square miles) is located north and west of the San Fernando Valley in the Santa Susana Mountains, in the western portion of the unincorporated area of the County of Los Angeles (Figure 2.1-1, *Regional Vicinity Map*). The Santa Susana Mountains are centrally located in the Transverse Ranges, a group of east-west trending mountains paralleling the Pacific Ocean between Santa Barbara and San Diego Counties. The proposed designation and improvement of a portion of the Johnson Motorway Trail is an element of the first phase of the Trails Master Plan (SSMFTMP).

2.2 TRAILS MASTER PLAN STUDY AREA

Phase I Area. The northern boundary of the Trails Master Plan – Phase I is defined by the southern limits of the Newhall Ranch Specific Plan Area and the northern limits of the proposed Santa Susana Mountains / Simi Hills Significant Ecological Area (SEA). The southern boundary is defined by the northern limit of the City of Los Angeles. The eastern boundary is defined by U.S. Interstate 5 (I-5). The western boundary is defined by the corporate boundary between Los Angeles and Ventura Counties (Figure 2.2-1, *Trails Master Plan Location*). The SSMFTMP is divided into two subareas or phases (see Figure 2.2-1). Phase I is the Northwest San Fernando Valley Study Area, and Phase II is the Southwest Santa Clarita Valley Study Area. Phase I includes 16,038.1 acres (25.1 square miles); the northern boundary is defined by the northern limits of the Los Angeles County Oat Mountain Planning Area, the southern boundary is defined by the northern limit of the City of Los Angeles, the eastern boundary is defined by the I-5 freeway, and the western boundary is defined by the boundary between Los Angeles and Ventura Counties.

Phase II Area. Phase II includes 8,084.4 acres (12.6 square miles). The northern boundary is defined by the northern limits of the proposed Santa Susana Mountains / Simi Hills SEA. The southern boundary is defined by the southern limits of the proposed Santa Susana Mountains / Simi Hills SEA. The eastern boundary is defined by the I-5 freeway. The western boundary is defined by the southern and eastern boundaries of the Newhall Ranch Specific Plan area.

The Trails Master Plan – Phase II has been expanded beyond the spatial extents of Phase II in the SSMFTMP and also divided into two subareas. The Phase II.a area is an approximately 22-square-mile area located in the north-facing slopes of the Santa Susana Mountains and the Santa Clarita Valley that is bound by Henry Mayo Drive (State Route [SR] 126) to the north, the I-5 freeway to the east, Phase I of the adopted SSMFTMP Area to the south, and the Newhall Ranch Specific Plan Area to the west. The Phase II.b area is an approximately 2-square-mile area located in the foothills of the Santa Monica Mountains, including Bell Canyon, Dayton Canyon, and Woolsey Canyon, west of the San Fernando Valley, that is bound by Ventura County to the north and west and the city of Los Angeles to the east and south.

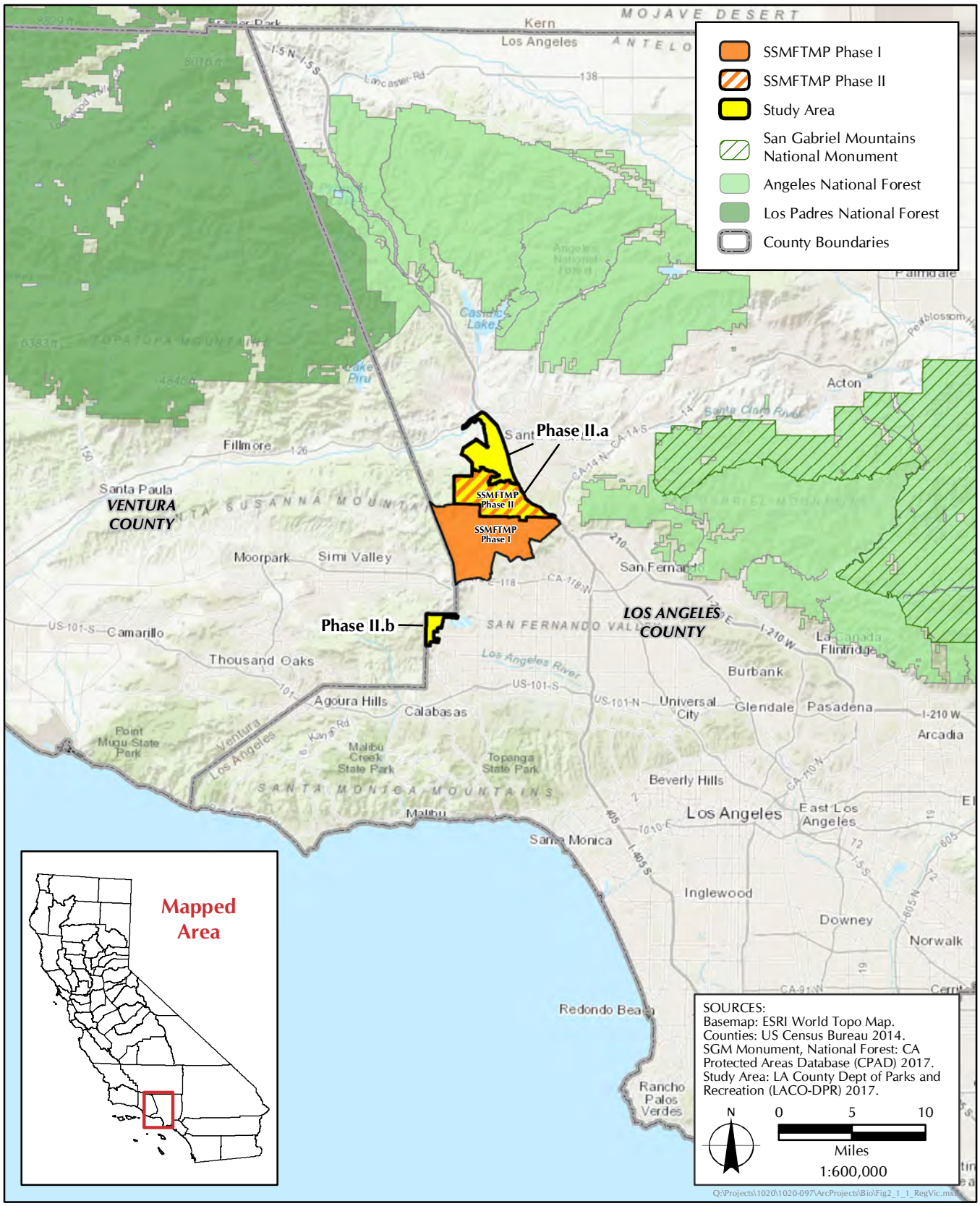

FIGURE 2.1-1

Regional Vicinity Map

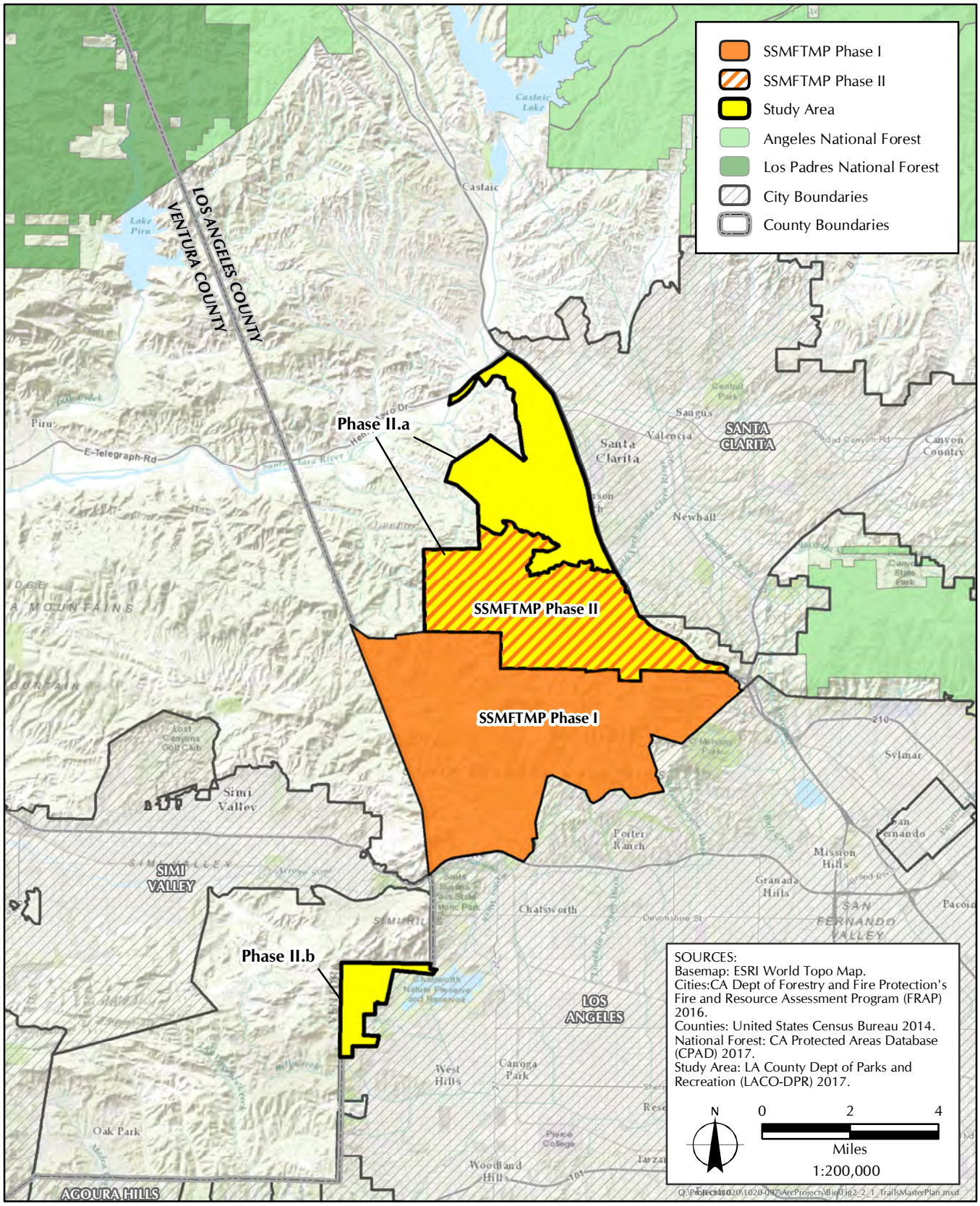

FIGURE 2.2-1

Trails Master Plan Location

Topography. The Trails Master Plan is located in the U.S. Geological Survey (USGS) 7.5-minute series, Newhall, Oat Mountain, Simi Valley East, and Val Verde, California, topographic quadrangles[1,2] and includes portions of Township 2 North, Range 16 West (San Bernardino Baseline and Meridian [SBB&M]); Sections 6 and 7, Township 2 North, Range 17 West (SBB&M), Sections 1, 2, 11, and 12; Township 3 North, Range 16 West (SBB&M), Sections 4–10, 13–24, and 26–34; and Township 3 North, Range 17 West (SBB&M), Sections 1, 2, 11–15, 22–27, and 34–36 (Figure 2.2-2, *Topographic Map with USGS 7.5-minute Quadrangle Index*). Phase I of the Trails Master Plan is located on the USGS 7.5-minute series Simi Valley East and Oat Mountain topographic quadrangles. Phase II of the Trails Master Plan is located on the Val Verde, Newhall, Simi Valley East (Santa Susana), Oat Mountain, and Calabasas topographic quadrangles. Situated along the southern flanks of the Santa Susana Mountains, the topography of the Trails Master Plan is characterized by a series of southwest draining canyons that are separated by steep-sloped and narrow ridge tops. The Trails Master Plan has elevations that range from 946 to 3,400 feet above mean sea level (msl). Vegetation in the area is characterized by a Sage and Chaparral plant communities with scattered yucca plants. Although small areas of exposed bedrock are seen along the trail corridor, much of the proposed project area is characterized by thick vegetative coverage, which is particularly dense in the canyon bottoms and at lower elevations.

2.3 PROJECT SUMMARY

The SSMTMP-PII will guide future trail development and recommend improvements to existing trails. The Trails Master Plan will provide trail users and local populations with seamless transitions throughout the proposed study area to trails of adjacent jurisdictions and prime destinations within and adjacent to the study area. The goals of the plan are to:

1. Develop a complete multi-use trail system connecting user groups and local populations to desired recreation destinations and experiences, with seamless transitions to the trails of adjacent jurisdictions, compatibility with adjacent land uses and environmental resources, and a safe and sustainable design that is consistent with the County of Los Angeles Trails Manual.

2. Develop a recreational trail system that supports low-intensity use, including mountain biking, equestrian use, and hiking, to accommodate the population increase anticipated in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area through the 2035 planning horizon consistent with the Parks and Recreation Element of the Los Angeles County General Plan 2035.

The overall work efforts will include a trails master plan and associated CEQA documentation. Individual trail alignments would be developed at a later phase of this project, which is intended to provide a trail planning framework for the study area.

[1] U.S. Geological Survey. 1969. 7.5-Minute Series, Oat Mountain, California, Topographic Quadrangle. Scale 1:24,000. Reston, VA.

[2] U.S. Geological Survey. 1969. 7.5-Minute Series, Willow Springs, California, Topographic Quadrangle. Reston, VA.

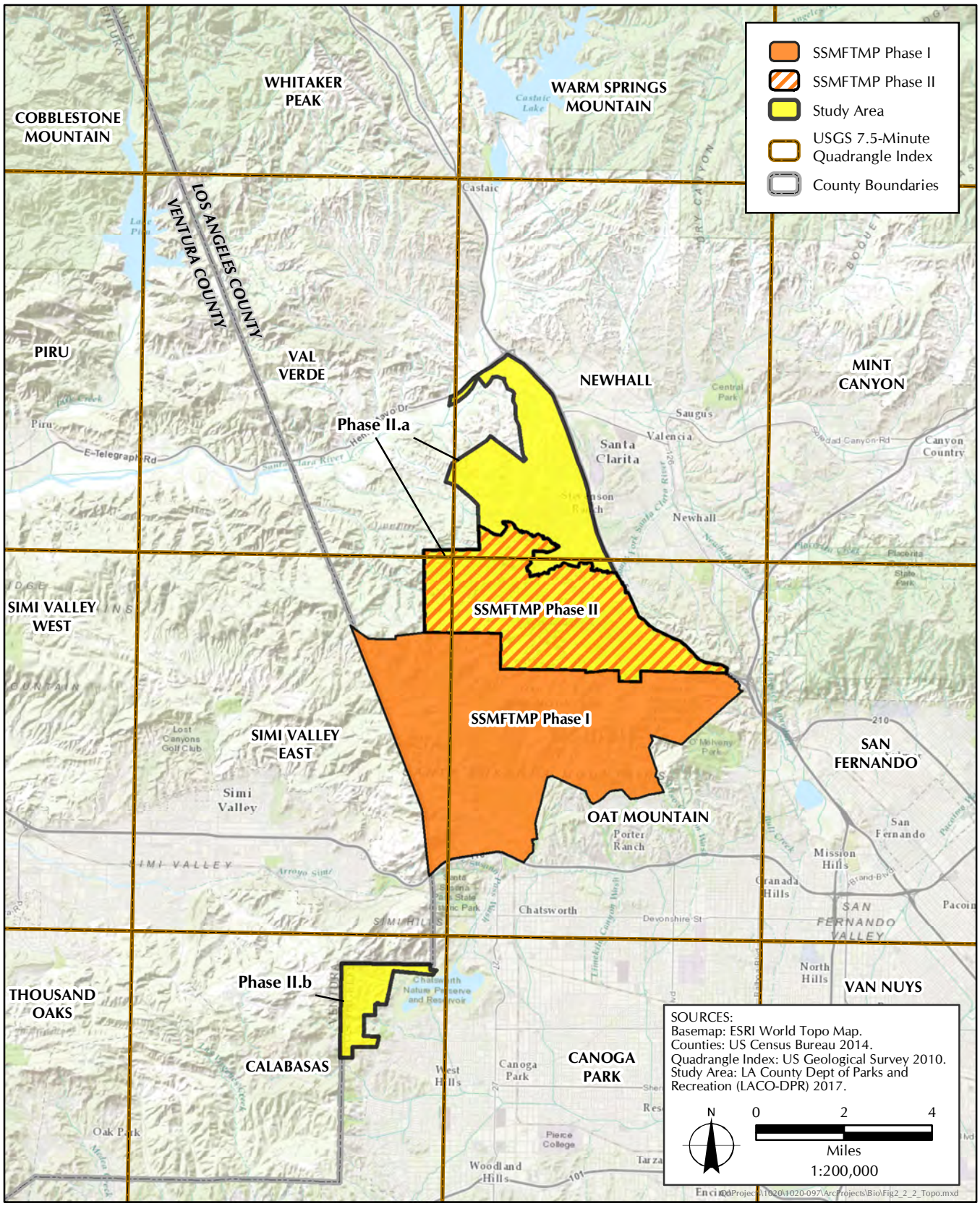

FIGURE 2.2-2

Topographic Map with USGS 7.5 Minute Quadrangle Index

The SSMTMP-PII involves approximately 70 miles of proposed new multi-use trails in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area (Figure 2.3-1, *Existing and Proposed Trails*). The trails would be multi-use and range from 3 to 12 feet wide based on site conditions, with adequate space for combined pedestrian, equestrian, and mountain biking use, in accordance with the County Trails Manual guidelines. The proposed trails would provide connections to the proposed Rim of the Valley Trail, trails in the City of Los Angeles, trails in the City of Santa Clarita, and trails in the Newhall Ranch Specific Plan, and trails within other jurisdictions as identified in the Trails Master Plan. The SSMTMP-PII identifies up to 20 potential locations for proposed facilities, including 4 trailheads, 2 bike skills areas, 2 equestrian parks, 8 trailhead and staging areas, and 4 trailheads outside the study area within the City of Los Angeles that would need to be developed by the City of Los Angeles (Figure 2.3-1). As the recommended City of Los Angeles trailheads would not be developed under jurisdiction of the County, this Report considers the 16 proposed facilities located within the SSMTMP-PII study area.

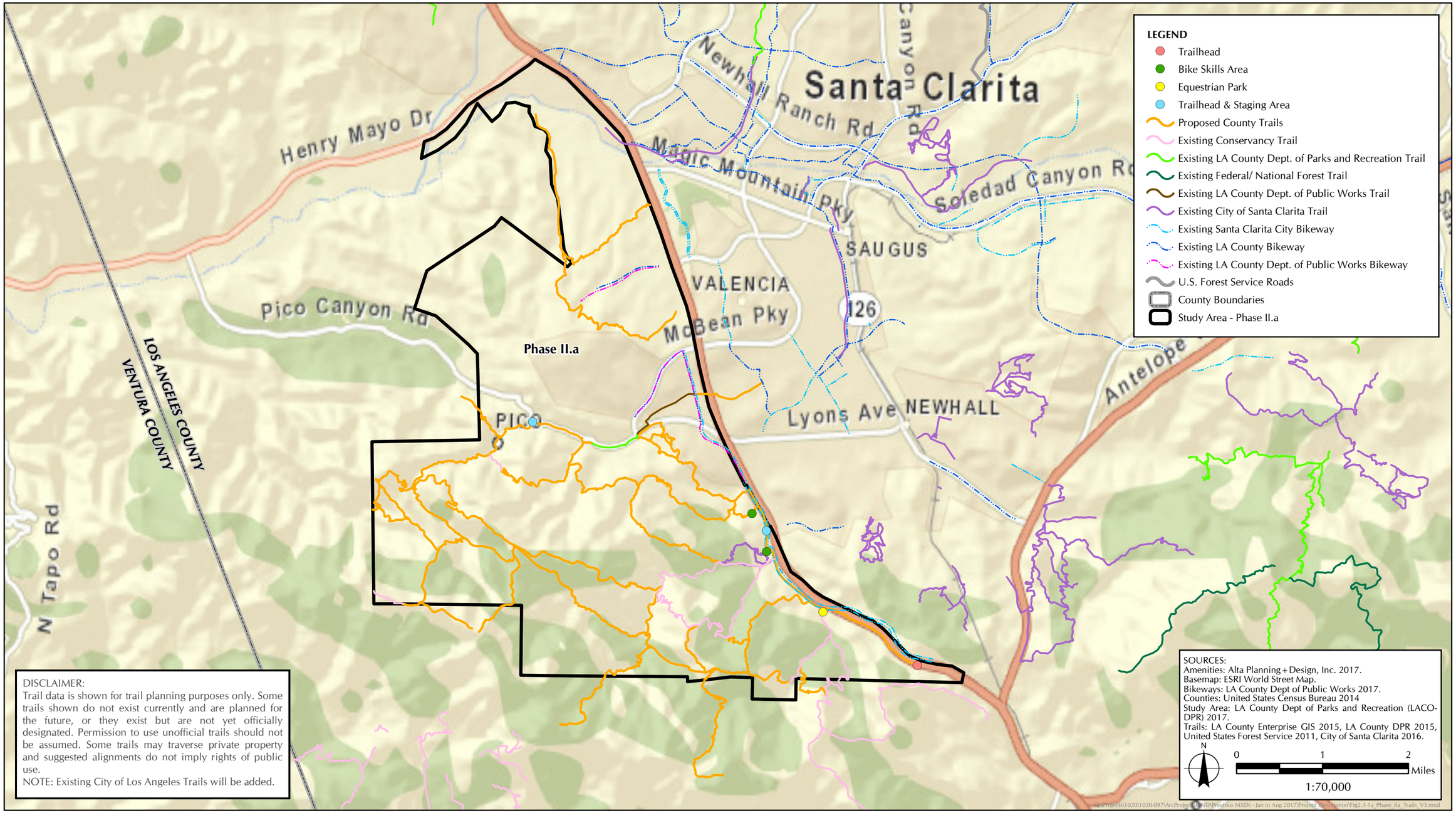

FIGURE 2.3-1a

Existing and Proposed Trails (Phase II.a)

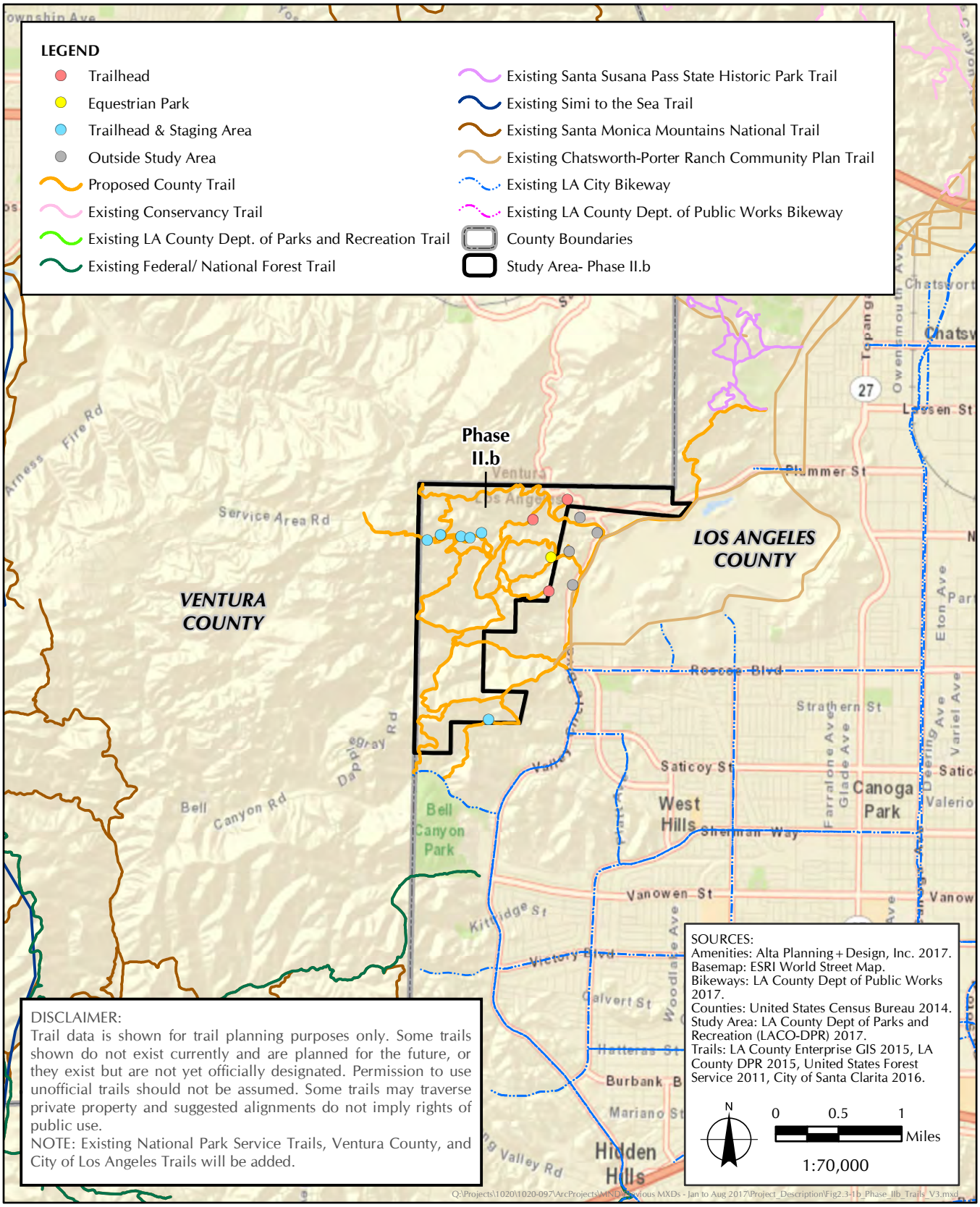

FIGURE 2.3-1b

Existing and Proposed Trails (Phase II.b)

SECTION 3.0
REGULATORY FRAMEWORK

3.1 FEDERAL

Noise Control Act of 1972

The adverse impacts of noise were officially recognized by the federal government in the Noise Control Act of 1972 (42 U.S. Code sections 4901–4918) which serves three purposes:

- Promulgating noise emission standards for interstate commerce;
- Assisting state and local abatement efforts; and,
- Promoting noise education and research.

The Office of Noise Abatement and Control (ONAC) was initially tasked with implementing the Noise Control Act. However, the ONAC has since been eliminated, leaving the development of federal noise policies and programs to other federal agencies and interagency committees. For example, the Occupational Safety and Health Administration (OSHA) prohibits exposure of workers to excessive sound levels. The U.S. Department of Transportation (DOT) assumed a significant role in noise control through its various operating agencies, such as the Federal Aviation Administration (FAA), which regulates noise generated by aircraft and airports. Surface transportation system noise is regulated by a host of agencies, including the Federal Transit Administration (FTA), which requires that all rail systems receiving federal funding be constructed and operated in accordance with its regulations and specifications. The Federal Railroad Administration (FRA) sets forth and enforces safety standards, including noise emissions within railroad locomotive cabs. Transit noise is regulated by the FTA, while freeways that are part of the interstate highway system are regulated by the Federal Highway Administration (FHWA). The FHWA has adopted and promulgated noise abatement criteria for highway construction projects. The federal government encourages local jurisdictions to use their land use regulatory authority to site new development to minimize potential noise impacts.

Title 14 Code of Federal Regulations, Part 150

Part 150 applies to airport noise compatibility planning and provides the procedures, standards, and methodology governing the development, submission, and review of airport noise exposure maps and airport noise compatibility programs, including the process for evaluating and approving or disapproving those programs. It provides guidance for measuring noise at airports and surrounding areas and for determining exposure of individuals to noise from the operations of an airport. Part 150 also identifies land uses that are normally compatible with various levels of exposure to noise by individuals. It provides guidance on the preparation and execution of noise compatibility planning and implementation programs.

Noise Abatement and Control, Title 24 Code of Federal Regulations, Part 51, Subpart B

The mission of Department of Housing and Urban Development (HUD) includes fostering "a decent, safe, and sanitary home and suitable living environment for every American." Accounting for acoustics is intrinsic to this mission, as an environment's safety and comfort can be compromised by excessive noise. In order to facilitate the creation of suitable living environments,

HUD has developed a standard for noise criteria. The basic foundation of the HUD noise program is set out in the noise regulation 24 CFR Part 51 Subpart B, Noise Abatement and Control.

HUD's noise policy clearly requires noise attenuation measures be provided when proposed projects are to be located in high noise areas. Within the HUD Noise Assessment Guidelines, potential noise sources are examined for projects located within 15 miles of a military or civilian airport, 1,000 feet from a road, or 3,000 feet from a railroad.

HUD exterior noise regulations state that 65 dBA DNL noise levels or less are acceptable for residential land uses and noise levels exceeding 75 dBA DNL are unacceptable. HUD's regulations do not contain standards for interior noise levels. Rather, a goal of 45 dBA is set forth, and the attenuation requirements are geared toward achieving that goal. It is assumed that, with standard construction, any building will provide sufficient attenuation so that if the exterior level is 65 dBA DNL or less, the interior level will be 45 dBA DNL or less.

3.2 STATE

California Government Code Section 65302

Section 65302 of California Government Code provides a framework for general plans and their content. It requires that the noise element include implementation measures and possible solutions that address existing and foreseeable noise problems, if any. The adopted noise element shall serve as a guideline for compliance with the state's noise insulation standards. The noise element shall also identify and appraise noise problems in the community, analyze and quantify current and projected noise levels for (1) highways and freeways; (2) primary arterials and major local streets; (3) passenger and freight online railroad operations and ground rapid transit systems; (4) commercial, general aviation, heliport, helistop, and military airport operations, aircraft overflights, jet engine test stands, and all other ground facilities and maintenance functions related to airport operation; (5) local industrial plants, including, but not limited to, railroad classification yards; and (6) other ground stationary noise sources, including, but not limited to, military installations, identified by local agencies as contributing to the community noise environment.

Section 65302 also specifies that noise contours be shown for all of the above listed sources and be stated in terms of CNEL or day-night average level (L_{dn}). The noise contours shall be prepared on the basis of noise monitoring or following generally accepted noise modeling techniques for the various sources identified above. The noise contours shall be used as a guide for establishing a pattern of land uses in the land use element that minimizes the exposure of community residents to excessive noise.

California Noise Control Act of 1973

The California Noise Control Act (California Health and Safety Code, Division 28, section 46000 et seq), as found in the California Health and Safety Code, Division 28, § 46000 et seq., declares that excessive noise is a serious hazard to public health and welfare, and establishes the Office of Noise Control with responsibility to set standards for noise exposure in cooperation with local governments or the state legislature.

Title 24, California Code of Regulations, Part 2

The State of California has developed a Land Use Compatibility Matrix for community noise environments that further defines the four categories of acceptance and assigns CNEL values to them. In addition, the State Building Code (Title 24, California Code of Regulations [CCR], Part 2) establishes uniform minimum noise insulation performance standards to protect persons within new hotels, motels, dormitories, long-term care facilities, apartment houses, and residential units other than detached single-family residences from the effects of excessive noise, including, but not limited to, hearing loss or impairment and interference with speech and sleep. Residential structures to be located where the CNEL or L_{dn} is 60 dBA or greater are required to provide sound insulation to limit the interior CNEL to a maximum of 45 dBA. An acoustic, or noise, analysis report prepared by an experienced acoustic engineer is required for the issuance of a building permit for these structures. Conversely, land use changes that result in increased noise levels at residences of 60 dBA or greater must be considered in the evaluation of impacts to ambient noise levels. Table 3.2-1, *Normally Acceptable Noise Levels for Residential Land Use*, and Table 3.2-2, *Land Use Compatibility for Community Noise Environments*, depict noise levels for a variety of uses.

TABLE 3.2-1
NORMALLY ACCEPTABLE NOISE LEVELS FOR RESIDENTIAL LAND USE

Land Use	Acceptable Range (dBA)
Residential – low-density single-family, duplex, mobile homes	50–60
Residential – multiple family	50–65

TABLE 3.2-2
LAND USE COMPATIBILITY FOR COMMUNITY NOISE ENVIRONMENTS

Land Use Category	Community Noise Exposure (L_{dn} or CNEL, dB)						
	55	60	65	70	75	80	
Residential - Low Density Single-Family, Duplex, Mobile Homes							
Residential - Multi-Family							
Transient Lodging - Motels Hotels							
Schools, Libraries, Churches, Hospitals, Nursing Homes							
Auditoriums, Concert Halls, Amphitheaters							
Sports Arena, Outdoor Spectator Sports							
Playgrounds, Neighborhood Parks							
Golf Courses, Riding Stables, Water Recreation, Cemeteries							
Office Buildings, Business Commercial and Professional							
Industrial, Manufacturing, Utilities, Agriculture							

Normally Acceptable - Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.

Conditionally Acceptable - New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply system or air conditioning will normally suffice.

Normally Unacceptable - New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.

Clearly Unacceptable - New construction or development should generally not be undertaken.

SOURCE:
Adapted from: Governor's Office of Planning and Research. 2003. *State of California General Plan Guidelines. Appendix C, Noise Element Guidelines*. Figure 2. Sacramento, CA.

3.3 COUNTY

Los Angeles County Municipal Code

The County maintains the health and welfare of its residents with respect to noise through nuisance abatement ordinances and land use planning. The County Noise Control Ordinance, Title 12 of the County Code, was adopted by the Los Angeles County Board of Supervisors in 1977 "to control unnecessary, excessive, and annoying noise and vibration." It declares that the purpose of the County policy is to "maintain quiet in those areas which exhibit low noise levels and to implement programs aimed at reducing noise in those areas within the county where noise levels are above acceptable values."[3]

On August 14, 2001, the Los Angeles County Board of Supervisors approved an ordinance amending Title 12 of the County Code to prohibit loud, unnecessary, and unusual noise that disturbs the peace and/or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitivity residing in the area. Regulations can include requirements for sound barriers, mitigation measures to reduce excessive noise, or the placement and orientation of buildings, and can specify the compatibility of different uses with varying noise levels, as shown in Table 3.3-1, *Los Angeles County Community Noise Criteria*.

TABLE 3.3-1
LOS ANGELES COUNTY COMMUNITY NOISE CRITERIA

Noise Zone	Land Use of Receptor Property	Time	Noise Levels (dBA)				
			Std 1 L50 30 min/hr	Std 2 L25 15 min/hr	Std 3 L8.3 5 min/hr	Std 4 L1.7 1 min/hr	Std 5 L0 At No Time
I	Noise Sensitive	Anytime	45	50	55	60	65
II	Residential	10 p.m. – 7 a.m.	45	50	55	60	65
		7 a.m. – 10 p.m.	50	55	60	65	70
III	Commercial	10 p.m. – 7 a.m.	55	60	65	70	75
		7 a.m. – 10 p.m.	60	65	70	75	80
IV	Industrial	Anytime	70	75	80	85	90

SOURCE: County of Los Angeles, *Municipal Codes*, Title 12, Chapter 8, *Noise Control*. Section 12.08.390.

In addition to the community noise criteria, the Los Angeles County Municipal Code establishes interior noise standards for multifamily residential dwellings. According to the Section 12.08.400 of the Los Angeles County Municipal Code, no person shall operate or cause to be operated within a dwelling unit, any source of sound, or allow the creation of any noise, which causes the noise level when measures inside a neighboring receiving dwelling to exceed the following standards:[4]

- Standard No. 1: The applicable interior noise level for cumulative period of more than five minutes in any hour; or

[3] County of Los Angeles. *Municipal Codes*, Title 12, Chapter 8, *Noise Control*.

[4] County of Los Angeles. *Municipal Codes*, Title 12, Chapter 8, *Noise Control*.

- Standard No. 2: The applicable interior noise level plus 5 dB for a cumulative period or more than one minute in any hour; or
- Standard No. 3: The applicable interior noise level plus 10 dB or the maximum measured ambient noise level for any period of time.

Furthermore, the following interior noise levels for multifamily residential dwellings shall apply, unless otherwise specifically indicated, within all such dwellings with windows in their noise seasonal configuration (Table 3.3-2, *Los Angeles County Interior Noise Standards*).

TABLE 3.3-2
LOS ANGELES COUNTY INTERIOR NOISE STANDARDS

Noise Zone	Designated Land Use	Time Interval	Allowable Interior Noise Level (dB)
All	Multifamily	10 p.m.–7 a.m.	40
	Residential	7 a.m.–10 p.m.	45

SOURCE: County of Los Angeles, *Municipal Codes*, Title 12, Chapter 8, *Noise Control*.

Section 12.08.440 of the Los Angeles County Municipal Code states that operating or causing the operation of any tools or equipment used in construction, drilling, repair, alteration, or demolition work between weekday hours of 7:00 p.m. and 7:00 a.m., or at any time on Sundays or holidays, such that the sound therefrom creates a noise disturbance across a residential or commercial real property line, except for emergency work of public service utilities or by variance issued by the health office is prohibited. If noise disturbance crosses a residential or commercial property line, the County has established maximum noise levels for both mobile and stationary equipment (Table 3.3-3, *County of Los Angeles Construction Noise Restrictions*).

TABLE 3.3-3
COUNTY OF LOS ANGELES CONSTRUCTION NOISE RESTRICTIONS

Time Frame	Single-Family Residential	Multifamily Residential	Semiresidential/ Commercial
Mobile equipment*			
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m. (daytime)	75 dBA	80 dBA	85 dBA
Daily, 8:00 p.m. to 7:00 a.m. (nighttime) and all day Sunday and legal holidays	60 dBA	64 dBA	70 dBA
Stationary equipment**			
Daily, except Sundays and legal holidays, 7:00 a.m. to 8:00 p.m. (daytime)	60 dBA	65 dBA	70 dBA
Daily, 8:00 p.m. to 7:00 a.m. (nighttime) and all day Sunday and legal holidays	50 dBA	55 dBA	60 dBA

NOTE: * = Maximum noise levels for nonscheduled, intermittent, short-term operation (less than 10 days) of mobile equipment.
** = Maximum noise levels for repetitively scheduled and relatively long-term operation (periods of 10 days or more) of stationary equipment
SOURCE: County of Los Angeles, *Municipal Codes*, Title 12, Chapter 8, *Noise Control*.

Los Angeles County 2035 General Plan

The Noise Element of the Los Angeles County General Plan summarizes noise issues and outlines goals and policies that seek to reduce noise impacts when making land use planning decisions. Of the 11 policies outlined in the Noise Element of the Los Angeles County 2035 General Plan, the following are applicable to the proposed project:[5]

Goal N-1: The reduction of excessive noise impacts.

- Policy N 1.1: Utilize land uses to buffer noise-sensitive uses from adverse noise impacts.
- Policy N 1.2: Reduce exposure to noise impacts by promoting land use compatibility.
- Policy N 1.3: Minimize impacts to noise-sensitive land uses by ensuring adequate site design, acoustical construction, and use of barriers, berms, or additional engineering controls through Best Available Technologies (BAT).
- Policy N 1.4: Enhance and promote noise abatement programs in an effort to maintain acceptable levels of noise as defined by the Los Angeles County Exterior Noise Standards and other applicable noise standards.
- Policy N 1.6: Ensure cumulative impacts related to noise do not exceed health-based safety margins.
- Policy N 1.9: Require construction of noise attenuation barriers on noise sensitive uses that would be exposed to exterior noise levels of 65 dBA CNEL and above, when unavoidable impacts are identified.

3.4 LOCAL

Santa Clarita Valley Area Plan

Phase II.a is covered by Santa Clarita Valley Area Plan which is an element of the County General Plan.

The Santa Clarita Valley Area Plan, which comprises the entire Santa Clarita Valley including the proposed project area, provides goals, policies, and maps to establish zoning regulations and guide new development proposals. Section 11.40.040 of the Santa Clarita City Municipal Code states, "It shall be unlawful for any person within the City to produce or cause or allow to be produced noise which is received on property occupied by another person within the designated region, in excess of the following levels, except as expressly provided otherwise herein."

Noise Element City of Los Angeles General Plan

While the County is not subject to the City General Plan, this information has been included based on the Phase II.b recommended connections to the immediately adjacent City of Los Angeles trails.

[5] County of Los Angeles Department of Regional Planning. Adopted 6 October 2015. *Los Angeles County General Plan 2035*. Chapter 11, Noise Element. Available at: http://planning.lacounty.gov/assets/upl/project/gp_final-general-plan-ch11.pdf

The Noise Element of the City of Los Angeles General Plan outlines the goal, objectives, and policies regarding the management of noise within the City. The following policies listed in the Noise Element of the City's General Plan are applicable to the proposed project:[6]

- Policy 2.2: Enforce and/or implement applicable city, state, and federal regulations intended to mitigate proposed noise producing activities, reduce intrusive noise and alleviate noise that is deemed a public nuisance.
- Policy 3.1: Develop land use policies and programs that will reduce or eliminate potential and existing noise impacts.

[6] City of Los Angeles Department of City Planning. 1999. Los Angeles City General Plan. Noise Element.

SECTION 4.0
METHODS

The method commonly used to quantify environmental noise involves evaluation of all frequencies of sound with an adjustment to reflect the constraints of human hearing. Since the human ear is less sensitive to low and high frequencies than to midrange frequencies, noise measurements are weighted more heavily within those frequencies of maximum human sensitivity in a process called "A-weighting," written as dBA. In practice, environmental noise is measured using a sound level meter that includes an electronic filter corresponding to the A-weighted (Table 4-1, *A-Weighted Noise Levels*).

TABLE 4-1
A-WEIGHTED NOISE LEVELS

Noise Source	A-Weighted Sound Level (in dBA)	Subjective Loudness	Effect of Noise
Near jet engine	130	Intolerable or deafening	Hearing loss
Loud auto horn	100	Very noisy	Hearing loss
Normal conversation at 5–10 feet	60	Loud	Speech interference
Bird calls	40	Moderate	Sleep disturbance
Whisper	30	Faint	No effect
Rustling leaves	10	Very faint	No effect

4.1 AMBIENT NOISE LEVELS

For the purpose of establishing the ambient noise levels over a given period of time, the equivalent-continuous sound (L_{eq}) is the preferred measurement to describe noise levels that vary over time. The L_{eq} is the level of a constant sound, expressed in dB, which in a given time period ($T = T_2 - T_1$) has the same energy as a time varying sound. This analysis considers dBA to reflect the relative loudness of sounds in air as perceived by the human ear since the human ear does not have a linear response to sounds at different frequencies. In the A-weighted system, the decibel values of sounds at low frequencies are reduced compared with unweighted decibels, in which no correction is made for audio frequency.

In order to establish existing conditions for ambient noise levels in the proposed project area, Sapphos Environmental, Inc. conducted noise monitoring at four locations near potential sensitive receptors within the proposed project area (Figure 4.1-1, *Noise Monitoring Locations*).

TABLE 4.1-1
NOISE MONITORING LOCATIONS

Monitoring Location	Approximate Location	Land Use Description	Within Project Boundary?
A	Towsley Canyon Trail	OS-PR-Parks and Recreation	Yes
B	Valencia Blvd between Oaks Hills Elementary School and West Ranch High School	P-Public and Semi-Public	Yes
C	Valley Circle Blvd and Plummer Street	Residential	At boundary
D	Stagg Street and Wiscasset Drive	Residential	At boundary

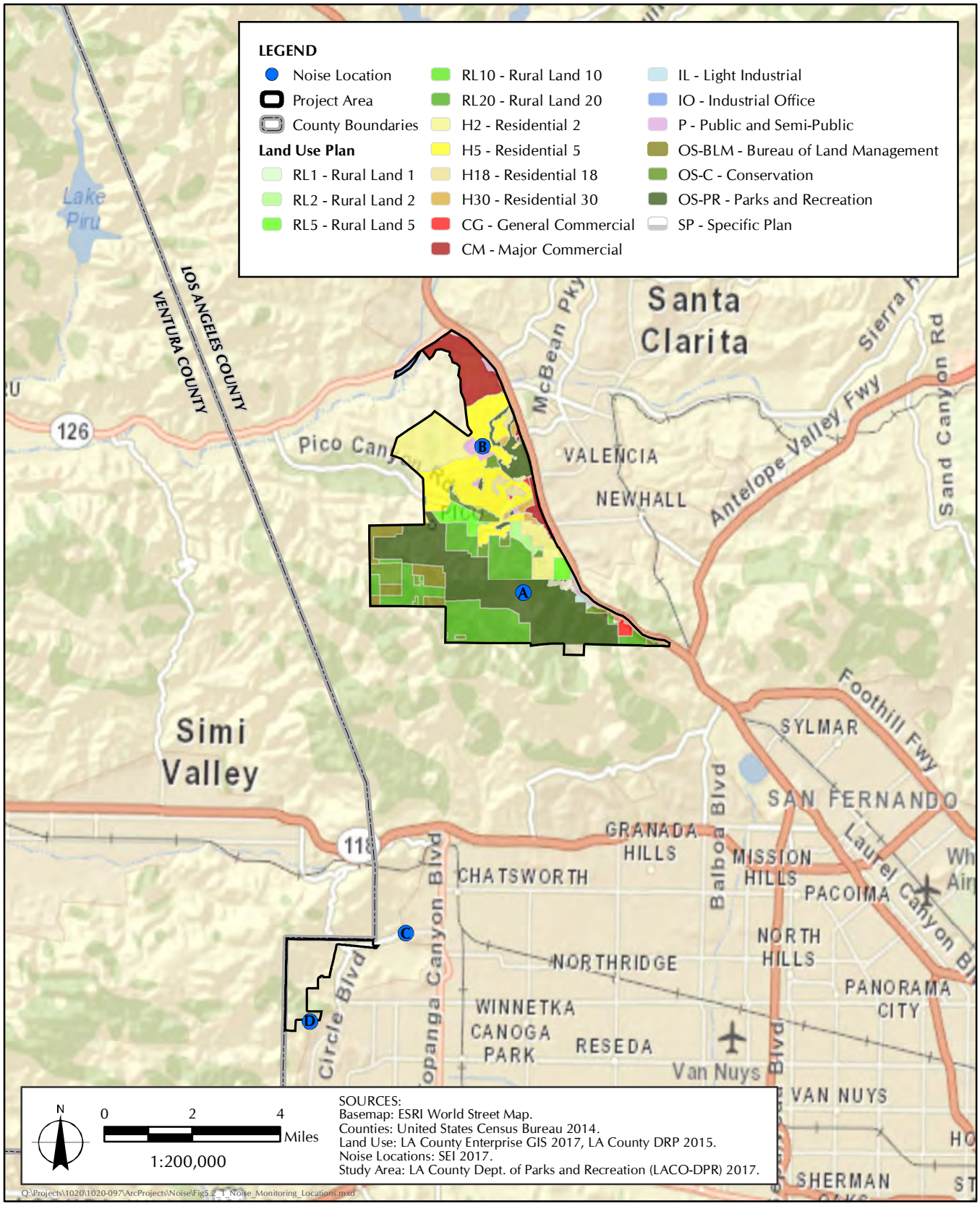

FIGURE 4.1-1

Noise Monitoring Sites

Baseline conditions were characterized by comparing the existing ambient noise levels to those levels that would be expected during construction, operation, and maintenance based on the type of equipment proposed for each phase of construction and for operation of the proposed project. The elevation of the Phase II.b area ranges from 946 feet above mean sea level (MSL) within the Santa Clara River near SR-126, to 2,889 feet above MSL in Santa Clarita Woodlands Park between Dewitt Canyon and Towsley Canyon. Sand Rock Peak (2,511 feet above MSL) is located within the northwestern portion of the Phase II.a area. The elevation of the Phase II.b area ranges from 895 feet above MSL at the northeastern corner of the Phase II.b area near Chatsworth Reservoir, to 1,867 feet above MSL near the northwestern corner of the Phase II.b area. Sound attenuation calculations would take into account the fluctuating elevation within the proposed project area. The process included ambient noise measurements taken within the proposed project area and the surrounding residential areas of both Phase II.a and II.b to characterize the ambient noise levels at the nearest sensitive receptors.

Ambient noise levels were established by continuously recording noise measurements in 15-minute intervals with a Larson Davis Spark 706RC Noise Dosimeters (serial number 18171) from 8:49 a.m. through 4:36 p.m. on June 28, 2017. The dosimeter was calibrated prior to recording measurements. Measurements were taken to establish ambient noise levels representative of the proposed project area. The average, maximum, and minimum L_{eq} for each monitoring site are the measurements used to describe ambient noise levels.

4.2 CONSTRUCTION NOISE

Construction noise impacts due to on-site construction activities were evaluated by calculating the construction-related noise levels at the selected points and comparing them to the existing ambient noise levels (i.e., noise levels without construction noise from the proposed project). Construction noise associated with the proposed project was analyzed using specified construction equipment inventory, construction durations, and construction phasing. The construction noise analysis for the proposed project is based on construction equipment noise levels as published in the *FHWA Roadway Construction Noise Model User's Guide*.[7]

The ambient noise levels were then calculated at adjacent property lines and were determined by field measurement data. The construction noise levels were then calculated based on the standard point source noise-distance attenuation factor of 6.0 dBA for each doubling of distance. Based on this attenuation factor, noise impacts at adjacent property lines were determined by Equation (1) for noise attenuation over distance:

(1) $$L_2 = L_1 - 20\,log_{10}\left(\frac{d_1}{d_2}\right)$$

Where

L_1 = known sound level at d_1
L_2 = desired sound level at d_2
d_1 = distance of known sound level from the noise source
d_2 = distance of the sensitive receptor from the noise source

[7] Federal Highway Administration. January 2006. *FHWA Roadway Construction Noise Model User's Guide*. Prepared by: U.S. Department of Transportation, Research and Innovative Technology Administration, John A. Volpe National Transportation Systems Center Acoustics Facility. Cambridge, MA.

4.2.1 Construction Scenario

This Noise Technical Report is based on an evaluation of the construction that would be required to build out the proposed trails in the general configurations of the conceptual plan. Proposed trail alignments are conceptual and will require additional survey, design, and engineering work to support dedication of easements and ultimately trail construction, operation, and maintenance. The final trail alignments are subject to refinement in relation to environmental, geologic, hydrologic, ownership, topology, and other factors, as specified in the County Trails Manual.

The environmental analysis for the proposed project is based on a potential worst-case scenario for construction activities, including improvements to existing trails, construction of new trails, site grading for facilities and access roads, and delivery and hauling of construction materials and equipment. Construction activities associated with the proposed project, as currently conceived, would entail construction of approximately 70 miles of trails. Construction equipment would be limited to mini-dozers; graders; small tractors; a water truck; and hand tools including picks, hoes, shovels, and wheelbarrows. Construction would be conducted in accordance with the guidelines specified in the County Trails Manual.[8] The County Trails Manual contains specific methods for building trails in areas with steep slopes and riparian crossings. The County Trails Manual should be referenced for further information to determine the constructability of trail segments.

Construction activities may include excavation, grading, and construction of trails and small structures at trailheads, rest areas, parking, equestrian parks, bicycle skills areas, and trailhead and staging areas. The County would require preparation of a trail site plan, site-specific geotechnical investigation, survey for biological and cultural resources, and a Categorical Exemption or Initial Study (the appropriate CEQA document) in support of each trail segment before project approval and construction can commence.

Site preparation and construction of the proposed project would be in accordance with all federal, state, and County building codes. Daily construction activities would be subject to County noise regulations, which state that construction equipment may not operate between the hours of 7:00 p.m. and 7:00 a.m., Monday through Saturday, or at any time on Sunday or holidays. Noise levels exceeding 75 dBA (A-weighted decibels) for single-family residences, 80 dBA for multi-family residences, and 85 dBA for semi-residential/commercial land uses are prohibited by the County Noise Control Ordinance, Title 12 of the County Code. The contractor shall conduct construction activities in such a manner that the maximum noise levels at the affected buildings would not exceed established noise levels.

Construction equipment would be turned off when not in use. The construction contractor would ensure that all construction and grading equipment is properly maintained. All vehicles and compressors would utilize exhaust mufflers and engine enclosure covers (as designed by the manufacturer) at all times.

[8] County of Los Angeles Department of Parks and Recreation. [Adopted 17 May 2011] Revised June 2013. County of Los Angeles Trails Manual. Available at:https://trails.lacounty.gov/Files/Documents/69/LA%20County%20Trails%20Manual%20%28Revised%2006-20-13%29.compressed.pdf

4.2.2 Temporary Noise Barrier, Baffles and Blankets

Temporary noise barriers, baffles, or blankets will be used in compliance with the requirements set forth in the complying with the County Noise Ordinance by limiting construction and maintenance activities to 7:00 a.m. to 7:00 p.m. on weekdays and Saturdays, and prohibiting work on federal holidays and Sundays, along with limiting noise levels to below 75 dBA for mobile equipment and 60 dBA for stationary equipment at sensitive receptor locations through the use of noise-attenuating barriers, baffles, or blankets. The proposed project would incorporate temporary noise barrier baffles, or blankets as project design features during outdoor construction activities. These project design features would be installed at construction staging areas and during construction activities on trial alignment, and at proposed facility locations to reduce the noise levels attributed to ground clearing, excavations, and erection of structures. The use of project design features and BMPs will ensure that impacts are less than significant.[9]

4.3 OPERATIONAL NOISE

Operational noise impacts associated with the proposed project were evaluated by identifying the noise levels generated by conversation noise from recreational uses such as hiking, bike riding, and horse riding, calculating the noise level from each noise source at surrounding sensitive receptor locations, and comparing such noise levels to ambient noise levels to determine significance. The operations of the trails built as a result of the proposed plans would typically result in conversation noise, bike riding, and horse riding and comparable to the existing baseline conditions.

4.4 SENSITIVE RECEPTORS

Sensitive receptors include, but are not limited to, hospitals, schools, daycare facilities, playgrounds, long-term health care facilities, elderly housing, and convalescent facilities. The proposed project area is located within multiple land use designations including RL-Rural Land, H-Residential, C-Commercial, I-Industrial, P-Public and Semi-Public, and OS-Open Space. GIS was used to search for sensitive receptors that are located within the SSMTMP-PII plan area or surrounding 0.25-mile buffer area. The 0.25-mile buffer was used based on sound levels of construction equipment anticipated to be used during construction of the proposed trails. Based on the noise attenuation calculation, noise levels due to construction activities outside of the 0.25-mile buffer were calculated below the ambient noise measurements in the vicinity of the proposed project and would not have effect on sensitive receptors within the 0.25-mile buffer.

[9] U.S. Environmental Protection Agency. 1971. *Noise from Construction Equipment and Operation, Building Equipment and Home Appliances*. PB 206717. Washington, DC.

SECTION 5.0
RESULTS

5.1 EXISTING CONDITIONS

5.1.1 Ambient Noise Levels

The average of the A-weighted ambient noise level for all four monitoring sites at the proposed project area is 58.3 dBA (Table 5.1.1-1, *Ambient Noise Levels*). Ambient noise was characterized using ambient noise measurements recorded on June 28, 2017. The highest L_{eq} recorded was 76.8 dBA located within the Phase II.a plan area at Site B.

TABLE 5.1.1-1
AMBIENT NOISE LEVELS

Monitoring Site	Sensitive Receptor	Average L_{eq} (dBA)	Maximum L_{eq} (dBA)	Minimum L_{eq} (dBA)
A	Rural/Open Space	57.1	63.4	56.3
B	Schools/Residential	57.8	76.8	51.4
C	Residential	64.4	73.7	51.9
D	Residential	54	73.1	50.5

Phase II.a

Field observations at Site A (located in open space at Towsley Canyon) included conversational noise by trail hikers, walking, bike riding, birds chirping, and planes crossing overhead, along with environmental factors such as wind. The primary sources of noise at Site B (located adjacent to schools in a residential area of Stevenson Ranch) indicated the primary sources of noise can be attributed to sounds of birds chirping, and school bus and automobile traffic sounds heard from the adjacent.

Phase II.b

The primary sources of noise at Site C (located in a residential area) indicated the primary sources of noise can be attributed to sounds of birds chirping, and traffic sounds heard from the adjacent streets, along with environmental factors such as wind. Site D (located in a relatively quiet residential area) indicated the primary sources of noise can be attributed to sounds of birds chirping, planes flying overhead, and residents talking, as well as environmental factors such as wind. The freeways are a primary source of ambient noise in the Santa Clarita Valley and most noticeably measured within the Stevenson Ranch community location.

5.1.2 Sensitive Receptors

There are 5,467 known sensitive receptors within a 0.25-mile radius of the proposed project area including 5,456 residential areas, 3 hotels/motels, 2 churches, 2 schools (private), 1 college, 2 cemeteries, and 1 senior day care center (Figure 5.1.2-1a, *Sensitive Receptors [Phase II.a]*, and Figure 5.1.2-1b, *Sensitive Receptors [Phase II.b]*). The evaluation of the proposed project area (Phase II.a and II.b) identified 520 parcels with potentially sensitive receptors (>99 percent were residential land uses) within 251 feet mile of the proposed trail alignments.

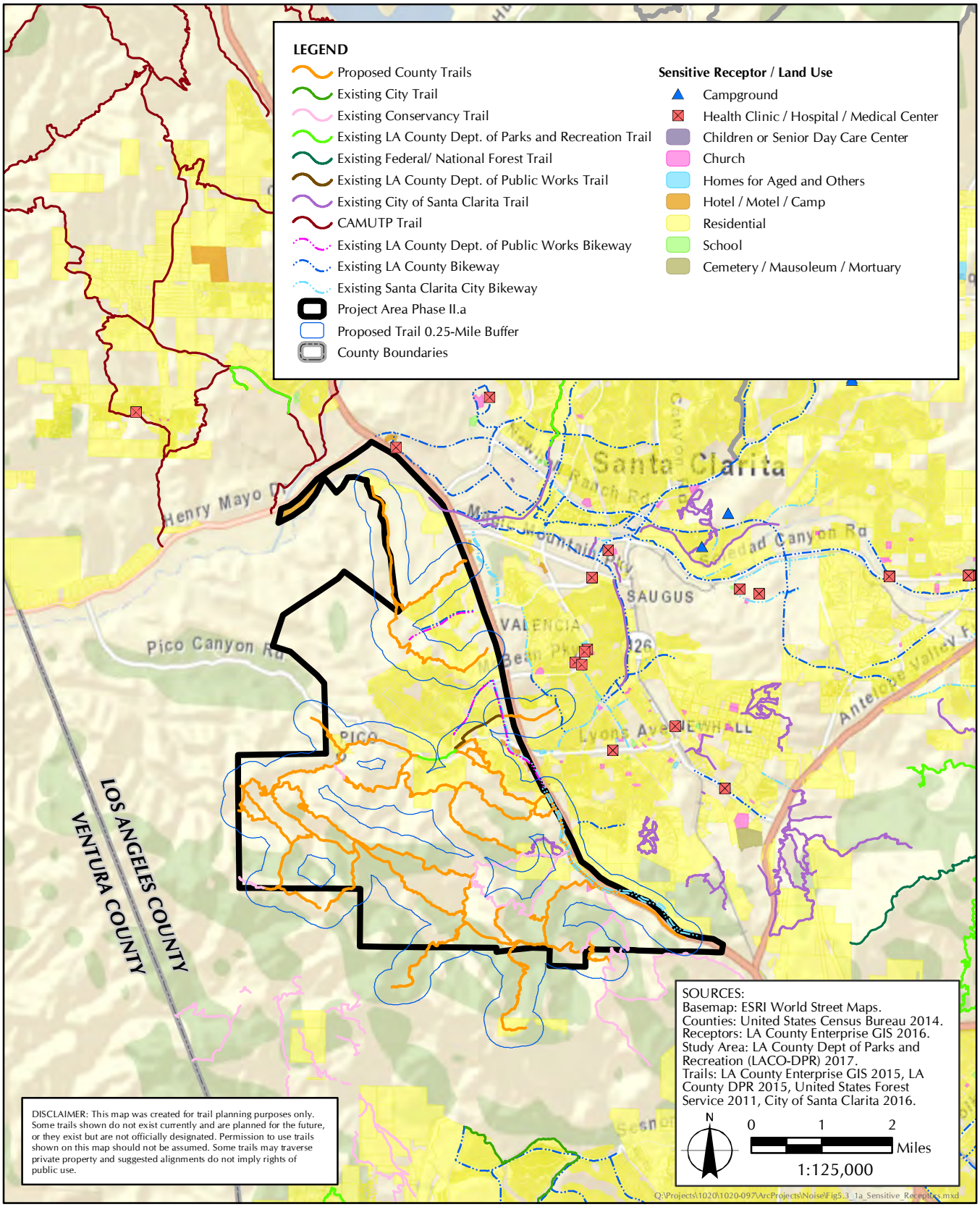

FIGURE 5.1.2-1a

Sensitive Receptors (Phase II.a)

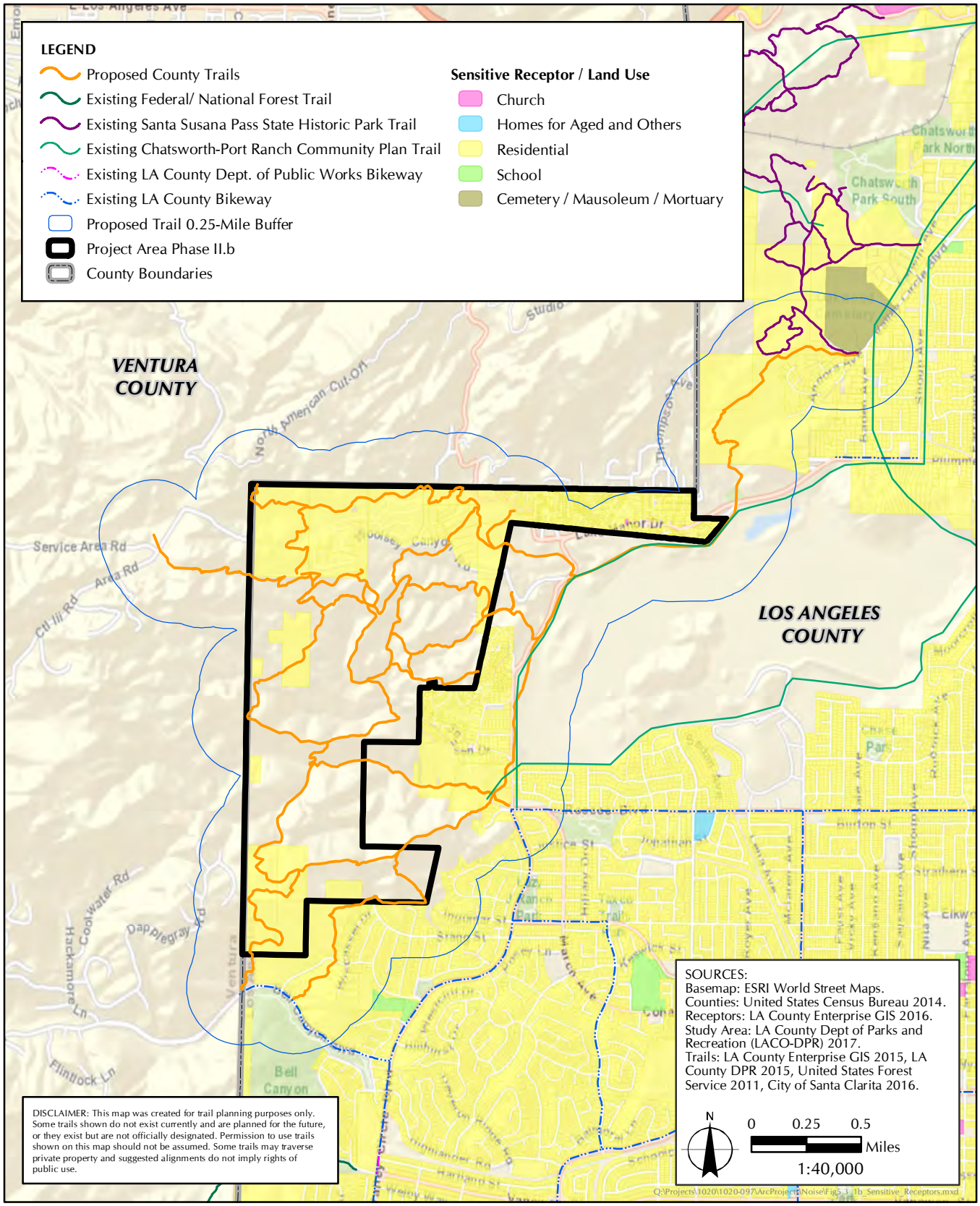

FIGURE 5.1.2-1b

Sensitive Receptors (Phase II.b)

The nearest sensitive receptors to the proposed project area, including any existing or proposed residences inside the proposed project area, are located within surrounding communities in the vicinity of the proposed project area. These sensitive land uses include residences, churches, short-term accommodations (hotels, motels and camps), schools, hospitals, cemeteries, and day care centers. Sensitive receptors located within residential communities of the proposed project area include the northeast portion of the Phase II.a project area of the Stevenson Ranch community within Santa Clarita Valley, California; and the northern and southern portions of the Phase 11.b project area, which include the Canoga Park, Chatsworth, and West Hills communities within the City of Los Angeles, California

5.1.3 Ground-Borne Vibration

Existing conditions for ground-borne vibration for Phase II.a and II.b of the proposed project area are comparable. Ground-borne vibration in the vicinity of the proposed project area is limited to recreational uses of current trails including, but not limited to, motorized dirt bikes and all-terrain vehicles (ATVs) as well as minor traffic-induced vibrations from nearby streets, highways, and freeway vehicular traffic. Furthermore, there are no current construction projects, oil fields, mining operations, blasting, or other activities resulting in ground-borne vibrations in the vicinity of the proposed project area.

5.1.4 Public and Private Airports

There are no public or private airports within 2 miles of the proposed project area. The nearest public airports to the proposed project area are the Van Nuys Airport, located approximately 9 miles southeast of Phase II.a and approximately 9 miles east from Phase II.b at 16461 Sherman Way, Van Nuys, California 91406; and the Whiteman Airport, located approximately 8 miles southeast of Phase II.a and 12.5 miles northeast of Phase II.b at 12653 Osborne Street, Los Angeles, California 91331 (Figure 5.1.4-1, Public *and Private Airports*).

5.2 IMPACT ANALYSIS

5.2.1 Construction Impacts

Noise impacts associated with the construction of the proposed project are expected to occur in three phases: ground clearing, excavations, and erections of poles and facilities. The average noise levels associated with these construction phases where all pertinent equipment is present and operating at a reference distance of 50 feet are presented in Table 5.2.1-1, *Construction Activity Noise Levels at 50 Feet*.

TABLE 5.2.1-1
CONSTRUCTION ACTIVITY NOISE LEVELS AT 50 FEET

Activity	Noise Level at 50 Feet (dBA)
Ground Clearing	84 ± 6 dBA
Excavations	89 ± 6 dBA
Erection of Structures	85 ± 5 dBA

SOURCE: VSA & Associates. 7 January 2008. *Altadena Crest Trail Improvement Noise Impact Analysis*. Whittier, CA.

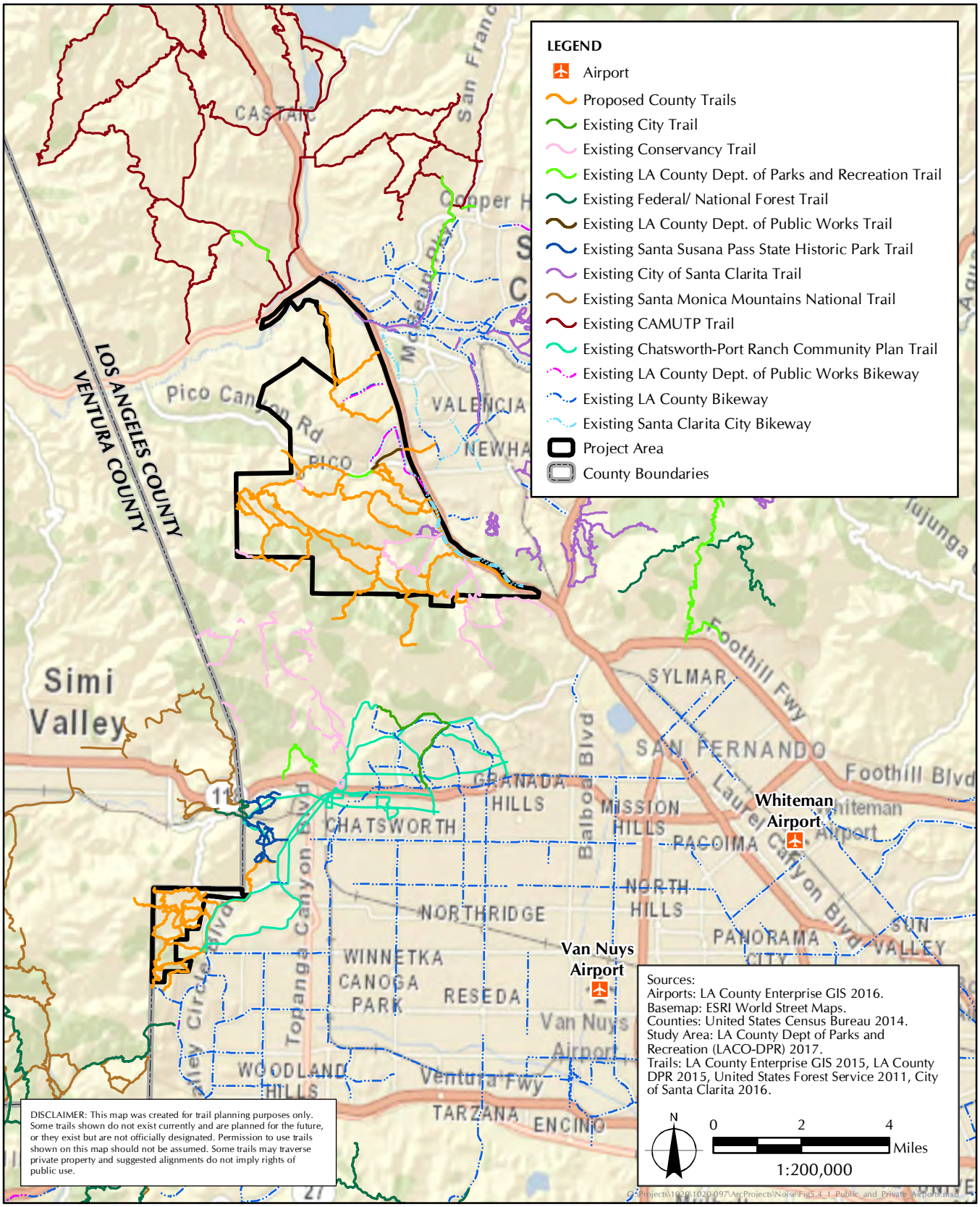

FIGURE 5.1.4-1

Public and Private Airports

Based on these noise levels, and the fact that noise attenuates at a rate of approximately 6.0 dBA per doubling of distance from a point source, the noise impacts on sensitive receptors can be determined by Equation 1 for noise attenuation over distance:

(1) $$L_2 = L_1 - 20\ log_{10}\left(\frac{d_1}{d_2}\right)$$

where

L_1 = known sound level at d_1
L_2 = desired sound level at d_2
d_1 = distance of known sound level from the noise source
d_2 = distance of the sensitive receptor from the noise source

By assigning the highest potential noise level during construction at 89 dBA during excavations (L_1) at a distance of 50 feet (d_1), the distance at which construction activities would reach a maximum of 75 dBA (L_2) and still be in compliance with Title 12, Chapter 8 of the Los Angeles County Municipal Codes for construction noise restrictions is approximately 251 feet (d_2). This distance, along with the other predicted distances at which the noise impacts would be below 75 dBA according to Equation 1 for each construction phase, are presented in Table 5.2.1-2, *Predicted Distance at which Noise Impact Would Be below Level of Significance*.

TABLE 5.2.1-2
PREDICTED DISTANCE AT WHICH NOISE IMPACT WOULD BE BELOW LEVEL OF SIGNIFICANCE

Construction Phase	Distance at Which Noise Impact Will Be below 75 dBA	Number of Sensitive Receptors within This Distance
Ground Clearing	141 feet	291
Excavations	251 feet	510
Erection of Structures	158 feet	317

NOTE: According to Title 12, Chapter 8 of the Los Angeles County Municipal Codes, construction activities for mobile equipment may not exceed 75 dBA during weekly daytime hours from 7:00 a.m. to 8:00 p.m. for single-family residential. Construction activities are not expected to occur during nighttime hours from 8 p.m. to 7:00 a.m.

The distance at which noise impacts will be below the threshold of significance for a single-family residence for the different construction phases ranges from 141 to 251 feet. Up to 510 (507 residences, 2 cemeteries, and 1 church) sensitive receptors are expected to be within 251 feet (Table 5.2.1-2). However, construction activities associated with the proposed project are not expected to expose sensitive receptors to noise levels in excess of the standards established by the Los Angeles County Municipal Codes since impacts would be avoided by limiting construction and maintenance activities to 7:00 a.m. to 7:00 p.m. on weekdays and Saturdays, and prohibiting work on federal holidays and Sundays, along with limiting noise levels to below 75 dBA for mobile equipment and 60 dBA for stationary equipment at sensitive receptor locations through the use of project design features and BMPs including noise-attenuating barriers, baffles, or blankets.[10]

[10] U.S. Environmental Protection Agency. 1971. *Noise from Construction Equipment and Operation, Building Equipment and Home Appliances*. PB 206717. Washington, DC.

Furthermore, exposure to potential noise impacts would vary from day to day, depending on the amount of work being conducted, the weather conditions, the location of receptors, and the length of time that receptors would be exposed. Due to the short-term nature of project construction, sensitive receptors would not be significantly affected by the proposed project.

5.2.2 Ground-Borne Vibration

Construction activities for the proposed project are not expected to include blasting, drilling, or other activities that would result in excessive ground-borne vibrations at the proposed project area. Furthermore, there are no current construction projects, oil fields, mining operations, blasting, or other activities resulting in ground-borne vibrations in the vicinity of the proposed project area. Therefore, the proposed project would not result in exposure of sensitive receptors or generation of excessive ground-borne vibration or ground-borne noise levels.

5.2.3 Operational Impacts

The primary sources of noise can be attributed to conversational noise from recreational uses such as hiking, bike riding, and equestrian riding. Noise from typical conversations at the trail would be negligible at sensitive receptor locations, when compared with the average A-weighted ambient noise level (62.7 dBA) for all four monitoring sites. Therefore, operation of the proposed project would not result in substantial permanent or temporary increases in ambient noise levels in the vicinity above levels existing without the proposed project.

5.2.4 Public and Private Airports

The proposed project would not result in noise impacts in relation to exposure to persons residing or working near airports to excessive noise levels. There are no public or private airports within 2 miles of the proposed project area. The nearest public airports to the proposed project area at least 8 miles away. The proposed project area is sufficiently removed from public and private airports to protect workers engaged in construction or maintenance of the trails from exposure to excessive noise levels. Similarly, recreational users would not be exposed to excessive noise levels from an airport.

5.3 MITIGATION RECOMMENDATIONS

Impacts to noise as a result of the proposed project would be less than significant, and no mitigation is required.

SECTION 6.0
REFERENCES

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APPENDIX A
AMBIENT NOISE DATA

The following tables summarize the ambient noise levels collected at the four monitoring locations on June 28, 2017. Ambient noise measurements were recorded with a Larson Davis Spark 706RC Noise Dosimeter (serial number 18171), which meets and exceeds the minimum industry standards performance requirements as defined by the American National Standard Institute (ANSI) S1.4.

The maximum existing daytime ambient noise levels at the four monitoring locations near potential sensitive receptors within the proposed project area ranged from 63.4 dBA (L_{eq}) at monitoring location A to 76.8 dBA (L_{eq}) at monitoring location B. The average L_{eq} for daytime ambient noise levels ranged from ranged from 54 dBA (L_{eq}) at monitoring location D to 64.4 dBA (L_{eq}) at monitoring location C. The maximum existing ambient noise levels at Location B located within a residentially zoned Public-Semi-Public land use designated area currently exceed the noise threshold under County of Los Angeles Community Noise Criteria of 70 dBA (L_{eq}) by 6.8 dBA (L_{eq}). Therefore, the measured existing ambient noise levels are appropriate for use as the baseline conditions for the purposes of determining the proposed project's noise impacts on the surrounding community.

Monitoring Location A								
Time	**L_{eq}**	**Max**	**Min**	**Peak**	**TWA1**	**TWA2**	**TWA3**	**TWA4**
8:49:15	58.3	58.7	57.8	—	—	—	—	—
8:50:15	57.2	57.3	57.1	—	—	—	—	—
8:51:15	56.8	56.8	56.8	—	—	—	—	—
8:52:15	56.8	56.8	56.7	—	—	—	—	—
8:53:15	56.7	56.7	56.7	—	—	—	—	—
8:54:15	56.9	56.9	56.8	—	—	—	—	—
8:55:15	56.7	56.8	56.7	—	—	—	—	—
8:56:15	56.9	56.9	56.9	—	—	—	—	—
8:57:15	56.9	57	56.9	—	—	—	—	—
8:58:15	56.6	56.7	56.6	—	—	—	—	—
8:59:15	56.8	56.8	56.8	—	—	—	—	—
9:00:15	56.8	56.8	56.8	—	—	—	—	—
9:01:15	56.6	56.7	56.4	—	—	—	—	—
9:02:15	57.2	57.2	57.2	—	—	—	—	—
9:03:15	57.3	57.3	57.3	—	—	—	—	—

NOTE: Time-weighted average (TWA) was calculated using the County's construction noise threshold (75 dBA).

Monitoring Location B								
Time	**L_{eq}**	**Max**	**Min**	**Peak**	**TWA1**	**TWA2**	**TWA3**	**TWA4**
13:20:47	76.5	76.8	75.9	—	76.5	—	—	—
13:21:47	61.8	62.2	61.2	—	—	—	—	—
13:22:47	52.5	53.1	52.1	—	—	—	—	—
13:23:47	52.6	52.7	52.5	—	—	—	—	—
13:24:47	52.8	53	52.7	—	—	—	—	—
13:25:47	54.7	55.2	54.2	—	—	—	—	—
13:26:47	52	52	52	—	—	—	—	—
13:27:47	53.3	53.8	52.8	—	—	—	—	—
13:28:47	53.4	53.9	53.1	—	—	—	—	—
13:29:47	53	53.2	52.7	—	—	—	—	—
13:30:47	52.5	52.6	52.4	—	—	—	—	—
13:31:47	53.9	54.1	53.8	—	—	—	—	—
13:32:47	56.1	56.2	56	—	—	—	—	—
13:33:47	52.7	52.8	52.7	—	—	—	—	—
13:34:47	53.6	53.9	53.3	—	—	—	—	—

NOTE: Time-weighted average (TWA) was calculated using the County's construction noise threshold (75 dBA).

Monitoring Location C								
Time	**L_{eq}**	**Max**	**Min**	**Peak**	**TWA1**	**TWA2**	**TWA3**	**TWA4**
15:29:37	57.3	57.6	57	—	—	—	—	—
15:30:37	64.2	64.6	63.8	—	—	—	—	—
15:31:37	71.1	71.7	70	—	—	—	—	—
15:32:37	62.9	63.1	62.8	—	—	—	—	—
15:33:37	65.3	66.5	64.1	—	—	—	—	—
15:34:37	63.4	64.8	62	—	—	—	—	—
15:35:37	54.2	54.3	54.2	—	—	—	—	—
15:36:37	66.1	66.2	65.9	—	—	—	—	—
15:37:37	68.7	69.7	67.4	—	—	—	—	—
15:38:37	59.1	60.2	58.1	—	—	—	—	—
15:39:37	69.4	69.9	68.9	—	—	—	—	—
15:40:37	56.5	56.9	55.8	—	—	—	—	—
15:41:37	52.3	52.5	52.2	—	—	—	—	—
15:42:37	55.5	56.1	55.1	—	—	—	—	—
15:43:37	63.7	64.5	63.3	—	—	—	—	—

NOTE: Time-weighted average (TWA) was calculated using the County's construction noise threshold (75 dBA).

Monitoring Location D								
Time	**L_{eq}**	**Max**	**Min**	**Peak**	**TWA1**	**TWA2**	**TWA3**	**TWA4**
16:21:20	55.7	55.9	55.4	—	—	—	—	—
16:22:20	53	53.1	52.9	—	—	—	—	—
16:23:20	53.9	54	53.7	—	—	—	—	—
16:24:20	51	51.1	51	—	—	—	—	—
16:25:20	51.6	51.7	51.5	—	—	—	—	—
16:26:20	51	51.3	50.8	—	—	—	—	—
16:27:20	51.7	51.7	51.6	—	—	—	—	—
16:28:20	51.6	51.7	51.5	—	—	—	—	—
16:29:20	51.5	51.6	51.5	—	—	—	—	—
16:30:20	51.7	51.8	51.6	—	—	—	—	—
16:31:20	51.9	52.4	51.5	—	—	—	—	—
16:32:20	51.2	51.3	51.1	—	—	—	—	—
16:33:20	67.7	68.6	65.9	—	—	—	—	—
16:34:20	51.5	51.6	51.5	—	—	—	—	—
16:35:20	51	51	51	—	—	—	—	—

NOTE: Time-weighted average (TWA) was calculated using the County's construction noise threshold (75 dBA).

Appendix H

2017 Traffic and Parking Assessment

MEMORANDUM

To:	Ms. Laura Male Sapphos Environmental, Inc.	Date:	October 31, 2017
From:	Clare M. Look-Jaeger, P.E. CL-Jaeger Chin S. Taing, PTP CST Linscott, Law & Greenspan, Engineers	LLG Ref:	1-17-4210-1
Subject:	**Traffic and Parking Assessment for the Santa Susana Mountains Trails Master Plan – Phase II Project, County of Los Angeles, California**		

This memorandum has been prepared by Linscott, Law & Greenspan, Engineers (LLG) to summarize the traffic and parking assessment prepared for the Santa Susana Mountains Trails Master Plan – Phase II (SSMTMP-PII or Trails Master Plan) located in the northwestern portion of the unincorporated area of the County of Los Angeles. In May 2015, the County adopted the first phase of the Santa Susana Mountains Final Trails Master Plan (SSMFTMP), which involved the extension of the 35.7 miles of existing County-, City-, and Conservancy-managed trails in the Phase I and Phase II study areas by approximately 35.9 miles with 22 proposed trail segments, for a total of approximately 71.6 miles of trails within the SSMFTMP Area. In 2017, the County initiated planning efforts for further development of the Phase II study area, which has been expanded to include Phases II.a and II.b.

Pursuant to coordination with the County and stakeholders, we understand that a traffic and parking assessment is needed to document the existing parking demand and forecast expected future parking demand associated with the Trails Master Plan – Phase II study area. The Trails Master Plan is being prepared for the County of Los Angeles Department of Parks and Recreation.

This traffic and parking assessment memorandum provides the following data:

- Description of the existing conditions
- Project description of general objectives for the Trails Master Plan
- Overview of the existing trailhead locations analyzed for the Phase II.a and II.b areas
- Summary of the vehicle inbound and outbound driveway/street parking counts conducted for the traffic assessment
- Derivation of the site specific trip generation rate associated with trail use
- Forecast of the trip generation for Phase II of the Trails Master Plan
- Summary of the existing and forecast future parking demand for the surveyed trailhead locations

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- Conclusion regarding the future traffic and parking demand anticipated with future trail connections assumed to be completed as part of the Trails Master Plan

Existing Setting and Study Area

The proposed SSMTMP-PII study area is located in the northwestern unincorporated area of Los Angeles County, California. The study area for the trails master plan location is displayed in ***Figure 1***. The study area encompasses approximately 31,398.1 acres (49.1 square miles). The northern boundary of the study area is defined by the southern limits of the Newhall Ranch Specific Plan Area and the northern limits of the Santa Susana Mountains/Simi Hills Significant Ecological Area. The southern boundary is defined by the City of Los Angeles. The eastern boundary is defined by Interstate 5 (I-5) Freeway and the western boundary is defined by the jurisdictional boundary line dividing Los Angeles and Ventura Counties.

The study area for the SSMTMP-PII is divided into two sub-areas or phases. Phase I, referred to as the Northwest San Fernando Valley Study Area, contains approximately 16,038.1 acres (25.1 square miles). The Phase I study area is generally bounded by the Los Angeles County Oat Mountain Planning Area to the north, the northern City of Los Angeles limit to the south, I-5 Freeway to the east, and the Los Angeles/Ventura County boundary line to the west. Phase II, referred to as the Southwest Santa Clarita Valley Study Area in the 2015 SSMFTMP, has been expanded beyond the spatial extents of Phase II in the SSMFTMP and divided into two subareas. The proposed project, including Phase II.a and Phase II.b, represents approximately 15,360 acres (24 square miles).

Phase II.a. The Phase II.a area is an approximately 22-square-mile area located in the north-facing slopes of the Santa Susana Mountains and the Santa Clarita Valley. Phase II.a is composed of generally mountainous and valley terrain that abuts Henry Mayo Drive (State Route 126) to the north, the I-5 Freeway to the east, Phase I of the SSMFTMP Area to the south, and the Newhall Ranch Specific Plan Area to the west. The Phase II.a area, which is located in the County of Los Angeles Fifth Supervisorial District, includes a portion (Phase II) of the SSMFTMP Area. The community of Stevenson Ranch and Six Flags Magic Mountain are located within the Phase II.a area.

Phase II.b. The Phase II.b area is an approximately 2-square-mile area located in the foothills of the Santa Monica Mountains, including Bell Canyon, Dayton Canyon, and Woolsey Canyon, west of the San Fernando Valley. The Phase II.b area, which is also located in the County of Los Angeles Fifth Supervisorial District, is composed of generally mountainous and valley terrain that abuts Ventura County to the north and west and the City of Los Angeles to the east and south.

Based on coordination with the project team, six trailhead locations were identified and analyzed herein for purposes of developing project trip generation forecasts for use in this traffic and parking assessment. These trailheads are all located within the Phase II.a and II.b study area of the SSMTMP-PII study area. The Sage Ranch Loop trailhead is located within the County of Ventura and is analyzed as part of the Phase II.b study area. The six analyzed trailhead locations are noted in ***Figures 2A*** and ***2B***.

- Survey Trailhead Location No. 1: Rice Canyon
- Survey Trailhead Location No. 2: Lower Towsley (Upper and Lower Lots)
- Survey Trailhead Location No. 3: Pico Canyon
- Survey Trailhead Location No. 4: Mentryville Overflow
- Survey Trailhead Location No. 5: Mentryville Main Lot
- Survey Trailhead Location No. 6: Sage Ranch Loop (Upper and Lower Lots)

Project Description

The purpose of the SSMTMP-PII project is to provide an analysis of existing and potential connectors between prime destination points and provide enhanced recreational opportunities for users. The trail systems are planned to be designed such that they provide an equal and safe experience for various trail users including pedestrians, bicyclists, and equestrians. The goals of the plan are to:

1. Develop a complete multi-use trail system connecting user groups and local populations to desired recreation destinations and experiences, with seamless transitions to the trails of adjacent jurisdictions, compatibility with adjacent land uses and environmental resources, and a safe and sustainable design that is consistent with the County of Los Angeles Trails Manual.

2. Develop a recreational trail system that supports low-intensity use, including mountain biking, equestrian use, and hiking, to accommodate the population increase anticipated in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area through the 2035 planning horizon consistent with the Parks and Recreation Element of the Los Angeles County General Plan 2035.

The SSMTMP-PII involves approximately 70 miles of proposed new multi-use trails in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area. The trails would be multi-use and range from 3 to 12 feet wide based on site conditions, with adequate space for combined pedestrian, equestrian, and mountain

biking use, in accordance with the County Trails Manual guidelines. The proposed trails would provide connections to the proposed Rim of the Valley Trail, trails in the City of Los Angeles, trails in the City of Santa Clarita, trails in the Newhall Ranch Specific Plan, and trails within other jurisdictions as identified in the Trails Master Plan.

The SSMTMP-PII identifies up to twenty (20) potential locations for proposed facilities, including four (4) trailheads, two (2) bike skills areas, two (2) equestrian parks, eight (8) trailhead and staging areas, and four (4) trailheads within the City of Los Angeles which would need to be developed by the City of Los Angeles. The recommended City of Los Angeles trailheads would not be developed under jurisdiction of the County.

Existing Study Trailhead Locations

The six trailhead locations identified for developing project trip generation forecasts were surveyed to document existing conditions with respect to the existing trail/park development, trailhead access, parking areas and amenities. The surveyed trailhead locations, including site photographs of the surrounding trailhead areas, are shown in ***Figures 3A*** through ***3H***.

The on-site and adjacent on-street parking supply for each of the trailhead locations, as well as any amenities that are provided near the parking areas (i.e., based on field reviews conducted by LLG Engineers), is summarized in ***Table 1***. As outlined in the *County of Los Angeles Trails Manual*[1], the parking area designs must consider the nine elements listed below.

- Provide roadway signs that indicate turnouts for trailheads and parking
- Select a parking surface that is natural and permeable
- Install guardrails where needed to define parking edges for safety reasons
- Use natural logs or poles to define parking bumper stops and lot edges
- Install post bollards at trailheads to mark trailhead entrances and to discourage vehicular encroachment into the trail area
- Install and maintain a trailhead information kiosk
- Place picnic tables, trash receptacles, and toilets where possible

[1] *County of Los Angeles Trails Manual*, County of Los Angeles Department of Parks and Recreation – Planning and Development Agency, May 2011.

- Allow adequate parking lot space (i.e., 300 square feet per car for 90-degree spaces) and also allow for ADA compliant parking

- Provide parking spaces for the anticipated occupancy load, with a minimum of five spaces, where site conditions permit

On-street parking in the vicinity of the trailhead locations was available at three of the six surveyed locations. On-site parking areas were provided for all six of the surveyed trailhead locations.

Traffic Assessment

Existing Trailhead Inbound/Outbound Traffic Counts

As part of the traffic assessment for the proposed project, vehicular traffic counts at the representative six trailhead locations were conducted during the Saturday morning peak period to document the number of vehicle trips entering and exiting the site driveways as well as the on-street parking associated with trail users. Specifically, these counts and observations were conducted in 15-minute time increments from 6:00 AM to 10:00 AM during a typical Saturday morning (i.e., Saturday, June 17, 2017). This time period is associated with the peak time period for use of multiple outdoor recreational opportunities by various trail user groups.

The inbound/outbound traffic counts for each of the representative trailhead locations are summarized and presented in ***Table 2***. Details of the inbound/outbound traffic count data are also attached. The traffic count data were reviewed and analyzed to determine the highest one-hour period of traffic generation associated with each site during the weekend (Saturday) morning count period. As indicated in *Table 2*, the weekend day morning peak hour of site generation for the six surveyed sites varied with peak hours beginning as early as 6:00 AM and as late as 8:45 AM. The Saturday morning peak hour vehicle trips observed at the six trailhead locations ranged between 7 total trips and 144 total trips. The Saturday morning peak hour combined traffic generation for all six surveyed trailhead locations (i.e., situated within the Phase II study area) totaled 226 vehicle trips (110 inbound trips and 116 outbound trips).

Derivation of the Site-Specific Trail Trip Generation Rate

The Saturday morning peak hour trip generation associated with future trail connections, or newly proposed trails within the Santa Susana Mountains Trails Phase II study area, can be forecast through the derivation of a site-specific trail trip generation rate (i.e., based on the empirical trip rate derived from the traffic counts conducted at the existing trailhead locations). As summarized in *Table 2*, the Saturday morning peak hour inbound and outbound vehicle trips for the surveyed trailhead locations totaled 226 vehicle trips. By dividing this trip generation by the total length (in miles) of both the official and unofficial trails (i.e., by a total length of 56.2 miles, with the unofficial trail lengths determined based on community input and usage) the trip generation rate can be determined. The trip generation rate per mile of trail length is as follows:

- Derived Empirical Saturday AM Peak Hour Trip Rate for Trails
  226 AM peak hour vehicle trips/56.2 miles of total trail length = 4.0 vehicle trips per mile of trail (49% inbound trips, 51% outbound trips)

Proposed Project Trip Generation Forecast

As shown below, a total of 63.1 miles of adopted trails (53.4 miles of trail length in Phase II.a and 9.7 miles of trail length in Phase II.b) are included in the Trails Master Plan Phase II study area. These trails and associated trailheads are spatially distributed throughout the Trails Master Plan - Phase II.a and II.b study areas as illustrated in ***Figures 4A*** and ***4B***, respectively. In addition, some unadopted proposed trails are located outside of the study area. The trails are divided into the various categories:

- County of Los Angeles Adopted Proposed Trails within Phase II.a. area – 53.4 miles
- Unadopted Proposed Trails Outside of Phase II.a area – 5.3 miles
- County of Los Angeles Adopted Proposed Trails within Phase II.b area – 9.7 miles
- Unadopted Proposed Trails Outside of Phase II.b area – 1.5 miles

The proposed project analyzed herein consists of the future proposed trails which includes the County of Los Angeles adopted proposed trails within the Phase II.a and II.b subareas. As previously noted, these future proposed trails are spatially distributed throughout the Trails Master Plan study area. The unadopted proposed trails are recommended connections outside of the Phase II.a and II.b subarea boundaries. Since the County cannot formally adopt these proposed trail connections,

these trails have been excluded in the forecast of the project trips for the Phase II study area. As stated above, the future proposed trails consist of 53.4 miles for Phase II.a and 9.7 miles for Phase II.b for a total of 63.1 miles within the Trails Master Plan – Phase II study area. The summary of the forecast Saturday AM peak hour project traffic generation for each of the Phase II subareas is shown below and has been determined based on the application of the derived empirical trip generation rate of 4.0 vehicle trips per mile of trail length:

- Phase II.a Project Saturday AM Peak Hour Trip Generation Forecast
  4.0 trips/mile of trail length x 53.4 miles of trail length = 214 Saturday AM Peak Hour Vehicle Trips (105 inbound trips, 109 outbound trips)

- Phase II.b Project Saturday AM Peak Hour Trip Generation Forecast
  4.0 trips/mile of trail length x 9.7 miles of trail length = 39 Saturday AM Peak Hour Vehicle Trips (19 inbound trips, 20 outbound trips)

The forecast project vehicle trips (i.e., 214 AM peak hour trips for Phase II.a and 39 AM peak hour trips for Phase II.b) are anticipated to be dispersed proportionately throughout all trailhead locations within the Trails Master Plan Phase II study area (i.e., throughout an over 15,000-acre recreational area). Any internal or pass-by vehicle trips, to the extent that any occur, are included in these volumes, as the peak hour counts conducted at each trailhead were of all vehicle trips. It is important to note that research regarding cumulative (related) development projects was not deemed necessary in the review of future volumes, since development projects typically impact the weekday commuter AM and PM peak hours to the greatest degree and therefore do not significantly contribute to the peak weekend (i.e., Saturday) early morning condition. Nonetheless, growth in the use of the trails is accounted for in the forecast trip generation.

Refer to *Figures 4A* and *4B* which show the existing and adopted proposed trails within the Santa Susana Mountains recreational area and trail system. It can be expected that future vehicle trips at any one trailhead location would be fairly nominal since many additional locations currently exist for access to the extensive trail system above and beyond those surveyed as part of this assessment. Potential trailheads and amenities are being reviewed within the Phase II.a and II.b study areas. It also should be noted that while all County of Los Angeles proposed trails and trails based on community input were included for purposes of forecasting future increases in vehicle trip generation and traffic patterns associated with the enhanced trail system, it is recognized that some of these trails are utilized today, while not formally designated. Furthermore, as the proposed trail length (in miles) cited above is comprised of new trails as well as extensions/connections to existing trails, the vehicle trip generation at these trailheads may not be solely new trips to the area since some recreational users may already frequent the existing trails. As such, the forecast

trips associated with Phase II noted above can be considered conservative and actual vehicle trip generation may be lower. Lastly, while some new trailhead locations are planned, they are not expected to significantly alter existing traffic patterns as other existing trail access points are in the nearby vicinity and are expected to result in a small redistribution of localized trips.

Parking Assessment

Existing Parking Demand at Study Trailheads

Parking observations were conducted at each surveyed trailhead location in June 2017 in order to document the peak weekend (Saturday) morning parking demand. Specifically, the parking surveys were conducted in hourly time increments from 6:00 AM to 10:00 AM on Saturday, June 17, 2017. ***Figures 5A*** through ***5E*** illustrate the aerial view of the parking areas associated with each surveyed trailhead location. The parking accumulation surveys were conducted by a traffic data collection company (The Traffic Solution). The day and time periods were selected during the weekend (Saturday) morning peak time period based on the expected peak parking demand associated with recreational trail usage. It is noted that weekday morning and afternoon peak time periods associated with the commuter peak periods would not coincide with the peak traffic generation of the trail users, which typically coincide with the weekend (Saturday) morning time period.

A detailed summary of the hourly parking accumulation surveys conducted at the parking areas for each of the trailhead locations is presented in ***Table 3***. As shown in *Table 3*, the survey parking supply totals 481 spaces and the weekend peak parking demand occurred between 8:00 AM and 9:00 AM when a total of 178 spaces were occupied (i.e., a 37% occupancy). It should be noted that the Lower Towsley trailhead location, which had the highest parking demand of the surveyed locations, experienced its peak between 9:00 AM and 10:00 AM. Street parking was observed to be the most heavily utilized at the Rice Canyon and Lower Towsley trailhead locations.

Proposed Project Parking Demand Forecast

Similar to the project trip generation forecasts, parking is dispersed throughout all trailhead locations within the Trails Master Plan Phase II study area (i.e., throughout an over 15,000-acre recreational area). Any internal or pass-by trips and associated parking demand, to the extent that they occurred at the survey locations, are included in the parking demand survey data collected as part of this study. Based on information provided by the project team, three of the six surveyed trailhead locations are planned for some additional parking (i.e., Rice Canyon, Lower Towsley, and Mentryville Overflow locations). It can be expected that future parking demand

increases at any one trailhead location would be fairly nominal since many additional locations currently exist for access to the extensive trail system above and beyond those surveyed as part of this assessment. As part of the Trails Master Plan, the parking areas for the prime trailhead locations should provide on-site parking areas which conform to the nine elements previously identified in the *County of Los Angeles Trails User Manual.*

Summary

Based on the traffic and parking assessment prepared for the proposed project, the following conclusions are made:

- Six trailhead locations were identified and analyzed herein for purposes of developing project trip generation forecasts for use in this traffic and parking assessment. Five of the six trailhead locations are situated generally within the Phase II.a subarea: 1) Rice Canyon Trailhead, 2) Lower Towsley Trailhead, 3) Pico Canyon Trailhead, 4) Mentryville Overflow Lot, and 5) Mentryville Main Lot. One of the six trailhead locations is situated within the Phase II.b subarea (i.e., Sage Ranch Loop Trailhead).

- Counts of existing Saturday AM peak period inbound/outbound vehicle trip generation associated with the six existing trailhead locations were conducted in June 2017. The Saturday morning peak hour trip generation for each trailhead ranged between 7 and 144 total vehicle trips. The Saturday morning peak hour trip generation for the six trailhead locations located within the Phase II (i.e., Phases II.a and II.b) study area totaled 226 vehicle trips (110 inbound trips and 116 outbound trips).

- The derived empirical trip generation rate per mile of trail length was determined to be 4.0 vehicle trips per mile of trail length (49% inbound trips, 51% outbound trips).

- With the exclusion of the existing trails, the future proposed trails comprise 53.4 miles for Phase II.a and 9.7 miles for Phase II.b, for a total of 63.1 miles within the Santa Susana Mountains Trails Master Plan - Phase II study area. The forecast Saturday AM peak hour project trip generation for Phases II.a and II.b of the Trails Master Plan (i.e., based on application of the derived empirical rate to the future proposed trail length) totals 214 vehicle trips and 39 vehicle trips, respectively.

- Research regarding cumulative (related) development projects was not deemed necessary in the review of future volumes since development projects typically impact the weekday commuter AM and PM peak hours to the greatest degree and

therefore do not significantly contribute to the peak weekend (i.e., Saturday) early morning condition.

- As the Trails Master Plan Phase II study area is within an approximate 15,000-acre recreational area, this increased trip generation is not expected to result in significant congestion near trailhead locations.

- The forecast project trips are anticipated to be dispersed proportionately throughout all trailhead locations within the Trails Master Plan - Phase II study area. Thus, it can be expected that future vehicle trips at any one trailhead location would be fairly nominal since many additional locations currently exist for access to the extensive trail system above and beyond those surveyed as part of this assessment.

- Existing parking observations were conducted at each of the trailhead parking areas during the Saturday morning peak period in June 2017. As shown in *Table 3*, the majority of the trailhead locations were observed to experience a peak weekend morning parking demand between 8:00 AM and 9:00 AM, when a total of 178 spaces of the 481 spaces available were observed to be occupied (i.e., 37% occupancy).

- Similar to the project trip generation forecasts, parking is dispersed throughout all trailhead locations within the Trails Master Plan – Phase II study area. Thus, it can be expected that future parking demand increases at any one trailhead location would be fairly nominal since many additional locations currently exist for access to the extensive trail system above and beyond those surveyed as part of this assessment.

- As part of the Trails Master Plan, the parking areas for the prime trailhead locations should provide on-site parking areas which conform to the nine elements previously identified in the *County of Los Angeles Trails User Manual*.

- It is recommended that in the County's review of the designs for the enhanced and new trailhead locations, that adequate sight distance be provided at the planned access points and that parking areas be designed to minimize impacts to any surrounding off-site parking including residential streets. It is further recommended that County Staff consider traffic calming measures if warranted.

Please feel free to contact us should you have any questions regarding this traffic and parking assessment for the Trails Master Plan – Phase II.

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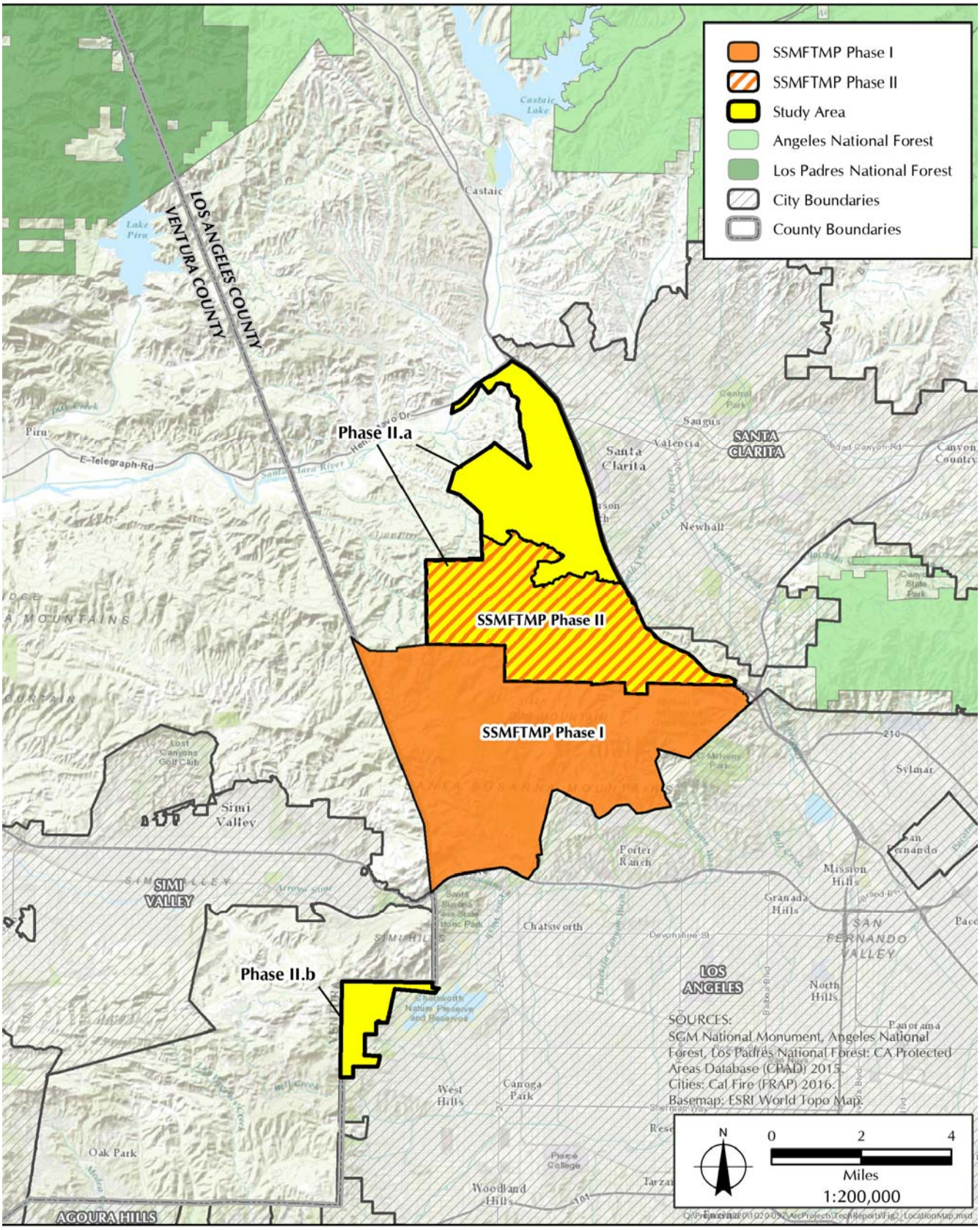

NOT TO SCALE

MAP SOURCE: SAPPHOS ENVIRONMENTAL INC.

FIGURE 1
TRAILS MASTER PLAN LOCATION

LINSCOTT, LAW & GREENSPAN, engineers

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

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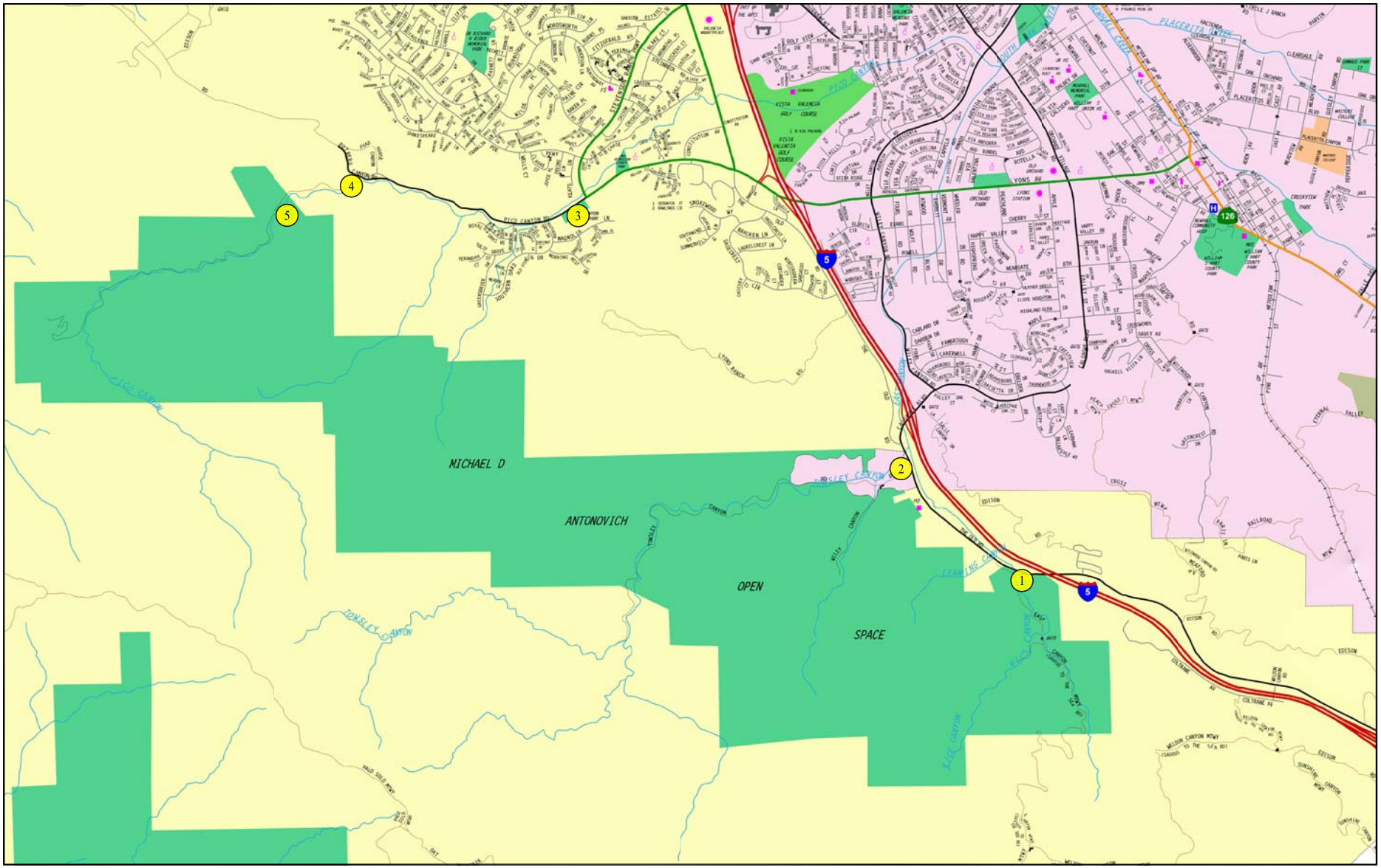

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NOT TO SCALE

MAP SOURCE: RAND MCNALLY & COMPANY

1. RICE CANYON TRAILHEAD
2. LOWER TOWSLEY TRAILHEAD
3. PICO CANYON TRAILHEAD
4. MENTRYVILLE OVERFLOW
5. MENTRYVILLE MAIN LOT

FIGURE 2A
VICINITY MAP

PHASE II.a STUDY AREA

LINSCOTT, LAW & GREENSPAN, engineers

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

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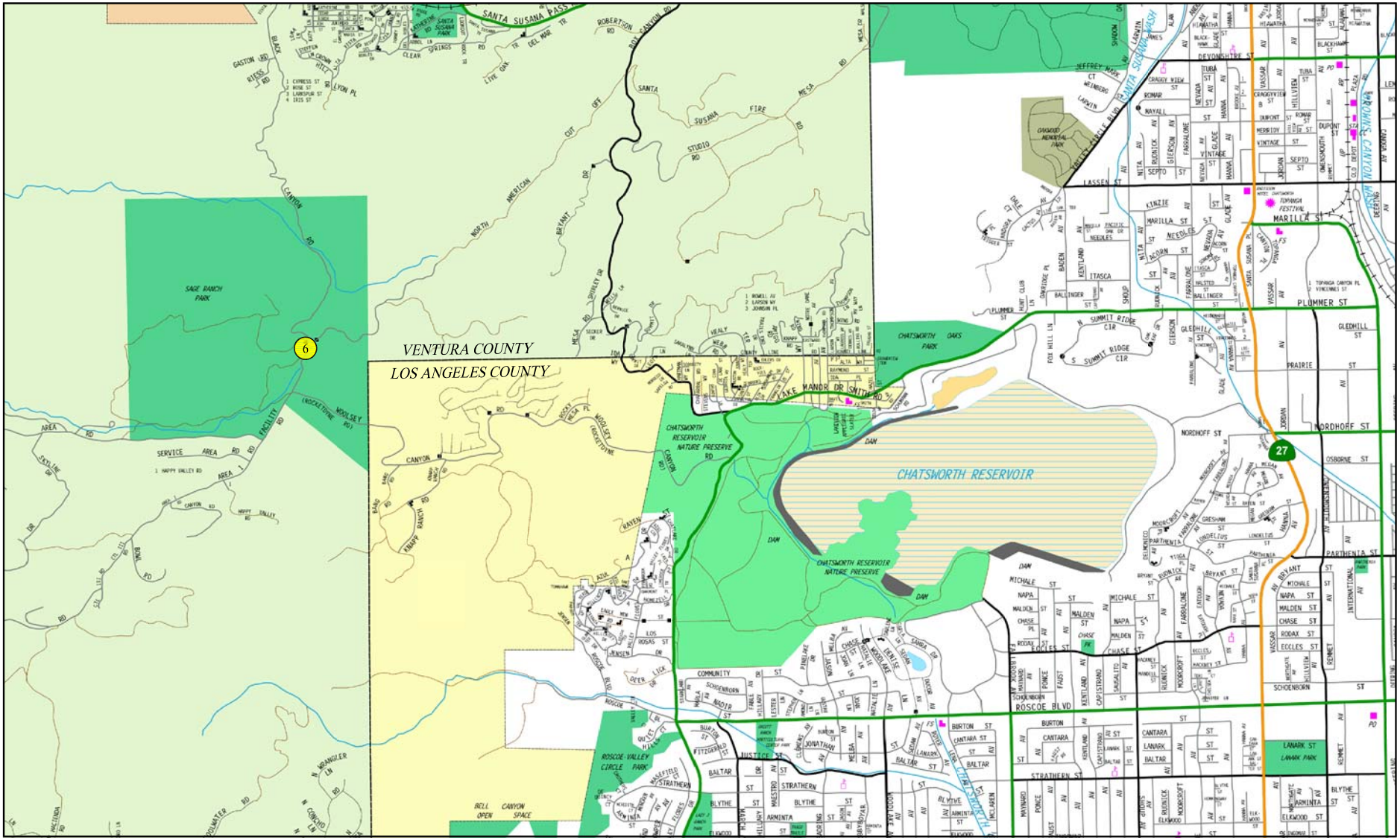

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NOT TO SCALE

MAP SOURCE: RAND MCNALLY & COMPANY

6 SAGE RANCH LOOP TRAILHEAD

FIGURE 2B
VICINITY MAP

PHASE II.b STUDY AREA

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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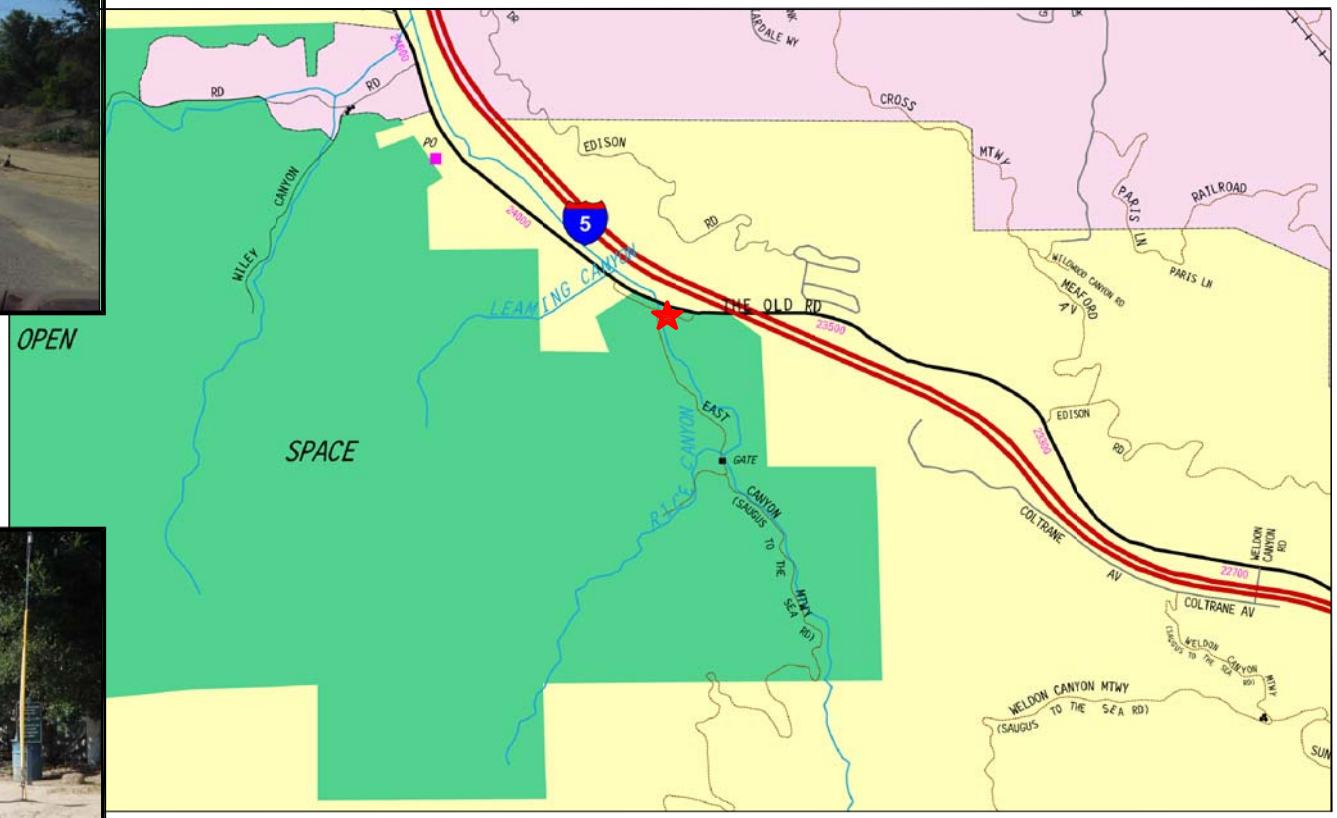

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NOT TO SCALE

MAP SOURCE: RAND MCNALLY & COMPANY

SURVEY TRAILHEAD

FIGURE 3A
RICE CANYON TRAILHEAD

LINSCOTT, LAW & GREENSPAN, engineers

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

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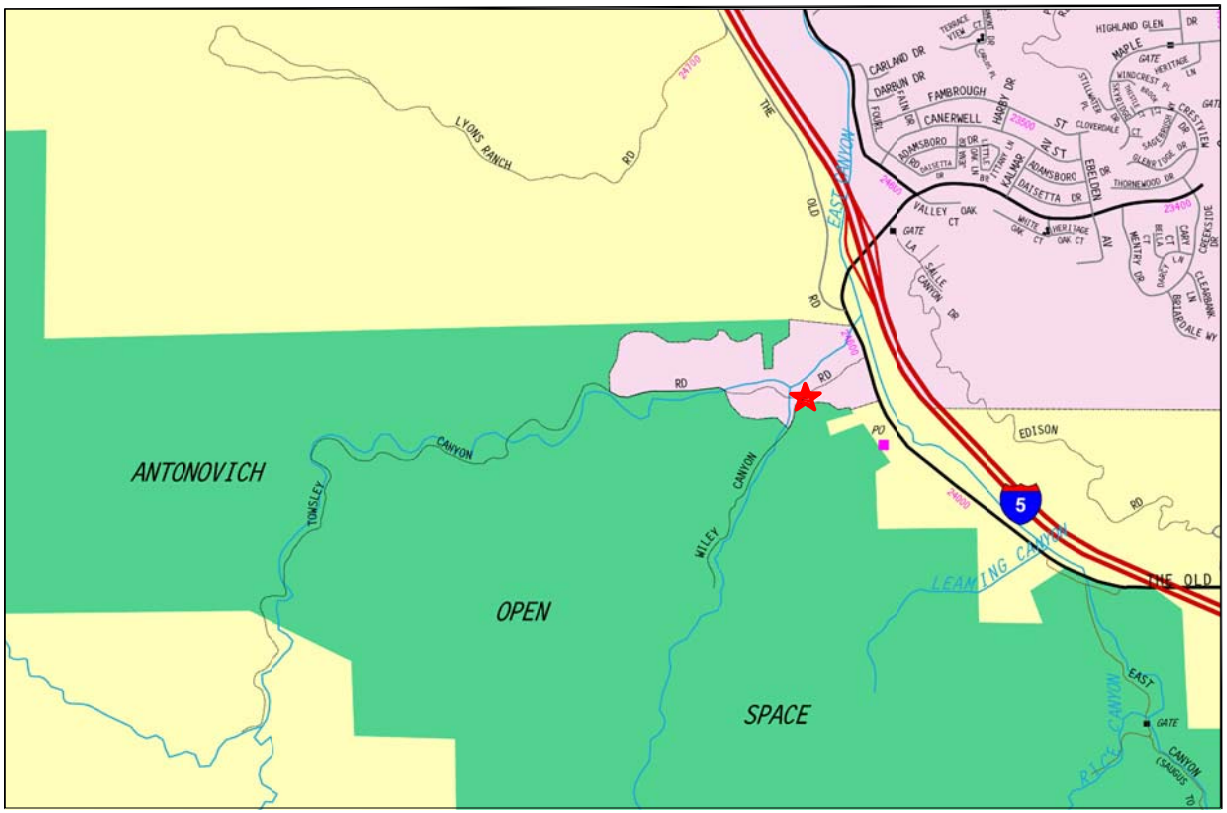

NOT TO SCALE

MAP SOURCE: RAND MCNALLY & COMPANY

SURVEY TRAILHEAD

FIGURE 3B
LOWER TOWSLEY TRAILHEAD

UPPER LOT

LINSCOTT, LAW & GREENSPAN, engineers

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

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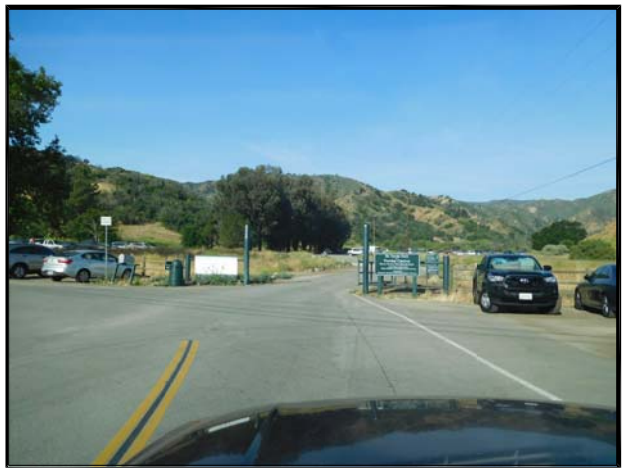

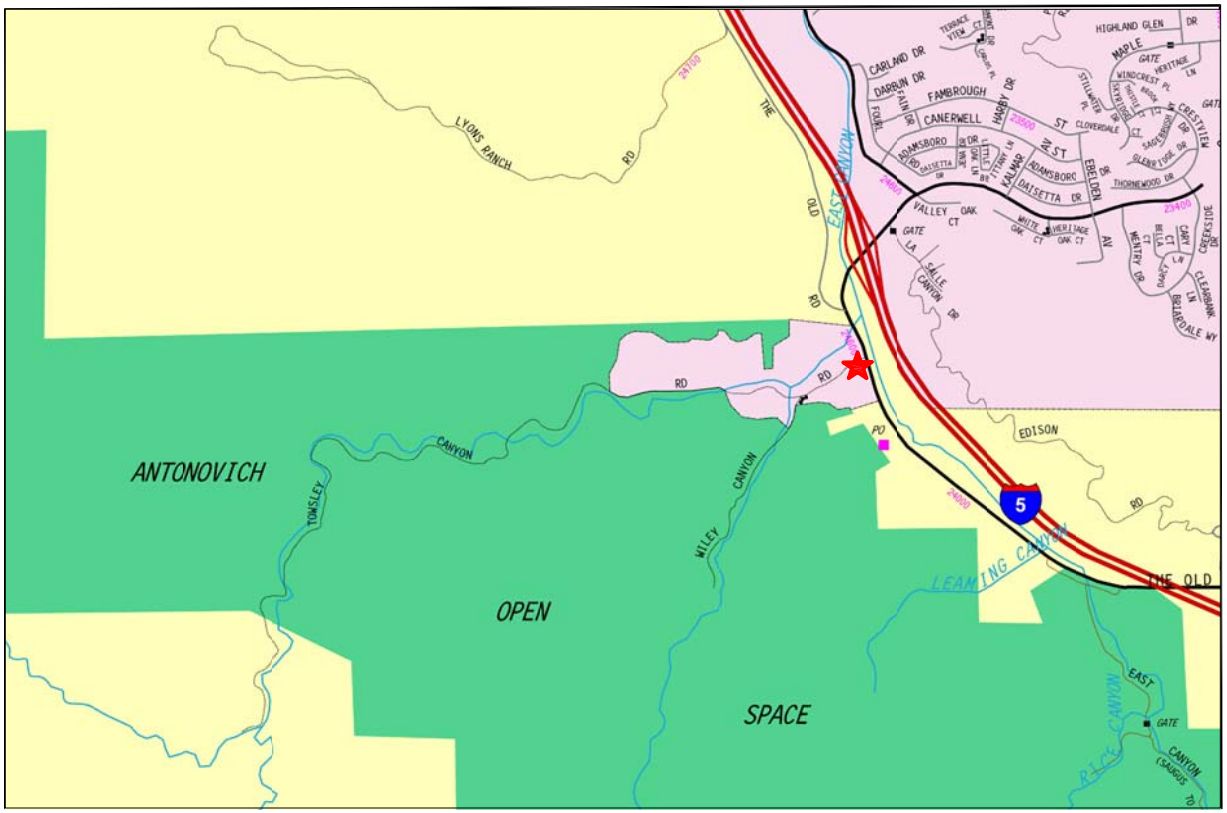

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NOT TO SCALE

MAP SOURCE: RAND MCNALLY & COMPANY

SURVEY TRAILHEAD

FIGURE 3C
LOWER TOWSLEY TRAILHEAD

LOWER LOT

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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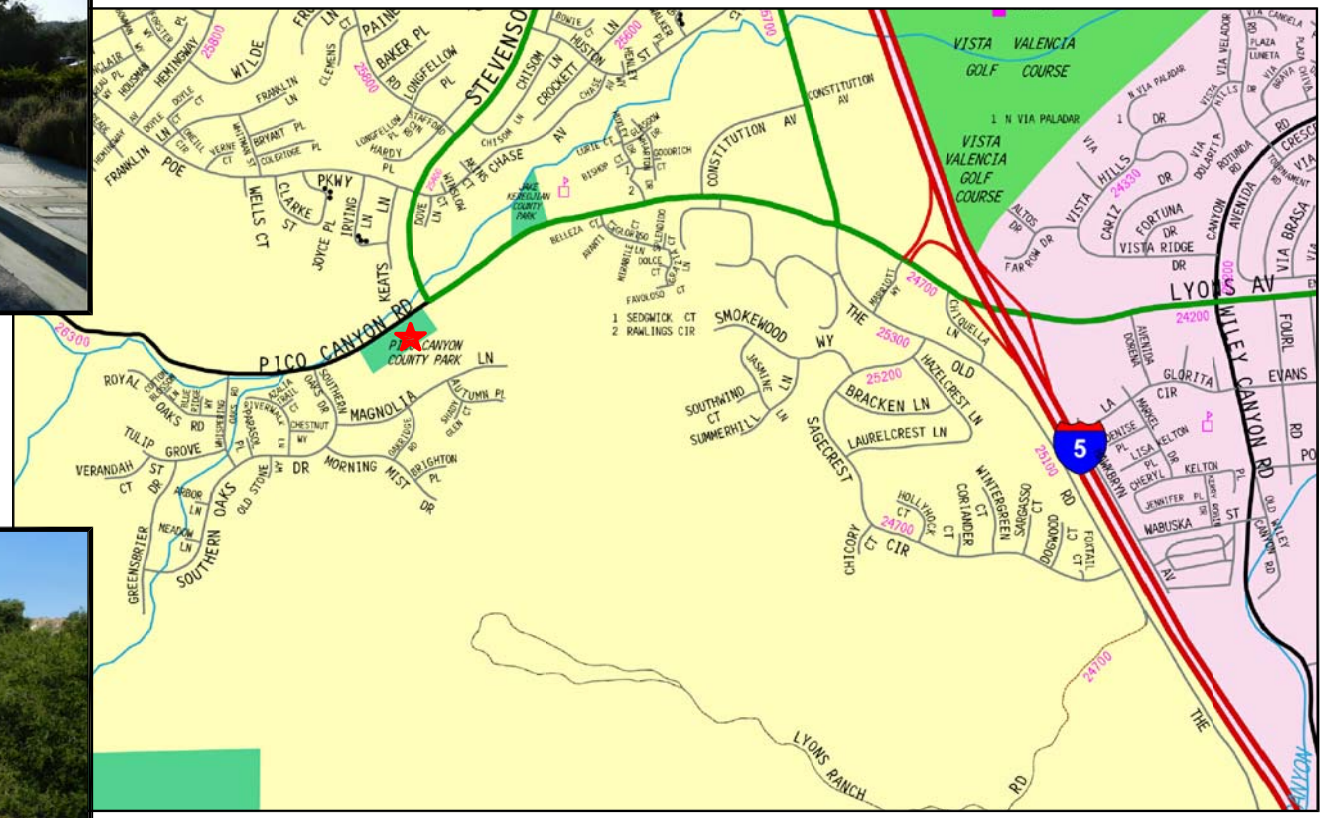

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NOT TO SCALE

MAP SOURCE: RAND MCNALLY & COMPANY

SURVEY TRAILHEAD

FIGURE 3D
PICO CANYON TRAILHEAD

LINSCOTT, LAW & GREENSPAN, engineers

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

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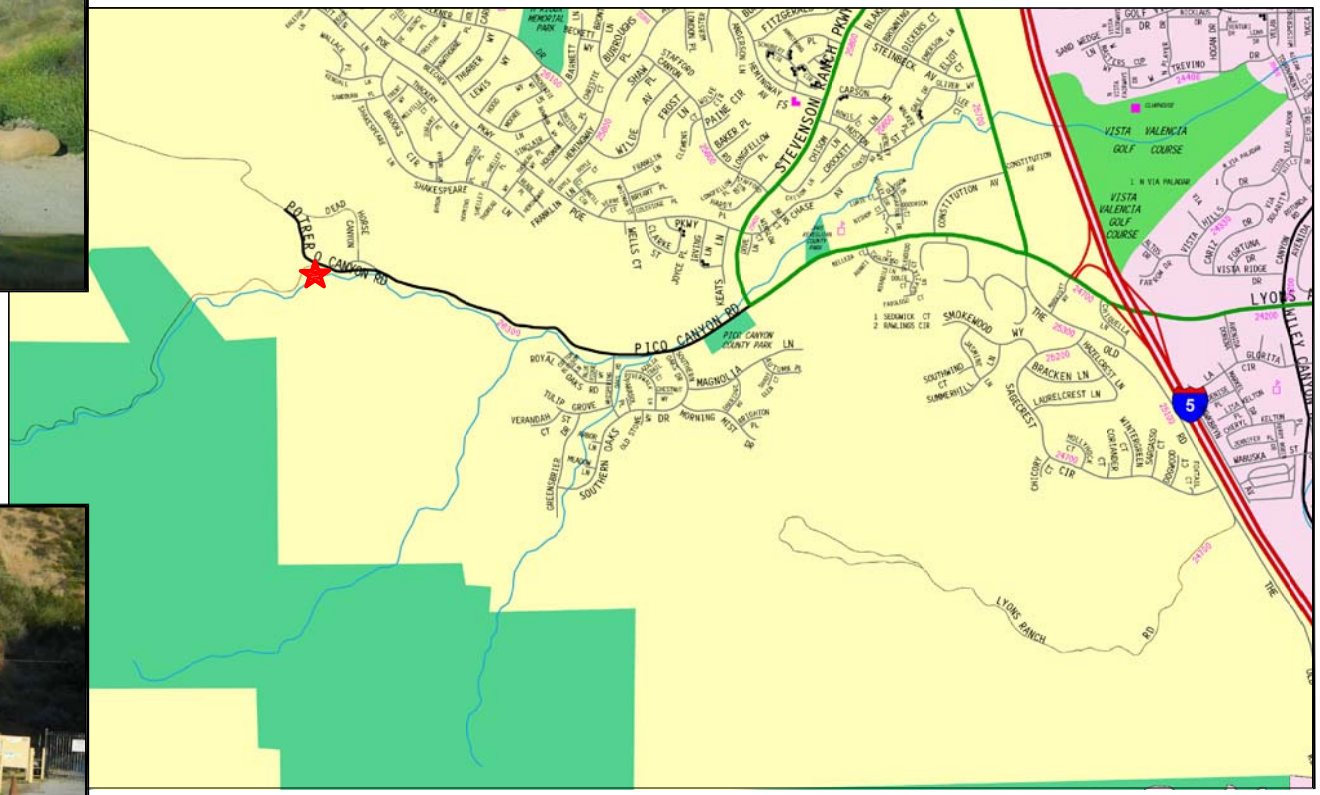

MAP SOURCE: RAND MCNALLY & COMPANY

SURVEY TRAILHEAD

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NOT TO SCALE

FIGURE 3E
MENTRYVILLE OVERFLOW LOT

LINSCOTT, LAW & GREENSPAN, engineers

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

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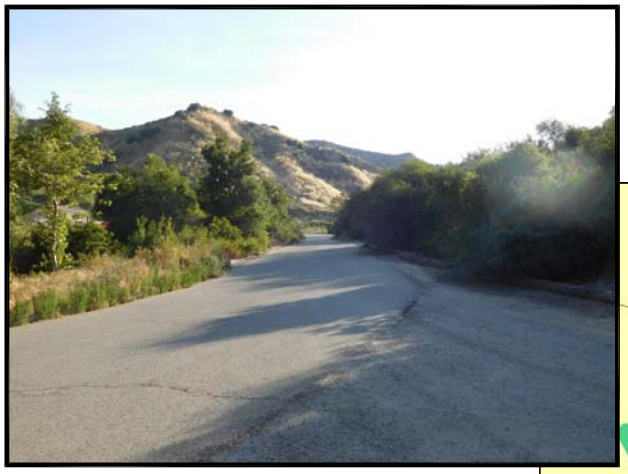

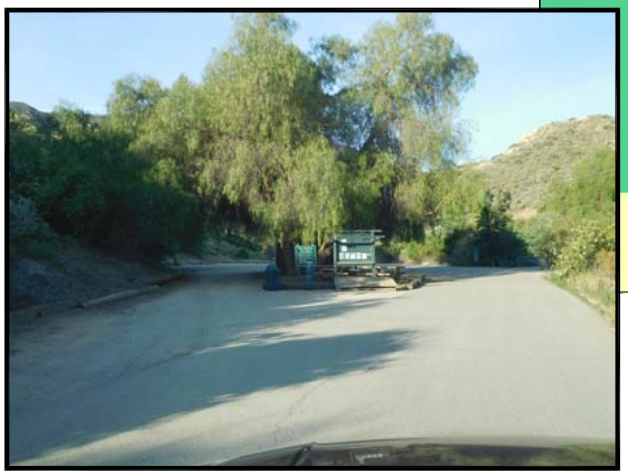

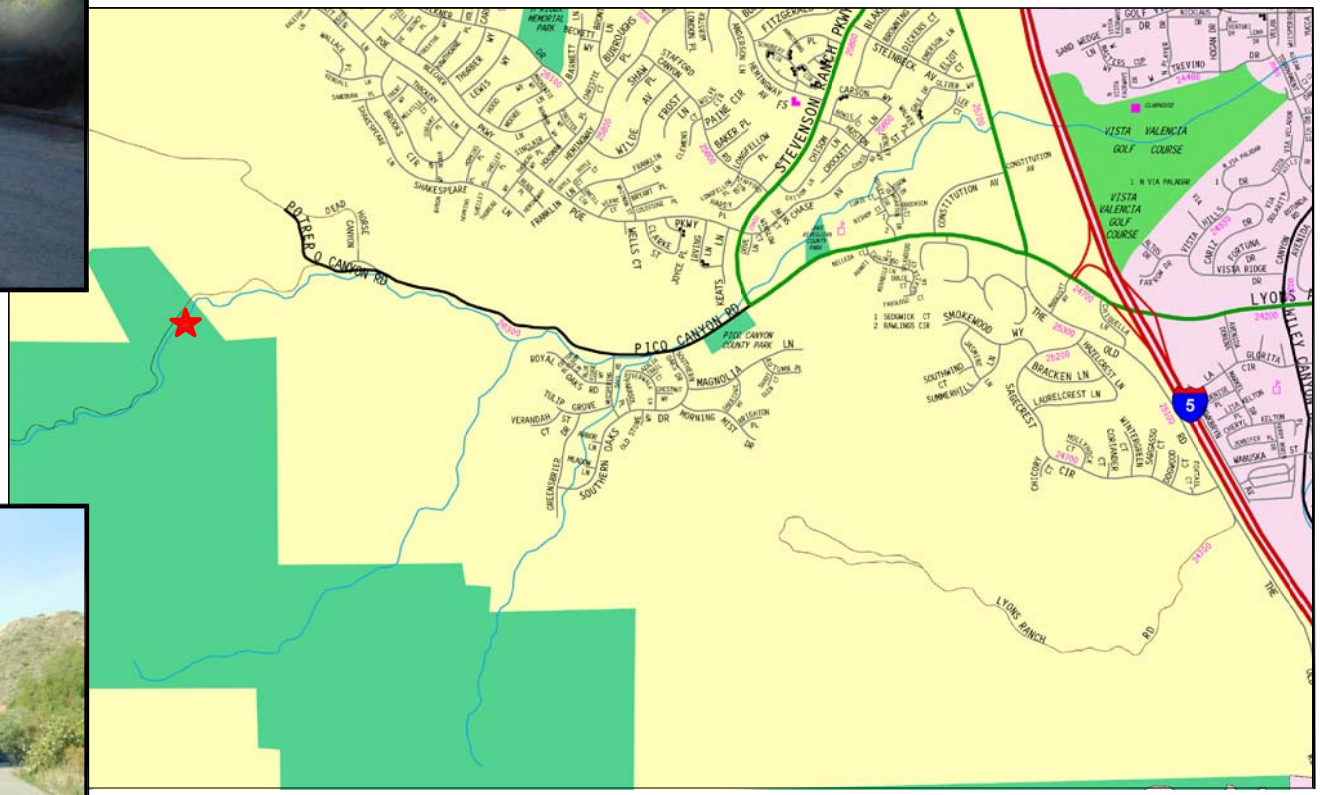

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NOT TO SCALE

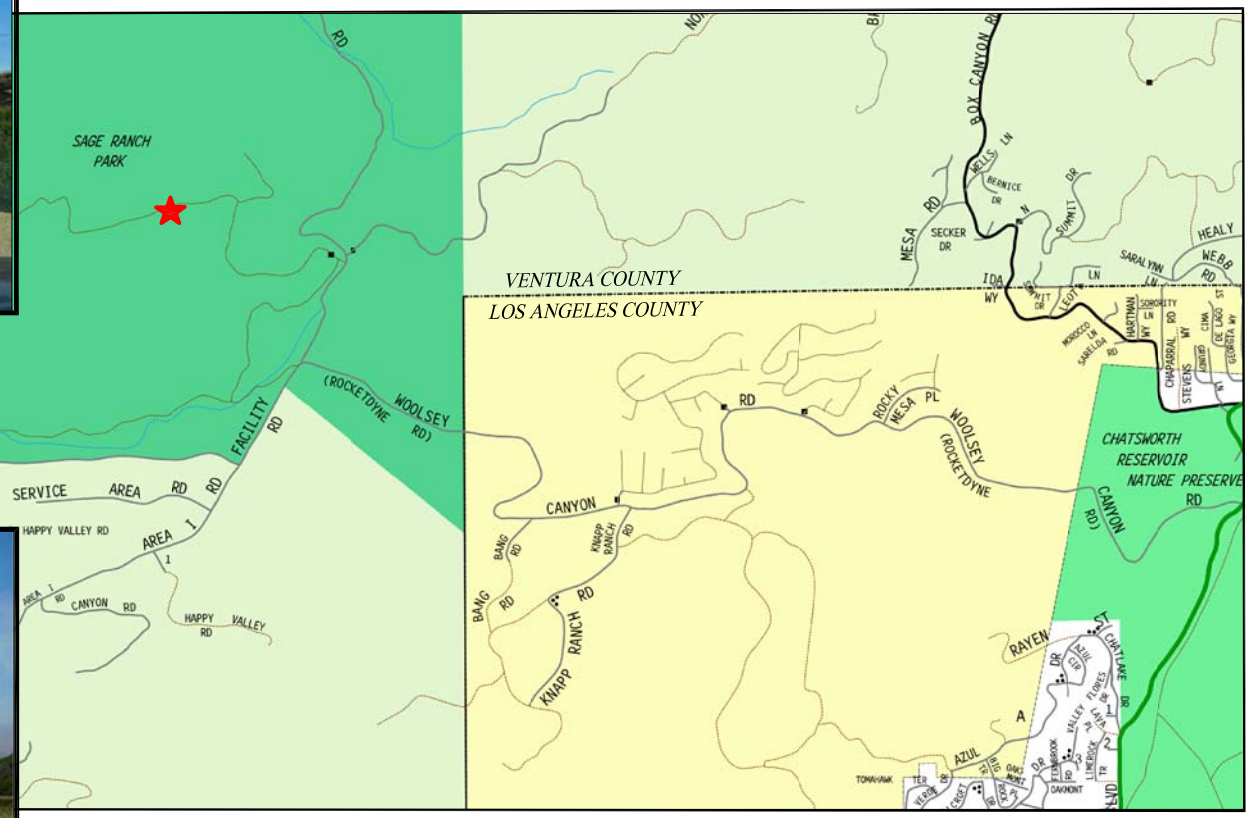
MAP SOURCE: RAND MCNALLY & COMPANY

SURVEY TRAILHEAD

FIGURE 3F
MENTRYVILLE MAIN LOT TRAILHEAD

LINSCOTT, LAW & GREENSPAN, engineers

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT



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NOT TO SCALE

MAP SOURCE: RAND MCNALLY & COMPANY

SURVEY TRAILHEAD

FIGURE 3G
SAGE RANCH LOOP TRAILHEAD

UPPER LOT

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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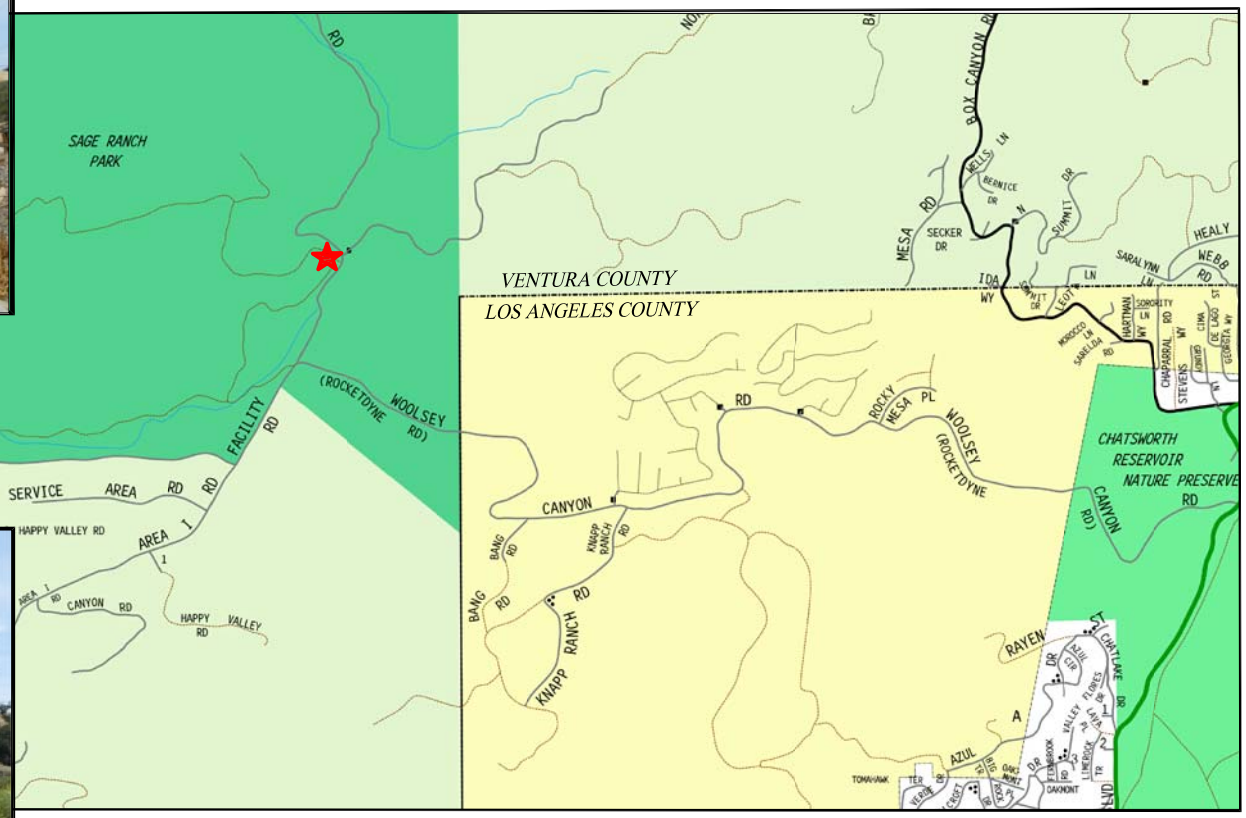

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NOT TO SCALE

MAP SOURCE: RAND MCNALLY & COMPANY

SURVEY TRAILHEAD

FIGURE 3H
SAGE RANCH LOOP TRAILHEAD

LOWER LOT

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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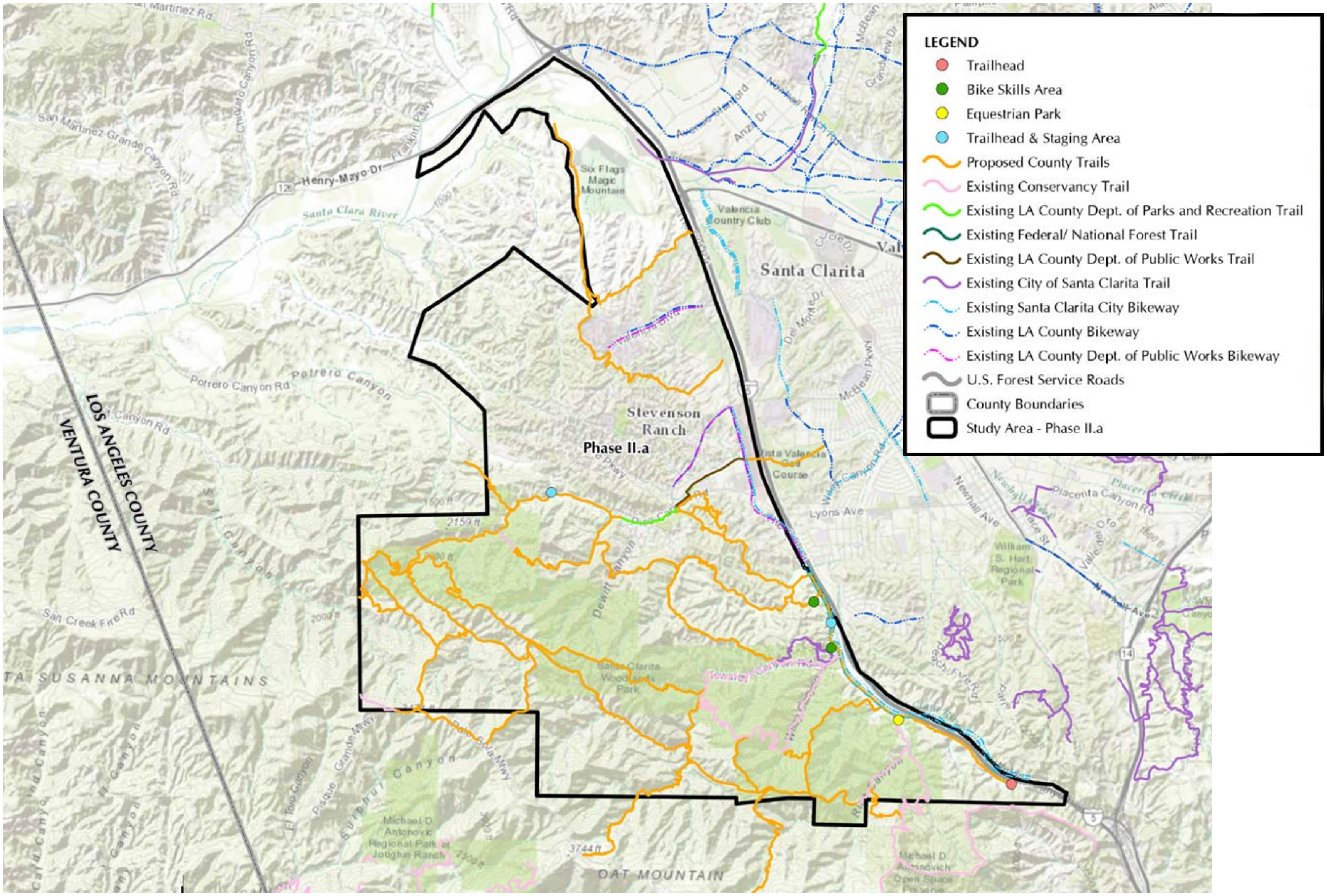

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MAP SOURCE: SAPPHOS ENVIRONMENTAL, INC.

FIGURE 4A
EXISTING AND PROPOSED TRAILS

PHASE II.a SUBAREA

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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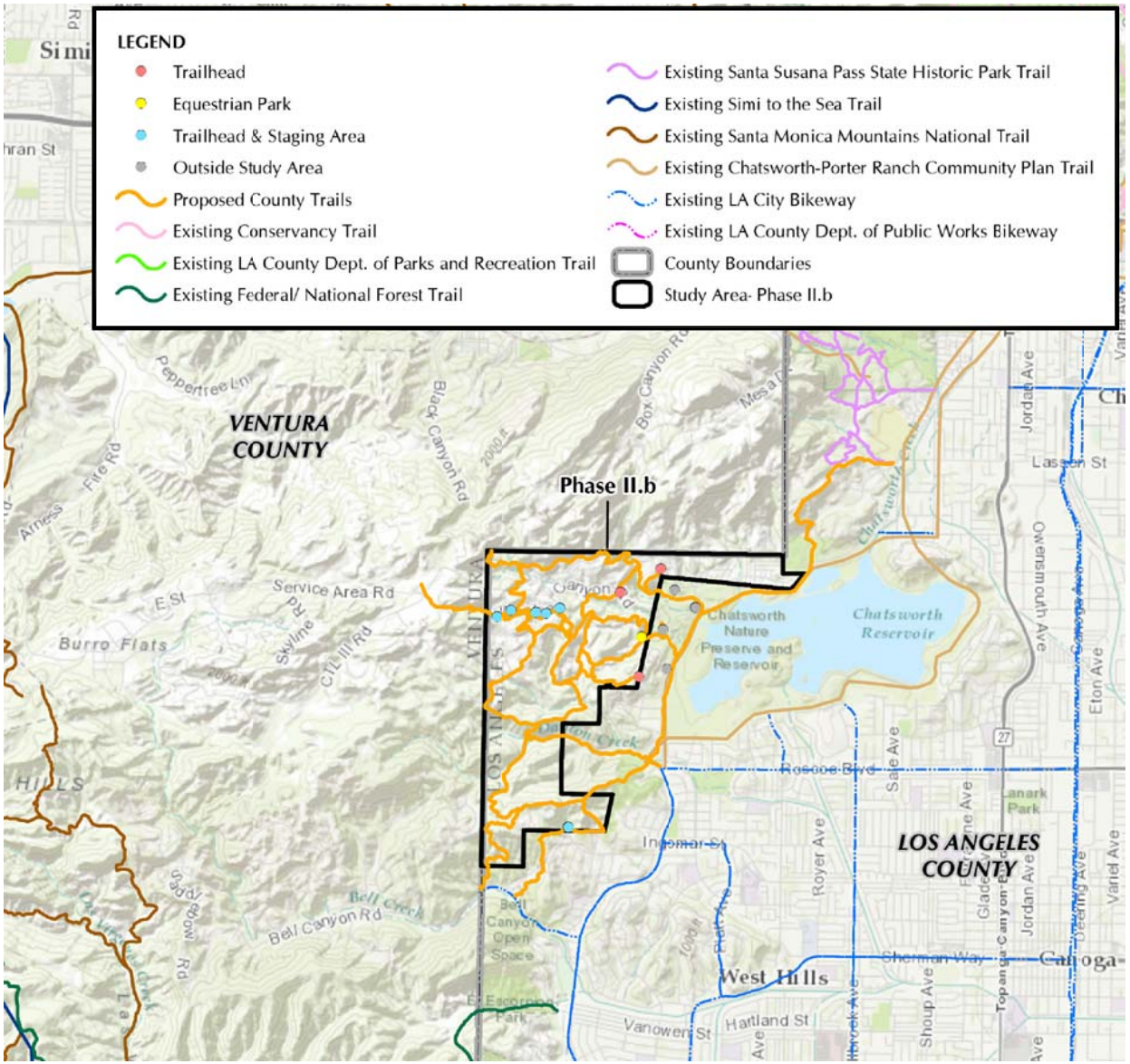

MAP SOURCE: SAPPHOS ENVIRONMENTAL, INC.

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NOT TO SCALE

FIGURE 4B
EXISTING AND PROPOSED TRAILS

PHASE II.b SUBAREA

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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MAP SOURCE: GOOGLE EARTH

FIGURE 5A
TRAILHEAD PARKING AREAS

RICE CANYON TRAILHEAD

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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NOT TO SCALE

MAP SOURCE: GOOGLE EARTH

FIGURE 5B
TRAILHEAD PARKING AREAS

LOWER TOWSLEY TRAILHEAD

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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MAP SOURCE: GOOGLE EARTH

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FIGURE 5C
TRAILHEAD PARKING AREAS

PICO CANYON TRAILHEAD

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

MAP SOURCE: GOOGLE EARTH

NOT TO SCALE

FIGURE 5D
TRAILHEAD PARKING AREAS

MENTRYVILLE TRAILHEAD

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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NOT TO SCALE

MAP SOURCE: GOOGLE EARTH

FIGURE 5E
TRAILHEAD PARKING AREAS

SAGE RANCH LOOP TRAILHEAD

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II PROJECT

LINSCOTT, LAW & GREENSPAN, engineers

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Table 1
TRAILHEAD LOCATIONS
EXISTING PARKING AREA DESIGN AND AMENITIES [1]

TRAILHEAD LOCATIONS [2]	Parking Lot (No. of Spaces)	On-street (No. of Spaces)	Roadway Signage	Natural Parking Surface	Guardrails for Parking Edges	Natural Logs/Poles for Bumper Stops	Post Bollards at Trailheads	Trailhead Info Kiosk	Picnic Tables/ Trash Receptables	Parking Lot with ADA Spaces	5 Minimum Parking Spaces
Trailhead #1: Rice Canyon	18	22		X	X			X	X		X
Trailhead #2: Lower Towsley	175	80	X	X	X	X		X	X		X
Trailhead #3: Pico Canyon	25	46	X	X [3]				X	X	X	X
Trailhead #4: Mentryville Overflow	10	n/a		X					X		X
Trailhead #5: Mentryville Main Lot	60	n/a	X	X		X	X	X	X		X
Trailhead #6: Sage Ranch Loop	45	n/a	X	X	X			X	X		X

[1] Based on field reviews conducted by LLG Engineers in June 2017.
[2] Refer to Figures 3A to 3H for the identified trailhead survey areas.
[3] Paved surface parking is also provided

Table 2

INBOUND/OUTBOUND VEHICLE TRIP GENERATION [1]

SURVEY DATE: SATURDAY, JUNE 17, 2017

TOTAL VEHICLE GENERATION AT TRAILHEAD LOCATIONS

TRAILHEAD LOCATIONS [2]	[3] TIME PERIOD	SATURDAY AM PEAK HOUR TRAFFIC VOLUMES [4]			TRAIL LENGTH (IN MILES) [5]	SAT AM PEAK HOUR DERIVED TRIP RATE (TRIPS/TRAIL MILE)
		IN	OUT	TOTAL		
Trailhead #1: Rice Canyon	7:30 AM - 8:30 AM	7	10	17	23.7	0.7
Trailhead #2: Lower Towsley	8:00 AM - 9:00 AM	70	74	144	10.9	13.2
Trailhead #3: Pico Canyon	8:00 AM - 9:00 AM	21	25	46	2.0	22.5
Trailhead #4, #5: Mentryville Overflow & Main Lot	6:00 AM - 7:00 AM	12	0	12	17.0	0.7
Trailhead #6: Sage Ranch Loop	8:45 AM - 9:45 AM	0	7	7	2.6	2.7
Total of Trailhead Locations Nos. 1 through 6 [6]:		**110**	**116**	**226**	**56.2**	**4.0**

[1] The vehicle inbound/outbound traffic count data was conducted by The Traffic Solution.

[2] Refer to Figures 5A to 5E for the identified trailhead survey areas.

[3] The Saturday morning peak hour determined based on the inbound/outbound vehicle trips observed to enter and depart the on-site and/or on-street parking areas in 15-minute time increments between 6:00 AM and 10:00 AM. Refer to Appendix A for the traffic count data.

[4] Trips are one-way traffic movements, entering or leaving.

[5] Trail length in miles includes both official and unofficial trails as provided by Sapphos Environmental, Inc.

[6] Derived trip rate based on the total trail length in miles for trailhead locations #1 through #6 divided by the total Saturday morning peak hour inbound and outbound trips.

Table 3
WEEKEND PARKING ACCUMULATION SURVEYS [1]
SURVEY DATE: SATURDAY, JUNE 17, 2017
TOTAL OVERALL PARKING OCCUPANCY AT TRAILHEAD LOCATIONS

PARKING LOCATION [2]	[3] NO. OF SPACES	Saturday, June 17, 2017														
		6:00 AM			7:00 AM			8:00 AM			9:00 AM			10:00 AM		
		OCC.		AVAIL.	OCC.		AVAIL.	OCC.		AVAIL.	OCC.		AVAIL.	OCC.		AVAIL.
		SP.	%	SP.	SP.	%	SP.	SP.	%	SP.	SP.	%	SP.	SP.	%	SP.
Trailhead #1: Rice Canyon																
Parking Lot Spaces	18	0	0.0%	18	0	0.0%	18	0	0.0%	18	0	0.0%	18	0	0.0%	18
On-Street Parking Spaces [4]	22	4	18.2%	18	12	54.5%	10	9	40.9%	13	7	31.8%	15	6	27.3%	16
Total Trailhead #1 Parking	**40**	**4**	**10.0%**	**36**	**12**	**30.0%**	**28**	**9**	**22.5%**	**31**	**7**	**17.5%**	**33**	**6**	**15.0%**	**34**
Trailhead #2: Lower Towsley																
A. Upper Overflow Lot Spaces	65	0	0.0%	65	18	27.7%	47	54	83.1%	11	57	87.7%	8	39	60.0%	26
B. Lower Overflow Lot Spaces	60	0	0.0%	60	6	10.0%	54	24	40.0%	36	27	45.0%	33	16	26.7%	44
C. Upper Pay Lot Spaces	30	0	0.0%	30	0	0.0%	30	0	0.0%	30	0	0.0%	30	0	0.0%	30
D. Lower Pay Lot Spaces	20	0	0.0%	20	0	0.0%	20	0	0.0%	20	0	0.0%	20	0	0.0%	20
E. On-Street Parking Spaces [5]	80	23	28.8%	57	80	100.0%	0	53	66.3%	27	50	62.5%	30	21	26.3%	59
Total Trailhead #2 Parking	**255**	**23**	**9.0%**	**232**	**104**	**40.8%**	**151**	**131**	**51.4%**	**124**	**134**	**52.5%**	**121**	**76**	**29.8%**	**179**
Trailhead #3: Pico Canyon																
Parking Lot - Standard Spaces	15	4	26.7%	11	15	100.0%	0	14	93.3%	1	9	60.0%	6	11	73.3%	4
Parking Lot - Handicap Accessible Spaces	2	0	0.0%	2	0	0.0%	2	0	0.0%	2	0	0.0%	2	0	0.0%	2
Parking Lot - Dirt Spaces	8	0	0.0%	8	2	25.0%	6	5	62.5%	3	3	37.5%	5	2	25.0%	6
On-Street Parking Spaces [6]	46	0	0.0%	46	0	0.0%	46	0	0.0%	46	0	0.0%	46	0	0.0%	46
Total Trailhead #3 Parking	**71**	**4**	**5.6%**	**67**	**17**	**23.9%**	**54**	**19**	**26.8%**	**52**	**12**	**16.9%**	**59**	**13**	**18.3%**	**58**
Trailhead #4: Mentryville Overflow																
Parking Lot Spaces	10	1	10.0%	9	8	80.0%	2	9	90.0%	1	7	70.0%	3	7	70.0%	3
Total Trailhead #4 Parking	**10**	**1**	**10.0%**	**9**	**8**	**80.0%**	**2**	**9**	**90.0%**	**1**	**7**	**70.0%**	**3**	**7**	**70.0%**	**3**
Trailhead #5: Mentryville Main Lot																
Parking Lot Spaces	60	0	0.0%	60	4	6.7%	56	2	3.3%	0	1	1.7%	59	1	1.7%	59
Total Trailhead #5 Parking	**60**	**0**	**0.0%**	**60**	**4**	**6.7%**	**56**	**2**	**3.3%**	**58**	**1**	**1.7%**	**59**	**1**	**1.7%**	**59**
Trailhead #6: Sage Ranch Loop																
A. Overflow Lot Spaces	20	6	30.0%	14	8	40.0%	12	8	40.0%	12	5	25.0%	15	0	0.0%	20
B. Pay Lot Spaces	25	0	0.0%	25	0	0.0%	25	0	0.0%	25	0	0.0%	25	0	0.0%	25
Total Trailhead #6 Parking	**45**	**6**	**13.3%**	**39**	**8**	**17.8%**	**37**	**8**	**17.8%**	**37**	**5**	**11.1%**	**40**	**0**	**0.0%**	**45**
Totals for Trailheads #1 through #6	**481**	**38**	**7.9%**	**443**	**153**	**31.8%**	**328**	**178**	**37.0%**	**303**	**166**	**34.5%**	**315**	**103**	**21.4%**	**378**

[1] The parking survey was conducted by The Traffic Solution.
[2] Refer to Figures 5A to 5E for the identified parking areas.
[3] Parking inventory based on field review conducted by LLG Engineers in June 2017.
[4] On-street parking spaces provided along the south side of The Old Road.
[5] On-street parking spaces provided along the west side of The Old Road.
[6] On-street parking spaces provided along the south side of Pico Canyon Road.

OCC = occupied spaces
AVAIL = available spaces

APPENDIX A

TRAFFIC COUNT DATA - SATURDAY AM PEAK PERIOD CONDITIONS

TRIP OBSERVATION STUDY - RESULTS

CLIENT: LLG - PASADENA

PROJECT: SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II

DATE: SATURDAY, JUNE 17, 2017

PERIOD: 06:00 AM TO 10:00 AM

LOCATION: RICE CANYON

FILE: 1-TRIP

BEGIN COUNT: THE OLD ROAD - 4 VEHICLES

RICE CANYON LOT - 0 VEHICLES

15-MIN	THE OLD ROAD		RICE CANYON LOT	
PERIOD	INBOUND	OUTBOUND	INBOUND	OUTBOUND
0600-0615	1	0	0	0
0615-0630	2	0	0	0
0630-0645	2	0	0	0
0645-0700	1	0	0	0
0700-0715	2	0	0	0
0715-0730	1	0	0	0
0730-0745	5	1	0	0
0745-0800	0	3	0	0
0800-0815	1	5	0	0
0815-0830	1	1	0	0
0830-0845	0	3	0	0
0845-0900	1	1	0	0
0900-0915	2	1	1	1
0915-0930	0	1	0	0
0930-0945	0	1	0	0
0945-1000	0	0	0	0

1-HOUR	THE OLD ROAD		RICE CANYON LOT	
PERIOD	INBOUND	OUTBOUND	INBOUND	OUTBOUND
0600-0700	6	0	0	0
0615-0715	7	0	0	0
0630-0730	6	0	0	0
0645-0745	9	1	0	0
0700-0800	8	4	0	0
0715-0815	7	9	0	0
0730-0830	7	10	0	0
0745-0845	2	12	0	0
0800-0900	3	10	0	0
0815-0915	4	6	1	1
0830-0930	3	6	1	1
0845-0945	3	4	1	1
0900-1000	2	3	1	1

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.446.7978

TRIP OBSERVATION STUDY - RESULTS

CLIENT: LLG - PASADENA

PROJECT: SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II

DATE: SATURDAY, JUNE 17, 2017

PERIOD: 06:00 AM TO 10:00 AM

LOCATION: LOWER TOWSLEY

FILE: 2-TRIP

BEGIN COUNT: LOWER TOWSLEY (E) - 23 VEHICLES

15-MIN PERIOD	LOWER TOWSLEY PARKING AREAS A-E	
	INBOUND	OUTBOUND
0600-0615	9	0
0615-0630	29	0
0630-0645	17	0
0645-0700	22	0
0700-0715	21	6
0715-0730	18	8
0730-0745	26	16
0745-0800	15	14
0800-0815	21	17
0815-0830	18	14
0830-0845	19	20
0845-0900	12	23
0900-0915	7	18
0915-0930	10	17
0930-0945	5	26
0945-1000	7	21

1-HOUR PERIOD	LOWER TOWSLEY PARKING AREAS A-E	
	INBOUND	OUTBOUND
0600-0700	77	0
0615-0715	89	6
0630-0730	78	14
0645-0745	87	30
0700-0800	80	44
0715-0815	80	55
0730-0830	80	61
0745-0845	73	65
0800-0900	70	74
0815-0915	56	75
0830-0930	48	78
0845-0945	34	84
0900-1000	29	82

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.446.7978

TRIP OBSERVATION STUDY - RESULTS

CLIENT: LLG - PASADENA

PROJECT: SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II

DATE: SATURDAY, JUNE 17, 2017

PERIOD: 06:00 AM TO 10:00 AM

LOCATION: PICO CANYON

FILE: 3-TRIP

BEGIN COUNT: PICO CANYON ROAD - 0 VEHICLES

PICO CANYON LOT - 4 VEHICLES

15-MIN PERIOD	PICO CANYON ROAD		PICO CANYON LOT	
	INBOUND	OUTBOUND	INBOUND	OUTBOUND
0600-0615	0	0	3	1
0615-0630	0	0	4	0
0630-0645	0	0	5	1
0645-0700	0	0	7	3
0700-0715	0	0	2	3
0715-0730	0	0	3	0
0730-0745	0	0	3	4
0745-0800	0	0	3	4
0800-0815	0	0	3	3
0815-0830	0	0	7	10
0830-0845	0	0	7	4
0845-0900	0	0	4	8
0900-0915	0	0	1	2
0915-0930	0	0	2	2
0930-0945	0	0	5	4
0945-1000	0	0	5	6

1-HOUR PERIOD	PICO CANYON ROAD		PICO CANYON LOT	
	INBOUND	OUTBOUND	INBOUND	OUTBOUND
0600-0700	0	0	19	5
0615-0715	0	0	18	7
0630-0730	0	0	17	7
0645-0745	0	0	15	10
0700-0800	0	0	11	11
0715-0815	0	0	12	11
0730-0830	0	0	16	21
0745-0845	0	0	20	21
0800-0900	0	0	21	25
0815-0915	0	0	19	24
0830-0930	0	0	14	16
0845-0945	0	0	12	16
0900-1000	0	0	13	14

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.446.7978

TRIP OBSERVATION STUDY - RESULTS

CLIENT: LLG - PASADENA
PROJECT: SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II
DATE: SATURDAY, JUNE 17, 2017
PERIOD: 06:00 AM TO 10:00 AM
LOCATION: MENTRYVILLE
FILE: 4,5 -TRIP

BEGIN COUNT: OVERFLOW LOT - 1 VEHICLE
MAIN LOT - 0 VEHICLES

15-MIN	OVERFLOW LOT / WALK-IN		MAIN LOT	
PERIOD	INBOUND	OUTBOUND	INBOUND	OUTBOUND
0600-0615	1	0	1	0
0615-0630	2	0	1	0
0630-0645	0	0	1	0
0645-0700	5	0	1	0
0700-0715	0	1	0	0
0715-0730	0	0	0	1
0730-0745	0	0	0	0
0745-0800	2	1	0	0
0800-0815	0	0	0	1
0815-0830	0	0	1	1
0830-0845	0	1	0	1
0845-0900	0	1	1	1
0900-0915	0	0	1	1
0915-0930	0	0	2	1
0930-0945	0	0	1	2
0945-1000	0	0	0	0

1-HOUR	OVERFLOW LOT / WALK-IN		MAIN LOT	
PERIOD	INBOUND	OUTBOUND	INBOUND	OUTBOUND
0600-0700	8	0	4	0
0615-0715	7	1	3	0
0630-0730	5	1	2	1
0645-0745	5	1	1	1
0700-0800	2	2	0	1
0715-0815	2	1	0	2
0730-0830	2	1	1	2
0745-0845	2	2	1	3
0800-0900	0	2	2	4
0815-0915	0	2	3	4
0830-0930	0	2	4	4
0845-0945	0	1	5	5
0900-1000	0	0	4	4

THE TRAFFIC SOLUTION
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ARCADIA, CALIFORNIA 91006
626.446.7978

TRIP OBSERVATION STUDY - RESULTS

CLIENT: LLG - PASADENA

PROJECT: SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II

DATE: SATURDAY, JUNE 17, 2017

PERIOD: 06:00 AM TO 10:00 AM

LOCATION: SAGE RANCH

FILE: 6-TRIP

BEGIN COUNT: LOT A - 6 VEHICLES

LOT B - GATE CLOSED

15-MIN	PARKING LOT A		PARKING LOT B	
PERIOD	INBOUND	OUTBOUND	INBOUND	OUTBOUND
0600-0615	0	0	0	0
0615-0630	0	0	0	0
0630-0645	0	0	0	0
0645-0700	2	0	0	0
0700-0715	0	0	0	0
0715-0730	0	0	0	0
0730-0745	0	0	0	0
0745-0800	1	0	0	0
0800-0815	0	1	0	0
0815-0830	0	0	0	0
0830-0845	0	1	0	0
0845-0900	0	0	0	0
0900-0915	0	2	0	0
0915-0930	0	0	0	0
0930-0945	0	5	0	0
0945-1000	0	0	0	0

1-HOUR	PARKING LOT A		PARKING LOT B	
PERIOD	INBOUND	OUTBOUND	INBOUND	OUTBOUND
0600-0700	2	0	0	0
0615-0715	2	0	0	0
0630-0730	2	0	0	0
0645-0745	2	0	0	0
0700-0800	1	0	0	0
0715-0815	1	1	0	0
0730-0830	1	1	0	0
0745-0845	1	2	0	0
0800-0900	0	2	0	0
0815-0915	0	3	0	0
0830-0930	0	3	0	0
0845-0945	0	7	0	0
0900-1000	0	7	0	0

NOTE: PARKING LOT B CLOSED DURING OBSERVATION PERIOD

THE TRAFFIC SOLUTION
329 DIAMOND STREET
ARCADIA, CALIFORNIA 91006
626.446.7978

SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN – PHASE II

FINAL MITIGATED NEGATIVE DECLARATION

STATE CLEARINGHOUSE NUMBER 2017111009

VOLUME IV
APPENDICES I–K

PREPARED FOR:

COUNTY OF LOS ANGELES DEPARTMENT OF PARKS AND RECREATION
1000 S. FREMONT AVENUE, UNIT #40
BUILDING A-9 WEST, 3RD FLOOR
ALHAMBRA, CALIFORNIA 91803

PREPARED BY:

SAPPHOS ENVIRONMENTAL, INC.
430 NORTH HALSTEAD STREET
PASADENA, CALIFORNIA 91107

AUGUST 22, 2018

Appendix I

Notice of Intent

COUNTY OF LOS ANGELES

DEPARTMENT OF PARKS AND RECREATION

"Parks Make Life Better!"

John Wicker, Director Norma E. Garcia, Chief Deputy Director

NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION FOR THE PROPOSED SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN – PHASE II PROJECT

PROJECT TITLE: Santa Susana Mountains Trails Master Plan – Phase II (SSMTMP-PII)

PROJECT LOCATION: The SSMTMP-PII area encompasses approximately 24 square miles in the unincorporated territory of the northwestern portion of the County of Los Angeles, immediately east of the boundary with Ventura County, located entirely within the 5th Supervisorial District. The SSMTMP-PII area is comprised of an approximately 22-square-mile area located in the north-facing slopes of the Santa Susana Mountains and the Santa Clarita Valley (Phase II.a) and an approximately 2-square-mile area located in the foothills of the Santa Monica Mountains, including Bell Canyon, Dayton Canyon, and Woolsey Canyon, west of the San Fernando Valley (Phase II.b). The Phase II.a area is composed of generally mountainous and valley terrain that abuts Henry Mayo Drive (State Route [SR] 126) to the north, the Interstate-5 freeway to the east, the southern edge of the Santa Clarita Valley Area Plan area to the south, and the Newhall Ranch Specific Plan Area to the west. Similarly, Phase II.b area, is composed of generally mountainous and valley terrain that abuts Ventura County to the north and west and the City of Los Angeles to the east and south.

PROJECT DESCRIPTION: The proposed project includes approximately 72 miles of proposed multi-use (hiking, mountain biking, equestrian) trails and related staging areas, bike skills parks, parking areas, and other supporting trail facilities in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area. The proposed trails would provide connections to parks and open spaces, a large commercial district, seven schools, numerous natural features, Six Flags Magic Mountain theme park, the proposed Rim of the Valley trail corridor alignment (RIVA), and existing trails in the Cities of Los Angeles and Santa Clarita, and in the Newhall Ranch Specific Plan area, as well as trails within other jurisdictions as identified in the Trails Master Plan. The trails would be multi-use and range from 3 to 12 feet wide based on site conditions, with adequate space for combined pedestrian, equestrian, and mountain biking use, in accordance with the County of Los Angeles Trails Manual guidelines (County Trails Manual). The proposed project would develop a complete multi-use trail system connecting user groups and local populations to desired recreation destinations and experiences, with unified transition to the trails of adjacent jurisdictions, compatibility with adjacent land uses and environmental resources, and incorporate a sustainable design consistent with the County Trails Manual. The plan would recommend conditions for improvement of unmet local recreation demands in the County's Fifth Supervisorial District.

(continued on other side)

2017 315900

FILED

Nov 02 2017

Dean C. Logan, Registrar – Recorder/County Clerk

Electronically signed by LILIA MURGUIA

THIS NOTICE WAS POSTED

ON November 02 2017

UNTIL December 04 2017

REGISTRAR – RECORDER/COUNTY CLERK

In accordance with Section 15072 of the State California Environmental Quality Act (CEQA) Guidelines, this notice is to inform public agencies, County residents, and the general public that the County of Los Angeles Department of Parks and Recreation, as the lead agency, has completed an Initial Study/Mitigated Negative Declaration (IS/MND) for the proposed project described above. The IS/MND examines potential impacts of the proposed project on the environment. The IS/MND will be available for a 45-day public review beginning November 2, 2017, at four locations:

- County of Los Angeles Department of Parks and Recreation, 510 South Vermont Avenue, Los Angeles, CA 90020. *Office hours are Mon.–Thurs. 7:00 am–5:30 pm. Please email Julie Yom, Park Planner, at jyom@parks.lacounty.gov to set up an appointment.*
- Stevenson Ranch Library, 25950 The Old Road, Stevenson Ranch, CA 91381. *Open Mon.–Wed. 10:00 am–8:00 pm, Thurs. 10:00 am–6:00 pm, and Fri.-Sat. 9:00 am–5:00 pm. Closed Sunday.*
- Chatsworth Branch Library, 21052 Devonshire Street, Chatsworth, CA 91311. *Open Mon. and Wed. 10:00 am-8:00 pm, Tues. and Thurs. 12:00-8:00 pm, and Fri. and Sat. 9:30 am-5:30 pm. Closed Sunday.*
- Online at: County of Los Angeles Department of Parks and Recreation website: http://parks.lacounty.gov/wps/portal/dpr/Newsroom/EnvironmentalDocuments/

PUBLIC COMMENT PERIOD: Thursday, November 2, 2017, to Saturday, December 16, 2017. All comments must be postmarked or emailed no later than **December 16, 2017.**

WHERE TO SEND COMMENTS: Written comments may be provided hardcopy of via email:

County of Los Angeles Department of Parks and Recreation
Planning Division
Attn: Julie Yom, Park Planner
510 South Vermont Avenue, Room 201
Los Angeles, CA 90020

email: jyom@parks.lacounty.gov

2017 315900
FILED
Nov 02 2017
Dean C. Logan, Registrar-Recorder/County Clerk
Electronically signed by LILIA MURGUIA

COMMUNITY MEETINGS:
On Thursday, November 9, 2017, the County will host a community meeting to review the project and solicit information in relation to the CEQA analysis for this project. The meeting will be held from 6:00–8:00 pm at Stevenson Ranch Library, 25950 The Old Road, Stevenson Ranch, CA 91381.

On Thursday, November 16, 2017, the County will host a community meeting to review the project and solicit information in relation to the CEQA analysis for this project. The meeting will be held from 6:00–8:00 pm at Chatsworth Branch Library, 21052 Devonshire Street, Chatsworth, CA 91311.

Please direct any questions regarding these meetings to Zachary Likins at (213) 351-5149 or zlikins@parks.lacounty.gov.

Appendix J

Notice of Intent Comment Letters

B1

-----Original Message-----
From: Harris, Scott P.@Wildlife [mailto:Scott.P.Harris@wildlife.ca.gov]
Sent: Friday, November 03, 2017 11:58 AM
To: Julie Yom <jyom@parks.lacounty.gov>
Subject: Public Review Period for Santa Susana Mountains Trails Master Plan - Phase II Project

Hello Julie,

Could you please let me know what the projected schedule is for the subject two-phased project as far as expected construction completion. 1

Also do you know why the Project was noticed under an MND and not a Programmatic EIR since it appears that subsequent activities conducted under the Project will require separate CEQA review and noticing? Thank you. 2

Scott P. Harris
Environmental Scientist
California Department of Fish and Wildlife Habitat Conservation Planning
308 S. Dunning St.
Ventura, CA 93003
Scott.p.harris@wildlife.ca.gov
(805) 644-6305

-----Original Message-----
From: Julie Yom [mailto:jyom@parks.lacounty.gov]
Sent: Monday, November 06, 2017 7:25 AM
To: Harris, Scott P.@Wildlife <Scott.P.Harris@wildlife.ca.gov>
Subject: RE: Public Review Period for Santa Susana Mountains Trails Master Plan - Phase II Project

Scott,

We do not have a construction schedule for the proposed Trails Master Plan because it is conceptual in nature, and the location of the trail alignment is subject to adjustment should development of the trails be pursued.
The project does not meet the threshold for an EIR as there are no anticipated significant and unavoidable impacts.

Regards,

JULIE YOM, AICP

County of Los Angeles
Department of Parks and Recreation | Planning Division
510 South Vermont Avenue
Los Angeles, CA 90020
Tel. 213) 351-5127 | Fax 213) 639-3959
jyom@parks.lacounty.gov
Please note that our offices are closed on Fridays.

-----Original Message-----
From: Harris, Scott P.@Wildlife [mailto:Scott.P.Harris@wildlife.ca.gov]
Sent: Monday, November 06, 2017 11:21 AM
To: Julie Yom <jyom@parks.lacounty.gov>
Subject: RE: Public Review Period for Santa Susana Mountains Trails Master Plan - Phase II Project

Thank you Julie for the clarification.

Scott P. Harris
Environmental Scientist
California Department of Fish and Wildlife Habitat Conservation Planning
308 S. Dunning St.
Ventura, CA 93003
Scott.p.harris@wildlife.ca.gov
(805) 644-6305

CDFW is California's Trustee Agency for fish and wildlife resources, and holds those resources in trust by statute for all the people of the State. CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species.

SaveOurWater.com · Drought.CA.gov

B2

STATE OF CALIFORNIA

GOVERNOR'S OFFICE of PLANNING AND RESEARCH

STATE CLEARINGHOUSE AND PLANNING UNIT

EDMUND G. BROWN JR.
GOVERNOR

KEN ALEX
DIRECTOR

December 19, 2017

Julie Yom
Los Angeles County
510 S. Vermont Ave, Rm 201
Los Angeles, CA 90020

Subject: Santa Susana Mountains Trails Master Plan - Phase II
SCH#: 2017111009

Dear Julie Yom:

The State Clearinghouse submitted the above named Mitigated Negative Declaration to selected state agencies for review. On the enclosed Document Details Report please note that the Clearinghouse has listed the state agencies that reviewed your document. The review period closed on December 18, 2017, and the comments from the responding agency (ies) is (are) enclosed. If this comment package is not in order, please notify the State Clearinghouse immediately. Please refer to the project's ten-digit State Clearinghouse number in future correspondence so that we may respond promptly. 1

Please note that Section 21104(c) of the California Public Resources Code states that:

> "A responsible or other public agency shall only make substantive comments regarding those activities involved in a project which are within an area of expertise of the agency or which are required to be carried out or approved by the agency. Those comments shall be supported by specific documentation."

These comments are forwarded for use in preparing your final environmental document. Should you need more information or clarification of the enclosed comments, we recommend that you contact the commenting agency directly.

This letter acknowledges that you have complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to the California Environmental Quality Act. Please contact the State Clearinghouse at (916) 445-0613 if you have any questions regarding the environmental review process.

Sincerely,

Scott Morgan
Director, State Clearinghouse

Enclosures
cc: Resources Agency

Document Details Report
State Clearinghouse Data Base

1 (cont)

SCH# 2017111009
Project Title Santa Susana Mountains Trails Master Plan - Phase II
Lead Agency Los Angeles County

Type MND Mitigated Negative Declaration

Description Note: Review Per Lead

The proposed project includes approx 70 miles of proposed multi-use (hiking, mountain biking, equestrian) trails and related staging areas, bike skills parks, parking areas, and other supporting trail facilities in the Santa Clarita Valley Planning Area and San Fernando Valley Planning Area. The proposed trails would provide connections to parks and open space, a large commercial district, seven schools, numerous natural features, Six Flags Magic Mountain theme park, the proposed Rim of the Vall. The trails would be multi-use and range from 3 to 12 ft wide based on site conditions, with adequate space for combined pedestrian, equestrian, and mountain biking use, in accordance with the county of Los Angeles Trails Manual guidelines. The plan would recommend conditions for improvement of unmet local recreation demands in the 5th Supervisorial District.

Lead Agency Contact

Name Julie Yom
Agency Los Angeles County
Phone 213-351-5127 **Fax**
email
Address 510 S. Vermont Ave, Rm 201
City Los Angeles **State** CA **Zip** 90020

Project Location

County Los Angeles
City
Region
Lat / Long
Cross Streets north of US 101, east of Ventura County line, south of SR 126, west of I-5
Parcel No.
Township 2N **Range** 16W **Section** 6,7 **Base** SB

Proximity to:

Highways 126,118,27
Airports
Railways
Waterways
Schools
Land Use mainly parks & rec and rural land use/open space, light and heavy ag, and single fam residence zoning

Project Issues Aesthetic/Visual; Agricultural Land; Air Quality; Archaeologic-Historic; Biological Resources; Cumulative Effects; Drainage/Absorption; Flood Plain/Flooding; Forest Land/Fire Hazard; Geologic/Seismic; Growth Inducing; Landuse; Minerals; Noise; Other Issues; Population/Housing Balance; Public Services; Recreation/Parks; Schools/Universities; Septic System; Sewer Capacity; Soil Erosion/Compaction/Grading; Solid Waste; Toxic/Hazardous; Traffic/Circulation; Vegetation; Water Quality; Water Supply; Wetland/Riparian

Reviewing Agencies Resources Agency; Department of Conservation; Department of Fish and Wildlife, Region 5; Department of Parks and Recreation; Department of Water Resources; California Highway Patrol; Caltrans, District 7; State Water Resources Control Board, Division of Water Quality; Regional Water Quality Control Board, Region 4; Native American Heritage Commission; California Department of Justice, Attorney General's Office

Note: Blanks in data fields result from insufficient information provided by lead agency.

Document Details Report
State Clearinghouse Data Base

Date Received 11/02/2017 ***Start of Review*** 11/02/2017 ***End of Review*** 12/18/2017

1 (cont)

Note: Blanks in data fields result from insufficient information provided by lead agency.

B-3

STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Blvd., Suite 100
West Sacramento, CA 95691
Phone (916) 373-3710
Fax (916) 373-5471

Edmund G. Brown Jr., Governor

12/18/17
E

November 17, 2017

Governor's Office of Planning & Research

DEC 07 2017

STATE CLEARINGHOUSE

Julie Yom
County of Los Angeles
510 S. Vermont Avenue, Room 201
Los Angeles, CA 90020

Sent via e-mail: jyom@parks.lacounty.gov

Re: SCH# 2017111009, Santa Susana Mountains Trails Master Plan – Phase II Project, Community of Stevenson Ranch; Los Angeles County, California

Dear Ms. Yom:

The Native American Heritage Commission (NAHC) has reviewed the Mitigated Negative Declaration prepared for the project referenced above. The review included the Project Description and the Environmental Checklist and Impact Analysis, section 5 Cultural Resources and section 18 Tribal Cultural Resources prepared by Sapphos Environmental for the County of Los Angeles. We have the following concerns: 1

1. There are no mitigation measures specifically addressing Tribal Cultural Resources separately and distinctly from Archaeological Resources. Mitigation measures must take Tribal Cultural Resources into consideration as required under AB-52, **with or without consultation** occurring. Mitigation language for archaeological resources is not always appropriate for or similar to measures specifically for handling Tribal Cultural Resources. For sample mitigation measures, please refer to California Natural Resources Agency (2016) "Final Text for tribal cultural resources update to Appendix G: Environmental Checklist Form," http://resources.ca.gov/ceqa/docs/ab52/Clean-final-AB-52-App-G-text-Submitted.pdf

ADDITIONAL INFORMATION:
The California Environmental Quality Act (CEQA)[1], specifically Public Resources Code section 21084.1, states that a project that may cause a substantial adverse change in the significance of a historical resource is a project that may have a significant effect on the environment.[2] If there is substantial evidence, in light of the whole record before a lead agency, that a project may have a significant effect on the environment, an environmental impact report (EIR) shall be prepared.[3] In order to determine whether a project will cause a substantial adverse change in the significance of a historical resource, a lead agency will need to determine whether there are historical resources with the area of project effect (APE).

CEQA was amended in 2014 by Assembly Bill 52. (AB 52).[4] **AB 52 applies to any project for which a notice of preparation or a notice of negative declaration or mitigated negative declaration is filed on or after July 1, 2015.** AB 52 created a separate category for "tribal cultural resources"[5], that now includes "a project with an effect that may cause a substantial adverse change in the significance of a tribal cultural resource is a project that may have a significant effect on the environment.[6] Public agencies shall, when feasible, avoid damaging effects to any tribal cultural resource.[7] Your project may also be subject to **Senate Bill 18 (SB 18)** (Burton, Chapter 905, Statutes of 2004), Government Code 65352.3, if it also involves the adoption of or amendment to a general plan or a specific plan, or the designation or proposed designation of open space. **Both SB 18 and AB 52 have tribal consultation requirements.** Additionally, if your project is also subject to the federal National Environmental Policy Act (42 U.S.C. § 4321 et seq.) (NEPA), the tribal consultation requirements of Section 106 of the National Historic Preservation Act of 1966[8] may also apply.

Consult your legal counsel about compliance with AB 52 and SB 18 as well as compliance with any other applicable laws.

Agencies should be aware that AB 52 does not preclude agencies from initiating tribal consultation with tribes that are traditionally and culturally affiliated with their jurisdictions before the timeframes provided in AB 52. For that reason, we urge you to continue to request Native American Tribal Consultation Lists and Sacred Lands File searches from the NAHC. The request forms can be found online at: http://nahc.ca.gov/resources/forms/. Additional information regarding AB 52 can be found online

[1] Pub. Resources Code § 21000 et seq.
[2] Pub. Resources Code § 21084.1; Cal. Code Regs., tit.14, § 15064.5 (b); CEQA Guidelines Section 15064.5 (b)
[3] Pub. Resources Code § 21080 (d); Cal. Code Regs., tit. 14, § 15064 subd.(a)(1); CEQA Guidelines § 15064 (a)(1)
[4] Government Code 65352.3
[5] Pub. Resources Code § 21074
[6] Pub. Resources Code § 21084.2
[7] Pub. Resources Code § 21084.3 (a)
[8] 154 U.S.C. 300101, 36 C.F.R. § 800 et seq.

at http://nahc.ca.gov/wp-content/uploads/2015/10/AB52TribalConsultation_CalEPAPDF.pdf, entitled "Tribal Consultation Under AB 52: Requirements and Best Practices". 1 (cont)

The NAHC recommends lead agencies consult with all California Native American tribes that are traditionally and culturally affiliated with the geographic area of your proposed project as early as possible in order to avoid inadvertent discoveries of Native American human remains and best protect tribal cultural resources.

A brief summary of portions of AB 52 and SB 18 as well as the NAHC's recommendations for conducting cultural resources assessments is also attached.

Please contact me at gayle.totton@nahc.ca.gov or call (916) 373-3714 if you have any questions.

Sincerely,

Gayle Totton, B.S., M.A., Ph.D
Associate Governmental Project Analyst

Attachment

cc: State Clearinghouse

Pertinent Statutory Information:

1 (cont)

Under AB 52:

AB 52 has added to CEQA the additional requirements listed below, along with many other requirements:

Within fourteen (14) days of determining that an application for a project is complete or of a decision by a public agency to undertake a project, a **lead agency** shall provide formal notification to a designated contact of, or tribal representative of, traditionally and culturally affiliated California Native American tribes that have requested notice.

A **lead agency** shall begin the consultation process within 30 days of receiving a request for consultation from a California Native American tribe that is traditionally and culturally affiliated with the geographic area of the proposed project.[9] and **prior to the release of a negative declaration, mitigated negative declaration or environmental impact report.** For purposes of AB 52, "consultation shall have the same meaning as provided in Gov. Code § 65352.4 (SB 18).[10]

The following topics of consultation, if a tribe requests to discuss them, are mandatory topics of consultation:

a. Alternatives to the project.
b. Recommended mitigation measures.
c. Significant effects.[11]

1. The following topics are discretionary topics of consultation:
   a. Type of environmental review necessary.
   b. Significance of the tribal cultural resources.
   c. Significance of the project's impacts on tribal cultural resources.

If necessary, project alternatives or appropriate measures for preservation or mitigation that the tribe may recommend to the lead agency.[12]

With some exceptions, any information, including but not limited to, the location, description, and use of tribal cultural resources submitted by a California Native American tribe during the environmental review process **shall not be included in the environmental document or otherwise disclosed by the lead agency or any other public agency to the public, consistent with Government Code sections 6254 (r) and 6254.10.** Any information submitted by a California Native American tribe during the consultation or environmental review process shall be published in a confidential appendix to the environmental document unless the tribe that provided the information consents, in writing, to the disclosure of some or all of the information to the public.[13]

If a project may have a significant impact on a tribal cultural resource, **the lead agency's environmental document shall discuss** both of the following:

a. Whether the proposed project has a significant impact on an identified tribal cultural resource.
b. Whether feasible alternatives or mitigation measures, including those measures that may be agreed to pursuant to Public Resources Code section 21082.3, subdivision (a), avoid or substantially lessen the impact on the identified tribal cultural resource.[14]

Consultation with a tribe shall be considered concluded when either of the following occurs:

a. The parties agree to measures to mitigate or avoid a significant effect, if a significant effect exists, on a tribal cultural resource; or
b. A party, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached.[15]

Any mitigation measures agreed upon in the consultation conducted pursuant to Public Resources Code section 21080.3.2 **shall be recommended for inclusion in the environmental document and in an adopted mitigation monitoring and reporting program**, if determined to avoid or lessen the impact pursuant to Public Resources Code section 21082.3, subdivision (b), paragraph 2, and shall be fully enforceable.[16]

If mitigation measures recommended by the staff of the lead agency as a result of the consultation process are not included in the environmental document or if there are no agreed upon mitigation measures at the conclusion of consultation, or if consultation does not occur, and if substantial evidence demonstrates that a project will cause a significant effect to a tribal cultural resource, **the lead agency shall consider feasible mitigation** pursuant to Public Resources Code section 21084.3 (b).[17]

An environmental impact report **may not be certified**, nor may a mitigated negative declaration or a negative declaration be adopted unless one of the following occurs:

a. The consultation process between the tribes and the lead agency has occurred as provided in Public Resources Code sections 21080.3.1 and 21080.3.2 and concluded pursuant to Public Resources Code section 21080.3.2.
b. The tribe that requested consultation failed to provide comments to the lead agency or otherwise failed to engage in the consultation process.
c. The lead agency provided notice of the project to the tribe in compliance with Public Resources Code section 21080.3.1 (d) and the tribe failed to request consultation within 30 days.[18]

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[9] Pub. Resources Code § 21080.3.1, subds. (d) and (e)
[10] Pub. Resources Code § 21080.3.1 (b)
[11] Pub. Resources Code § 21080.3.2 (a)
[12] Pub. Resources Code § 21080.3.2 (a)
[13] Pub. Resources Code § 21082.3 (c)(1)
[14] Pub. Resources Code § 21082.3 (b)
[15] Pub. Resources Code § 21080.3.2 (b)
[16] Pub. Resources Code § 21082.3 (a)
[17] Pub. Resources Code § 21082.3 (e)
[18] Pub. Resources Code § 21082.3 (d)

This process should be documented in the Tribal Cultural Resources section of your environmental document. 1 (cont)

Under SB 18:
Government Code § 65352.3 (a) (1) requires consultation with Native Americans on general plan proposals for the purposes of "preserving or mitigating impacts to places, features, and objects described § 5097.9 and § 5091.993 of the Public Resources Code that are located within the city or county's jurisdiction. Government Code § 65560 (a), (b), and (c) provides for consultation with Native American tribes on the open-space element of a county or city general plan for the purposes of protecting places, features, and objects described in Sections 5097.9 and 5097.993 of the Public Resources Code.

- SB 18 applies to **local governments** and requires them to contact, provide notice to, refer plans to, and consult with tribes prior to the adoption or amendment of a general plan or a specific plan, or the designation of open space. Local governments should consult the Governor's Office of Planning and Research's "Tribal Consultation Guidelines," which can be found online at: https://www.opr.ca.gov/docs/09_14_05_Updated_Guidelines_922.pdf
- Tribal Consultation: If a local government considers a proposal to adopt or amend a general plan or a specific plan, or to designate open space it is required to contact the appropriate tribes identified by the NAHC by requesting a "Tribal Consultation List." If a tribe, once contacted, requests consultation the local government must consult with the tribe on the plan proposal. **A tribe has 90 days from the date of receipt of notification to request consultation unless a shorter timeframe has been agreed to by the tribe.**[19]
- There is no Statutory Time Limit on Tribal Consultation under the law.
- Confidentiality: Consistent with the guidelines developed and adopted by the Office of Planning and Research,[20] the city or county shall protect the confidentiality of the information concerning the specific identity, location, character, and use of places, features and objects described in Public Resources Code sections 5097.9 and 5097.993 that are within the city's or county's jurisdiction.[21]
- Conclusion Tribal Consultation: Consultation should be concluded at the point in which:
    - The parties to the consultation come to a mutual agreement concerning the appropriate measures for preservation or mitigation; or
    - Either the local government or the tribe, acting in good faith and after reasonable effort, concludes that mutual agreement cannot be reached concerning the appropriate measures of preservation or mitigation.[22]

NAHC Recommendations for Cultural Resources Assessments:

- Contact the NAHC for:
    - A Sacred Lands File search. Remember that tribes do not always record their sacred sites in the Sacred Lands File, nor are they required to do so. A Sacred Lands File search is not a substitute for consultation with tribes that are traditionally and culturally affiliated with the geographic area of the project's APE.
    - A Native American Tribal Contact List of appropriate tribes for consultation concerning the project site and to assist in planning for avoidance, preservation in place, or, failing both, mitigation measures.
        - The request form can be found at http://nahc.ca.gov/resources/forms/.
- Contact the appropriate regional California Historical Research Information System (CHRIS) Center (http://ohp.parks.ca.gov/?page_id=1068) for an archaeological records search. The records search will determine:
    - If part or the entire APE has been previously surveyed for cultural resources.
    - If any known cultural resources have been already been recorded on or adjacent to the APE.
    - If the probability is low, moderate, or high that cultural resources are located in the APE.
    - If a survey is required to determine whether previously unrecorded cultural resources are present.
- If an archaeological inventory survey is required, the final stage is the preparation of a professional report detailing the findings and recommendations of the records search and field survey.
    - The final report containing site forms, site significance, and mitigation measures should be submitted immediately to the planning department. All information regarding site locations, Native American human remains, and associated funerary objects should be in a separate confidential addendum and not be made available for public disclosure.
    - The final written report should be submitted within 3 months after work has been completed to the appropriate regional CHRIS center.

Examples of Mitigation Measures That May Be Considered to Avoid or Minimize Significant Adverse Impacts to Tribal Cultural Resources:

- Avoidance and preservation of the resources in place, including, but not limited to:
    - Planning and construction to avoid the resources and protect the cultural and natural context.
    - Planning greenspace, parks, or other open space, to incorporate the resources with culturally appropriate protection and management criteria.

[19] (Gov. Code § 65352.3 (a)(2)).
[20] pursuant to Gov. Code section 65040.2,
[21] (Gov. Code § 65352.3 (b))
[22] (Tribal Consultation Guidelines, Governor's Office of Planning and Research (2005) at p. 18).

- Treating the resource with culturally appropriate dignity, taking into account the tribal cultural values and meaning of the resource, including, but not limited to, the following:
  - Protecting the cultural character and integrity of the resource.
  - Protecting the traditional use of the resource.
  - Protecting the confidentiality of the resource.
- Permanent conservation easements or other interests in real property, with culturally appropriate management criteria for the purposes of preserving or utilizing the resources or places.
- Please note that a federally recognized California Native American tribe or a non-federally recognized California Native American tribe that is on the contact list maintained by the NAHC to protect a California prehistoric, archaeological, cultural, spiritual, or ceremonial place may acquire and hold conservation easements if the conservation easement is voluntarily conveyed.[23]
- Please note that it is the policy of the state that Native American remains and associated grave artifacts shall be repatriated.[24]

1 (cont)

The lack of surface evidence of archaeological resources (including tribal cultural resources) does not preclude their subsurface existence.

- Lead agencies should include in their mitigation and monitoring reporting program plan provisions for the identification and evaluation of inadvertently discovered archaeological resources.[25] In areas of identified archaeological sensitivity, a certified archaeologist and a culturally affiliated Native American with knowledge of cultural resources should monitor all ground-disturbing activities.
- Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the disposition of recovered cultural items that are not burial associated in consultation with culturally affiliated Native Americans.
- Lead agencies should include in their mitigation and monitoring reporting program plans provisions for the treatment and disposition of inadvertently discovered Native American human remains. Health and Safety Code section 7050.5, Public Resources Code section 5097.98, and Cal. Code Regs., tit. 14, section 15064.5, subdivisions (d) and (e) (CEQA Guidelines section 15064.5, subds. (d) and (e)) address the processes to be followed in the event of an inadvertent discovery of any Native American human remains and associated grave goods in a location other than a dedicated cemetery.

[23] (Civ. Code § 815.3 (c)).
[24] (Pub. Resources Code § 5097.991).
[25] per Cal. Code Regs., tit. 14, section 15064.5(f) (CEQA Guidelines section 15064.5(f)).

COUNTY OF LOS ANGELES

FIRE DEPARTMENT

1320 NORTH EASTERN AVENUE
LOS ANGELES, CALIFORNIA 90063-3294

B4

DARYL L. OSBY
FIRE CHIEF
FORESTER & FIRE WARDEN

December 5, 2017

Julie Yom, Park Planner
Department of Parks and Recreation
Planning Division
510 South Vermont Avenue
Los Angeles, CA 90020

Dear Ms. Yom:

NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION, "SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN," WOULD PROVIDE CONNECTIONS TO PARKS AND OPEN SPACES, A LARGE COMMERCIAL DISTRICT, SEVEN SCHOOLS, NUMEROUS NATURAL FEATURES, SIX FLAGS MAGIC MOUNTAIN THEME PARK, THE PROPOSED RIM OF THE VALLEY TRAIL CORRIDOR ALIGNMENT AND EXISTING TRAILS IN THE CITIES OF LOS ANGELES AND SANTA CLARITA, AND IN NEWHALL RANCH, SANTA CLARITA, FFER 201700149

The Notice of Intent to Adopt a Mitigated Negative Declaration has been reviewed by the Planning Division, Land Development Unit, Forestry Division, and Health Hazardous Materials Division of the County of Los Angeles Fire Department.

The following are their comments:

PLANNING DIVISION:

We have no comments.

1

SERVING THE UNINCORPORATED AREAS OF LOS ANGELES COUNTY AND THE CITIES OF:

AGOURA HILLS	BRADBURY	CUDAHY	HAWTHORNE	LA HABRA	LYNWOOD	PICO RIVERA	SIGNAL HILL
ARTESIA	CALABASAS	DIAMOND BAR	HIDDEN HILLS	LA MIRADA	MALIBU	POMONA	SOUTH EL MONTE
AZUSA	CARSON	DUARTE	HUNTINGTON PARK	LA PUENTE	MAYWOOD	RANCHO PALOS VERDES	SOUTH GATE
BALDWIN PARK	CERRITOS	EL MONTE	INDUSTRY	LAKEWOOD	NORWALK	ROLLING HILLS	TEMPLE CITY
BELL	CLAREMONT	GARDENA	INGLEWOOD	LANCASTER	PALMDALE	ROLLING HILLS ESTATES	WALNUT
BELL GARDENS	COMMERCE	GLENDORA	IRWINDALE	LAWNDALE	PALOS VERDES ESTATES	ROSEMEAD	WEST HOLLYWOOI
BELLFLOWER	COVINA	HAWAIIAN GARDENS	LA CANADA-FLINTRIDGE	LOMITA	PARAMOUNT	SAN DIMAS	WESTLAKE VILLAG
						SANTA CLARITA	WHITTIER

LAND DEVELOPMENT UNIT: 2

The Land Development Unit has no comment at this time. For any questions regarding the report, please contact FPEA Wally Collins at (323) 890-4243 or Wally.Collins@fire.lacounty.gov.

FORESTRY DIVISION – OTHER ENVIRONMENTAL CONCERNS: 3

The statutory responsibilities of the County of Los Angeles Fire Department's Forestry Division include erosion control, watershed management, rare and endangered species, vegetation, fuel modification for Very High Fire Hazard Severity Zones or Fire Zone 4, archeological and cultural resources, and the County Oak Tree Ordinance.

The County of Los Angeles Fire Department's Forestry Division has no further comments regarding this project.

HEALTH HAZARDOUS MATERIALS DIVISION: 4

The Health Hazardous Materials Division of the Los Angeles County Fire Department has no comments or requirements for the project at this time.

If you have any additional questions, please contact this office at (323) 890-4330.

Very truly yours,

Michael Y. Takeshita

MICHAEL Y. TAKESHITA, ACTING CHIEF, FORESTRY DIVISION
PREVENTION SERVICES BUREAU

MYT:ac

B5

WATER RECLAMATION
SOLID WASTE MANAGEMENT

COUNTY SANITATION DISTRICTS
OF LOS ANGELES COUNTY

1955 Workman Mill Road, Whittier, CA 90601-1400
Mailing Address: P.O. Box 4998, Whittier, CA 90607-4998
Telephone: (562) 699-7411, FAX: (562) 699-5422
www.lacsd.org

GRACE ROBINSON HYDE
Chief Engineer and General Manager

December 14, 2017

Ref. Doc. No.: 4382694

Ms. Julie Yom, Park Planner
Planning Division
Department of Parks and Recreation
County of Los Angeles
510 South Vermont Avenue
Los Angeles, CA 90020

Dear Ms. Yom:

NOI Response to the Santa Susana Mountains Trails Master Plan Phase II

The Sanitation Districts of Los Angeles County (Districts) received a Notice of Intent to Adopt a Mitigated Negative Declaration (NOI) for the subject project on November 2, 2017. We offer the following comments:

- Portions of the proposed trails discussed in the NOI include entry across Districts' access roads and will require coordination with the Districts to ensure the safety of passing pedestrians, bicyclists and equestrians. For more specific information, please contact Mr. Ed Stewart at (562) 908-4288, extension 2766. 1

If you have any questions, please contact the undersigned at (562) 908-4288, extension 2717.

Very truly yours,

for

Adriana Raza
Customer Service Specialist
Facilities Planning Department

AR:ar

cc: S. Pegadiotes

DOC: #4382789.SCVD

Los Angeles County
Department of Regional Planning

Planning for the Challenges Ahead

Dennis Slavin
Acting Director

B6

December 14, 2017

TO: County of Los Angeles Department of Parks and Recreation
Planning Division
Attn: Julie Yom, Park Planner

FROM: Susan Tae, AICP, Supervising Regional Planner
Community Studies North Section

SUBJECT: **Comments on Santa Susana Mountains Trails Master Plan Phase II Project**

Please find attached our Department's comments on the Santa Susana Mountains Trails Master Plan Phase II Project and associated Mitigated Negative Declaration.

SMT:dm

320 West Temple Street • Los Angeles, CA 90012 • 213-974-6411 • Fax: 213-626-0434 • TDD: 213-617-2292

Santa Susana Mountains Trails Master Plan – Phase II
Initial Study / Mitigated Negative Declaration
Comments by Jennifer Mongolo, DRP Biologist

In general I am in support of the plan and the proposed approach to avoiding and mitigating impacts to biological resources. I have the following comments and suggestions for improving the Biological Resources section of the Initial study regarding impacts and mitigation measures. 1

Indirect impacts to sensitive species and plant communities should also recognize the introduction of invasive plants into wildlands by trail users (hikers, bikers, horses, dogs); creation of spur trails in sensitive areas by users going off trail and trampling vegetation; and increased levels of trash/litter and vandalism in natural areas. Unfortunately, these are all common impacts that result from new trails, especially those in close proximity to large human populations.

- Potential mitigation measures could include invasive species monitoring in combination with an early detection rapid response program; trash receptacles at trailheads and informational signs reminding people to pack out their garbage; monitoring by staff and law enforcement; and a plan for decommissioning and restoring user created trails.

Mitigation Measure BIO-1: 2

- Pre-construction habitat surveys should be seasonally timed to coincide with the appropriate blooming periods for special status plant species with potential to occur within the project site (typically spring) and should be conducted by a qualified botanist, to document the location(s) and number(s) of any special status plants that may occur within the project site. Surveys should be conducted within one year of the initiation of construction for each trail segment project.
- A minimum mitigation ratio for unavoidable impacts to special status species/habitats should be set, recognizing that the actual mitigation ratio may vary depending on species impacted, based on its level of state and federal protection and responsible agency.

Mitigation Measure BIO-2: 3

- (regarding bullet point 6) – mitigation for permanent impacts to sensitive plant communities should include a minimum mitigation ratio of 2:1, recognizing that the actual mitigation ratio may vary depending on level of rarity and reviewing agency. It should also include the option for onsite mitigation. On-site mitigation could include restoring trails that are being decommissioned, salvage and transplant plan for sensitive plant species, and restoring disturbed areas in the project vicinity.
- Work conducted in sensitive habitats should be performed with hand tools to the greatest extent feasible.

Vernal Pools 4

- potential presence and impact to vernal pools is not addressed, although the CNDDB table in the Biological Resources Technical Report indicates that several vernal pool species have potential to occur in the project area. Question “c” should address vernal

pools in some way and a mitigation measure should be included for avoidance of these important resources, which are very difficult to mitigate or recreate elsewhere. 4 (cont.)

Mitigation Measure BIO-4

- minimum ratio for oak woodland should be 2:1 (not 1:1) – actually both the Oak Tree Ordinance and Oak Woodland Conservation Management Plan require minimum 2:1 mitigation ratios. Monitoring period required for oak trees is 2 years minimum (sometimes extended to 7 years), and oak woodland is 7 years. 5

Bridges and Culverts have the potential to impact both the hydrology and ecological connectivity of a stream or wetland. Size of bridges and culverts crossing streams and drainages is very important to ensuring that the structure won't get washed out in high flows, but it's also highly important for ensuring that the stream can continue along its natural continuum. Since a stream channel changes naturally over time (shifting course, braiding, meandering, etc.), bridges should be built to accommodate the whole floodplain (or the 100-yr storm event) whenever possible. This is also important to ensure that the stream can continue its natural functioning, such as sediment transport. For example, a culvert may impede the natural movement of substrate, woody debris, and benthic macroinvertebrates if it is not adequately sized or installed properly. The LA County Trails Manual does not adequately address the design of bridges and culverts from the standpoint of protecting the ecological functions of the water resource, so this aspect should be covered in the Initial Study. 6

Additionally, soil disturbance during construction can result in erosion and downstream sedimentation. No work within or immediately adjacent to streams and seasonal drainages should occur during the rainy season. 7

Santa Susana Mountains Trails Master Plan – Phase II
Comments by Community Studies North Section
Consistency with the Santa Clarita Valley Area Plan 8

We have reviewed the Santa Susana Trails Master Plan (Trails Plan) within the context of the Santa Clarita Valley Area Plan (Area Plan), and find it consistent with the Area Plan, a component of the Los Angeles County General Plan. Additional comments regarding selected Trails Plan goals are further discussed below:

- Trails Plan Goal 1 to accommodate a wide range of trail user types and abilities, including providing multi-use trails typically open to all users (hikers, mountain bikers, equestrians, and persons with dogs on leash), is consistent with and implements the Area Plan Conservation and Open Space Policies CO-9.2.1 and CO-9.2.5, and Circulation Policy C-7.1.10, as follows:

  Policy CO-9.2.1*: Plan for a continuous and unified multi-use (equestrian, bicycling, and pedestrian/hiking) trail network for a variety of users, to be developed with common standards, in order to unify Santa Clarita Valley communities and connect with City, Regional, State, and Federal trails such as the dual-use (equestrian and hiking) Pacific Crest Trail.*

  Policy CO-9.2.5*: Promote the expansion of multi-use trails within rural areas of the Santa Clarita Valley and Circulation Element.*

Policy C-7.1.10: *Continue to expand and improve the Valley's multi-use trail system to provide additional routes for pedestrian travel.* 8 (cont.)

- Trails Plan Goal 2 to connect to desirable destinations, features and settings, including using trails to connect to and provide linkage between key destinations such as parks, trails, public services, transit, commercial centers and schools, is consistent with and implements Area Plan Policy CO-9.2.2 as follows: 9

  Policy CO-9.2.2*: Provide trail connections between paseos, bike routes, schools, parks, community services, streets and neighborhoods*.

- Trails Plan Goal 4 to avoid or minimize environmental impacts, is consistent with and implements Area Plan Policy CO-9.2.8 as follows: 10

  Policy CO-9.2.8*: Ensure that trails are designed to protect habitat, ecosystems, and water quality.*

- Trails Plan Goal 6 to emphasize trails that close gaps in existing trail networks and provide regional connectivity, is consistent with and implements Area Plan Policy CO-9.2.4, as follows: 11

  Policy CO-9.2.4: *Ensure that new development projects provide trail connections to local and regional trail systems, where appropriate.*

B7

MITCHELL ENGLANDER

COUNCILMEMBER, 12TH DISTRICT

PRESIDENT PRO TEMPORE, LOS ANGELES CITY COUNCIL

December 15, 2017

Julie Yom
County of Los Angeles Department of Parks and Recreation
Planning Division
510 South Vermont Avenue
Los Angeles, California 90020

Dear Julie Yom:

Thank you for this opportunity to comment on the Santa Susana Mountains Trails Master Plan- Phase II. The trails outlined in the SSMTMP-PII are located in close proximity to the Santa Susana Field Laboratory (SSFL). The former rocket testing facility is located on the Ventura County/Los Angeles City boundary, in the hills overlooking the western San Fernando Valley and directly west of the Phase II. b Study Area. 1

Numerous accidents, including a partial nuclear meltdown have resulted in substantial radioactive and toxic chemical contamination of soil, groundwater and surface water at the SSFL. The contamination poses a risk to the residents of the City of Los Angeles who live and work in the vicinity. Therefore, construction of recreational multi-use trails prior to a full cleanup of toxins and radionuclides puts both workers and eventual trail users at risk.

The SSMTMP-PII fails to include examination or mention of any central environmental risk or of any clean up measures for the SSFL. The Mitigated Negative Declaration claims that the proposed project would result in no impact regarding environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly. There is no mention of the environmental or health risks associated with the contaminated SSFL and locating recreational facilities or infrastructure in proximity to it.

Specifically, the Dayton Canyon to Santa Susana Field Lab Trail Corridor proposes a trail that would directly lead to the contaminated SSFL site. Therefore I am opposed to the Phase II. b trails within the SSMTMP-PII prior to a full cleanup of the SSFL contamination.

Additionally, adding insult to injury is the proposal to create a John Luker Trail—named for the chief Boeing surrogate advocating against a full cleanup of the site. 2

Yours truly,

MITCHELL ENGLANDER
Council President Pro-Tempore
Councilmember, Twelfth District

City Hall Office • 200 N. Spring Street, Room 405 • Los Angeles, CA 90012 • Phone (213) 473-7012 • Fax (213) 473-6925
Community Service Center • 9207 Oakdale Ave. • Chatsworth, CA 91311 • Phone (818) 882-1212 • Fax (818) 701-5254
www.CD12.org

Agency Meeting In-Person Comments

Comment C1.1:
Regarding prescriptive rights trails—can social trails become official trails automatically?

Comment C1.2:
LACSD is concerned about trail user safety as a result of the related Newhall Ranch project. Newhall will grant a 20- to 25-foot-wide trail easement for the Santa Clara River trail located in an approximately 70-foot-wide portion of the middle of the Valencia Water Reclamation Plant (WRP). LACSD is concerned that larger trucks bringing in chemicals and sludge materials will be more likely to threaten the safety of trail users if this social trail receives more use.

Comment C1.3:
LACSD is concerned that The Old Road trail segment would cross truck entry points at two locations. Traffic during construction projects is of special concern.

Comment C1.4:
LACSD has no problem with the proposed project, but would like to stay informed to discuss protocol for maneuvering vehicles at trail easements and developing of a traffic plan.

D1

From: Alan Salazar [mailto:chumashstories@gmail.com]
Sent: Monday, November 06, 2017 7:50 AM
To: Julie Yom <jyom@parks.lacounty.gov>
Subject: Re: Santa Susana Mountains trail master plan

Thanks, Julie. I still believe all ground disturbance should monitored by a Tataviam monitor. Please add this comment. Alan 1

Sent from my iPhone

On Nov 6, 2017, at 7:23 AM, Julie Yom <jyom@parks.lacounty.gov> wrote:

Alan,

Both Rudy Ortega and Kimia Fatehi were contacted in the consultation and attended the consultation meetings with the County.

Thanks,

JULIE YOM, AICP
County of Los Angeles
Department of Parks and Recreation | Planning Division
510 South Vermont Avenue
Los Angeles, CA 90020
Tel. 213) 351-5127 | Fax 213) 639-3959
jyom@parks.lacounty.gov
Please note that our offices are closed on Fridays.

From: Alan Salazar [mailto:chumashstories@gmail.com]
Sent: Friday, November 03, 2017 11:34 AM
To: Julie Yom <jyom@parks.lacounty.gov>
Subject: Re: Santa Susana Mountains trail master plan

On Fri, Nov 3, 2017 at 11:29 AM, Alan Salazar <chumashstories@gmail.com> wrote:
Dear Julie: I am writing about the Mitigated Negative declaration for the proposed Santa Susana Mountains trails master plan. I am the Chairman of the Elders council for the Fernadeno Band of Tataviam Indians from San Fernando California. I am not sure if you have contacted my tribe or Rudy Ortega our tribal chairman regarding this project. But, I believe all ground disturbance should be monitored by Tataviam Native monitors due to this all being in a very sensitive area. This is our tribal territory and there are several village sites and other sites near your proposed trails. I look forward to hearing from you. And Rudy Ortega's email is rortega@tataviam-nsn.us

Thanks, Alan Salazar

D2

COMMENT FORM
Santa Susana Mountains Trails Master Plan – Phase II
Public Meeting

Stevenson Ranch Library
25950 The Old Road, Stevenson Ranch, CA 91381
Thursday, November 9, 2017
6:00 p.m. – 8:00 p.m.

Please use this form to make comments regarding the Santa Susana Mountains Trails Master Plan – Phase II project and the Proposed Mitigated Negative Declaration (MND). The County is soliciting comments from agencies and the public. You may submit your comments at this public meeting or by mail to the County of Los Angeles Department of Parks and Recreation (contact information below). Written comments will be accepted until **December 16, 2017.**

Name: MANUEL SANTANA. TRUST 1992

Organization (if applicable):

Address: 25208 WHEELER.

City/State/ZIP: NEWHALL CA. 91321

E-mail address:

Comments: NO TRAIL ON APN # 2826020028

Please check other A.P.N.'s
Manny's Cell 661-670-8042
Paul's Cell 661-877-1141

1

Send Comments to: County of Los Angeles Department of Parks and Recreation
Attn: Ms. Julie Yom
Santa Susana Mountains Trails Master Plan – Phase II MND Comments
510 South Vermont Avenue, Room 201, Los Angeles, CA 90020
E-mail: jyom@parks.lacounty.gov
Fax: (213) 639-3959

D3

From: Ralph Combs
To: Laura Male; Zachary Likins; jyom@parks.lacounty.gov
Subject: RE: Public Review Period for Santa Susana Mountains Trails Master Plan - Phase II Project: November 2-December 16, 2017
Date: Friday, November 10, 2017 11:49:23 AM

Ms. Male, Ms. Yom, or Mr. Likins –

The Termo Company operates the Oak Canyon Oil Field (located at the end of Hasley Canyon Road in the Castaic area) and the Oat Mountain / Aliso Canyon Oil Fields (located on Palo Sola Truck Rd / Oat Mtn Motorway above Porter Ranch). We have previously submitted comments and been in contact with LA County Parks and Rec about this Trails Master Plan. 1

I have reviewed the Plan and Initial Study but I am not seeing a really good large scale map of the proposed trails / alignments that would allow me to assess where they are proposed in relation to our operations. I apologize if I have missed it, but could you email me a PDF file (max 20 mb) or a link to a higher resolution / larger version map? I also did note within the document that some trails would take users within 100' of an oil well. We feel this is too close and could pose a hazard. I will follow up more with you all on this later as I get a chance to do a better assessment. 2

Thank you for your time and attention to this matter and do not hesitate to contact me for clarification.

Regards -

Ralph Combs ï Manager of Regulatory,
Community, and Government Affairs
The Termo Company

D / M / F: (562) 279-1955 | RalphC@TermoCo.com
P.O. Box 2767, Long Beach, CA 90801

From: Laura Male [mailto:lmale@sapphosenvironmental.com]
Sent: Thursday, November 02, 2017 1:04 PM
To: Zachary Likins
Subject: Public Review Period for Santa Susana Mountains Trails Master Plan - Phase II Project: November 2-December 16, 2017

On behalf of the County of Los Angeles Department of Parks and Recreation, Sapphos Environmental, Inc. is sending this email to inform you that the Draft Santa Susana Mountains Trails Master Plan and Initial Study/Proposed Mitigated Negative Declaration are available for public review beginning today (November 2, 2017) at the following locations:

- County of Los Angeles Department of Parks and Recreation, 510 South Vermont Avenue, Los Angeles, CA 90020.
  Office hours are Mon.–Thurs. 7:00 am–5:30 pm. Please email Julie Yom, Park Planner, at jyom@parks.lacounty.gov to set up an appointment.

- Stevenson Ranch Library, 25950 The Old Road, Stevenson Ranch, CA 91381.
  Open Mon.–Wed. 10:00 am–8:00 pm, Thurs. 10:00 am–6:00 pm, and Fri.-Sat. 9:00 am–5:00 pm. Closed Sunday.

- Chatsworth Branch Library, 21052 Devonshire Street, Chatsworth, CA 91311.

D4

COMMENT FORM
Santa Susana Mountains Trails Master Plan – Phase II
Public Meeting

Chatsworth Branch Library
21052 Devonshire Street, Chatsworth, CA 91311
Thursday, November 16, 2017
6:00 p.m. – 8:00 p.m.

Please use this form to make comments regarding the Santa Susana Mountains Trails Master Plan – Phase II project and the Proposed Mitigated Negative Declaration (MND). The County is soliciting comments from agencies and the public. You may submit your comments at this public meeting or by mail to the County of Los Angeles Department of Parks and Recreation (contact information below). Written comments will be accepted until **December 16, 2017.**

Name: Matthew Booth

Organization (if applicable):

Address: 2931 Township Ave Apt B

City/State/ZIP: simi valley, CA 93063

E-mail address: parks@neighborhood[redacted]la.com

Comments: Input is needed from Caltrans, City of Simi Valley, La mountains/Santa monica mountains conservancy, Ventura County Fire, Rancho Simi Rec & Parks. In order to extend proposed trails and to help ensure more land is used for recreation only. 1

Send Comments to: County of Los Angeles Department of Parks and Recreation
Attn: Ms. Julie Yom
Santa Susana Mountains Trails Master Plan – Phase II MND Comments
510 South Vermont Avenue, Room 201, Los Angeles, CA 90020
E-mail: jyom@parks.lacounty.gov
Fax: (213) 639-3959

D5

COMMENT FORM
Santa Susana Mountains Trails Master Plan – Phase II
Public Meeting

Chatsworth Branch Library
21052 Devonshire Street, Chatsworth, CA 91311
Thursday, November 16, 2017
6:00 p.m. – 8:00 p.m.

Please use this form to make comments regarding the Santa Susana Mountains Trails Master Plan – Phase II project and the Proposed Mitigated Negative Declaration (MND). The County is soliciting comments from agencies and the public. You may submit your comments at this public meeting or by mail to the County of Los Angeles Department of Parks and Recreation (contact information below). Written comments will be accepted until **December 16, 2017.**

Name: Sonia Plank

Organization (if applicable):

Address: 23942 Box Canyon Rd

City/State/ZIP: West Hills, CA 91304

E-mail address: 818-340-0255

Comments: 2017-005-031 –
Do Not put Trail Through my property!! I will not authorize. 1
I already experience trespasser coming through DWP property. 2
They steal and caused trouble. Knock down Horse fencing, etc
Going through my cars, Trailers.
I Do not want more people accessing DWP adjacent land

Send Comments to: County of Los Angeles Department of Parks and Recreation
Attn: Ms. Julie Yom
Santa Susana Mountains Trails Master Plan – Phase II MND Comments
510 South Vermont Avenue, Room 201, Los Angeles, CA 90020
E-mail: jyom@parks.lacounty.gov
Fax: (213) 639-3959

Additional Comments:

Another thing to consider is horses don't really mix well with bikes. To have trails proposed for use by del three - with ~~be~~ hikers - is not really realistic.

3

D6

COMMENT FORM
Santa Susana Mountains Trails Master Plan – Phase II
Public Meeting

Chatsworth Branch Library
21052 Devonshire Street, Chatsworth, CA 91311
Thursday, November 16, 2017
6:00 p.m. – 8:00 p.m.

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Name: George Tash
Organization (if applicable): Owner
Address: PO Box 152
City/State/ZIP: Somis CA 93066
E-mail address: george@gtwaterproducts.com
debratasho@gmail.com

Comments: We are willing to cooperate but we need to see how we can be helped too.
(805) 432-4701

1

Send Comments to: County of Los Angeles Department of Parks and Recreation
Attn: Ms. Julie Yom
Santa Susana Mountains Trails Master Plan – Phase II MND Comments
510 South Vermont Avenue, Room 201, Los Angeles, CA 90020
E-mail: jyom@parks.lacounty.gov
Fax: (213) 639-3959

D7

COMMENT FORM
Santa Susana Mountains Trails Master Plan – Phase II
Public Meeting

Chatsworth Branch Library
21052 Devonshire Street, Chatsworth, CA 91311
Thursday, November 16, 2017
6:00 p.m. – 8:00 p.m.

Please use this form to make comments regarding the Santa Susana Mountains Trails Master Plan – Phase II project and the Proposed Mitigated Negative Declaration (MND). The County is soliciting comments from agencies and the public. You may submit your comments at this public meeting or by mail to the County of Los Angeles Department of Parks and Recreation (contact information below). Written comments will be accepted until **December 16, 2017.**

Name: Dina Fisher

Organization (if applicable):

Address: 9340 Ventura Way

City/State/ZIP: Chatsworth CA

E-mail address: i@dinafisher.com

Comments: Washoe County in Nevada is providing grant funds & put a call out to fine artists to design trail head centerpieces. I suggest LA County do something similar w/ Phase II and incorporate fine arts into some of the facilities. 1

Send Comments to: County of Los Angeles Department of Parks and Recreation
Attn: Ms. Julie Yom
Santa Susana Mountains Trails Master Plan – Phase II MND Comments
510 South Vermont Avenue, Room 201, Los Angeles, CA 90020
E-mail: jyom@parks.lacounty.gov
Fax: (213) 639-3959

D8

COMMENT FORM
Santa Susana Mountains Trails Master Plan – Phase II
Public Meeting

Chatsworth Branch Library
21052 Devonshire Street, Chatsworth, CA 91311
Thursday, November 16, 2017
6:00 p.m. – 8:00 p.m.

Please use this form to make comments regarding the Santa Susana Mountains Trails Master Plan – Phase II project and the Proposed Mitigated Negative Declaration (MND). The County is soliciting comments from agencies and the public. You may submit your comments at this public meeting or by mail to the County of Los Angeles Department of Parks and Recreation (contact information below). Written comments will be accepted until **December 16, 2017.**

Name: Tom Gerardi

Organization (if applicable): _____

Address: _____

City/State/ZIP: _____

E-mail address: _____

Comments:

Homeowner near TS7 recommends moving it ~300' west, conservancy land, right on the county border. 1

Offroad use also a problem. Also dumping 2

Send Comments to: County of Los Angeles Department of Parks and Recreation
Attn: Ms. Julie Yom
Santa Susana Mountains Trails Master Plan – Phase II MND Comments
510 South Vermont Avenue, Room 201, Los Angeles, CA 90020
E-mail: jyom@parks.lacounty.gov
Fax: (213) 639-3959

D9

COMMENT FORM
Santa Susana Mountains Trails Master Plan – Phase II
Public Meeting

Chatsworth Branch Library
21052 Devonshire Street, Chatsworth, CA 91311
Thursday, November 16, 2017
6:00 p.m. – 8:00 p.m.

Please use this form to make comments regarding the Santa Susana Mountains Trails Master Plan – Phase II project and the Proposed Mitigated Negative Declaration (MND). The County is soliciting comments from agencies and the public. You may submit your comments at this public meeting or by mail to the County of Los Angeles Department of Parks and Recreation (contact information below). Written comments will be accepted until **December 16, 2017.**

818 577 3725
Name: Darlene Brother Wageman
Organization (if applicable): Chatsworth Neighborhood Council & SSMPA
Address: PO Box 5225
City/State/ZIP: West Hills CA
E-mail address: darlene@WPINS.com

Comments: JOHNSON MOTORWAY TRAIL IN CHATSWORTH 91311 IS BEING BLOCKED BY 2 HOMEOWNERS BY CAR & HARRASS HIKERS, BIKERS & ESP HORSEBACK RIDERS SAID PUTTING UP A GATE NEXT THIS IS A MAIN TRAIL HEAD. 1

Send Comments to: County of Los Angeles Department of Parks and Recreation
Attn: Ms. Julie Yom
Santa Susana Mountains Trails Master Plan – Phase II MND Comments
510 South Vermont Avenue, Room 201, Los Angeles, CA 90020
E-mail: jyom@parks.lacounty.gov
Fax: (213) 639-3959

D10

From:	Zachary T. Likins
To:	Laura Male
Cc:	Julie Yom
Subject:	Fw: Santa Susana Mountains Trails Master Plan Phase II.b
Date:	Tuesday, December 05, 2017 11:33:19 AM
Attachments:	SSMTMP-PII_Property Research_APN2017005021(1)Attachment 2.pdf SSMTMP-PII_Property Research_APN2017005021(1)Attachment 1.pdf

Hi Laura, please see the comment from Mr. Gerardi blow.

From: Thomas Gerardi <tjag@dslextreme.com>
Sent: Friday, December 1, 2017 2:57 PM
To: jvom@parks.lacounty.gov
Cc: Zachary T. Likins
Subject: Santa Susana Mountains Trails Master Plan Phase II.b

November 30, 2017

County of Los Angeles Department of Parks and Recreation

Planning Division
Attn. Julie Yom, Park Planner
RE: Santa Susana Mountains Trails Master Plan – Phase II.b Project

Hello Julie Yom,

After receiving a post card stating I owned a parcel of land in Woolsey Canyon that was within 500 feet of a proposed trail in the Phase II.b Project,
I decided I better investigate how this might affect my parcel of land.

I called Zachary Likins and left a message on his phone stating I could not find on the maps provided on the Internet link where the trail was in relation to my parcel of land. Mr. Likins returned my call and asked for my parcel APN so he could look up on his computer where exactly this trail was located. He sent me the location of the John Luker Trailhead 7 located next to my parcel of land.(Attachment #1) Once I had a chance

1

to look at the map of the Trail head proposed for the trail next to my parcel of land, it was very apparent to me that I have an easement for access to my property over the same exact location. (Attachment #2)

1

I then sent Mr. Likins a copy of where my easement was located in an email. Mr. Likins contacted me and told me for the John Luker Trailhead 7 to be located at that location you would need my consent since I have an existing easement, otherwise the trailhead could not be located on the easement.

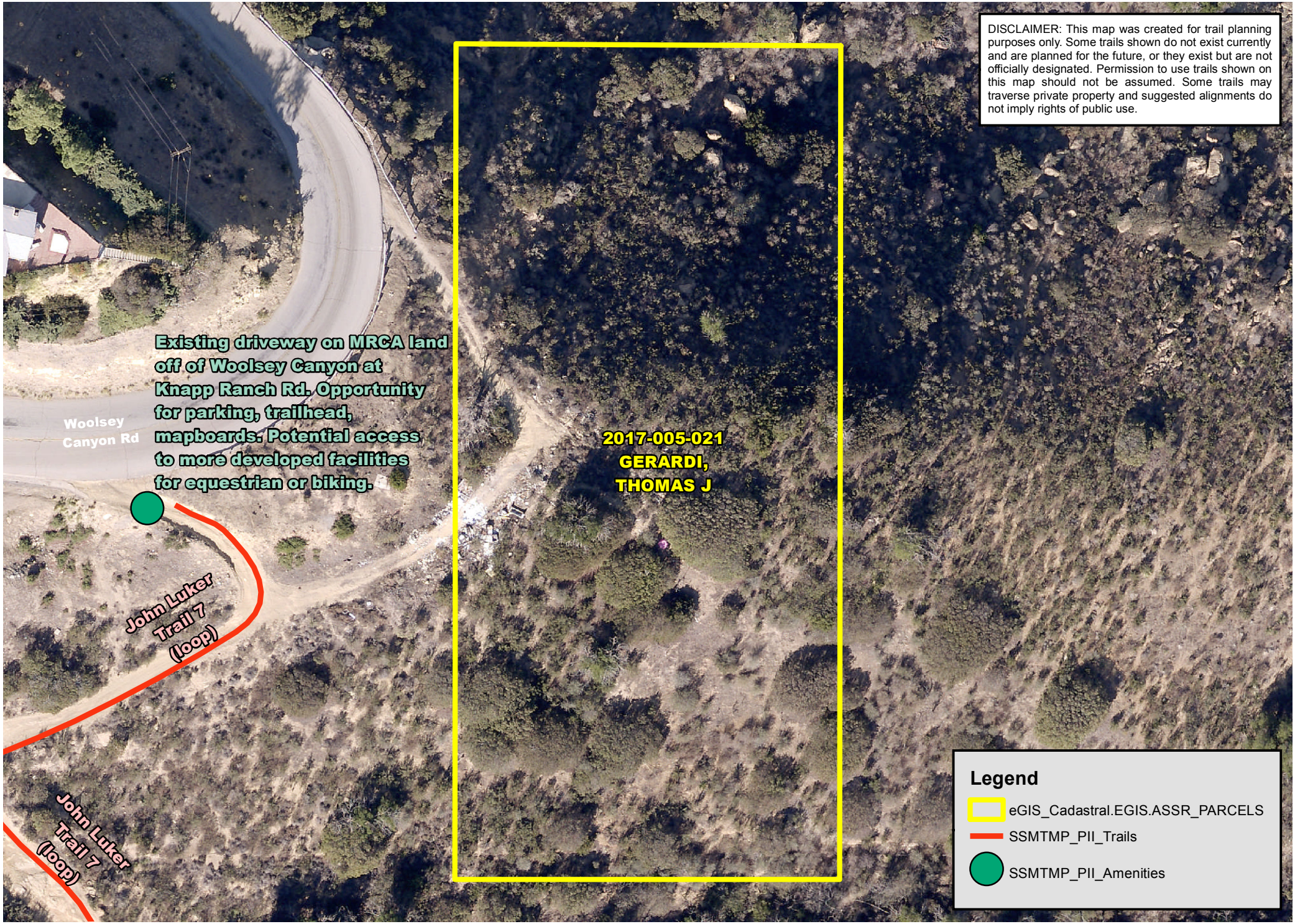
I proceeded to tell Mr. Likins that the better spot for this John Luker Trailhead 7 would be approximately 800 feet West of the proposed Trailhead, where there is an existing entrance and a much better area for parking cars, trucks with horse trailers etc. since the topography is much gentler and more conducive to a parking lot type of arraignment, and it is on Santa Monica Mountains Conservancy land. (Attachment #3&#4) These maps show where I propose the John Luker Trailhead 7 should be located and can connect to the original trail location through an existing trail.

If you have any questions on what I have sent you please contact me and we can discuss any questions you may have. Please keep me updated on changes made to the plans before the plans are submitted to the supervisors for approval.

2

Regards,

Tom Gerardi
818-998-5479



SSMTMP-PII - PROPERTY RESEARCH

County of Los Angeles | Department of Parks & Recreation

200 Feet

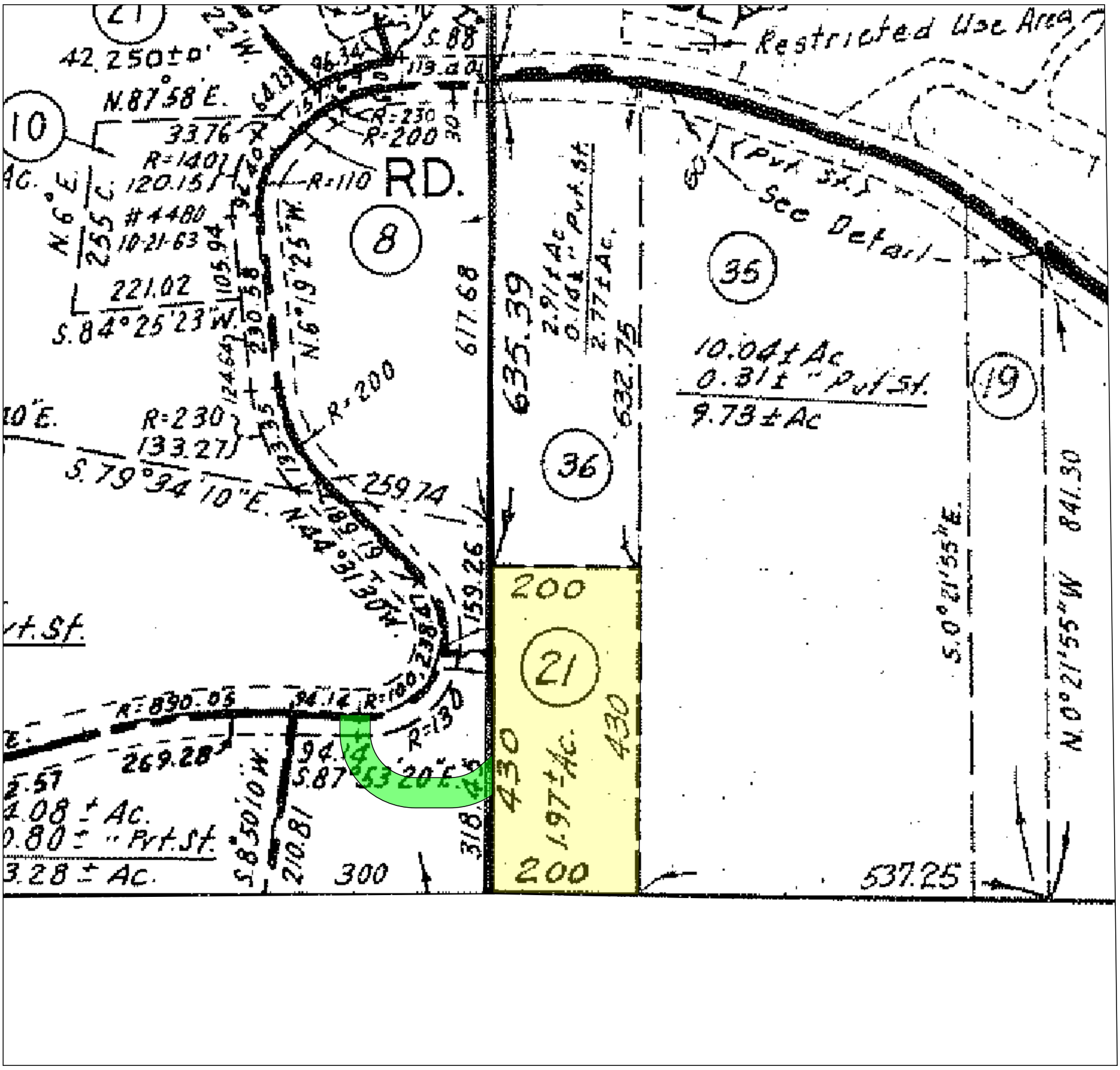
Date: 11/07/17
Prepared By: Planning_ZL
Aerial: LAR-IAC4
Trails/Facilities: SSMTMP_PII_Proposed_080317
Roads: EGIS.CAMS_ROADS

Scale 1 inch = 100 Feet

0 100 200

APN: 2017-005-021

N



LEGEND

Fee, Property in Question

Item No. 8 - Easement
06/29/2001, Instrument No. 01-1130171, of Official Records
Affects as described therein

Fidelity National Title Company
5000 Van Nuys Blvd., Suite 500
Sherman Oaks, CA 91403
(818) 881-7800 FAX (818) 776-8528

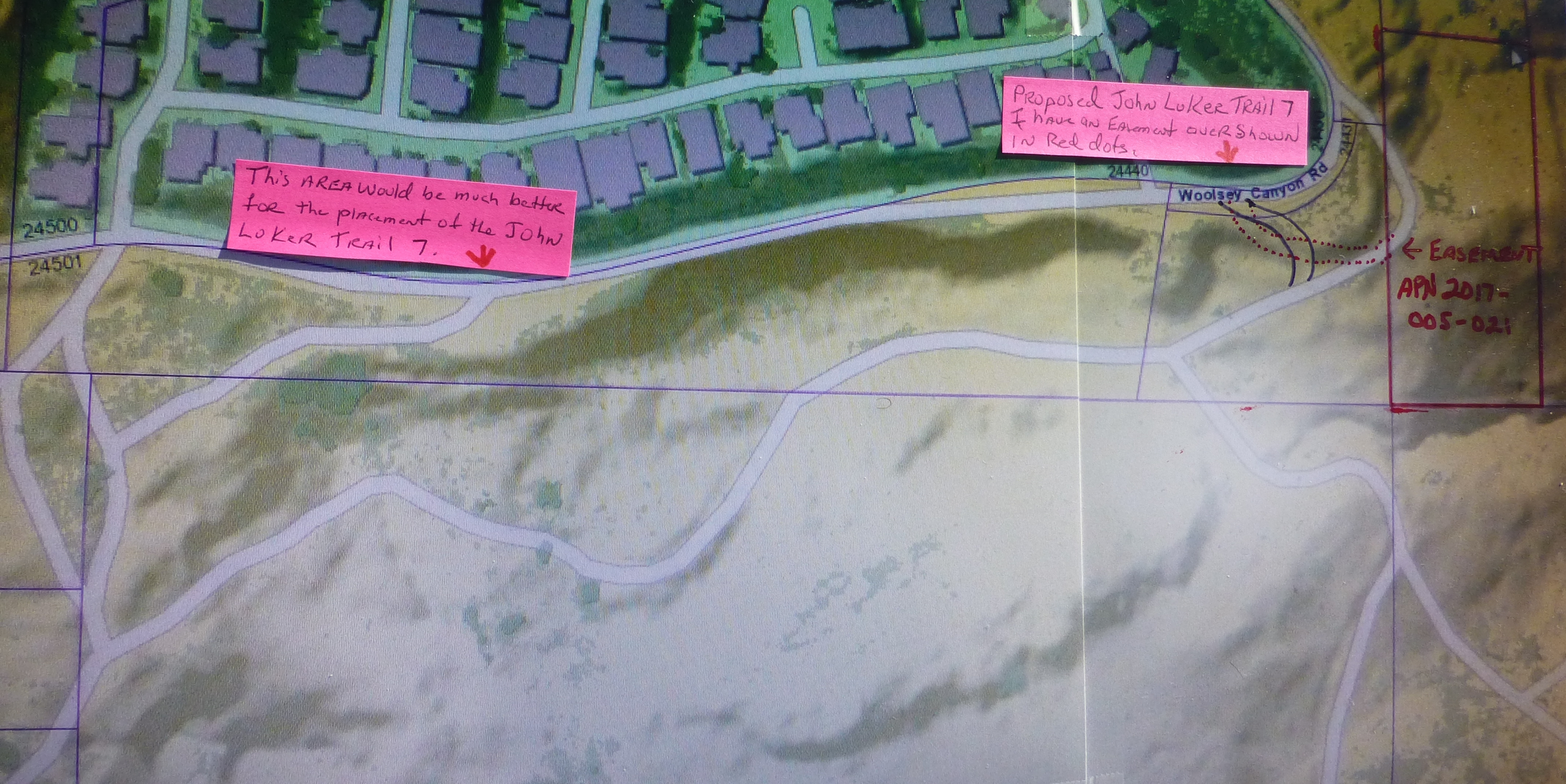
Title Order No. 00126342, Preliminary Report Dated as of March 24, 2016	Drawing Date: March 24, 2016 - FT
Reference : 2500 Woolsey Canyon	Assessor's Parcel No. : 2017-005-021
Property: 2500 Woolsey Canyon Road, Canoga Park, State Of California	Data :

This map/plat is being furnished as an aid in locating the herein described Land in relation to adjoining streets, natural boundaries and other land, and is not a survey of the land depicted. Except to the extent a policy of title insurance is expressly modified by endorsement, if any, the Company does not insure dimensions, distances, location of easements, acreage or other matters shown thereon.

Plat Showing,
Parcel 1: That Portion of the South Half of the Southwest Quarter of Section 22, Township 2 North, Range 17 West, San Bernardino Base and Meridian, in the County of Los Angeles, State of California.

Sheet 1 of 1

Archive #


Proposed John Loker TRAIL 7
I have an Easement over Shown
IN Red dots.
This AREA Would be much better
for the placement of the John
Loker Trail 7.
24500
24501
24440
Woolsey Canyon Rd
← EASEMENT
APN 2017-
005-021


John Luker Trail 7 should be Relocated to this AREA Ample Parking, shallow Grade, Existing Trails, etc.
Woolsey Canyon Rd
John Luker Trail 7
7

D11

12/13/17

To: County of Los Angeles Department of Parks and Recreation; Planning Division
Attn: Julie Yom, Park Planner- 510 South Vermont Avenue, Los Angeles, California 90020
Email: jyom@parks.lacounty.gov

From: georgia17a23@gmail.com; Andora Ave., Chatsworth, CA 91311

I am writing to you as a concerned resident, neighbor and Chatsworth stakeholder regarding the proposed **SANTA SUSANA MOUNTAINS TRAILS MASTER PLAN - PHASE II.** My comments are general but specifically directed towards the **9955 Andora Ave. trailhead entrance only.** We are directly affected by ALL activity in this area. Our residence is in the immediate vicinity of the Andora Ave. state park entrance. We do not want our quality of life negatively affected with the proposed development of a parking lot/parking area or any additional public restrooms at the Andora Ave. trailhead. **We are opposed to and do not want any parking area developed here, we do not want any overnight camping or camp fires of any kind allowed in the park anywhere.** 1

Has anyone approached **Oakwood Memorial Park** as an alternative for using their restrooms or **parking?** They are a great neighbor, and maybe you could work out a plan with them.

Why isn't there signage to indicate state park hours? I know the biggest challenge would be enforcing the hours because we do not have a full-time ranger to patrol, but our community would still appreciate the hours being officially posted as there is an on-going problem with people loitering at the Andora Ave. trailhead late at night, smoking in this brush/fire hazard area, and entering the park after hours, and in the dark. People are loud, litter, and do not respect other's privacy. Lights from cars coming and going after sunset shine directly into our bedrooms, waking us up. Additionally, people in vehicles come here with loud music playing any time of the day or night. Some park visitors are just simply inconsiderate to the residents. 2

The 9800 block of Andora Ave. is already densely populated and growing. The City has approved a zone change and sub-division (9503 North Andora Place) for end of Andora Ave development Reference Numbers Case: VTT-73427-1A; Environmental: ENV-2014-3995-EIR; SCH No. 201521057) which will increase vehicle, pedestrian, and equestrian traffic/activity in an already busy neighborhood. Due to limited funds, the city will not be providing any extra LAPD officers to patrol our community or city streets which are adjacent to the **SANTA SUSANA MOUNTAINS STATE PARK** and Andora Ave. trailhead. There are children, families, pets who live and play here and wild **peafowl birds that roam on Andora Ave.** All are at risk with vehicles coming and going to and from the state park Andora Ave. entrance. 3

Andora Ave. and the surrounding blocks and neighborhoods are growing in population/density and we don't need more traffic coming and going with the addition of a parking area at the Andora Ave. trailhead. **The 9955 Andora Ave. trailhead was always planned as a "secondary entrance".** It became a primary entrance because the originally planned primary entrance, Chatsworth Park South, was closed for many years. **Now that Chatsworth Park South has re-opened, YOUR FOCUS should be made on educating the public as it being the Primary Access for ALL visitors, including A.D.A. It's easy access and does not directly impact homes or residents like the Andora Ave. trailhead because the access point is inside the city park and not at the public street. Most importantly, parking is plentiful** for all vehicles, including buses.

I am also concerned with there being no (or very minimal) State Park patrol by park rangers because there is no funding?? Crime in the area is up! Volunteers are great with guided hikes, clean up, trail maintenance, etc. but they cannot deal with criminal activity. With this being a state park, the city of LA (i.e. LAPD) does not provide patrol because the State Park is not their jurisdiction. 4

In closing, I want to commend the many SANTA SUSANA MOUNTAINS state park volunteers who work so hard to keep this state park a peaceful and beautiful place. They kindly work with us residents to minimize negative impacts and to keep the park safe and clean as much as they can. You know as well as everyone, that State & Local government resources to protect the SANTA SUSANA MOUNTAINS and SIMI HILLS are very limited without much enforcement by state park law enforcement or rangers.

Lastly, I am attaching images below of incidents that have occurred this year, 2017 that are concerning to us and our community. Thank you for reading my comments and I hope that you will "put yourself in our position" and take them into consideration.

Regards,

Mr. and Mrs. Altmayer

Burn/Fire - Photo 1

Burn/Fire - Photo 2

The above two photos were taken near the Andora Ave. trailhead entrance.

Photo 3.
Homeless going through neighbors trash. He allegedly came from the Andora Ave. trailhead (not related to photos 1 & 2)

Photo 4.
Motor bikes entering state park off of Andora Ave trailhead. Note: this problem has since been resolved.

Photo 5.
Fire at Rockpointe.

D12

From: bonnie Klea [mailto:bonnie1@dslextreme.com]
Sent: Wednesday, December 13, 2017 10:46 PM
To: Julie Yom <jyom@parks.lacounty.gov>
Subject: John Luker Trail

I am greatly opposed to a trail named after John Luker. John has worked in opposition to the Santa Susana nuclear and chemical cleanup. He denies that anyone got sick from the site when we currently have a large number of babies around the site with leukemia and brain cancer. Previously we had 12 babies born with retina blastoma. Also all the workers have been covered under federal compensation for their cancers. John Luker is a surrogate for Boeing. 1

CHATSWORTH NATURE PRESERVE COALITION

Working Together to Save a Crucial Habitat in Los Angeles-San Fernando Valley

D13

www.savechatsworthpreserve.org

December 15, 2017

County of Los Angeles Dept. of Parks and Recreation
Planning Division
Attn: Julie Yom, Park Planner
510 So. Vermont Avenue, Los Angeles, CA 90020

E-Mail: jyom@parks.lacounty.gov

Re: Comments: Santa Susana Mountains Trail Master Plan (SSMTMP)
Phase II MND Comments

Dear Ms. Yom:

The Chatsworth Nature Preserve Coalition in general supports the SSMTMP Phase II-b comments with some concerns that need addressing:

- All trails must be located outside of the Chatsworth Nature Preserve, 1325 acres, a wildlife sanctuary for all wildlife from amphibians/reptiles, mammals, including occasional visits of mountain lions, mule deer, bobcats, coyotes, and other larger mammals, and over 200 species of birds, local residents and Pacific Flyway migratory species. 1

- Valley Circle Boulevard-Lake Manor-Chatsworth is a narrow 2-way road with hairpin turns and blind areas. Even with extra effort to keep traffic flow within safety speeds, bike riders and pedestrians are at risk during peak traffic times. Horses should never be allowed to cross Valley Circle Boulevard from west to east side to prevent accidents and traffic choke holds. 2

- Woolsey Canyon is another narrow 2-way road with hairpin turns that intersects at Valley Circle Boulevard. A plan for a Trailhead on Woolsey Canyon – Valley Circle Blvd. will put hikers/bikers/horseback riders and drivers at great risk. There aren't parking locations available and shouldn't be to protect this wildlife movement corridor, as well as, prevention of road accident risk. 3

- Archaeological sites in this region, including inside the Chatsworth Nature Preserve, have been documented by Pierce College and California State Northridge University; anthropological consultants should be consulted prior to establishing trails in the Woolsey Canyon-Box Canyon region. 4

- Andora Estates subdivision project, located in a wildlife movement corridor alongside DWP and Department of Parks and Recreation's Chatsworth Trails Park, needs to be scaled back so the SSMTMP will have a sufficient trail link between the Santa Susana Pass State Historic Park (SSPSHP) and Chatsworth Trails Park while maintaining a principal wildlife corridor between the SSPSHP and Chatsworth Nature Preserve. 5

Phase 11.A Comments:

We appreciate the Trails Master Plan for a recreational trail system that is designed for low-intensity use. The Santa Susana Mountains and foothills are in an urban sprawl battle to remain open space, native habitat, for the survival of wildlife. There are irreversible negative consequences caused by Los Angeles County board of supervisor's approval of the Newhall Ranch Land Project's 21,000 units. The massive building in farmland, Santa Clara River flood plain, open space, places the future of the Santa Susana Mountains land and watershed also at risk. This decision is counter to the intent of the SSMTMP to improve human's quality of life. Newhall Ranch Land development and other urban sprawl developments destroy forever our natural beauty, threaten survival of Southern California wildlife, and create unlivable traffic conditions. 6

Los Angeles City and County planning departments need to halt any further developments in the Simi Hills and along the south side of the Santa Susana Mountains, adjacent to both 11.A and 11b. The developments are out of control and destructive of the chaparral and native habitat, watershed which supports groundwater and which feeds the Los Angeles River, and the scenic vista. The recent fires throughout Southern California and millions of dollars of cost to save residential and commercial properties built in historic wildlife locations is a burden to taxpayers, not the developers. It's time to save our natural world for both wildlife and humans. 7

Sincerely,

Chatsworth Nature Preserve Coalition Delegates

Carla Bollinger planopenspace@gmail.com
Mark Osokow mark.osokow@sfvaudubon.org
Arthur Langton wrentit@att.net
Dina Fisher i@dinafisher.com
Jerry Roskilly groskilly@gmail.com
Julie Clark De Blasio conservation@lacnps.org

D14

County of Los Angeles Department of Parks and Recreation
Planning Division
Attn: Julie Yom, Park Planner
510 South Vermont Avenue, Los Angeles, California 90020
jyom@parks.lacounty.gov

RE: Comment on Los Angeles County Draft Trails Plan

Dear Ms. Yom,

Thank you for accepting comments on the Santa Susana Mountains Trails Master Plan- Phase II.

I grew up about 5 miles away from the former rocket testing and nuclear reactor facility, the Santa Susana Field Laboratory (SSFL). SSFL sits on the border of Ventura and Los Angeles County, in the beautiful hills that I spent my childhood running, hiking, and riding horses through. Unbeknownst to me, vast amounts of harmful radioactive and chemical contamination exist at and near SSFL from the decades of nuclear reactor work and rocket testing, which resulted in numerous spills and accidents, including a partial nuclear meltdown of one of the reactors in 1959. 1

Extensive evidence points to the likelihood of contamination migrating off-site, including a federally-funded study conducted by the University of Michigan. Boeing, one of the polluters, has been fined in excess of 80 times for water-run off violations. Two other federally-funded studies out of UCLA demonstrate an increased death rate from key cancers amongst former workers of SSFL, as well as a 60% increase in cancer diagnoses within two miles of SSFL. One of my close friend's 7-year-old daughter just returned home from Children's Hospital yesterday, after over a month in out-patient care, receiving a second round of chemo and a bone marrow transplant to treat her very rare form of leukemia. She was almost a two years into remission, after being first diagnoses when she was 4. I've personally known half a dozen people who have died before their time from rare cancers they could have only contracted from toxins in their environment. Statistically significant data reveal our community is above the national average for cases of several rare pediatric cancers.

I am submitting this comment in the hopes that you will heed my concern and halt all considerations of trails that run through or near SSFL until remedial actions are completed and return it to its original clean splendor. I am specifically referring to proposed trails such as W0S3 in the figures on pages 115 and 116 of the Master Plan. Other examples of trails that should be considered only after a full cleanup of SSFL are the John Luker Trail and connections, as they border areas of the site that are known to be contaminated.

Furthermore, I want to express my discomfort with the proposal of naming a trail and connecting path after John Luker. Luker is one of the leading members of a so-called SSFL CAG. The CAG was secretly funded by one of the polluters of SSFL, who has been pushing to be relieved of much of its cleanup obligations. Luker has also personally promoted the drastically weakened 2

cleanup standards proposed by the polluters, which would leave large amounts of contamination at SSFL not cleaned up.

2 (cont.)

I believe that a trail designation should honor true conservationists and undeniable champions for the environment. Luker maintains a leadership role in a group that accepted money from the polluters of SSFL, and has personally advocated for a less protective cleanup of the contamination onsite. I hope you will reconsider the names of these trails and connecting paths.

Most importantly, I ask of you to halt all current considerations of trails through or near SSFL until all cleanup has been completed, thus allowing the public to enjoy its natural beauty without risking their health.

3

Thank you.

Sincerely,

Devyn Gortner

D15

-----Original Message-----
From: SCV Trail Users [mailto:scvtrailusers@gmail.com]
Sent: Saturday, December 16, 2017 6:59 AM
To: Julie Yom <jyom@parks.lacounty.gov>
Cc: Zachary T. Likins <ZLikins@parks.lacounty.gov>; Steve Messer <steve@corbamtb.com>
Subject: SCV Trail Users comments on SSMTMP-PII

Dear Ms. Yom:

I am the chair person for SCV Trail Users. We are a local Committee of CORBA, the Concerned Off Road Bicycling Association, which is a subchapter of IMBA, the International Mountain Bicycling Association. We focus on expanding trail opportunities in Santa Clarita for non-motorized users. 1

We have been involved with the planning process for the SSMTMP-PII area, have reviewed the draft master plan document and attended all public hearings. Overall we are very pleased the many proposed new trail alignments, trailheads, and facilities. We can see that the County was very responsive to public input on trail alignments.

Our one concern is the whether the County and how quickly the County will be able to secure access through private property so that the public will have access to these many proposed trails. For example, there is private property at the top of East Canyon Motorway where it intersects with Palo Sola Truck Road. The Palo Sola Truck Road heading west from East Canyon Motorway is a very important part of the trail system being proposed in this master plan. However, Palo Sola Truck Road is gated at East Canyon Motorway and the public cannot use that road. Without access to Palo Sola Truck Road, the overall master plan is significantly compromised.

Our hope is that the County will make it a top priority to negotiate access to Palo Sola Truck Road at the earliest possible time so that the public can start to enjoy this very important portion of the master plan.

Thank you to Zachary Likins and everyone at the County for their hard work on this plan. We are very pleased.

Best regards,

Ken Raleigh
Chair

D16

ROCKETDYNE CLEANUP COALITION Since 1989

December 16, 2017

County of Los Angeles Department of Parks and Recreation
Planning Division
Attn: Julie Yom, Park Planner
510 South Vermont Avenue, Los Angeles, California 90020

transmitted by email to: jyom@parks.lacounty.gov

SUBJECT: Comment on Los Angeles County Draft Trails Plan

Dear Ms. Yom:

The Rocketdyne Cleanup Coalition (RCC) is a community-based alliance that was formed in 1989, when we first learned about the partial nuclear meltdown and other accidents at the lab that had been hidden from the public for years. We were concerned that continued nuclear rocket work at Rocketdyne [now the Santa Susana Field Laboratory (SSFL)] would bring additional harm to our communities, so we worked to prevent the re-licensing of the hot lab. Together with other key people and organizations, we helped bring an end to nuclear activities at the site. 1

Many of us live right below the SSFL, so we turned our focus to making sure that all of SSFL's nuclear and chemical contamination was cleaned up. We learned about the toxins on the hill, the radionuclides strontium-90, cesium-137, and plutonium-239, the hazardous chemicals perchlorate, TCE, dioxins, heavy metals and more. We fought for health studies for the workers and the offsite population. Studies by the UCLA School of Public Health found significantly elevated cancer death rates between both the nuclear and rocket workers from exposures to these toxic materials. Another study by UCLA found that SSFL contamination led to offsite exposures to hazardous chemicals by the neighboring population at levels exceeding EPA levels of concern. A study performed for the federal Agency for Toxic Substances and Disease Registry found the incidence of key cancers were 60% higher in the offsite population near the site compared to further away.

After spending so many years fighting for the cleanup of SSFL, and more importantly, fighting for the health of our neighbors in who also live in the area

around SSFL, we were greatly relieved in 2010 when Administrative Orders on Consent (AOCs) were signed requiring cleanup of SSFL to background. The County has been vigorous in fighting for those obligations for a full and complete cleanup to be met.

The cleanup was supposed to be completed by 2017, but it has not even begun, and there are substantial efforts by the parties responsible for the contamination and their proxies to get out of the cleanup promises and leave most of the contamination not cleaned up. As such, it would pose a continued risk to anyone nearby because of the potential migration.

We therefore are very troubled by the proposal for trails leading up to SSFL, in areas that may be contaminated and may in the future experience migration from SSFL. We believe that any consideration of the trails proposed for Phase II.B should be put on hold until the full cleanup of SSFL has happened. As local residents, we have been deeply burdened by the offsite migration of contaminants, and we want to prevent the health impacts one could have if exposed to any of the further offsite migration until SSFL is cleaned up.

1(cont)

We are also concerned that nothing put forward in a County document such as these should inadvertently be at odds with the long efforts of the County to get a full cleanup of SSFL. Boeing and other Responsible Parties have recently been pushing for the site to be cleaned up to the least protective standard, recreational, which would leave something like 98% of the contamination not cleaned up. They do so by trying to push for SSFL to be a park and thus argue for leaving most of the contamination, contrary to the County's long position for full cleanup. The parks people at the County should be careful not to suggest that the County views the future of SSFL as open space and by implication it should only be cleaned up to recreational standards, whereas the County has been clear that the promised cleanup to background.

2

We are concerned that the environmental review documents do address the contamination, and that no EIR has been conducted. These are significant flaws.

3

Additionally, we must candidly say that the proposal to name the trail leading up to SSFL the "John Luker Trail" is offensive to those of us who have worked for decades to get SSFL cleaned up, and we urge that it be reconsidered. Mr. Luker is part of a group that was funded by one of the polluters of SSFL (which insisted that its funding be kept secret, leading to the resignation of at least one other member of the group). He has pushed for years the position of the parties responsible for the contamination, which is that the cleanup agreements the County and we have supported be abrogated and that large amounts of the contamination never be cleaned up. It is inappropriate to name a trail after such a person.

4

In summary, no trails should even be considered until the full cleanup of SSFL to background is completed. 5

Sincerely,

Marie Mason
Rocketdyne Cleanup Coalition

CC:
LA County Supervisor Sheila Kuehl
LA County Supervisor Kathy Barger
LA City Councilmember Mitch Englander
CA Senator Henry Stern
CA Senator Robert Hertzberg

D17

COMMITTEE TO BRIDGE THE GAP

Comments on Proposed Santa Susana Mountains Trail Plan – Phase II
Initial Study/Mitigated Negative Declaration

16 December 2017

Four decades ago, the Committee to Bridge the Gap uncovered documents about a partial meltdown of a reactor at what is now called the Santa Susana Field Laboratory (SSFL). The accident had been kept secret for twenty years, until we revealed it to the news media. Numerous other nuclear and rocket testing mishaps led to widespread contamination of the site. We promised the local community to help it work for cleanup, to protect the areas near the facility from exposure to migrating toxins. In 2010 legally binding cleanup commitments were entered into, and that should have been the end of the matter. But now, as the deadline for cleanup has passed and the cleanup has not even started, the environmental disaster of SSFL is by no means over, and the risk to people nearby remains. 1

We were therefore quite surprised to see proposals for hiking trails in areas very close to SSFL and leading up to it. There is significant question about contamination in the particular areas being considered, in addition to future risk of migration from SSFL so long as the promised full cleanup is not completed out. Yet, no EIR has been prepared, and there is no consideration whatsoever in the Initial Study, Mitigated Neg. Dec., or supporting material regarding the contamination at SSFL or the potential for such contamination in the areas where the trails are proposed to be constructed and used. These are fundamental defects, and violations of CEQA.

Much of the trails proposed are in the Dayton Canyon area. Dayton Canyon has as its central feature Dayton Creek, the source of which is on SSFL, in an area where there was lots of contamination from work on exotic rocket fuels. For example, the area around the headwaters of Dayton Creek on SSFL experienced significant perchlorate contamination. A housing development was proposed for Dayton Canyon, beneath SSFL, and the *LA Daily News* ran an article questioning why no measurements for SSFL contaminants had been made there. A couple of days later the developer sent out a contractor who took some samples, which came back with astronomical concentrations of perchlorate, as high as 62,000 parts per million (i.e., 6% of the soil sample was perchlorate). Followup sampling found radioactivity that appeared to be above background.[1] 2

More measurements found more perchlorate. A remediation plan was slowly prepared. But then heavy storms came and washed away the perchlorate (it is very soluble). No suitable explanation for how the perchlorate got there, except that it came from SSFL, was ever demonstrated. And thus the potential for subsequent additional

[1] See CBG report, attached.

migration remains significant. We are unaware of any detailed sampling for chemicals or radioactivity that has occurred in recent years in Dayton Canyon. 2 (cont.)

Similarly, the area around Woolsey Creek is of concern. After the partial meltdown, water in the Chatsworth Reservoir (then filled) was routinely monitored for radioactivity. Over and over again the radioactivity levels in the reservoir were higher than the levels measured in the input water from the state water project. The measurements suggested an source of additional radioactivity. Indeed, there was a secondary water source for the Reservoir – Woolsey Creek, which comes down the mountain from close to SSFL. The reservoir was closed and a major upgrade started that would block Woolsey Creek from entering the reservoir. The project was abandoned after a major earthquake and the reservoir remains closed. But the data suggest potential migration of SSFL contaminants through Woolsey Canyon, another of the areas contemplated for trails. 3

Under contract to the Agency for Toxic Substances and Disease Registry, UCLA Professor Yoram and colleagues over a number of years studies the question of potential migration of contaminants from SSFL and found evidence of such migration in excess of levels of concern set by US Environmental Protection Agency. These exposures were concentrated in areas within two miles of SSFL—the trails proposed are within that zone. 4

We have detailed some of the history and concerns about SSFL in comments to the state toxics agency submitted jointly with the City of Los Angeles and the Natural Resources Defense Council last week, and more detailed comments submitted with NRDC earlier this week. Both are attached hereto.

CBG believes it would be imprudent to consider any trails in the areas near SSFL until the promised cleanup to background is complete. Additionally, the County has been a vocal supporter of the promised cleanup to background. The parks department should be careful that it does nothing that can be used by the Responsible Parties (RPs) in support of their efforts to break out of their cleanup commitments, at variance with the County's efforts to get full cleanup. Those RPs would like to declare SSFL open space, and suggest County support for it, as a way of saying they should only have to clean up SSFL to the weakest of standards because people are only on parkland a few hours. But the County—and CBG—have long insisted on cleanup to the most protective standards, in part to protect the people who live 24/7 nearby. Do nothing that could be used by the polluters to interfere with the commitments to a full cleanup to background. 5

We note that the Congressional sponsors of the Rim of the Valley (ROV) legislation recently removed SSFL because of the contamination. The Phase IIb area proposal for trails and the associated Initial Study/Neg. Dec. completely ignore the contamination, as though it is not there. Ignoring it does not make it go away. We urge that the Phase IIb area be removed from the proposal (we do not have concerns about IIa) and not be subsequently considered until and unless cleanup of SSFL to background, as promised and as the County has long supported, is fully completed. 6

D17 - Attachment 1/4

Supplemental Detailed Comments
Regarding the Department of Toxic Substances Control
Draft Program Environmental Impact Report
on Cleanup
of the Santa Susana Field Laboratory
by
the Committee to Bridge the Gap
and
the Natural Resource Defense Council
14 December 2017

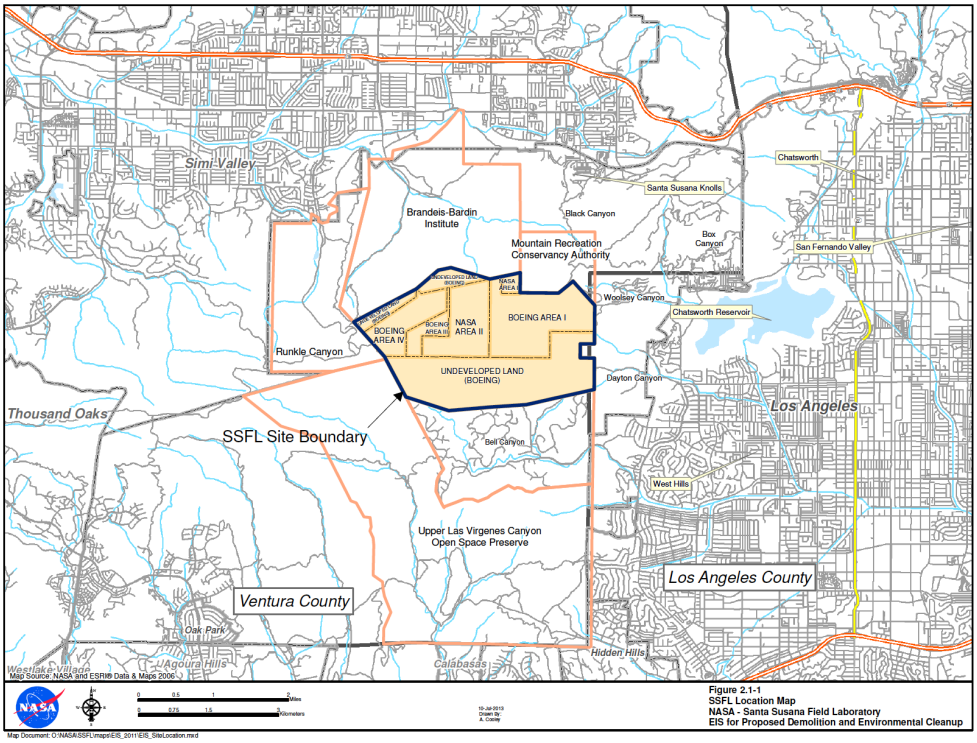
A. BACKGROUND

The history of the site provided in the draft Program Environmental Impact Report (PEIR) is inaccurate and minimizes the problems. We provide here a more complete picture.

The Santa Susana Field Laboratory (SSFL) was established in the late 1940s for rocket testing and in the early 1950s commenced nuclear reactor work. In this initial incarnation, the site was supposed to be a remote field lab for work too dangerous to conduct near populated areas, and the original siting criteria stated that "care must be taken to select an area where prospects for population growth in the near future are not anticipated."[1] However, over the decades the population nearby mushroomed, so that there are now more than 150,000 people living within 5 miles of the site and more than half a million people are within 10 miles.[2]

[1] NAA-SR-30, *General Reactor Site Survey of the Los Angeles Area*, U.S. Atomic Energy Commission, June 1, 1949, as cited in *Report of the Santa Susana Field Laboratory Advisory Panel,* October 2006 (hereafter SSFL Panel Report), p. 8. http://www.ssflpanel.org/files/SSFLPanelReport.pdf The SSFL Advisory Panel was established at the initiative of local legislators in the early 1990s to oversee independent health studies of SSFL and the surrounding areas. Under its auspices, federally-funded worker studies by the UCLA School of Public Health were conducted in the 1990s, and in the next decade a series of studies about potential offsite effects funded by the State Legislature were prepared. This summary of the siting and accident history is drawn in part from the Panel's 2006 report; the reader is referred to the full report for more detail and supporting citations, which is incorporated herein by reference.

[2] SSFL Panel Report, pp. 8-9.



1. A History of Safety Considerations Subordinated to Other Concerns; Accidents, Spills and Releases

a. Nuclear Activities

SSFL housed ten reactors, plutonium and uranium fuel fabrication facilities, numerous nuclear "critical facilities," and a "hot lab" wherein highly irradiated nuclear fuel from around the nation was cut apart. Safety considerations were "subordinated to other concerns from the outset."[3] Despite being ranked 5th out of 6 candidate sites for the safety of meteorological conditions (in part because of nighttime migration of potentially contaminated air into the San Fernando Valley), the site was chosen as a nuclear testing site nonetheless, in large measure because of convenient drive times from nearby universities. To compensate for the poor site conditions, and because the reactors would have no containment structures, a reactor power limit was set to limit radioactive inventory. But a decade thereafter, the AEC chose to build the Sodium Reactor Experiment (SRE) with power twenty times the limit, despite people living much closer than the original rule recommended.[4]

Poor environmental and safety practices resulted in at least four of the reactors suffering significant accidents, including a partial nuclear meltdown.

[3] *id.,* p. 8.
[4] *id.*, pp. 8-9.

First, in March of 1959, the AE6 reactor released fission gases as a result of malfunction.. Then blockage of coolant precipitated a power excursion and partial meltdown of the SRE in July 1959. The SNAP8ER accident damaged 80% of its fuel in 1964. A similar accident in the SNAP8DR resulted in damage to a third of its fuel in 1969.[5] None of these reactors had a containment structure like modern reactors to prevent radiological releases into the environment.

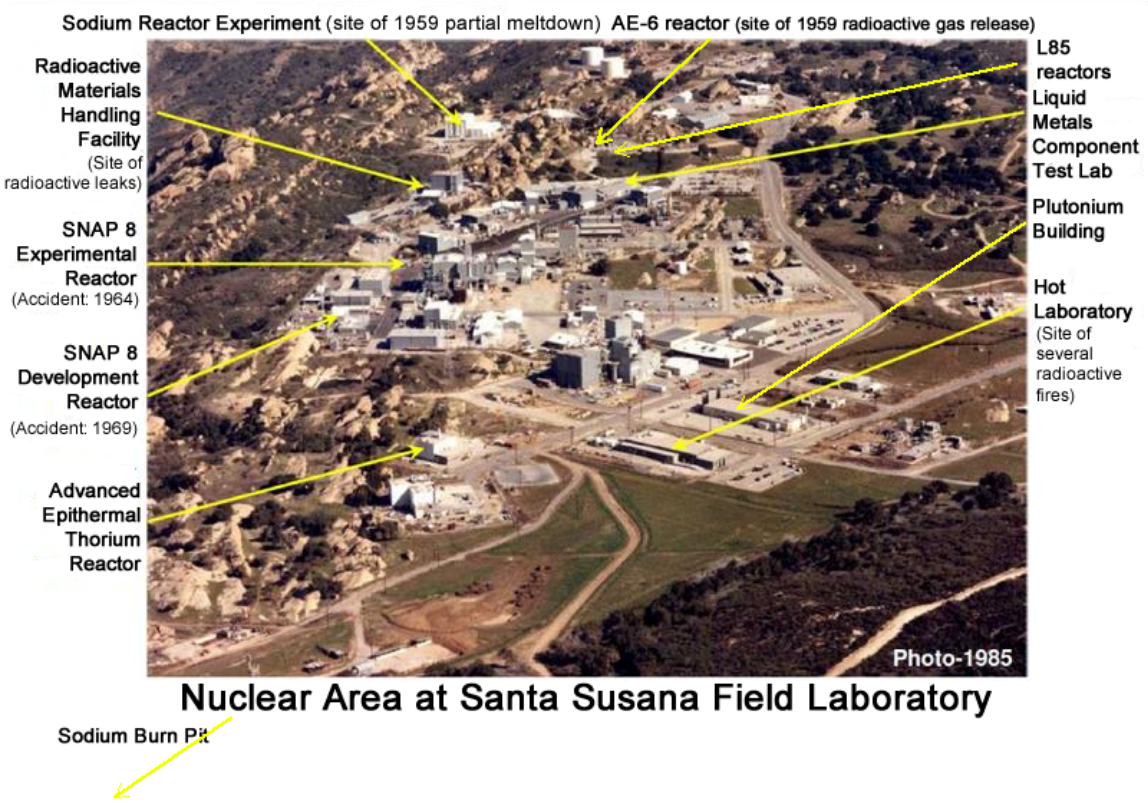


photo source: DOE; labels: SSFL Work Group[6]

The events of June, 1959 at the SRE are emblematic of the problems caused by a troubled safety culture at SSFL.[7] On that date, a fuel rod at the SRE, coated with sodium, exploded when it was washed with water in a "wash cell." The explosion lifted the shield plug out of the wash cell, and created "extremely high contamination levels

[5] SSFL Panel Report, p. 10.
[6] https://energy.gov/em/energy-technology-engineering-center; http://www.ssflworkgroup.org/about-ssfl/
[7] See, e.g., the review of the SRE accident performed for DOE by Dr. Thomas Cochran of NRDC, *Sodium Reactor Experiment Partial Fuel Meltdown, 29 August 2009.* http://www.etec.energy.gov/Library/Main/Cochran%20SRE%20Presentation.pdf

within the entire building."[8] A couple of weeks later, on July 13, the SRE experienced a power excursion—the reactor power suddenly began to increase exponentially, out of control, and the reactor barely was able to be shut down, or "scrammed." Yet, inexplicably, the operators of the reactor, unable to figure out what had caused the incident, started it up again two hours later, and continued to operate it for another week and a half, in the face of rising radioactivity readings (off-scale) and numerous other signs of reactor in trouble. When it was finally shut down, it was determined that 13 of 43 fuel elements had experienced melting.

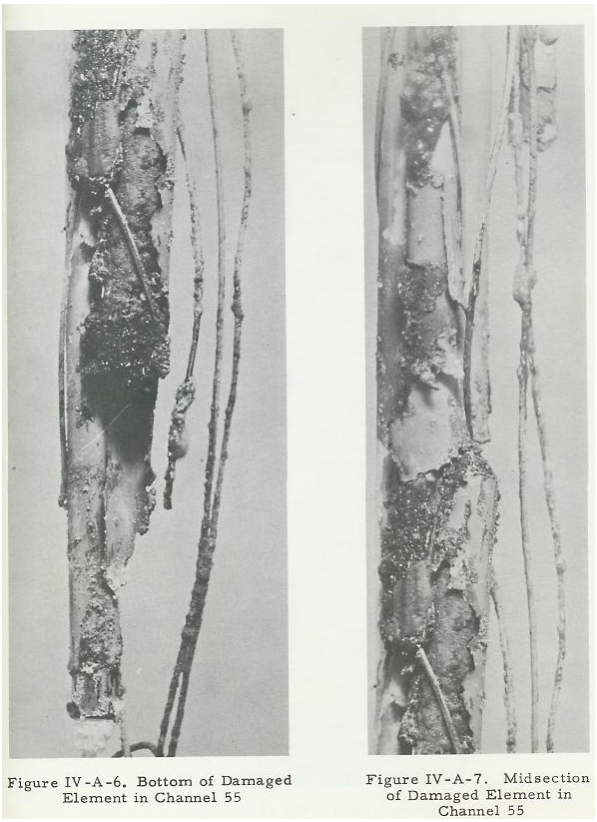
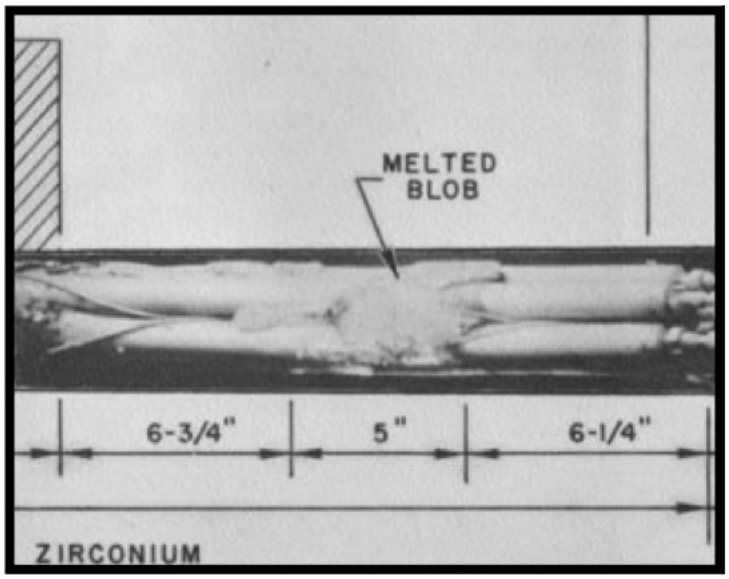


Figure IV-A-6. Bottom of Damaged Element in Channel 55

Figure IV-A-7. Midsection of Damaged Element in Channel 55

Photo of Damaged Fuel Element; source: AEC/Atomics International

[8] See Committee to Bridge the Gap, *Past Accidents and Areas of Possible Present Concern Regarding Atomics International*," January 18, 1980, and the citations therein. (Atomics International was the name of the AEC contractor running the nuclear portion of SSFL at the time.)



SRE Fuel "Melted Blob" (label in original); source: AEC/Atomics International

The accidents at the SRE, SNAP8ER and SNAP8DR all involved running the reactors for extensive periods of time while they were failing, despite clear indications of problems. As an AEC analysis[9] of the SRE partial meltdown concluded:

> [S]o many difficulties were encountered that, at least in retrospect, it is quite clear that the reactor should have been shut down and the problems solved properly. Continuing to run in the face of a known Tetralin leak, repeated scrams, equipment failures, rising radioactivity releases, and unexplained transient effects is difficult to justify. Such emphasis on continued operation can and often does have serious effects on safety and can create an atmosphere leading to serious accidents. It is dangerous, as well as being false economy, to run a reactor that clearly is not functioning as it was designed to function.

Nonetheless, the same pattern of continuing to operate reactors for long periods despite evidence of failing cores subsequently resulted in significant fuel damage in two other reactors at the site.

The problem of cutting safety corners was compounded by a culture of secrecy and a lack of candor. The AEC said nothing publicly about the SRE partial meltdown for nearly five weeks. Finally, it issued a news release, embargoed for Saturday morning papers, saying that "a parted fuel element had been observed," that there were no

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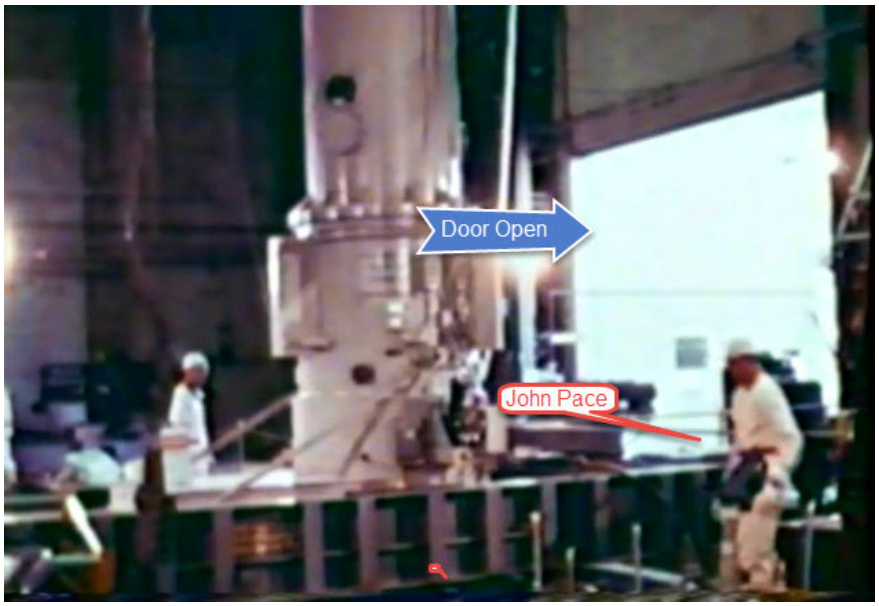
[9] T. J. Thompson and J. G. Beckerley, *The Technology of Nuclear Reactor Safety,* prepared under the auspices of the US Atomic Energy Commission, 1964, p. 644

indications of unsafe operating conditions and no radioactive release. However, in fact, the fuel had experienced not just parting, but melting. A third of the core underwent partial melting, not just a single fuel element. It was a clear indication of unsafe operating conditions,, and radioactivity had been intentionally vented into the atmosphere for weeks.

Despite subsequent claims that only noble gases were released, independent experts have concluded that other radionuclides such as iodine-131 could have been vented into the atmosphere. One estimate is that over 260 times the I-131 released at the Three Mile Island accident could have been emitted by the SRE.[10] The reactor had no containment structure; because of the coolant blockage, the coolant vaporized, and volatile radionuclides like iodine, cesium and strontium could have been emitted into the core cover gas, which was deliberately vented from the reactor and into the environment. Furthermore, a report by an eyewitness, John Pace, indicates that the reactor room became so radioactive that the large equipment door had to be kept open to vent radioactivity from the room to the outdoors.[11]



By no means was the SRE partial meltdown the only problem at SSFL that led to releases. Much of the work at SSFL involved radioactively contaminated liquid sodium coolants for reactors, which burn if exposed to air and explode in the presence of water.

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[10] Declaration of Arjun Makhijani, Ph.D., President of the Institute for Energy and Environmental Research, in *Lawrence O'Connor et al. v. Boeing North American, et al.,* U.S. District Court for the Central District of California, February 12, 2004, p. 24.

[11] http://data.nbcstations.com/national/KNBC/la-nuclear-secret/ The above photograph is from an AEC film about the accident, taken during the recovery operation. The labels have been added. Pace says the door had to be opened for extended periods during the accident itself because of high radiation readings.

There were radioactive fires at the hot lab and numerous other radioactive and chemical releases and spills. In addition, for decades, despite requirements to the contrary, radioactive and toxic chemical wastes were burned in open "burnpits." Sodium-coated reactor components were placed in shallow pools of water to chemically react. The resulting clouds of airborne contamination fell out over wide areas, including beyond the SSFL boundaries. These activities resulted in contaminating soil and groundwater. They also contaminated surface water that ran into the neighboring Brandeis Bardin Institute.

b. Rocket Testing

In addition to nuclear development work, tens of thousands of rocket tests were conducted at SSFL, many with very toxic fuels such as monomethyl hydrazine. The rocket tests produced massive airborne plumes of contaminants extending substantial distances.

Perchlorate, a very hazardous solid rocket fuel component, also resulted in substantial contamination of soil, groundwater and surface water. Because it is so mobile, there is evidence it rapidly traveled offsite contaminating land and groundwater; numerous wells in Simi Valley are polluted with it.[12]

In addition, over 21,500 tests alone involved flushing the rocket engines after firing with trichlorethylene (TCE), a very hazardous volatile organic compound.[13] Approximately one million gallons of TCE were employed for this purpose at SSFL, and about half a million gallons are estimated to have been allowed to percolate into the soil and groundwater. The acceptable concentration (the EPA Maximum Concentration Limit, or MCL) of TCE in drinking water is 5 parts per billion; concentrations orders of magnitude higher than that have been found in SSFL groundwater plumes. A substantial

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[12] See Ali Tabidian, *Land-use conversion and its potential impact on stream/aquifer hydraulics and perchlorate distribution in Simi Valley, California,* prepared for the SSFL Advisory Panel, October 2006

[13] NASA, *Santa Susana Field Laboratory: The Use of Trichloroethylene at NASA's SSFL Sites*, 2008.

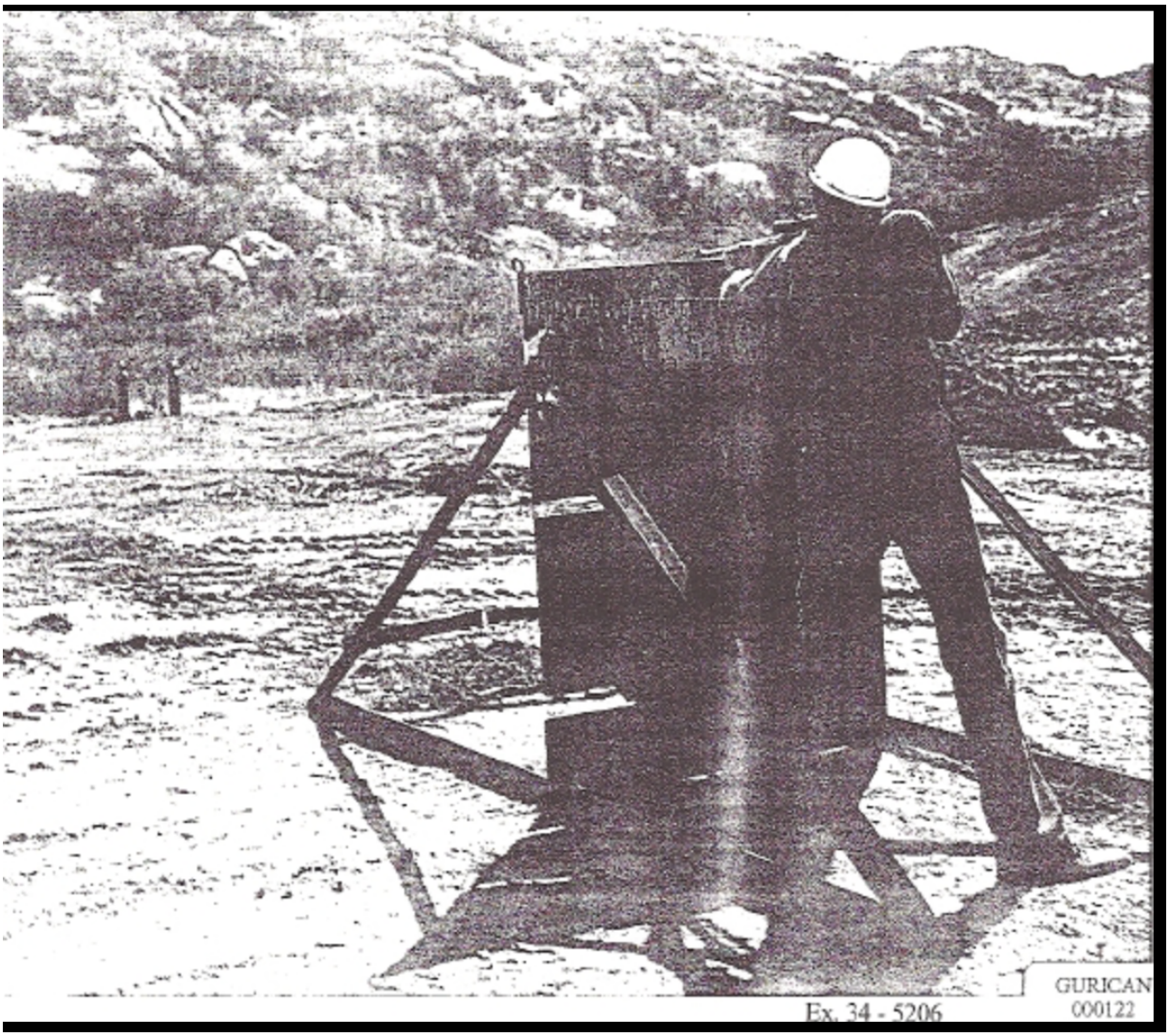
fraction of the groundwater at SSFL is contaminated with TCE and other pollutants. The TCE groundwater plume extends offsite.

There were also various accidents, such as explosions at the Alpha and Coca rocket test stands.[14] In 1994, two workers were killed when hazardous wastes that were being illegally burned in open pits exploded. The U.S. Justice Department commenced legal proceedings against Rocketdyne, resulting in an admission of guilt and plea agreement.

Just as in Area IV, the nuclear area, there was also an open-air burnpit where for years toxic wastes were illegally burned in the open air. To save the expense of transporting the waste offsite for proper disposal, scores of barrels of toxic waste were brought to the pit each month, and ignited by workers firing rifles at them to blow them up, releasing large plumes of contamination.

Ex. 34 - 5

[14] NASA, Historic Resources Survey and Assessment of the NASA Facility at Santa Susana Field Laboratory p. 3-42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000122

A federally-funded study by the UCLA School of Public Health found markedly increased rates of death from key cancers for workers associated with their radiation and chemical exposures.[15] The most highly exposed workers had triple the deaths from those cancers as did less exposed SSFL workers.

A subsequent federally funded study by a team of researchers led by UCLA's Professor Yoram Cohen found evidence of contaminants having migrated outside the site

[15] Morgenstern, Froines, Ritz and Young, *Epidemiologic Study to Determine Possible Adverse Effects to Rocketdyne/Atomics International Workers from Exposure to Ionizing Radiation*, June 1997, at http://www.ssflpanel.org/files/UCLA_rad.pdf. See also *Santa Susana Field Laboratory Epidemiological Study: Report of the Oversight Committee,* September 1997, at http://www.ssflpanel.org/files/panel_worker_radiation.pdf, and the UCLA study of and panel report about chemical exposures, included in exhibits to these comments.

boundaries and exposing the public at levels in excess of EPA levels of concern.[16] A study by Dr. Hal Morgenstern of the University of Michigan, also federally funded, found a greater than 60% increase in incidence of various cancers in people living near the site associated with their proximity to it.[17]

SSFL is located atop the Santa Susana mountains overlooking significant populations in the City of Los Angeles and elsewhere. The site is contaminated with a wide range of radioactive materials, such as plutonium-239, cesium-137, and strontium-90, and over a hundred hazardous chemicals, such as dioxins, PCBs, heavy metals, and volatile organic compounds. Contaminants at the site can migrate offsite and expose those communities. Thus, the cleanup of the source of pollution above these communities is critical to their health. The concern thus is not limited in any fashion to potential exposures to people at the site in the future, but to the people who live in the area surrounding SSFL. As we shall show, the failure to recognize this is a fundamental failure of the PEIR.

2. Responsible Parties' History of Resisting Cleanup Obligations

Along with the history of weak environmental and safety controls at SSFL, the AEC – and its successor the DOE – have long resisted doing anything more than a minimal cleanup of the contamination for which it was responsible, at this or its other polluted facilities across the country.[18]

After incidents like the Rocky Flats fires in the 1970s, the Three Mile Island meltdown in Pennsylvania in the late 1970s, and the 1986 Chernobyl accident in the former Soviet Union raised concerns with the widespread environmental and safety problems throughout the DOE nuclear complex nationwide, tentative attempts at reform were undertaken. Reviews were undertaken of environmental problems at DOE sites; one performed by DOE contractor (and thereafter, NRDC engineer) James Werner found widespread chemical and radioactive contamination at SSFL.[19] Admiral James Watkins

[16] Yoram Cohen, et al., *Potential for Offsite Exposures Associated with the Santa Susana Field Laboratory,* February 2006, at http://www.ssflworkgroup.org/potential-for-offsite-exposures-associated-with-ssfl/

[17] Hal Morgenstern, et al., *Cancer Incidence in the Community Surrounding the Rocketdyne Facility in Southern California*, March 2007, at http://www.ssflworkgroup.org/files/UofM-Rocketdyne-Epidemiologic-Study-Feb-2007-release.pdf . See also, Professor Hal Morgenstern letter to Senator Joe Simitian, then-Chair, California Senate Committee on Environmental Quality, April 5, 2007, summarizing his findings, at http://www.ssflworkgroup.org/files/LettertoSen.Simitian_041507.pdf

[18] See, e.g., National Governors Association, *Cleaning Up America's Nuclear Weapons Complex:* 2015 Update for Governors.

[19] Environmental Survey, Preliminary Report, DOE Activities at Santa Susana Field Laboratory, February 1989; DOE/eh/OEV-33-P.

was brought in as Secretary of Energy to attempt to change the troubled "safety culture" at DOE. In 1991 an investigative "Tiger Team" team found significant problems in the safety and environmental program at SSFL.[20] In 1995, in an effort to bring DOE into the modern era of environmental regulation, it entered into a Joint Policy with the U.S. EPA committing that all DOE nuclear sites in the country, irrespective of whether they were on the National Priority List, would be cleaned up consistent with EPA's CERCLA (Superfund) guidance.[21] However, significant elements within DOE continued to resist these efforts at reform.

A clear example of this resistance can be found in the cleanup standards for the site. To wit, despite these critical findings and despite the Joint Policy entered into with EPA to carry out environmental remediation pursuant to EPA's CERCLA guidance, in the late 1990s, DOE and its contractor Boeing put forward cleanup standards for SSFL that were orders of magnitude more lax than the EPA CERCLA guidance and which would have left virtually all of the contamination not cleaned up.[22] In January 2002, DOE issued a Draft Environmental Assessment, and in 2003 a final Environmental Assessment and Finding of No Significant Impact approving those standards and its plan to leave substantially more than 90% of the radioactive contamination unremediated.[23]

Concerned about the plan to not clean up the great majority of the contamination and the failure to examine the environmental impacts of the harms associated with such weak cleanup choices, the City of Los Angeles, the Natural Resources Defense Council (NRDC), and the Committee to Bridge the Gap (CBG) filed a lawsuit in U.S. District Court, challenging the legality of DOE's actions under the National Environmental Policy Act (NEPA), 42 U.S.C. §4321, et seq. In 2007, in an Order highly critical of DOE, Judge Samuel Conti, granted summary judgment for the plaintiffs and against DOE.[24]

In 2007, Judge Conti ruled against DOE. He noted, "Area IV is known to be radiologically contaminated and, in fact, was the location of at least one well-known nuclear meltdown....It is located only miles away from one of the largest population centers in the world....Among the primary purposes of NEPA, and the EIS process more specifically, is assuring the public is informed and aware of the potential environmental impacts of government actions....It is difficult to imagine a situation where the need for

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[20] http://www.etec.energy.gov/Library/Main/DOE-EH-0175_ES&H_Tiger_Team_Assessment_of_ETEC.pdf

[21] DOE & EPA, Policy on Decommissioning Department of Energy Facilities Under CERCLA, May 22, 1995, hereafter DOE-EPA 1995 Joint Policy.

[22] Approved Sitewide Release Criteria for Remediation of Radiological Facilities at the SSFL, December 12, 1998.

[23] The EA was restricted to issues related to cleanup of radioactivity, recognizing that the cleanup of the chemicals was subject to the Resource Conservation and Recovery Act (RCRA) and those cleanup decisions were in the hands of the California Department of Toxic Substances Control.

[24] 2007 WL 1302498 (N.D. Cal).

such an assurance could be greater." He therefore permanently enjoined DOE from "transferring ownership or possession, or otherwise relinquishing control over, any portion of Area IV until it completed an EIS and issued a Record of Decision pursuant to NEPA." The Court retained jurisdiction over the matter until it is satisfied that the DOE has met its legal obligations related to the remediation.

Shortly thereafter, DOE issued a Notice of Intent to prepare an EIS. However, DOE dragged its feet for a decade and only now has issued the DEIS for comment.

3. The 2007 and 2010 Cleanup Agreements

a. The 2007 Consent Order

In 2007, the California Department of Toxic Substances Control (DTSC), which regulates toxic chemicals in California pursuant to federal delegation under the Resource Conservation and Recovery Act (RCRA), entered into a Consent Order with DOE and the other SSFL Responsible Parties (Boeing and NASA) in which the Responsible Parties were obligated to complete cleanup of soil and installation of the permanent groundwater remedy by mid-2017.[25] Contrary to the claim in the PEIR, that Consent Order does not mandate a cleanup to standards less than the 2010 AOC requirements, but instead requires cleanup to normal DTSC procedures. Those procedures, as DTSC reiterated in 2010, rely on current County zoning and General Plan land use designations, which in the case of SSFL, allows a wide range of agricultural and residential (with garden) uses and would result in the most protective cleanup standards being employed, comparable, DTSC has written, to a cleanup to background.[26]

b. The 2010 Administrative Order on Consent (AOC)

In 2010, in the face of mounting frustration by DTSC, the California Environmental Protection Agency (CalEPA), and state and federal legislators with what appeared to be continued foot-dragging by DOE mid-level personnel, Dr. Steven Chu, the Nobel-Prize winning physicist who was then the Secretary of Energy, and Dr. Ines Triay, the DOE Assistant Secretary for Environmental Management, proposed to the state that they enter into an agreement whereby the site would be cleaned up to local background; i.e., remove all the detectible contamination and return it to the condition it was in before DOE contaminated it. Over that year, there were numerous negotiating sessions with DOE and the state, with participation from some of the parties to the successful 2007 NEPA lawsuit, to hammer out the written agreement, first an Agreement in Principle (AIP) and then the full Administrative Order on Consent (AOC), which incorporated the AIP. A nearly identical AOC was reached with NASA. After two rounds of opportunity

[25] Consent Order, p. 20.
[26] DTSC, Response to Comments, Agreements in Principle, State of California and the Department of Energy, of California and the National Aeronautics and Space Administration, (hereafter DTSC Response to Comments on Agreements in Principle), October 26, 2010, Volume I, pp. 11-12, 14-7, 21.

for public comment, in which more than 3000 comments were received, of which all but a handful were strongly in favor, DTSC, DOE and NASA executed the AOCs in December, 2010.

There are several key components of the AOCs. (1) They are legally binding; the parties cannot unilaterally choose not to comply with any part of them. (2) Cleanup of soil shall be to local background. (3) For the purposes of the AOCs, soil is defined to include structures, debris, and other anthropogenic materials. (4) There is to be no averaging; any contamination above background is to be cleaned up. (5) The deadline for full soil cleanup and implementation of the groundwater remedy was 2017. (6) All waste with radioactivity above background must be disposed of in licensed or authorized low-level radioactive waste disposal facilities. And (7) critically, no "leave in place alternatives will be considered.

The AOCs contain some very tightly delimited exceptions to the requirement to clean up all contamination to background.[27] Because DTSC in the DEIR misrepresents them as it implies they allow it to leave in place very large amounts of contaminated soil, reprinting the exceptions from the DOE AOC here may be helpful:

> **SUMMARY: The end state of the site (the whole of Area IV and the Northern Buffer Zone) after cleanup will be background** (i.e., at the completion of the cleanup, no contaminants will remain in the soil above local background levels), subject to any special considerations specified below.
>
> • Clean up radioactive contaminants to local background concentrations.
>
> Possible exceptions *(where unavoidable by other means):*
>
> • The framework acknowledges that, where appropriate, DOE will engage in an Endangered Species Act (ESA) Section 7(a)(2) consultation with the U.S. Fish and Wildlife Service (FWS) over any species or critical habitat that may be affected by a federal action proposed to be undertaken herein on a portion of the site. Impacts to species or habitat protected under the Endangered Species Act may be considered as possible exceptions from the cleanup standard specified herein *only to extent that the federal Fish and Wildlife Service, in response to a request by DOE for consultation, issues a Biological Opinion with a determination that implementation of the cleanup action would violate Section 7(a)(2) or Section 9 of the ESA, and no reasonable and prudent measures or reasonable and prudent alternatives exist that would allow for the use of the specified cleanup standard in that portion of the site.*

[27] DOE AOC, Appendix B, pp. 1-2; NASA AOC, Appendix B, p. 1

> • *The acceptance and exercise of any of the following exceptions is subject to DTSC's oversight and approval, and the resulting cleanup is to be as close to local background as practicable*:
>
> > • Detection limits for specific contaminants exceed the local background concentration, in which case the cleanup goal shall be the detection limits for those specific contaminants.
> >
> > • *Native American artifacts that are formally recognized* as Cultural Resources.
> >
> > • *Other unforeseen circumstances but only to the extent that the cleanup cannot be achieved through technologically feasible measures.* Under no circumstances shall exceptions for unforeseen circumstances be proposed in excess of five percent of the total soil cleanup volume.
> >
> > (italics and underlining added[28])

Thus, the only biological exception in the AOC to the requirement to clean up to background is if U.S. Fish and Wildlife Service issues a Section 7 Biological Opinion with a determination that implementation of the cleanup action would violate Section 7(a)(2) or Section 9 of the ESA, and no reasonable and prudent measures or reasonable and prudent alternatives exist that would allow for the use of the specified cleanup standard in that portion of the site. The only cultural exemption is for formally recognized Native American artifacts, and DTSC must approve the exception. And the up to 5% "unforeseen circumstances" exemption also requires DTSC approval and exists only to the extent that the cleanup cannot be achieved through technologically feasible measures. Furthermore, no exception can be applied unless it is demonstrated to be unavoidable by other means and the resulting cleanup is as close to background as practicable. As shall be discussed below, none of the conditions necessary to trigger an exception has been met. In apparent recognition of this, DOE in its DEIS admits that its leave-in-place options would not be in compliance with the AOC and for them to go forward, the AOC's requirements would have to be altered.[29] Nonetheless, after having criticized DOE for suggesting such leave-in-place alternatives and exceptions that go beyond those allowed in its AOC, DTSC now, in the PEIR, proposes to do precisely the same thing, in violation of both the DOE and NASA AOCs.

[28] DOE AOC, Appendix B, p. 1; there are identical exemptions for chemical contaminants on p. 2; those exemptions are also found in the NASA AOC, Appendix B, p. 1.

[29] DEIS p. S-12.

B. THE DOE AND NASA CLEANUPS: The PEIR Breaches the AOCs' Prohibition on Consideration of "Leave in Place" Alternatives

The AOCs expressly bar leaving contaminated soil in place, but also forbid even *consideration* of such an action as alternative. The AOCs require cleanup to local background and then state:

> Cleanup to local background means removal of soils contaminated above local background levels
>
> · **No "leave in place" alternatives will be considered**
>
> · No on-site burial or landfilling of contaminated soil will be considered
>
> emphasis added[30]

Despite this unequivocal prohibition, the PEIR proposes--just as DOE did and which DTSC criticized--leaving in place unspecified but clearly extremely large amounts of contaminated soil.

a. After Declaring that Proposals to Leave in Place Contaminated Soil for "Monitored Natural Attenuation" Would Violate the AOCs, DTSC Proposes the Very Same Action

In its DEIS, DOE had stated that for all alternatives, it would leave in place 150,000 cubic yards of soil contaminated with Total Petroleum Hydrocarbons (TPHs) and Poly Aromatic Hydrocarbons (PAHs).[31] It argued that these will be left in place to "naturally attenuate." However, the AOCs bars consideration of any leave in place alternative.[32] The AOC expressly states, "No 'leave in place' alternatives will be considered." Note that not only are leave in place alternatives prohibited from being employed, they are barred from even being considered.

DOE said in its DEIS that natural attenuation could take up to 70 more years, whereas the AOC required cleanup in just a few years. If DOE did what it proposed in its DEIS, and if DTSC did what it now proposes in the PEIR, those contaminants would be left in place, available for offsite migration, for a lifetime. Given that the contamination was created as much as seventy years ago, it would thus have been not cleaned up for nearly a century and a half if the AOC were breached this way. And of course, if natural

[30] DOE-DTSC AOC, Attachment B, p. 3; NASA-DTSC AOC, Attachment B, p. 2
[31] DEIS p. S-21.
[32] See p. 3, Appendix B, DOE AOC. DOE tried to conflate the prohibition on "leave in place" alternatives with the prohibition on "onsite burial or landfilling of contaminated soil," but these are separate prohibitions. DOE also appeared to try to claim leaving it in place is on-site treatment, but it is of course just the opposite—no treatment at all, just leaving it there.

attenuation were viable and quick, there would be at SSFL no such contamination now, since it was first created many decades ago.

But in fact the time periods appear far longer. The source DOE cited for the 70 year estimate[33] merely refers to another source[34] for the number and correctly points out that this was based merely on a "Phase I literature search." In truth, the study relied upon (Nelson, et al. 2014) says the amount of time could be far longer, because the rates of attenuation slow dramatically after the easiest material degrades, which has already long ago occurred, and because site specific conditions of weathering also would tend to prevent degradation. The initial estimates were based on first-order approximations from the literature, but the report said site-specific studies were needed to determine likely attenuation rates at SSFL. As the Nelson, et al. study stated about the first-order estimate of ~70 years:

> An important assumption in the above calculations was that the same first-order rate constant would be valid throughout the remediation period. As stated above, there are a couple of reasons this may not be a valid assumption: 1) The more easily biodegraded fractions of the hydrocarbon mixture will biodegrade first, leaving the more recalcitrant compounds towards the end, and 2) some fraction of the hydrocarbons will likely remain sequestered in the soil matrix and unavailable for biodegradation. For these reasons, longer remediation times than those calculated ... may be required at SSFL.

Nelson et al. concluded in that study, "It would be helpful to run microcosm experiments under conditions mimicking those at SSFL to get a better idea of potential biodegradation rates at SSFL."

Indeed, Nelson and his team (their studies were performed under contract to DOE) followed up that Phase I literature search with actual tests for SSFL-specific conditions. Those measurements under SSFL actual soil conditions resulted in "essentially no change" in concentrations for any of the unamended samples tested.[35] Thus, the actual studies prepared for DOE do not support the claim that the TPHs at SSFL can be left to naturally attenuate. But even were the claim of 70-year attenuation periods correct—and they aren't—leaving the contamination in place for an additional 70 years would violate the AOC and pose continuing risks.

It is important to keep in mind that the DOE-funded Nelson studies were not aimed at natural attenuation but at identifying active soil treatment options. The former is barred by the AOC but the latter, if it works effectively and quickly, is allowed. The Nelson studies concluded that natural attenuation wouldn't work but that more research should be conducted on possible methods of treatment. One of the failures of both the DEIS and PEIR is the failure to adequately address possible treatment methodologies.

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[33] DOE DEIS reference CDM Smith 2015b.
[34] DOE DOE reference Nelson, et al. 2014.
[35] See Nelson, et al. reports to DOE, DEIS references 296-300.

In its formal comments on the DOE DEIS, DTSC strongly criticized DOE for proposing monitored natural attenuation in the DEIS because it would leave contaminated soil in place, violating the AOC:

> The DEIS proposes to rely on the natural process of degradation (monitored natural attenuation) to reduce levels of certain contaminants to achieve cleanup standards, which may take decades and *therefore violate the AOC's prohibition on leaving contamination where it is found*.[36]

It is therefore very puzzling that just a few months later, DTSC in its own PEIR proposes to leave contamination in place via the very claim of monitored natural attenuation that it said would violate the AOC. Indeed, the PEIR assumes precisely the same amount of DOE contaminated soil – 150,000 cubic yards – would be exempted from cleanup by claimed monitored natural attenuation as did DOE in the portions of its DEIS that DTSC criticized.

Leaving contamination in place to "naturally attenuate" can result in continuing migration of the contamination; it may thereby attenuate, i.e., the concentration at the source may go down, but by spreading the contamination elsewhere, including to the public living nearby. The refusal to clean up this contaminated soil but rather leave it in in place violates the AOC's requirement that "no 'leave in place' alternatives will be considered, and they thus should not be considered.

DTSC Fails to Disclose What Contamination It Proposes to Leave in Place

As is the case in so many other ways, the PEIR does not disclose how much soil would be left in place for supposed monitored natural attenuation, with what contaminants and in what concentrations, where the contaminated soil is located and even on what Areas of the site, nor any evidence that monitored natural attenuation would actually occur and if so, over how long a time period. This opacity defeats the public disclosure purposes of CEQA and frustrates the required opportunity for meaningful comment.

In an Administrative Draft of the Project Description Chapter of the PEIR, obtained under the California Public Records Act, the soil volume tables include an estimate of 150,000 cubic yards of contaminated soil at the DOE part of SSFL that would be allowed to be left in place, and associated notes indicate that DTSC wanted NASA and Boeing to estimate how much of their contaminated soil they would similarly like to have

[36] DTSC Deputy Director Mohsen Nazemi, *Department of Toxic Substances Control's Comments on the Department of Energy's Draft Environmental Impact Statement for Remediation of Area IV, Santa Susana Field Laboratory, Ventura County, California,* April 13, 2017, emphasis added

exempted. In the wake of public criticism after the document was obtained, the draft PEIR as issued has removed from Table 3-3 the estimated 150,000 CY for the DOE site, and leaves the entries for each of the three Responsible Parties' portions of the sites as "TBD"--to be determined. Thus, the PEIR hides from public review any estimate of how much of each RP's contaminated soil is being contemplated to be allowed to be left in place under the guise of monitored natural attenuation.

The effort to keep hidden the actual proposal resulted in contradictory statements in what remained. Table 3-3 in the PEIR released for public comments gives no estimate for the monitored natural attenuation soil volumes for any of the RPs, having removed the 150,000 CY entry for DOE in the parallel table (3-2) in the Administrative Draft, but nonetheless kept the same footnote for DOE, which said that for DOE, "the estimate for monitored natural attenuation (MNA) represents the volume of soil where it is anticipated that chemical impacts would be reduced through natural processes...." However, the PEIR table now published now has no MNA estimate for DOE, it having been removed. Furthermore, although no MNA estimate is given for DOE in the PEIR as published, the 150,000 CY figure having been removed, the total soil volume for DOE is unaltered. The Administrative Draft was 1,260,000 CY after assuming an additional 150,000 CY would be MNA; the published PEIR, with MNA estimate for DOE removed, nonetheless remains1,260,000 CY.

To add to the confusion, Table 3-3 in the published PEIR, while asserting MNA volumes for each RP are "to be determined," nonetheless gives a 150,000 cubic yard estimate as the total MNA volume from all RPs together. No basis whatsoever is given for such an estimate, and as indicated above, it is puzzling, given that that figure is precisely the same as the estimate for DOE alone in the Administrative Draft. The puzzling footnote for the 150,000 total estimate says:

> The amount of soil that would be treated through MNA has not yet been determined for Boeing, DOE, and NASA. A volume estimate and evaluation of the appropriateness will be presented in the cleanup decision documents. *For purposes of the PEIR, the disposal volume assumes that 150,000 CY of the total would be amenable to MNA*. Although the amount of soil that would be treated through MNA has not yet been determined, MNA would address a portion of the soil volumes currently identified for cleanup and no additional soil volume is expected to be identified.
>
> emphasis added

No source or basis is given for the volume selected "for purposes of the PEIR," and it makes little sense in the context of an identical estimate for DOE alone, in the Administrative Draft. To confuse things even further, the PEIR as released, in the very next Table, 3-4, in footnote C, says "As presented in Table 3-2, DOE's disposal volume assumes that 150,000 CY of the total 1,410,000 CY would be remediated by monitored natural attenuation." Whereas Table 3-3 says DOE's disposal volume is "to be determined," and estimates the total for all RPs together at 150,000 CY, Table 3-4 asserts

150,000 for DOE alone. It cites Table 3-2 for that claim, but there is no such claim in Table 3-2 of the published PEIR. It appears this is an incorrect reference to a different table, in the Administrative Draft.

Symptomatic of Fundamental Problems in the PEIR

The laborious discussion immediately above about the contradictions in the PEIR as its authors attempted to shield from public view the MNA estimates that were in the Administrative Draft illuminates several of the fundamental problems with the PEIR. It is not actually an Environmental Impact Report by DTSC, the regulatory agency, but rather by a contractor to one of the Responsible Parties, Boeing. It was written in large measure by the RPs, who were also, as the Public Records Act materials demonstrate, allowed to edit much of it.[37] And many of the central, controversial elements of the PEIR, which undermine the DTSC commitments to a full cleanup, came directly from the RPs, with no evidence of critical review by DTSC itself. Finally, the central aspects of the proposed action are hidden from public disclosure and thus meaningful public comment. This is a pattern seen throughout the document.

b. The PEIR Includes Vast But Unspecified Cleanup Exemptions for Biological Features That Go Far Beyond What is Permitted in the AOCs, While Ignoring the Harm to Biological Receptors From Not Cleaning Up the Radioactive and Toxic Chemical Contamination

The PEIR suggests that very large fractions of the contaminated soil would not get cleaned up, pursuant to unspecified and undetailed exemptions for biological features. However, with the exception of a single map, nothing is disclosed about this plan—no volume estimates, no indication of the degree of or nature of contamination in any specific soil that wouldn't get cleaned up, no information on the harm to the public or ecological receptors that would result from the pollution not being remediated, etc. It is all hidden from public scrutiny.[38]

However, under the AOCs, the biological exception only occurs if the United States Fish and Wildlife Service (USFWS) issues a Biological Opinion that finds that the particular cleanup in a particular SSFL location would violate Section 7(a)(2) or Section 9 of the Endangered Species Act and no reasonable and prudent measures or reasonable and prudent alternatives exist that would allow for the use of the specified cleanup standard in that portion of the site, and the exception is unavoidable by other means.

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[37] See emails and Administrative Drafts obtained under the Public Records Act and included in the exhibits to these comments.

[38] As in the case of the amounts proposed to be left in place for monitored natural attenuation, the Administrative Draft from last year did give some estimate for how much soil would be exempted for one of the RPs under supposed biological and cultural exemptions—a vast 300,000 cubic yards for DOE alone. (Table 3-3, Administrative Draft) But once again, the draft PEIR as issued for public review has even that disclosure removed.

No such USFWS Biological Opinion has been issued. The AOC exception does not apply.

And we note that the agency did issue a Biological Opinion a few years ago for EPA's intrusive radiation survey work that involved cutting back much of the vegetation in the area.[39] USFWS approved, indicating in part that the activity would actually be helpful to the natural species by making possible cleanup of the environmental contaminants. The Biological Opinion further indicated that soil disturbance often helps the Braunton milkvetch, a federally listed species, but in any case measures such as tagging and avoiding plants or storing seeds and reseeding thereafter could be undertaken. The Biological Opinion concluded, further, that even were there a loss of a great majority of the Braunton milkvetch at Area IV and the NBZ, "adverse effects caused by this project will not occur throughout a significant portion of the range of the species (only plants in approximately 2 percent of the range of Braunton's milkvetch would be affected by the project)." But in any case, mitigation measures can be undertaken.

It is unacceptable that DTSC and the RPs have dragged their feet on getting a Biological Opinion issued so that it could be considered and its implications responded to during the comment period on the draft PEIR. When it issues, we ask that the PEIR be recirculated for public comment.

We are also concerned that DTSC has not been candid with USFWS (or, for that matter, the California Dept. of Fish and Wildlife). A Biological Opinion is only as valid as the information on which it is based. Since the PEIR claims zero negative impacts from doing no cleanup at all, and contains no analysis whatsoever of the risks to biological receptors from the contamination or the effects on them if it weren't cleaned up, it will be difficult for USFWS to perform an adequate review. Apparently they were not informed that the contamination levels DTSC proposes to allow to remain unremediated far exceed DTSC's own official Ecological Risk Based Screening Levels. In other words, failing to clean the site up would result in contaminant levels deemed harmful to the very species DTSC claims it wants to protect by not protecting them from the pollution.

DTSC is attempting to allow the Responsible Parties to get out of remediating the damage to the environment which they and their predecessors caused by decades of pollution, by saying it now wants to protect biological features by not cleaning up the radioactive and toxic chemicals with which the RPs contaminated them. But it is, of course, that contamination which poses risk to biological features, and failure to clean it up which would harm them, none of which is considered in the PEIR. Instead, claims about prospective harm from cleanup are the sole focus, despite clear evidence that many

[39] Biological Opinion for the Santa Susana Field Laboratory Area IV Radiological Study Project, Ventura County, California [EPA Contract # EP-S7-05-05] (8-8-10-F-12), May 25, 2010.

of those claims are inflated.

The DOE DEIS, for example, asserted that the contamination is concentrated around certain facilities.[40] But the biological features were long ago scraped away by the Responsible Parties to construct those reactor and other facilities; it is not pristine land, even leaving aside the contamination. Somehow, after decades damaging the SSFL land with radioactivity, toxic chemicals, and intensive industrial activity, suddenly it is claimed that DTSC and the RPs shouldn't have to live up to their commitments to remediate the damage done to those very biological resources.

Perhaps in recognition that the AOC's narrow exception has not been met, there has been an effort to confuse the issue by speaking in the PEIR in broad terms about "conserving biological resources." But that, of course, is not the actual AOC exception.

There has been an effort to try to conflate the AOC exception, which is limited to a USFWS Biological Opinion barring a specific aspect of the cleanup as violating ESA, into a misleading effort to get the California Department of Fish and Wildlife (CDFW) to support DOE's efforts to avoid complying with the AOC cleanup requirements.

For example, on September 12, 2016, DOE wrote to CDFW misleadingly asserting that the AOC had a generic exemption for protection of biological resources and "to employ an exemption, DOE requires the opinion of the California Department of Fish and Wildlife that an exemption to the AOC soil cleanup is critical for protection of the species."[41] DOE attached a very misleading document, purporting to show that there is no health risk whatsoever from not cleaning up the site and supposed extreme risk to the tarplant if it is. (The tarplant is not a federally listed species at all, and is not listed by the state as endangered or threatened, but is identified as rare.) Note that CDFW would have no way of knowing that the AOC exception is restricted to a specified narrow finding in a Biological Opinion by the *U.S.* Fish and Wildlife Service, not the CDFW, and that the standard DOE suggests is also far broader than that contained in the AOC.

Intriguingly, the DOE submission to CDFW indicates that the tarplant has thrived in formerly developed areas at SSFL where facilities were removed followed by interim restoration. It is conceded that the tarplant grows in previously disturbed areas ("including cracks in paved areas") and that "Boeing has had success at getting Santa Susana tarplant to reestablish at sites where soil has been removed as part of remediation." Area IV and the NBZ contain about 850 plants total, or about 2 per acre; it estimates an average of only about 13 plants per acre it proposes as exemption areas in Area IV. Clearly one could simply work around those few plants if one wished.

In the guise of trying to protect biological features, DOE proposed (and DTSC

[40] DEIS, p. S-1.
[41] Letter from DOE's John Jones to CDFW's Mary Meyer, September 12, 2016, including Attachment A, "Supporting Analysis, Effects of Soil Remediation on Santa Susana Tarplant (*Deinandra minthornii)* in SSFL Area IV, August 25, 2016.

now proposes) to walk away from the obligation to clean up the radioactive and chemically toxic pollution which contaminated those features, and leave behind concentrations far above the established Risk Based Screening Levels for ecological receptors, let alone for human health.

None of this was explained to CDFW by DOE. On the day DOE issued the DEIS, however, DTSC's Director Barbara Lee wrote to DOE Assistant Secretary Regalbuto expressing significant dismay about DOE's misleading approach to CDFW, asserting that it was essentially violating the AOC.[42] DTSC stated,

> We are concerned that DOE is proposing cleanup actions inconsistent with the Administrative Order on Consent (AOC) between DOE and the Department of Toxic Substances Control (DTSC), and is basing these proposals on assumptions unsupported by needed data and analysis.
>
> ***
>
> *First, and most importantly, we note that it appears DOE is proposing cleanup approaches that fail to fully recognize the AOC provisions that apply to sensitive plant and animal species located at SSFL. These provisions allow limited exceptions to cleanup activities to safeguard protected species.* As you know, DTSC is committed to implementing and enforcing the AOC. DTSC requests DOE to discontinue early consultation until we can discuss with DOE and CDFW how the requirements of the AOC apply to this process.
>
> Second, DTSC is concerned that DOE may not have supported its initial assessments of key issues with sufficient data and analysis.
>
> ***
>
> Further, it does not appear that DOE has analyzed individual, location-specific approaches to minimizing and mitigating potential impacts to the Tar Plant and other sensitive habitat and resources consistent with the AOC.
>
> emphasis added

In sum, DTSC rightly objected that DOE was attempting to claim a biological exception for which it does not qualify. That exception is only triggered by a USFWS Section Biological Opinion finding a proposed cleanup action on part of the property to violate specified sections of the ESA, with no reasonable and prudent measures or reasonable and prudent alternatives that would allow for the use of the specified cleanup standard in that portion of the site. No such USFWS Biological Opinion exists. No such showing has been made. Cleaning up the radioactive and toxic damage DOE and the other RPs did to the SSFL environment would help biological features in the long run,

[42] January 6, 2017, DTSC letter "Initial DOE Assessments Related to the Santa Susana Field Lab Cleanup."

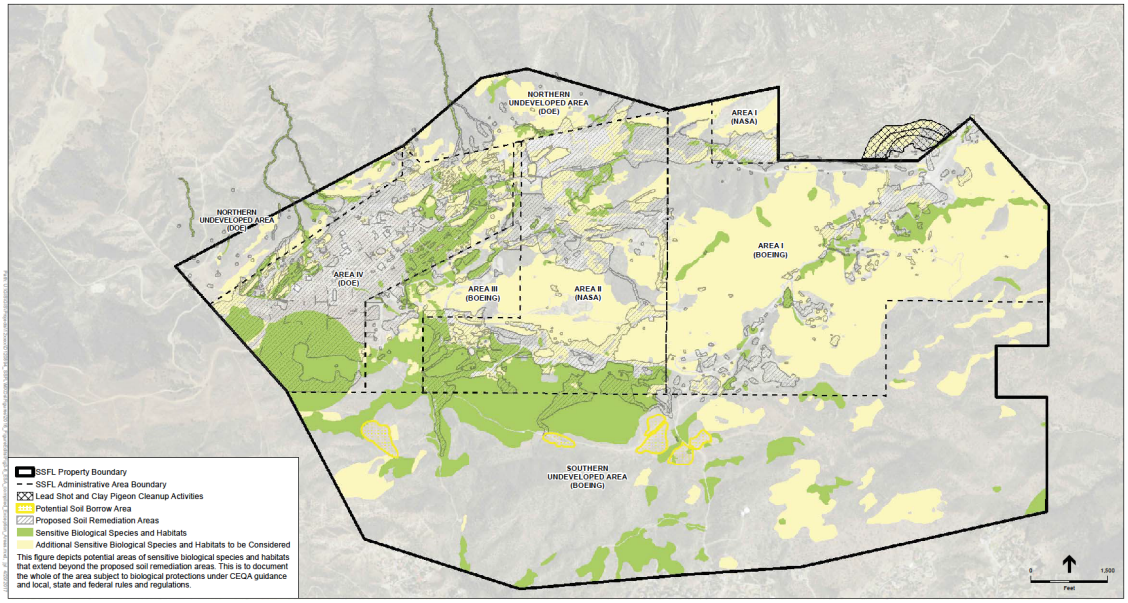
not harm them.

But now, merely a few months later, just as was the case regarding leaving in place contaminated soil under the guise of monitored natural attenuation in violation of the AOC, DTSC has issued a draft PEIR that does precisely what it criticized DOE for -- claiming vast biological exemptions that go far beyond what is allowed by the AOCs.

The PEIR includes no information whatsoever as to how much contaminated soil is being contemplated to be exempted from cleanup, how polluted and with what pollutants that soil is, and – critically—how far in excess of the ecological Risk Based Screening Levels (low-TRV ecoRBSLs) the contamination would be (i.e., how far above the level for no observable adverse effects). It is an extraordinary omission. In the guise of protecting biological resources, DTSC proposes to expose those biological receptors to levels of radioactivity and toxic materials far above the levels that DTSC has established as causing harm to those plants and animals. Yet that is not disclosed, and no data showing how the proposed exemptions from cleanup would result in exceeding levels that DTSC has determined harm those very biological features.

All that one is given that gives any suggestion of the magnitude of the proposed exposure of biological features to harmful pollutants is a single map, reproduced below. No soil volume figures are provided, no contaminant identification or levels, and no comparison to the no observable adverse effects ecoRBSLs to show how much harm would be done by not cleaning up the contaminants that place those ecological features at risk. The PEIR is silent on the harm to the environment from exempting contamination from cleanup. At best one can make an approximation that the contemplated exceptions would prevent a very large fraction of the contamination from being cleaned up, and that they appear to go far beyond the exceptions allowed in the AOCs.

The problem of "hiding the ball," in violation of CEQA, is exacerbated by the failure of DTSC to make available the referenced material upon which the conclusory claims such as this critical map are based. In small print at the bottom of Figure 3-6, the sources are identified in the most cursory of ways: "SOURCE: DOE 2012; Boeing/MWH 2016; USFWS 2016; ESA 2016." However, not one of these has been made publicly available. Indeed, not one is even listed in the references for this chapter. There is thus no way to independently ascertain the validity, or lack of same, of any claim documented on the map as to contaminated areas that are purported to be exempt from cleanup. And yet, this single map, entitled "Proposed AOC Exception Areas," is perhaps the most important aspect of the entire PEIR, and its validity and the environmental impacts that flow from it – exempting vast portions of SSFL contamination from cleanup—cannot be independently assessed. It appears to come primarily from the RPs, who have a vested interest in getting out of cleanup obligations. The impacts for public health and the environment could be immense, yet the bases for it, the level of contamination in various areas that would thus not be cleaned up, and the consequences of continued pollution on biological receptors and the public, are shielded from public review.



SOURCE: DOE 2012; Boeing/MWH 2016; USFWS 2016; ESA 2016

Santa Susana Field Laboratory,120894

Figure 3-6

Potential AOC Exceptions Areas

The proposed exemption areas in the PEIR appear to include some of the most contaminated areas on the property.[43] These areas are the opposite of pristine natural areas, and it is troubling that DTSC would attempt to claim biological exceptions not allowed by the AOC as a way of avoiding cleaning up among the biggest toxic impacts on wildlife.

The figure is contradictory, but no explanation is available for the contradictions. The green highlighted areas are called "sensitive biological species and habitats," while the yellow areas are called "additional sensitive biological species and habitats to be considered." What the difference, if any, between the two might be is unexplained. The legend also says, "This figure depicts potential areas of sensitive species and habitats that extend beyond the proposed soil remediation areas." But that does not appear to be what the figure depicts; instead it shows vast areas of proposed soil remediation areas that are suggested to not get remediated. Lastly, the legend asserts "This is to document the whole of the area subject to biological protections under CEQA guidance and local, state, and federal rules and regulations." But these are not identified; to the extent one can ascertain the matter from the limited information disclosed, none of that guidance or rules or regulations bars the cleanup from occurring; and the AOC' biological exemption is far more narrow, restricted, as indicated above, to a USFWS Biological Opinion that forbids a particular place from being cleaned up because to do so would violate sections of the Endangered Species Act and there are no mitigations or alternatives available, which hasn't happened.

In summary, the AOCs have very narrow biological exemptions, which have not

[43] DEIS, p. 2-23.

been met at SSFL, while the PEIR appears to contemplate vast amounts of contamination being exempted from cleanup by purported exemptions that far exceed those allowed by the AOCs. CEQA and other environmental statutes and rules are generally designed to protect pristine areas from actions like polluting activities that could harm biological features, not to prevent already polluted areas from being remediated so those biological receptors are no longer at risk from the contamination.

c. Cultural Features Exemption Claim

In addition to unquantified purported biological exceptions that go beyond those allowed by the AOCs, the PEIR asserts exemptions from cleanup of unspecified magnitudes that it describes as being for cultural features. However, the AOC exception is limited to Native American artifacts that have been formally recognized, and for those, only if DTSC approves and the exception is unavoidable by other means. Even then, the resulting cleanup of those specific areas would still have to be as close to local background as practicable.[44] Cultural features that are not Native American (e.g., NASA rocket stands) are not an allowable exemption. Native American interests that are not artifacts are not an allowable exemption. Native American artifacts that are not formally recognized as Cultural Features are not bases for cleanup exemptions under the AOCs.

Again, DTSC in the PEIR has gone far beyond the exemptions allowed in the AOCs. Like its attempt to expand the narrow exception for a USFWS Biological Opinion to a shotgun set of claims about biological features generally, DTSC similarly tries to inflate the narrow exception for formally recognized Native American *artifacts* to cover far broader claims not allowed under the AOC.

The PEIR identifies only 6 formally recognized Native American artifacts.[45] Those are all rockshelters, which presumably wouldn't be affected by cleanup of soil in any case, but which can be readily worked around if cleanup nearby were required.

We are sensitive to the need to protect Native American artifacts. But the information put forward in the PEIR and other evidence suggests that very little if any cleanup of contamination need be avoided in order to protect those artifacts.

A cultural features survey performed for the USEPA radiation survey identified some additional rockshelters and similar features and isolated small artifacts such as the mano stone, a few inches across, pictured below. These were flagged and either avoided

[44] AOCs, Appendix B, p. 1

[45] Table 4.4-1. The table lists a few other items as not officially recognized, but potentially eligible for such recognition in the future. Again, most of these are rockshelters and other similar features that appear to either not be associated with soil cleanup in the first place or could readily be worked around.

during the survey or carefully collected and then returned to their original location, which could be done as well during the cleanup.[46]

mano stone, source: DOE DEIS Ref. 465 (Corbett 2012)

What artifacts have been found – although none is formally recognized—have generally been quite small and isolated, whereby one can readily work around them or, as was done in the EPA survey, carefully collect and then return them. There is no basis, as DOE has done, to propose exempting a vast amount of the contamination from cleanup because of isolated small artifacts, which can be fully protected while also allowing the site to be returned to its natural state before DOE polluted it.

It is troubling that the PEIR is issued without the USFWS Biological Opinion, which is the only basis for a biological exemption, and without any information about asserted cultural exemptions.[47] The public review mandated by CEQA is impaired accordingly and prevents public review and comment in the CEQA process, amounting to a game of hide the ball. DTSC and the RPs have had years, indeed decades, to obtain the Biological Opinion and complete any necessary Native American artifacts consideration, and their delay in doing so impermissibly shields from CEQA review the basis for cleanup exemption claims. One notes that EPA was able to timely obtain its USFWS Biological Opinion and its cultural features review for its activities at Area IV and the NBZ, and that neither Opinion indicated that the activity would cause an unacceptable impact and could be readily conducted in a way that was acceptable. DTSC's efforts to exempt very large but undisclosed volumes of contaminated soil from cleanup for purported biological and cultural reasons violates the narrow AOC exceptions and is unsupportable upon careful examination.

The PEIR also suggests the possibility, without disclosing any specifics, of exempting from cleanup "cultural features" such as rocket test stands. This would clearly violate the AOCs, which strictly limit exceptions to formally recognized Native

[46] DOE DEIS Ref. 465 Corbett 2012.

[47] Given claims by Boeing that it wishes to eventually make SSFL into a park, with full public access, the failure to disclose information about proposed cultural exemptions cannot reasonably be based on protecting the location of the features.

American artifacts. Since much of the contamination is due to and thus collocated with the rocket test stands, such exceptions would strike at the heart of the cleanup obligations. For example, a million gallons of TCE was used to flush rocket engines after firing, with the TCE and the dissolved pollutants therein allowed to percolate into the soil at the test stand locations. One can't clean up the soil with the test stands there. Attempting to avoid promised cleanup by declaring the test stands to be cultural features would abrogate the AOC requirements.

No estimates are given as to how much contaminated soil would be left in place pursuant to these vaguely claimed biological and cultural exemptions.

Summary Regarding PEIR Discussion of Cleanup of the DOE and NASA Portions of SSFL

The PEIR violates the legally binding AOCs that were entered into by DTSC, DOE and NASA. It proposes leaving in place obviously large, but undisclosed, amounts of contaminated soil, in violation of the AOC prohibition on consideration of "leave in place" alternatives. The exceptions contemplated in the PEIR go far beyond those allowed by the AOCs. Furthermore, the key aspects of the DOE and NASA cleanups are hidden from public disclosure, making adequate CEQA consideration and public review and comment impossible.

C. THE PEIR CONSIDERATION OF THE CLEANUP OF THE SSFL PORTIONS FOR WHICH BOEING IS RESPONSIBLE: BREACHING DTSC'S 2010 COMMITMENTS

a. The PEIR Improperly Excludes Cleanup of SSFL to Any of the Standards DTSC Previously Promised: to a Standard Equivalent to the AOCs, to Background, or to the Agricultural/Rural Residential Standard

Under EPA and DTSC practice, one is to clean up to the exposure scenario that produces the greatest risk and which is allowed under current County zoning and General Plan designations.[48] As DTSC described the process[49]:

> One of the primary assumptions that these calculations rely upon is the land use. The Superfund process requires the assumption to be based upon the reasonably anticipated land use. *The local government General Plan land designations and local zoning designations are the most reliable expressions of prospective land use.* OSWER Directive No. 9355.7 - 04 ."Land Use in the CERCLA Remedy

[48] See, e.g., Land Use in the CERCLA Remedy Selection Process, EPA OSWER Directive 9355.7-04, and DTSC Response to Comments on Agreements in Principle, p. 11-12.

[49] DTSC Response to Comments, *supra*.

> Selection Process," May 25, 1995, p. 2, 4 - 5. *DTSC and U.S.EPA, in implementing the Superfund process, defer to local governments' land use plans and zoning decisions, and base their cleanup level calculations on the assumption that the land will be used as the land use requirements would allow, irrespective of its current use.*
>
> (emphasis added)

As DTSC said in 2010, its normal practice, even if there were no AOC or site-specific law, would be to require SSFL to be cleaned up to the rural residential/agricultural standard because that is what the site is zoned for and allowed under the General Plan:

> Even absent SB 990 [an SSFL-specific statute], *DTSC, in implementing its cleanup authorities, would defer to local governments' land use plans and zoning decisions. In this instance, the Ventura County zoning maps specify that the site and much of the surrounding area are currently zoned as rural agricultural*. Carrying out the cleanup specified in the Agreements in Principle is consistent with both SB 990 and with local land use decisions.
>
> (emphasis added)[50]

DTSC after analyzing various contaminants at SSFL, stated that a cleanup using its standards for all sites in the state, i.e., relying on local land use designations, would result in a cleanup at SSFL essentially equal to a cleanup to background, because the agricultural/rural residential cleanup levels were generally at or below background (one doesn't have to clean up below background).[51] Thus, DTSC said, a genuine risk-based cleanup would be the same as the cleanup-to-background required by AOC, even where there is no AOC and even if SB990, which subsequently was struck down, didn't exist.[52]

In 2015, in response to a request by DTSC, Ventura County confirmed for DTSC that its land use designations for the property allow a wide range of residential (e.g., with gardens) and agricultural (rural residential) uses.[53] Ventura noted that the current zoning (RA-5) for parts of the property might be changed in the future to comport with the General Plan's larger minimum parcel size, but that either zone that is compatible with the General Plan and to which it might be changed, OS-160 or AE-40, would be similar in continuing to allow residential and agricultural uses. Ventura provided the following table summarizing allowable land uses of SSFL under the General Plan and the zones compatible therewith:

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[50] *id.*, p. 21.
[51] *id.* pp. 14-17.
[52] *id.,* pp. 11-12, 14-7, 21
[53] Letter of July 20, 2015 from Kimberly L. Prillhart, Director, Ventura County Planning Division, to Mark Malinowski, DTSC.

Table 1: Allowable Residential & Agricultural Uses

Allowable Uses		AE Zone	OS Zone
Agricultural	Crop and Orchard Production[1]	X	X
	Animal Husbandry (animal raising)[2]	X	X
	Agricultural Contractors' Service and Storage yards and buildings	X	X
Animal Keeping, Non-Husbandry	Horses and Other Equines	X	X
	Kennels/Catteries	X	X
	Equestrian Centers	X	X
Residential:	Single Family Dwellings	X	X
	Second Dwelling Units	X	X
	Residential Care Facilities (6 or fewer)	X	X
	Boarding Houses / Bed-and-Breakfast Inns	X	X
	Family Day Care Home	X	X
	Farmworker Dwelling Units	X	X
	Animal Caretaker Dwelling Units	X	X
	Farmworker Housing Complex (multi-family)	X	X

1 See Section 8105-4 for a complete list of allowable uses. A wide range of crops and fruit-bearing trees are grown in Ventura County, and this use includes wineries and other uses related to agriculture.
2 This includes a wide range of animals, including cattle (ranching), horse ranches, etc.

Ventura concluded, "[A]s shown in Table 1 above, both of the zones that are compatible with the General Plan land use designation (OS, AE) **allow for a wide array of both residential and agriculture land uses.**" (emphasis added) Thus, pursuant to DTSC's commitments in 2010 and its normal procedures, even in the absence of an AOC or SB990, any risk-based cleanup for the Boeing portion of the property must be to the most protective of those allowable land uses and exposure scenarios, which is equivalent to the cleanup to background required in the AOCs for the DOE and NASA sections of SSFL.

However, just as the PEIR abrogates the cleanup commitments in the AOCs for the DOE and NASA areas, it breaches the past commitments and normal cleanup requirements for the Boeing portion. The PEIR states that the Boeing cleanup standard will be less protective than that required for DOE and NASA under the AOCs, and rejects even from consideration cleanup pursuant to equivalent standards. It further rejects from consideration cleanup to background for the Boeing portion. And it does not even mention and explicitly reject consideration of cleanup to the rural residential/agricultural standard it had previously promised, but it excludes it as well.

Surprisingly, DTSC does acknowledge in the PEIR that its procedures mandate cleaning up to the land uses allowed by Ventura's General Plan and zoning.[54] But it then

[54] p 3-9

goes on to misrepresent those allowable land uses by asserting that suburban residential represents all allowable land uses and the most conservative exposure scenario, ignoring the agricultural/rural residential entirely and without explanation.[55] No rationale is provided in the PEIR for excluding the agricultural/rural residential exposure scenario, allowed under Ventura County land use designations, nor is there even a disclosure that DTSC is excluding it.

The agricultural/rural residential standard is the most protective standard, as it presumes consumption of not just contaminated fruits and vegetables, but also beef, dairy products, chicken, eggs, etc. and longer exposure times. The agricultural cleanup standards are designed to assure that, for example, cows are not grazing on grass growing in contaminated soil, so that those who drink the milk and eat the meat are not put at risk.

Cow on SSFL Area IV (the nuclear area)
source: William Preston Bowling

[55] There is an assertion that the Standardized Risk Assessment Methodology (SRAM) it approved for SSFL mandates excluding the agricultural/rural residential scenario, but in fact, the SRAM includes detailed requirements for analysis of the agricultural/rural residential scenario as well, albeit, as shall be shown in the next pages, there errors in those input assumptions.

Cows grazing near SSFL Area IV source: William Preston Bowling

The PEIR does contain Risk Based Screening Levels for the agricultural/rural residential scenario in Appendix B, but they are not even considered as a cleanup standard.[56] These RBSLs are clearly wrong, in any case.

By definition, the concentration of contaminants in soil that will lead to the same risk are lower in the agricultural/rural residential scenario than in the suburban residential scenario, because the former assumes one consumes not just contaminated produce but also eggs, dairy, chicken, etc., and the exposure period assumed is longer (40 years as opposed to 30 or less). However, the RBSLs produced by Boeing and incorporated into the PEIR in Appendix B are less protective (i.e., would allow higher levels of contamination) for the SRAM-based agricultural/rural residential scenario than for the SRAM-based suburban residential garden. This, of course, cannot logically occur.

For example, Appendix B indicates one could allow approximately five times higher concentrations of chromium, antimony, mercury, and beryllium in the agricultural/rural residential scenario than in the suburban residential garden scenario, using the SRAM assumptions, even though the former by definition is consuming more contaminated food for a longer time than the latter. That this is clearly erroneous can be checked by comparing the suburban residential (residential) with the rural residential (farmer) preliminary remediation goals (PRGs) in EPA's current PRG calculator for the same elements. The PRGs for the rural residential scenario are 7-20 times tighter (more protective) than for the suburban residential scenario—the opposite relationship than the

[56] Two sets of rural residential RBSLs are provided, one based on the default exposure period of 40 years required by USEPA and DTSC, and the second, based only on 30 years. As was the case with the non-SRAM-based suburban residential garden RBSL, Boeing asked to include the 30 year RBSLs "for informational purposes," even though the DTSC-approved RBSLs were for the standard 40 year assumption.

one claimed in the PEIR Appendix B. In other words, mercury, for example, is purported in the PEIR to have a Risk Based Screening Level 5 times higher (*less* protective) for the rural residential/agricultural scenario than for the suburban residential, when it should be 7 times lower, or *more* protective. The rural residential RBSL is thus off by approximately a factor of 35, in the unsafe direction.

Comparison of Risk-Based Screening Levels (RBSL) for Metals in the PEIR (Appendix B)

Metal	SRAM-based Suburban Residental Garden RBSL (App. B) (mg/kg)	SRAM-based Rural Residential/ Agricultural RBSL (App. B) (mg/kg)	How Many Times Less Protective is the PEIR Rural Res/Ag. RBSL than the Suburban Res. Garden RBSL?
Arsenic	0.00010	0.00014	1.4
Beryllium	0.76	3.95	5.2
Chromium	542	3,020	5.6
Mercury	0.05	0.24	4.8
Antimony	0.14	0.70	5.0
Strontium	121	248	2.0

Comparison of EPA Preliminary Remediation Goals (PRG) for Metals

Metal	EPA Suburban Residental Garden PRG (pCi/g)	EPA Rural Residential/ Agricultural PRG (pCi/g)	How Many Times More Protective Should the Rural Res/Ag. Standard Be Than the Suburban Res. Garden According to EPA Guidance?
Arsenic (As-73)	0.439	0.2290	2
Beryllium (Be-10)	1.690	0.0838	20
Chromium (Cr-51)	0.889	0.2920	3
Mercury (Hg-194)	0.018	0.0025	7
Antimony (Sb-125)	0.053	0.0107	5
Strontium (Sr-90)	0.004	0.0004	10

*According to EPA Preliminary Remediation Goal Calculator for Radionuclides, accessed Nov. 14, 2017

The problem is not just for metals. For example, the PEIR assumes one can leave approximately five times higher concentrations of N-Nitrosodimethylamine, hydrazine and pyrene in soil for the agricultural scenario than for the residential scenario, despite the greater range of contaminated food types and longer exposure time for the former. This scientifically cannot be.

Comparison of Risk-Based Screening Levels (RBSL) for Example Chemicals in the PEIR (Appendix B)

Chemical	SRAM-based Suburban Residental Garden RBSL (App. B)(mg/kg)	SRAM-based Rural Residential/ Agricultural RBSL (App. B) (mg/kg)	How Many Times Less Protective is the Rural Res/Ag. RBSL than the Suburban Res. Garden RBSL?
N-Nitrosodimethylamine	0.00000095	0.00000480	5.1
Hydrazine	0.00000067	0.00000373	5.6
Pyrene	10.4	50.3	4.8

The error seems to be in large part due to failing to use for the rural residential scenario the SRAM-based ingestion rates for home-grown produce and instead using tiny rates that are non-credible. Much of that error appears to involve failing to use the normal, wet weight that EPA estimates comes from home grown produce, as used in the SRAM, and instead using a dry weight estimate, resulting in an indefensible, miniscule *total* produce consumption rate that is given for adults as a risible 28.5 grams of vegetables (about one ounce) and 56.2 grams of fruit per day, and for children, 10.4 and 14.8 grams respectively.[57] By contrast, the SRAM estimates adult residential consumption of vegetables and fruit--just from a residential backyard garden, based on actual EPA data on homegrown produce consumption--of 324.8 and 377.3 grams/day respectively, and for a child, 84.9 and 81.45 grams per day.[58] Current EPA default rates for homegrown produce consumption are even higher.

In short, the PEIR includes in Appendix B purported Risk Based Screening Levels for rural residential/agricultural exposures, values which are clearly erroneous. Additionally, in the PEIR, DTSC simply refuses to even consider cleanup to rural

[57] SRAM-2 Update, pdf p. 1125

[58] SRAM, pdf p. 1129 The error appears due in part to using, correctly, wet weight for the SRAM-based suburban residential garden and ingestion rates based on dry weight for the SRAM-based rural residential/agricultural scenario. Obviously the same amount of produce can appear to be a very different amount if the moisture in the food is not counted.

residential/agricultural standards, despite its past commitment to use them.[59]

It is important to note that DTSC acknowledged in 2010 that what was important was not just the zoning for SSFL itself, but for the areas surrounding it, about which DTSC correctly stated "the Ventura County zoning maps specify that the site *and much of the surrounding area are currently zoned as rural agricultural*."[60] If contamination onsite is not cleaned up, it can continue to migrate offsite and pose risks for the land uses nearby, which includes agriculture and residences.

The PEIR is therefore deficient in that it breaches past DTSC commitments and contradicts longstanding DTSC policy by declaring (1) that whatever cleanup occurs at SSFL will be less protective than the cleanup standards in the AOCs, (2) less protective than a cleanup to background, and (3) less protective than a cleanup to agricultural standards. Furthermore, as shall be shown below, the stated commitment to a cleanup to standards protective of suburban residential exposure with garden are also broken. All of these past promises are not just abrogated, they are excluded from even consideration.

b. <u>The PEIR's Supposed Suburban Residential Standard from Appendix B is Actually Nearly 30 Times Less Protective than DTSC's Official Suburban Residential Standard</u>

It is asserted in the PEIR that it is using a suburban residential standard (with garden) as the maximum cleanup that DTSC will require for Boeing. However, it significantly misrepresents DTSC's own suburban residential garden standard and instead relies on one far, far weaker that would result in very much higher levels of contamination not being cleaned up.

The PEIR asserts that the SRAM identifies three alternative suburban residential cleanup standards: one involving no garden, one involving a garden from which the residents get 100% of their fruits and vegetables, and one involving a garden from which they get 25% of their fruits and vegetables. Each of these assertions misrepresents the actual situation.

The SRAM requires consideration of a suburban residential scenario in which the residents have a backyard garden. It divides the exposures into two components, direct contact with the contaminated soil (e.g., getting some on your hand) and ingestion from consumption of fruit from a fruit tree or vegetables like lettuce and tomatoes from a

[59] It should be noted that even with the errors leading to higher (less protective) rural residential RBSLs in PEIR Appendix B than appropriate, they are nonetheless more protective than the erroneous values used in the PEIR for suburban residential garden RBSLs (either the Appendix B supposed EPA default RBSLs or the Appendix K supposed 25% garden). Cleanup to all the land uses allowed by Ventura County land use designations, as the PEIR asserts it is based on, would thus involve considerably more cleanup of the Boeing land than the very small amount set forth in the PEIR.

[60] DTSC Response to Comments on AIP, *supra,* emphasis added

backyard garden. The separate components were spelled out so that one could more readily see which exposure pathways contributed what portion of the overall risk. But DTSC's official policy is that the two components must be added together, and it so directed Boeing. So the SRAM does not give an option of a suburban residential standard without a garden, for the simple reason that many residences have them and one has to protect people from that exposure.

It is asserted in the PEIR that the standard identified in the SRAM as the SRAM-based suburban residential garden is based on assuming 100% of one's produce comes from one's backyard garden. That assumption is then rejected as unrealistic. However, the SRAM-based suburban residential garden component of the Risk Based Screening Levels (RBSLs) is *not* based on assuming that 100% of the fruits and vegetables one consumes comes from one's garden. It was based on USEPA data about the *amount of homegrown produce people actually consume*. It then assumed, sensibly, that 100% of that homegrown produce, grown in contaminated soil, was contaminated (CF_p, the contamination fraction for that produce, =1).

The inputs for the SRAM-based suburban residential garden RBSLs are found in Table 2 on PDF page 1129 of the SRAM Rev.2 Addendum. The fruit ingestion rates for adults and children respectively are given as 0.3773 and 0.08145 kg/day and for vegetables as 0.3248 and 0.0849, with a CF_p=1. Note (a) at the bottom of the table states that these numbers come from the Tables 5-2 through 5-5 of the 2005 SRAM, and that "Adult and child SRAM-based suburban residential garden fruit and vegetable ingestion rates were adjusted to units of kg/day using the adult and child body weights of 70 and 15 kg, respectively." The referenced Table 5-2 is captioned "ingestion of homegrown food/fish" and states explicitly that the fruit and vegetable ingestion rates are the "value of *homegrown* fruit consumption in the Western U.S." and the "value of *homegrown* vegetable consumption in the Western U.S.," citing as the source of those values EPA's Exposure Factors Handbook.[61] And indeed, Tables 13-12 and 13-13 of the EPA Exposure Factors Handbook provide "intakes of homegrown fruit" and "homegrown vegetables" for the Western U.S. The values given by EPA for homegrown ingestion rates are identical to the values found in Table 5-2 of the SRAM (5.39 and 4.64 g/kg-day respectively, for the 90th percentile). And these values yield the values in Table 2 on PDF p. 1129 of the SRAM-2, when converted, as the note to the table says, into kg/day by multiplying by body weight.[62] Thus, the SRAM-based suburban residential garden RBSLs are based not on 100% of all the produce one eats coming from one's garden, but 100% of all the produce one eats from one's garden coming from one's garden.[63] The

[61] emphases added. Table 5-2 is found at PDF p. 277 of the SRAM-2, which incorporates material from the 2005 SRAM. (The table gives the fractions of those fruit and vegetables totals that are local as 1, because the ingestion rates given are for homegrown produce in the first place.)

[62] e.g., 5.39 g/kg-day x 70 kg (70,000 g, adult)= 0.3773 kg-day fruit, the precise value in the table.

[63] As described in the SRAM at pdf p. 109, "Exposure parameter values for residential ingestion of homegrown fruits and vegetables are provided in Tables 5-2 and 5-3 for

values assumed are values based on actual USEPA data as to how much produce people eat that is homegrown. The fraction of the food from the garden that is contaminated is rightly assumed to be 100%.

Remarkably, the PEIR rejects the use of the official DTSC value for suburban residential garden exposure, the (DTSC-approved) "SRAM-based suburban residential garden." It does so, in part, by falsely asserting it is based on assuming that 100% of all of one's produce is homegrown, which, as we have seen is not the case. Instead, the PEIR proposes to use what it describes as a 25% garden scenario, where 25% of all the produce one eats comes from one's garden. It claims that this is what is found in Appendix B of the PEIR as "EPA-default suburban residential garden." But those values are not in fact based on the EPA defaults, not based on 25% of one's produce coming from one's garden. Furthermore, DTSC had told Boeing that the official suburban residential garden value was the SRAM-based one. Boeing asked to be allowed to include what it claimed was the EPA-default value for purely "informational" purposes. DTSC allowed it for that limited purpose, but made clear DTSC had not approved its use at SSFL and that the approved values were the SRAM-based garden values.

The PEIR, however, mischaracterizes this and claims that the SRAM presented three alternative suburban residential RBSLs (direct contact with the soil, SRAM-based garden, and "EPA default" garden) and that any of the three could be picked. That simply isn't the case. DTSC insisted that the direct contact and SRAM-based garden RBSLs be combined and that the "EPA default" garden was there just for informational purposes.

The PEIR claims that the "EPA default garden" RBSLs are just garden RBSLs with the assumption of 25% of one's produce coming from the garden rather than 100%. As indicated above, the SRAM-based garden was never based on such a 100% assumption, but was always restricted to how much actually was generally consumed from backyard gardens. But assuming *arguendo* the claim to be true, a review of the two sets of RBSLs makes clear that the standard the PEIR applies is not just a factor of four less protective (25% instead of 100%).

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adults and children, respectively. Deterministic values for adult and three- to five-year-old child consumption rates were obtained from USEPA (1997a) and *relate specifically to homegrown produce in the western United States.* Accordingly, the F term in the above equation was set at 1.0." (emphasis added) The F term is the fraction of produce assumed to be grown locally in one's garden. The USEPA document is the Exposure Factors Handbook, which provides data for actual consumption rates from gardens in the western U.S. Whereas other parts of the SRAM were changed in the update, this remained in effect; the updated table is on pdf p. 1129, which gives Table 5-2 as its source for the produce ingestion rates and contaminated fraction, and that table indicates the produce ingestion rates were just for how much came from the garden and the fraction was 1, and pdf. p. 109 explains the basis for Table 5-2.

We have compared the two sets of RBSLs in the attached Tables. As seen there, the values the PEIR says it intends to use are not just four times weaker, less protective, than the SRAM-based values, by 26-29 times so. It is clear that, despite the impression given in the PEIR, the weakened standards are not weakened simply by the SRAM-based values assuming 100% of one's produce comes from one's garden (which they don't) and assuming that the EPA presumes 25% (which it also doesn't), but additional errors have been made that result in dramatically weakened proposed cleanup levels.

Boeing, in its "for information only" supposed EPA-default garden RBSLs, assumed total amount of fruits and vegetables ingested by an adult as 0.0562 and 0.0285 kg/day, and the amount coming from one's garden as 25% of that.[64] The moment one looks at those numbers, one knows they are wrong. People eat far more than 56 grams of fruit and 29 grams of vegetables a day; people with gardens eat far more than 14 grams of fruit and 7 grams of vegetables from their gardens. These erroneous assumptions lead to the incorrect "EPA-default" suburban residential garden RBSLs Boeing put forward that are repeated in Appendix B of the EIR, and which the PEIR asserts (also erroneously, it turns out) is used in the PEIR as the maximum cleanup level for the Boeing site.

So how could the PEIR's supposed 25% garden standard be not four times weaker than the 100% standard, but nearly 30 times so? How could the former standard assume one consumes only 14 grams of fruit and 7 of vegetables from one's garden (less than an ounce total), while the latter assumes 377 and 325 grams respectively? It is in part because Boeing's supposed "EPA Default Suburban Residential Garden RBSL" is not in fact based on the EPA defaults whereas the SRAM-based garden scenario is, as we have seen, based on USEPA actual data on homegrown produce consumption.

Boeing got its total produce consumption rates indirectly from an old draft EPA document[65] but either failed to notice or did notice but failed to acknowledge that the values given were (1) not total consumption rates, but based on actual amounts from a garden [the note at the bottom of the table states: "the recommended ingestion rates are based on national average *home produced* consumption rates" (emphasis added)], and (2) were in dry weight (DW), not wet weight, whereas the formulas in the SRAM, and the values for the SRAM-based suburban residential garden RBSLs, are based on the actual, wet weight. In other words, they used values with the wrong units. It is not a matter of mixing apples and oranges; it is a matter of using the actual weight of the apple for the SRAM-based RBSL and then using the weight of dried apples for the alternative RBSL, making it appear that one is eating far less apples. These two errors largely explain the 26-29-fold lower RBSLs. Boeing double-counted: the ingestion rate was not total produce ingestion, but only the ingestion of home-grown produce, so multiplying that rate by 25% to supposedly get to the amount home-grown erroneously improperly reduced the actual home grown ingestion rate four-fold. And then, by using dry weight instead of, as the SRAM-based garden RBSL correctly did, the actual weight for the ingestion amount, it further artificially reduced the amount of produce ingestion. (One is

[64] Table 2, SRAM-2, PDF p 1129.
[65] Table C-1-2, source given in RAIS

supposed to count the actual weight of the lettuce, for example, not merely the weight of it if you drove off all the water.)

The final version of the draft EPA document that was supposedly the source of some of the erroneous inputs in Boeing's "EPA default garden RBSL" states explicitly one is to assume a contamination fraction of 100% because the ingestion rate is based on the amount from the garden:

6.2.2.3 Percentage of Contaminated Food

The percentage of food consumed by an individual which is home-grown will affect exposure, because the HHRAP assumes that only the portion of an individual's dietary intake which is home-grown is impacted by facility emissions.

We recommend assuming that all food produced at the exposure location - i.e. the farm for the farming scenarios, and the home garden for the residential and fishing scenarios - is impacted by facility emissions. Only that portion of the diet produced at home (and therefore exposed to facility emissions) is of consequence in the risk assessment. As detailed in Section 6.2.2.2, the consumption rates we recommend represent only the home-produced portion of the diet. Therefore, by using consumption rates specific to home produced foods, we consider it reasonable to assume that 100% of those home produced foods are contaminated.

What Boeing and the PEIR purport to be the EPA default garden ingestion rates are thus in fact not the EPA defaults at all. The current EPA's Preliminary Remediation Goal calculator for radionuclides uses the following default intake rates for homegrown fruits and vegetables from a homegrown garden: 626.7 and 852.3 g/day, and a Contamination Fraction of 1 (100%).[66] Thus, if one were to reject the intake values of the SRAM-based suburban residential garden RBSL and use current EPA defaults for the intake values, they would *go up* from 377.3 and 324.8 g/day to substantially higher values, roughly doubling. They would certainly not go down by factors of 27 or 45, as claimed by Boeing and the PEIR.

In summary, the PEIR's claims that the SRAM-based suburban residential garden RBSL is based on assuming 100% of one's produce comes from one's garden and should therefore be rejected are false. Similarly, the PEIR's claims that the "EPA-default suburban residential garden RBSLs" are based on EPA defaults and the assumption that 25% of one's produce comes from one's garden and should be used in the PEIR are also

[66] *Biota Modeling in EPA's Preliminary Remediation Goal and Dose Compliance Concentration Calculators for Use in EPA Superfund Risk Assessment*, ORNL-TM-2016/328, p. A-7,8

erroneous. The PEIR Appendix B "EPA default suburban residential garden" RBSLs are not in fact based on EPA defaults; they aren't based on 25% of one's produce coming from one's garden; and they are nearly 30 times weaker than the DTSC-approved SRAM-based residential garden, which should be employed, as DTSC mandated in the SRAM in the first place. The mistake is due almost entirely to assuming a grossly erroneous value for the intake of homegrown produce, about $1/30^{th}$ – $1/60^{th}$ the actual values EPA had established based on data for actual homegrown produce consumption and which was used for the SRAM-based garden, and $1/60^{th}$ the actual updated values EPA now uses.

The RBSLs Set Forth in Appendix B Are, Despite Claims to the Contrary in the PEIR, Not Even Used, But Rather, Even Less Protective RBSLs from Appendix K Are, **~60 Times Weaker** than DTSC's Official Suburban Residential Garden RBSLs

The PEIR states that it is based on what it describes as the 25% garden standard, found in Appendix B as the supposed EPA-default suburban residential garden. As shown above, it is in fact neither based on 25% of one's produce coming from one's garden nor on EPA defaults, and breaches DTSC's prior determination that the SRAM-based garden should be used instead.

However, the PEIR does not in fact even use the Appendix B values, despite its claims to do so. Instead, one finds in Appendix K that it throws out all the values in the SRAM and uses new ones that are generally even less protective. Nearly half of the supposed 25% garden values are 60 and even 70 times weaker than the DTSC-approved SRAM-based garden RBSLs.

In the attached Tables, we have compared the values for which comparisons are possible (i.e., those chemical contaminants for which 25% suburban residential garden RBSLs are provided in Appendix K, Table 3) One sees that the RBSLs for what Appendix K calls 25% suburban residential garden are frequently twice as high (i.e., half as protective) as what the PEIR calls the 25% garden from the SRAM, as set forth in Appendix B of the PEIR as the "EPA default suburban residential garden." *More critically, the supposed 25% garden values in Appendix K are generally 60 or 70 times higher (less protective) than the DTSC official suburban residential garden value from the SRAM, the "SRAM-based suburban residential garden" RBSL.*

This is not disclosed in the PEIR. Only someone who would laboriously compare the tables buried in Appendix K with the SRAM-based suburban residential garden RBSL in Appendix B would discover the extraordinary weakening of protections proposed. And the flimsy bases for the weakened cleanup levels are quite buried as well. This is all at variance with the purpose of CEQA – public disclosure and transparency and meaningful opportunity to comment.

It is stated in the main volume of the PEIR that DTSC is rejecting from even consideration the SRAM-based suburban residential garden RBSL – i.e., its official suburban residential cleanup values – and the maximum that will be considered is what it

claims is the 25% garden RBSL. As seen above, those values are not, in fact, based on assuming that one consumes one-fourth of one's produce from one's garden, as claimed. Furthermore, if that were the difference, the value used in Appendix K should be one-fourth of the SRAM-based value, but instead is one sixtieth or one seventieth. Put differently, if those values were used as cleanup values, contamination concentrations 60 or 70 times higher than DTSC's official risk-based levels for suburban residences would be allowed to remain.

How did the authors of the PEIR manage to put forward such dramatically weakened standards? One cannot tell, because the sources for the numbers are not disclosed. The reader is informed that Appendix K is a summary of an analysis prepared by Boeing and a review thereof by DTSC[67], but neither the Boeing submission nor the DTSC review are made available. It becomes impossible to check the conclusory claims.

It is mentioned in passing that Appendix K employed assumptions altered from the DTSC-approved assumptions in the SRAM-2 Addendum. There is no explanation of why that would be appropriate. The SRAM-2 Addendum is the latest approved version of the assumptions to be used for risk assessment at SSFL. Apparently Boeing rejected some of the official assumptions, replaced them with others, and the authors of the appendix accepted those alterations. Yet there is no discussion of why those alterations, and not others, were appropriate, particularly when they breach the official SRAM.

A brief table in Appendix K (table 2) summarizes changes purportedly made to the SRAM assumptions. However, a review of the resulting revised RBSLs suggests that other changes, not disclosed, may also have been made, but it is difficult to ascertain precisely what in the absence of the underlying documentation that has been kept from public view. One can't get to the numbers given in the Appendix on the basis of the few changes in inputs disclosed.[68] This is another example of the continued pattern of hiding the bases for conclusions, preventing meaningful review and comment.

Most of the changed inputs from the SRAM that are disclosed are relatively minor in magnitude (e.g., changing adult body weight from 70 to 80 kg, reducing the period of exposure as an adult from 24 to 20 years (not very conservative, given that people often live in the same place for far longer than that), and fairly small changes to assumed skin

[67] Appendix K, p. 1

[68] For example, the overall factor by which the suburban residential garden RBSLs described in the PEIR as representing 100% garden and 25% garden differ is 26-29 times. Making the same changes, as identified in Table 2 in PEIR Appendix K, to both should result in the ratio between the 100% and 25% gardens remaining the same; however they don't. It would appear some other factor or factors have been altered from the Appendix B values and not disclosed in Appendix K, but one can't tell what factor(s) those might be because the Boeing submission on which Appendix K is based has been shielded from scrutiny.

contact area.[69] But one is quite large, reducing the mass loading factor (MLF) by nearly twenty-fold. Depending on the chemical, this change can produce a very large relaxation of cleanup levels, all things being equal. But as we discuss below, all things aren't equal, and the authors of Appendix K are engaging in a scientifically inappropriate form of cherry picking.

A number of factors affect how much contamination in soil will result in how much risk, given the same exposure scenario (e.g., suburban residential with a garden). Key among these are: (1) how much produce from the garden is assumed to be consumed (ingestion rate of home-grown fruits and vegetables, or IR_f and IR_v), (2) what fraction of that homegrown produce is assumed to be contaminated (the produce contamination fraction, or CF_p), (3) the mass loading factor (MLF, how much contaminated dirt gets on the plant), and (4) the soil uptake factor (BV, the soil to plant uptake factor, i.e., how much contamination in the soil is taken up into the plant via its roots). Updating one of these factors without updating the others will result in incorrect cleanup standards. If one picks as the sole key factor to alter one which weakens the cleanup standard – say, for example, significantly lowering the MLF – the result is artificially creating markedly non-protective standards.

That is precisely what has occurred here. And the flimsy basis provided for such a large weakening of protections – the citation of a single email from a USEPA staffer (with the recipient not even identified) that DTSC has repeatedly refused to release[70]—is indicative of the underlying problem in the PEIR of dramatic diminution of safety with the shaky rationale for such steps kept hidden behind a wall of non-disclosure. DTSC has repeatedly declined to make public the documents referenced in the PEIR and on which it relies, including this cited email. The refusal to release the email raises suspicion that its contents do not fully support the claim for allowing Boeing to avoid cleaning up large amounts of contamination.

Indeed, there is reason to believe that were the email released, one would find precisely that. In the face of repeated refusals by DTSC to make available the documents referenced in the EIR, a Freedom of Information Act (FOIA) request was submitted to EPA. The email does not say that EPA had officially changed the MLF from 0.26 to 0.0135, as claimed in the PEIR Appendix K, but rather a DTSC staffer asked EPA asked what the MLF might in the future be revised to for lettuce, and was told that no decision had been made but the *draft* figure for lettuce was indeed 0.0135. The EPA email author further indicated that some MLFs for other foodstuffs would be unchanging – not

[69] It is unclear why these changes to the SRAM are even being considered now, as the document cited as the source for all of them (with the exception of the MLF matter discussed above separately), pre-dates the SRAM-2 Update.

[70] The other changed values (which have little effect) are all from a single, published EPA document, creating the impression they are there to help bury the far more significant change, which is purportedly based solely on an undisclosed email. This is not a proper way to bypass the officially approved (by DTSC) Standardized Risk Assessment Methodology.

disclosed in the PEIR.[71] And most importantly, the EPA author of the email also indicated that the EPA default produce ingestion rates and soil uptake factors were likely to change as well.

Were these to increase – as they in fact did – they would counteract some or all of the effect of a reduced MLF. Indeed, when USEPA did officially revise the inputs, cleanup standards *tightened* rather than relaxed, despite change to the MLF. The EPA residential PRG for Strontium-90, for example, went from 6.6×10^{-2} pico-curies per gram (pCi/g) to 3.61×10^{-3} pCi/g, an 18-fold reduction, or increase in protectiveness.[72]

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[71] Despite the assertion by the DTSC author of the email to EPA, EPA was not changing the MLF values from dry to wet weight. Instead, EPA had long set an MLF of 0.26 as the conservative default for all intake, and in the new PRG calculator, was setting individual MLFs for each main fruit and vegetable. But, as EPA's Walker indicated in his email response, it was doing the same thing for soil transfer factors and produce ingestion rates. Those changes, which the PEIR does not disclose and does not include, counter to a significant degree the MLF change.

[72] EPA PRG radionuclide calculator, https://epa-prgs.ornl.gov/radionuclides/

[73] The other changed values (which have little effect) are all from a single, published EPA document, creating the impression they are there to help bury the far more significant change, which is purportedly based solely on an undisclosed email. This is not a proper way to bypass the officially approved (by DTSC) Standardized Risk Assessment Methodology.

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This was due to other updated inputs that resulted in lowering rather than relaxing cleanup standards, changes which are selectively ignored in the PEIR when it changes the MLF but not the other countervailing factors. For example, the EPA default values for home-grown fruit ingestion rate have now increased to 626.7 g/day for adults and 260.5 g/day for children; for vegetables the rate increased to 852.3 and 249.6 respectively.[76] This represents about twice the values the SRAM-based garden is based on and about sixty times the erroneous values used in Appendix B as supposedly "EPA default-based garden." These current EPA defaults are based on EPA data about how much of each fruit and vegetable are actually consumed from backyard gardens. But they appear to not be reflected in the PEIR selective revisions.

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[74] Despite the assertion in the initiating email by the DTSC author, EPA was not changing the MLF values from dry to wet weight. Instead, EPA had long set an MLF of 0.26 as the conservative default for all intake, and in the new PRG calculator, was setting individual MLFs for each main fruit and vegetable. But, as EPA's Walker indicated in his email response, it was doing the same thing for soil transfer factors and produce ingestion rates. Those changes, which the PEIR does not disclose and does not include, counter to a significant degree the MLF change. Additionally, the DTSC initiating email also misstated the EPA PRG calculator user's guide then in effect; it did not have an MLF value for lettuce, or any other individual produce; it used a generic value for all.
[75] EPA PRG radionuclide calculator, *supra*
[76] *Biota Modeling, supra,* Table A-1. As stated on p. A-7 therein, these values are for the amount of homegrown produce, not total produce consumed. As such, EPA set the default contaminated fraction (CF) at 1 (100%), not the 25% used in the PEIR. See EPA Radionuclide PRG Calculator User Guide, https://epa-prgs.ornl.gov/radionuclides/prg_guide.html

Additionally, EPA used in its updated PRG radionuclide calculator more modern soil uptake factors (how much of a contaminant in soil is taken up by the plant), ones aimed at each main kind of fruit or vegetable, but the PEIR fails to use updated plant uptake factors for calculating RBSLs in Appendix K. We had an email exchange[77] with the same individual at EPA, Stuart Walker, who was the author of the email cited in the PEIR, and Stuart Dolislager at Oak Ridge National Laboratory (ORNL), who is responsible for many of the technical revisions in the EPA PRG calculator and is a primary point of contact for ORNL's Risk Assessment Information System (RAIS), for both radionuclides and chemicals, about the matter.[78] Dolislager indicated that for metals, the new values in the EPA PRG calculator for radionuclides should be used for chemicals as well. As to non-metal chemicals, Dolislager said the soil transfer values in the RAIS come from a formula for estimating such transfer included in a 1994 paper on uncertainty in human exposures[79] and that it would be far better to use "new equations for all kinds of soil to all kinds of plant by climate zone" and that he understands "there are better ones out there." Walker provided a document which he said showed that many of the European chemical models addressed homegrown produce. (We are not suggesting a quick modification of the transfer factors, nor use of any of the initial sources identified by Dolislager and Walker, but a thorough review of what are the most accurate and updated transfer factors internationally available. One should not change one factor, e.g., MLF, without a thorough review of changing the countervailing other factors that would drive the cleanup levels in the other direction.

In short, the DTSC-approved inputs are found in the current SRAM (Standardized Risk Assessment Methodology Rev. 2 Update) and produce the SRAM-based suburban residential garden RBSLs that should have been used in the PEIR, but were inappropriately thrown out and replaced with far less protective RBSLs that are based on erroneous inputs (Appendix B) and with even less protective RBSLs in Appendix K.[80] The Appendix K RBSLs ignore the approved SRAM assumptions and selectively change them. In particular, the MLF is altered from that in the official SRAM, an action which markedly relaxes the RBSLs, but increased EPA default homegrown produce

[77] Hirsch to Dolislager and Walker, October 27, 2017; Dolislager to Hirsch and Walker, October 30, 2017; and Walker to Dolislager and Hirsch, October 30.
[78] The RBSLs in Appendix B, coming from the SRAM, rely in part on RAIS inputs.
[79] The section of the 23-year-old paper touching on soil transfer factors is merely a page long and suggests a simple generic formula for the purpose of the author's Monte Carlo analysis about uncertainty and variability. It relies on information from three decades ago and hardly forms an adequate basis for estimating soil uptake factors for different kinds of plants, in different soils and climates, for an array of chemicals.
[80] DTSC directed Boeing to propose revisions to the SRAM to reflect current EPA and other information and defaults for the suburban residential garden scenario. Boeing has refused, and instead submitted a proposed SRAM revision that excludes the suburban residential scenario completely. As such, there is no official SRAM-based suburban garden set of RBSLs other than those in the SRAM-2 Update, and they should be used in the PEIR.

consumption rates are ignored and there is no effort to update the extremely old soil transfer factors. This kind of cherry-picking of input changes is scientifically indefensible and would lead to substantially weakened public protections. One should not be modifying the factors that relax standards (MLFs) for different produce types in the absence of as thorough an acquisition of new soil transfer factors for the same produce types, and the use of EPA's new homegrown produce consumption rates.

The PEIR Fails to Include Any Analysis of the Human Health Risks from Leaving Contamination Not Cleaned Up—No Comparison of Levels of Contamination Proposed to be Left in Place Against Human Health Risk Based Screening Levels

It is asserted in the PEIR that the Boeing cleanup will be risk-based. Additionally, the PEIR proposes to "leave in place" very large amounts of contamination in the DOE and NASA portions of SSFL--despite the AOC prohibitions on doing so—with no analysis of how much above human health Risk Based Screening Levels that would be. In the prior sections, we have demonstrated that DTSC has arbitrarily excluded from consideration for the Boeing cleanup the agricultural/rural residential scenario, despite having promised to clean the site up to all the land uses allowed by Ventura County General Plan and zoning designations of SSFL and the surrounding are, which include, as admitted in the PEIR, a wide range of residential and agricultural uses. We have shown how the PEIR does include purported RBSLs for rural residential use, but that they are erroneous by a large margin, in part because of large errors in the homegrown produce consumption rate used. We have similarly shown that the PEIR erroneously dismisses the use of the official DTSC-approved suburban residential garden RBSLs (the "SRAM-based" suburban residential garden) and proposes to use instead RBSLs that are on the order of dozens of times less protective, largely due to misrepresenting the SRAM-based garden as assuming 100% of one's produce comes from a backyard garden and then using trivially small homegrown produce rates far, far lower than the official EPA defaults.

What is most striking, however, is that despite the specification of erroneous RBSLs, and the ignoring of DTSC's official suburban residential RBSLs, they aren't even used to analyze the impacts of the proposed exempting from cleanup and leaving in place hundreds of thousands of cubic yards of contaminated soil. How much above risk based levels would the remaining contamination be? What risk values are associated with leaving contamination that high?

DTSC had required Boeing to perform risk assessments, and those are instructive. In one location, risks of 9.6×10^{-1} were estimated—96 out of 100 people would get cancer from the contamination if exposed. In other areas, risks of 3 in 10, 1 in 5, and so on are estimated. Post-cleanup, Boeing estimated risks remaining as high as 1 in 5 people getting an excess cancer from their exposure, 200,000 to 2,000 times DTSC's (and EPA's) official acceptable risk range.[81] For non-cancer risks, Boeing estimates levels

[81] For a detailed analysis of the Boeing risk assessments, see the Rincon et al. analysis submitted by Physicians for Social Responsibilty. Also, see the letter of December 15,

hundreds of times higher than the required Hazard Index of 1, above which there is supposed to be cleanup. These extraordinary risk estimates, as high as they may be, may still be low, since they are based on suburban residential cleanup levels, rather than the rural residential standards which should be more protective and are required because of Ventura County land use designations.

These numbers from Boeing's own risk assessments are critical. Even if the site were not used for agriculture or residences in the future (although those were its past uses), those are the current uses surrounding the property. Even assuming some dilution or dispersion (and there are mechanisms that could concentrate rather than reduce concentrations that have migrated), the risk estimates are so high that people living and working near the site could still be exposed well above DTSC risk goals if the site isn't fully cleaned up.

What is remarkable about the PEIR is that it contains no assessment whatsoever of the risk from what it proposes – leaving much of the contamination not cleaned up, assumed for all of the alternatives identified. There are hundreds of pages about purported negative impacts of doing the cleanup, but nary a word about the negative impacts of the contamination itself and the effects of not cleaning it up.

Indeed, DTSC told Boeing to remove the embarrassing risk assessments from its prior submissions, purportedly to await a revised approved SRAM, which does not exist.[82] When questioned in June about this, and how an EIR could be issued without estimates of the risk from the proposed plans to avoid cleaning up much of the contamination, DTSC and CalEPA indicated they would do the risk assessments themselves, and they would be in the EIR. However, that didn't happen, and the PEIR is completely silent on the risks from the contamination and from leaving it not cleaned up. The public – and decision-makers -- are not informed how much against risk-based levels the contamination would remain under the various options being considered. On one side of the ledger in the PEIR is a parade of horribles, exaggerated claims about impacts from the cleanup; but on the other side of the ledger, the impacts of the radioactive and toxic chemical contamination and of not cleaning it up, the ledger is empty. And not because of a lack of risks, but the opposite, and a complete failure to disclose those impacts, a failure that goes to the heart of the transparency and disclosure requirements of CEQA.

The PEIR puts forward vague proposals to exempt from cleanup unspecified but clearly very large amounts of contaminated soil . But nowhere does it tell the public how much of which particular contaminants are in those areas that wouldn't get cleaned up, nor by how much they exceed risk-based levels. This is a fundamental failure.

2015, by elected officials to DTSC Director Barbara Lee about these extremely high estimated risks.

[82] In response, Boeing refused the DTSC direction and instead submitted a proposed SRAM revision that would remove the suburban residential exposure scenario (and rural residential as well) completely from the SRAM.

The PEIR Fails to Include Any Analysis of the Ecological Health Risks from Leaving Contamination Not Cleaned Up—No Comparison of Levels of Contamination Proposed to be Left in Place Against Appropriate Ecological Risk Based Screening Levels

Just as the PEIR fails to provide any information about potential impacts on public health from its proposals to leave in place large amounts of contamination, not cleaned up, it similarly fails to perform any analysis or make any disclosure about the ecological effects of the contamination and of failing to clean up all or part of it. The PEIR does provide in Appendix B various Ecological Risk Based Screening Levels (EcoRBSLs), but remarkably, nowhere in the PEIR is there disclosure of the particular contaminants or their concentrations in the places proposed to not be cleaned up, nor any comparison of those levels to the appropriate EcoRBSLs. From what limited information can be gleaned from other sources, it would appear that the contamination proposed to be left in place would often greatly exceed the EcoRBSLs. The failure to provide this information in the PEIR is a fundamental failure, violating a central purpose of CEQA.

The argument given in the PEIR for leaving in place large amounts of contamination, despite the AOCs' prohibition on leave-in-place alternatives, is that the cleanup would purportedly harm biological receptors. But a key purpose of the cleanup is to undo the decades of damage to those biological receptors from the radiological and toxic chemical contamination. This is never addressed. Nor is the degree to which the contamination proposed to be left in place would exceed the EcoRBSLs which purportedly define the pollution levels at which those biological receptors would be harmed.

The cleanup levels considered in the PEIR for the Boeing property, the supposed 25% garden, also described as EPA defaults (both of which characterizations are, as shown, above, a misrepresentation), far exceed the appropriate EcoRBSLs for many of these contaminants. The difference is often a factor of hundreds or thousands. See attached Tables.

In Appendix K, without disclosing the decision or any basis for it, the wrong EcoRBSLs are considered. The original ecological ecological screening levels of the SRAM were based on EcoRBSLs supposedly based on No Observable Adverse Effects Levels – i.e., contaminant levels expected to produce no adverse effects on the biological receptors. Boeing asked in a SRAM revision to also include, "for informational purposes," a second set of EcoRBSLs, based on concentrations that would purportedly produce mid-level adverse effects. It called these "High Toxicity Reference Value" (High TRV) EcoRBSLs. Somehow, just as the far less protective "for informational purposes only" mischaracterized "EPA default" suburban residential garden ended up in the PEIR being used instead of the officially approved "SRAM-based suburban residential garden," Appendix B gives both sets of EcoRBSLs, but Appendix K ends up using the High Toxicity Reference Value EcoRBSLs, which are based on significant adverse effects, rather than the required Low Toxicity Reference Value EcoRBSLs which

are based supposedly on NO observable adverse effects. This questionable decision is not called out in the PEIR, nor is any basis given for it. The values used in Appendix K are often hundreds or thousands of times less protective than the Low TRV, No Observable Adverse Effects Levels, from Appendix B and the SRAM. See attached Table.

The attached tables compare the difference between the two EcoRBSL sets. One sees that the High TRV EcoRBSLs Boeing put forward for informational purposes only in the SRAM, and which are nonetheless used in the PEIR rather than the Low TRV EcoRBSLS, are far less protective than the Low TRV EcoRBSLs that should have been used. Furthermore, as one can see in Appendix B, for many contaminants, in addition to to Low and High TRV EcoRBSLs which are put forward for mammals and avian species, EcoRBSLs are also enumerated for terrestrial plants and soil invertebrates and sometimes those RBSLs are also lower (more protective) than the values used in Appendix K. In addition to the use of both human health and EcoRBSLs that are far higher (less protective) than appropriate, Appendix K also arbitrarily assumes that contamination above even those RBSLs will not be cleaned up, exempting from cleanup soil that is 2-3 times the weak, non-protective RBSLs used therein.

For the NASA and DOE portions of the property, there are no comparisons provided in the PEIR of the contamination levels in areas proposed to be exempted from cleanup against the EcoRBSLs (and those should be the lowest, most protective RBSLs). The argument that one is avoiding cleanup in order to protect biological features rings hollow if there is no disclosure how doing so would result in contamination levels far above the levels DTSC estimates would harm those very biological receptors.

For the Boeing portions of the property, there similarly are no comparisons to the appropriate protective EcoRBSLs provided for the contamination levels in areas proposed to be exempted from cleanup (either by use of the extraordinarily weak cleanup standards proposed or by additional contemplated exemptions from even those standards). The purported harm from cleanup is discussed at great length, whereas the real harm to biological receptors from contamination by plutonium-239, strontium-90, cesium-137, perchlorate, dioxins, PCBs, heavy metals etc. is not analyzed at all.

As was the case with the human health RBSLs discussed earlier, not only is there no comparison of the contamination levels to be left in place against any RBSLs, and not only are the wrong set of RBSLs employed, but the RBSLs reported in Appendix B, reprinted from the SRAM, appear scientifically questionable and insufficiently protective. The High Toxicity Reference Value EcoRBSLs, at times inappropriately called in the SRAM low observable adverse effects levels (LOAEL), sometimes described as medium effects, appear based on effects as high as 50% mortality or 50% reduction in reproductive capacity. Using as a cleanup value levels that are estimated to kill half of those exposed or reduce their reproduction by 50% cannot possibly be justified.

Additionally, even the Low Toxicity Reference Value EcoRBSLs included in Appendix B and the SRAM do not appear to be true No Observable Adverse Effect Levels (NOAEL). Instead, many are based on taking the level that would produce 50% mortality or reduction in reproductive or other key functions and merely assuming that at $1/5^{th}$ the concentration there is zero adverse effect. This assumption appears based on no scientific evidence whatsoever, but goes back to a short paper from several decades ago by a DOE employee that used that assumption based on his own "judgment." The High TRV EcoRBSLs should be abandoned, as they involve significant harm to biological receptors, and the Low TRV EcoRBSLs should be substantially tightened, so they truly represent No Observable Adverse Effects Levels.

The situation is even worse for the values given for terrestrial plants and soil invertebrates (the Low and High TRV EcoRBSLS discussed above are limited to mammals and birds.) As DTSC noted in comments on the SRAM[83]:

> Most plant TRVs are not adjusted to a "no effect" level; this is also true for the soil invertebrate TRVs used to calculate the EcoRBSLs. *Most of these are acutely lethal doses*, concentrations such as LC_{50}s [lethal concentration to 50% of the organisms exposed], divided by an uncertainty factor of as little as 5, to estimate a LOAEL. *As such, if these EcoRBSLs are exceeded, it is generally more likely that impacts will occur to these communities than if the low EcoRBSLs are exceeded for mammals and birds,* although there is *also a large degree of uncertainty regarding these TRVs, as they are often based on acute studies which may not be accurate predictors of chronic effects*.

As one can see from perusing the EcoRBSLs in Appendix B, the RBSLs for plants and invertebrates are often given as far higher than the RBSLs for birds and mammals; that is not because the chemicals are less lethal to the former, but because the assumptions used for calculating them are so non-protective.

In summary: (1) the PEIR is deficient in failing to compare contaminant levels proposed to be exempted from cleanup against the appropriate, protective Risk Based Screening Levels for harms to biological receptors, (2) the wrong EcoRBSLs, ones that are non-protective, are used in Appendix K, ones that by definition would produce adverse effects on the biological receptors, (3) and the numerical values for all categories of EcoRBSLs in Appendix B are scientifically questionable and insufficiently protective, with insufficient evidence to support claims that any represent true "no observable adverse effect levels." Whereas the PEIR is premised on the claim that cleanup would harm biological receptors, it is the decades of polluting the SSFL environment that has harmed them and will continue to do so if the contamination is not cleaned up, and the PEIR wholly fails to analyze the impacts on the biological receptors of failing to meet the commitments for a full cleanup of the pollution that has damaged their environment.

[83] SRAM pdf p. 1580, emphasis added

Soil Volume Estimates for DOE and NASA Are Artificially Inflated and for Boeing Artificially Deflated

A central aspect of the PEIR is the estimate of how much contaminated soil there is and how much of it would be remediated. However, most of the key numbers are missing from the PEIR and those that are presented appear to have little validity, and virtually no basis for them is provided. They appear to come not from DTSC but from the Responsible Parties themselves. In the case, of the DOE and NASA portions of the property, the values appear to have been inflated so as to push for breaking out of the AOC cleanup requirements. In the case of the Boeing portion, the proposed cleanup volumes appear to have been dramatically understated, so that the maximum cleanup Boeing would have to do is a tiny fraction of the amount of contaminated soil in their areas.

The estimated soil remediation volumes are found in Table 3-3. The acreage estimates are in Table 3-2 and shown in Figure 3-5. Even a cursory review suggests that the values are highly questionable. For Area IV, the DOE area, virtually the entire area is colored in as contaminated. 92% of that contamination is identified as chemical, rather than radioactive.[84] Yet the SSFL areas that would be expected to be more heavily contaminated with chemicals—the rocket testing Areas I, II, and III—are claimed to have considerably less contamination requiring cleanup. No explanation is given as to how DOE managed to so badly contaminate virtually its entire area, and with which chemicals and where they came from, nor why the other areas which presumably dealt with more chemicals and had more airborne releases that could settle on soil are claimed to have instead significantly less.[85]

Figure 3-5 also suggests almost complete contamination within the Area IV boundaries and generally no contamination on the other side of the line, something which is scientifically quite improbable. See, for example, the southern and southwestern boundaries of Area IV shown on Figure 3-5; on one side, full contamination, on the other, purportedly none.[86] For the boundary with the NBZ, only small traces are colored in on the NBZ side, whereas virtually the entire Area IV on the other side of the boundary is colored in as contaminated. Again, this is highly improbable scientifically.

The bases for these assertions, however, are hidden from public review. The sole sources for the DOE and NASA volume estimates are from DOE and NASA themselves,

[84] Table 3-4 indicates only 91,000 of the 1,260,000 cubic yards of soil estimated in the DOE area is radioactively contaminated, the rest being due to chemicals.
[85] We recognize that part of this difference is due to the grossly non-protective cleanup standard assumed in the PEIR for the Boeing portion of the property, but that does not explain the difference with the NASA portion.
[86] The AOCs require cleanup of contamination that extends across area boundaries.

and DTSC has refused to make them public.[87] The estimate for the DOE volume comes not from DTSC but from DOE, and a single DOE document at that—one which has not been made public. It is listed in the references as an email from a DOE staffperson to DTSC on April 23, 2015, but like virtually all of the information that forms the basis for the PEIR, DTSC has refused to release it. Similarly, the soil remediation volume estimate for the NASA part of the property comes not from DTSC but from NASA. It too is simply an email from a NASA staffer to DTSC, dated June 17, 2015, and again, DTSC has refused to allow the public to see it. There is no way that the public can perform a meaningful review of such important aspects of the PEIR when DTSC shields from public view the very basis for the assertions contained therein. This is one more example of how DTSC has failed to comply with CEQA in this matter.

Given DTSC's shielding from public review the actual bases for the questionable volume assertions, the public is left to infer from other documents the likely causes of the errors. DOE previously issued volume estimates[88]—prepared in fact not by DOE but by Boeing's contractor—which was released by DOE during its scoping proceeding for its EIS. This document was heavily criticized, particularly by the Southern California Federation of Scientists (SCFS).[89] The SCFS critique was totally ignored in the PEIR by accepting without question the DOE (and similarly troubled NASA) estimates.

As SCFS indicated, the estimates appeared significantly inflated by questionable assumptions. DOE assumed contamination went all the way to bedrock, even when there was no evidence that was the case; that it extended laterally through soil until there were rock outcroppings, even when there was no evidence; that entire pond areas were contaminated if there were one or two samples that were positive, even without evidence that the rest was contaminated; and so on. We incorporate herein the SCFS critique.[90]

Additionally, a significant part of the questionable volume estimates seems to be tied to questionable handling of the TPHs. DOE and DTSC themselves have raised questions whether the purported detects of TPHs all represent contamination or whether may represent naturally occurring material unrelated to SSFL, which wouldn't be subject to a cleanup requirement. None of this is addressed in the PEIR. The reader is merely given a conclusory number, with no basis provided, the sources not made public, and the

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[87] The PEIR notes (see fn. 1, p. 3-1) that the information in that chapter was produced "in conjunction" with the Responsible Parties, but in fact, the involvement went much farther. Documents obtained under the Public Records Act indicate that the RPs were allowed to draft, edit and revise much of the PEIR.

[88] Rough Order of Magnitude Estimates for AOC Soil Cleanup Volumes in Area IV, and Associated Truck Transport Estimates based on DTSC Look-up Table Values – DRAFT, memo from David Collins, Mark Sherwin, Dixie Hambrick (MWH) to John Jones and Stephanie Jennings of DOE, September 4, 2013

[89] March 1, 2014 Statement at DOE Scoping Hearings

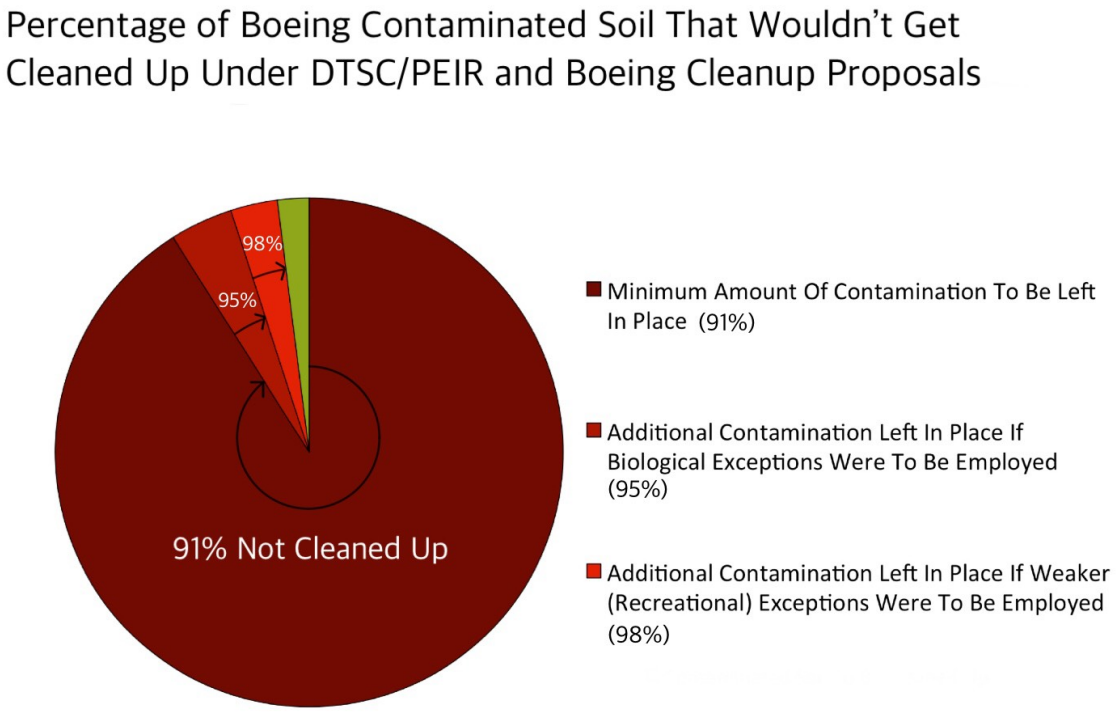
[90] *id.* One issue raised by SCFS, that of inappropriately counting fluffing of soil when estimating volumes, appears partially addressed in terms of volume estimates (but not clearly so regarding trucks).

past criticisms not addressed. Furthermore, no basis is provided for the claim that one side of the boundary lines is virtually completely contaminated and the other side clean or nearly so. In short, the volume estimates for the DOE and NASA areas are questionable and without any basis provided that can be publicly reviewed. They appear designed primarily for polemical purposes—to attempt to scare the public about numbers of trucks necessary or amount of land that would be affected on the one hand and to make it seem there is virtually no offsite contamination on the other, and therefore support breaking out of the AOC cleanup commitments.

As to the Boeing portion of SSFL, none of the tables or figures, or the PEIR text itself, gives any data as to the extent of contamination in the Boeing areas, a principal failure of the PEIR and at odds with CEQA's disclosure and environmental analysis requirements. The PEIR fails to disclose how much contamination, with what contaminants, and at what levels and locations. This omission makes it impossible to determine how much contamination, of what kind and concentration, the PEIR proposes to exempt from cleanup. One cannot evaluate the environmental impacts without knowing what contamination is proposed to not be cleaned up.

One can make some very approximate estimates by assuming that for the operational areas, Areas I through IV, the percent of Boeing acreage that is contaminated is similar to that of the DOE area[91] and comparing then the estimated cleanup acreage and excavation and disposal volumes in the Boeing areas in Table 3-2 to the total Boeing acreage volumes, taking into account the suggested biological exemption areas shown in Figure 3-6. This would very roughly suggest that the *maximum* Boeing cleanup being proposed in the PEIR would leave about 95% of the contamination not cleaned up.[92] Furthermore, the PEIR suggests that the final cleanup could be considerably less, as the acreage and volume estimates in Tables 3-2 and 3-3 are said to represent maximum volume estimates and that final cleanup standards could be even less protective.[93] The actual Boeing cleanup could thus end up leaving as much as 98 or 99% of the contamination not cleaned up.[94] It is, however, a central failure of the PEIR that this absolutely critical information is not disclosed and thoroughly discussed in the PEIR.

[91] This assumes the accuracy of the DOE volume estimates.
[92] Similar rough estimates of the amount proposed to not be cleaned up are reached based on the soil excavation estimates in Table 3-3 adjusted for the overall acreages involved.
[93] see footnote B, Table 3-3,
[94] Boeing is pushing for cleanup to an even less protective standard than the claimed 25% residential garden standard used for the volume estimates, which as shown earlier, is itself about 60 times weaker than the true residential garden standard. Its proposal is for what it calls a "recreational" standard, which is very much less protective than even the residential garden standard. See attached Tables.



The Boeing volume estimates included in Table 3-3 are misleading. To make it seem as though the Boeing soil cleanup volumes are larger than they in fact are, Boeing includes an estimate for how much soil would be subject to soil vapor extraction. Note that the DOE and NASA columns do not include such numbers. Vapor extraction doesn't remove contaminated soil; it merely sucks up toxic vapors from below ground surface, while leaving contaminated soil in place. Additionally, it is inappropriate to include in the soil volume estimates in this table estimates for *in situ* and *ex situ* treatment, as they don't involve excavation and offsite disposal, again making it appear that there is more volume requiring trucking than is the case; although such techniques should be encouraged. The PEIR doesn't explain why it includes *ex situ* and *in situ* treatment for Boeing soils but not DOE and NASA; such techniques should be used more on the Boeing property and encouraged across the site, and that is an alternative not considered in the PEIR.

The Boeing soil estimates are found in Appendix K, which in turn is based, it says, on an analysis submitted by Boeing and supposedly reviewed by DTSC. However, the Boeing analysis and DTSC review thereof have not been made publicly available, despite repeated requests to do so, and the public is unable to scrutinize the basis for many of the conclusory claims made in the Appendix. But buried in the Appendix (as opposed to being explicitly disclosed in the main PEIR itself) are indications of extraordinarily significant purported cleanup decisions, and in so doing, DTSC fails the CEQA requirements of making its proposals and their implications clearly disclosed. The Appendix is characterized as merely the basis for soil volume estimates in the main

body of the PEIR, but it is far more. One of the most fundamental issues of the PEIR – what cleanup standard will Boeing have to meet, at most – is buried in the Appendix.

We have discussed at length earlier how the claim in the main PEIR that Boeing would clean up to a suburban residential standard based on residents consuming 25% of their produce from a backyard garden is completely false, and we will not repeat it here. Suffice it to say that hidden deep in Appendix K, cleanup standards that are often 60 or 70 times less protective than ones based on actual consumption of homegrown produce are put forward.

There are numerous other aspects of Appendix K that improperly weaken cleanup standards, without disclosing what is really being done. For example, the PEIR states that the cleanup levels assumed for the Boeing property will be the human health RBSLs from Appendix B, which in turn come from the SRAM, yet Appendix K doesn't use those values but uses different, often even less protective numbers. The EcoRBSLs employed, as discussed previously, are the wrong EcoRBSLs, far higher than the ones from Appendix B and the SRAM that should be used. Even more critically, Appendix K proposes that only 71 chemicals have any limits at all, out of about three hundred chemicals for which RBSLs which are provided in Appendix B. In other words, Appendix K, without letting anyone know, in essence is proposing that more than 200 chemicals (about three quarters of the chemicals for which limits are identified in Appendix B) no longer have *any* limit, i.e., not be cleaned up no matter how high the concentration. This is an extraordinary change to make without revealing it to the public.

Other undisclosed weakenings of environmental and public protections are similarly buried deep in Appendix K without revealing they have been done. For example, despite the claim that the standards are risk based, the Table in Appendix K does not use risk-based levels at all for key chemicals and instead puts forward cleanup levels that turn out to be orders of magnitude higher than risk based levels. For example, monomethylhydrazine (MMH), one of the key chemicals from the rocket testing and one of the primary risk drivers for the contamination, is given a cleanup level that turns out to be 1.7 million times higher than the SRAM-based suburban residential garden standard.[95] (see Table attached) For n-Nitrosodimethylamine (NDMA), also associated with the rocket testing and extremely toxic, Appendix K provides a cleanup level that turns out to be more than 10,000 times higher than the SRAM-based suburban residential garden standard. PCB and dioxin cleanup levels are also provided that are not risk-based at all but are actually hundreds or thousands of times higher than the appropriate RBSLs. What has been done apparently – although no basis or detail is provided – is that Boeing

[95] Where monomethyl hydrazine has been detected, above these extremely high detection limits, Boeing estimated extremely high risks. It tried to dismiss the findings because of lack of other detects, but, as seen here, Boeing is using a detection limit that would make it impossible to detect it even at levels vastly about health and ecological risk levels. Furthermore, because of the high detection limits used, MMH contamination is likely to exist at many other places at the site that are not identified and which would also pose large risks.

has set extremely high reporting limits for the chemicals that are among the primary risk-drivers, i.e., set limits of detection so high that it can't "see" the contaminants at all unless the concentrations is hundreds, thousands, or even millions of times higher than the level estimated to produce a significant risk.[96] In so doing, the vast majority of the most dangerous chemicals would never get cleaned up; risks far higher than acceptable would remain; but Boeing would be allowed to save a lot of money by having to clean up only a tiny proportion of the chemicals.

MMH and NDMA were identified in the federally-funded SSFL epidemiological study by the UCLA School of Public Health as likely significant contributors to the excess cancers found among the exposed workers. PCBs and dioxins are also extremely toxic and among the main contaminants at SSFL. But by suggesting cleanup levels for these main contributors to SSFL risk that are orders of magnitude above risk based levels, and by using reporting limits vastly above risk based levels as well, large amounts of extremely toxic contamination would remain, with extremely significant risk levels.

In addition to not disclosing the use of reporting limits and cleanup levels far too high to capture contaminant concentrations that pose a significant human health or environmental risk, the PEIR fails to disclose that the actual Boeing measurements for all contaminants were based on Soil Characterization Levels (SCLs) that came from suburban residential RBSLs *without* a garden at all, levels orders of magnitude higher (less protective) than the required SRAM-based suburban residential standard with garden. In other words, the SCLs were based merely on getting a bit of soil on your hands or other similar direct contact, with no ingestion whatsoever of fruits or vegetables from the contaminated ground. DTSC has directed that the garden pathway must be included. The PEIR furthermore states that the alternative of cleanup to a standard without a garden has been removed from consideration, and that a significant fraction of one's overall produce consumption must be presumed to be from a contaminated garden. Yet the SCLs used to characterize the contamination at the Boeing property were orders of magnitude higher than ones necessary to characterize contamination at a suburban residential garden level. So the entire dataset on which the PEIR sections on Boeing are based is erroneous, leaving out potentially very large amounts of contamination from consideration, even though it would have exceeded the risk based levels supposedly being used.

None of this is disclosed in the PEIR; the public is not on notice at all. Buried in a table in an appendix are the proposed cleanup levels in fine print, with no revelation of these matters. One is told in the main body of the PEIR that the proposed Boeing standards are risk-based and for suburban residents who gets a significant fraction of their produce from their garden. None of this turns out to be true, but there is no way for the public to know it, as it is not disclosed.

[96] Surely for contaminants that pose significant risk at small concentrations, every effort should be made to employ detection limits that can detect the constituent of concern at the lowest possible levels of concern.

Additionally, even with the extraordinarily non-protective and erroneous cleanup levels assumed in Appendix K, it goes on to then exempt from cleanup contamination that does exceed those levels, not presuming cleanup until the measured value exceeds two or three times the cleanup value. No rational basis for this is provided. And whereas the DOE inflated volume estimates appear to assume contamination all the way down to bedrock in the absence of any measurements that show that[97], Appendix K's volume estimates for Boeing are based on contrary assumptions that minimize soil volume estimates by assuming contamination extends down only 1 or 1.5 feet below the last measurement of contamination. Again, no explanation is provided as to why the assumed depth for the volume estimates for DOE and Boeing should differ, or why contamination on the Boeing land somehow can't go below a foot or so.[98]

No member of the public would ever be on notice that any of this was occurring, and have any meaningful opportunity for review of true alternatives or the impacts of this proposal. And there is no disclosure whatsoever as to how much contamination would thus *not* get cleaned up, nor how much above true health or environmental risk based levels the material not cleaned up would be. This is not the way under CEQA to handle one of the most consequential aspects of the entire project and program.

Adverse Effects of Cleanup Are Exaggerated; Failure to Enhance Possible Mitigation Measures; Assertions that Effects Are Significant Even After Mitigation Are Conclusory, with Little or No Basis Provided

Much of the PEIR is devoted to exaggerated claims about adverse effects of the cleanup. Repeatedly, it is asserted that these effects are significant, even after mitigation. Yet often little or no basis is provided to support these conclusory assertions.

For example, central focus is given to Braunton's milk-vetch (Astragalus brauntonii) and Santa Susana tarplant (Deinandra minthornii). The former is the only federally listed plant at SSFL; the latter is designated "rare" by the state. A thorough analysis by LandIQ, a biological consulting firm, attached hereto, concludes "In our professional opinion, the unavoidable impacts for these species related to soil cleanup to background levels as agreed to in the 2010 AOC can be reasonably mitigated with a combination of specific conservation, restoration, and management measures." The LandIQ analysis provides detailed information about how such mitigation can be carried

[97] As indicated earlier, the PEIR does not disclose the basis for the DOE and NASA volume assumptions, merely referencing emails from them that DTSC has refused to make public; an earlier volume estimate for DOE assumed, however, contamination in various settings extended throughout the soil column even if there were no evidence to support that presumption.

[98] The PEIR also assumes that the depth of contamination in areas proposed to be exempted from cleanup is half as great at the depth for the non-exempted areas; no basis is provided for such an assumption, which can tend to understate the degree to which proposed cleanup exemptions will fail to remediate soil that is contaminated.

out. Rather than repeat that information here, it is incorporated herein by reference.

It is important to note that much of SSFL, particularly the areas where past activities have resulted in contamination, is already disturbed from decades of construction and operation of reactors and test stands, etc. Furthermore, many of the species identified in the PEIR are said therein to thrive in disturbed soils; indeed, as the PEIR notes, the Braunton milk-vetch requires disturbance to trigger germination of dormant seeds. In any case, the treatment of impacts from cleanup appears overstated and under-supported and the identification of mitigation measures should be strengthened.

An extremely important deficiency is that the review of impacts on biological receptors is completely one-sided: much discussion about the negative impacts purported to exist from the cleanup, no discussion of the positive impacts from the cleanup (removal of radioactive and toxic contamination at levels well above the concentrations deemed to harm those receptors) and no discussion of the negative impacts on them from not cleaning up contamination. In particular, as stated earlier, there is no analysis of how exempting contamination from cleanup would result in pollution levels that far exceed the EcoRBSLs, i.e. levels above which there are observable adverse effects.

Failure to Accurately Describe the Project and Alternatives; Failure to Evaluate Appropriate Alternatives; Alternatives Considered Do Not in Fact Meet Project Objectives; Claims of No Impacts from No Project Alternative and Environmentally Superior Impacts from Reduced Cleanup Alternatives are Erroneous

As discussed earlier, the PEIR inappropriately dismisses from consideration alternatives that should have been included; indeed, many of these represent the cleanup standards DTSC had previously committed to employing. DTSC had previously promised, and said its procedures required, cleanup of the Boeing portion of SSFL to the agricultural/rural residential standard, which it said was equivalent to a cleanup to background, which is what the AOCs require. But the PEIR expressly removes from consideration even as an alternative a cleanup of the Boeing land to background, and states in sections other than that on alternatives that a cleanup comparable to the AOC requirements will not occur on that land; this despite past DTSC promises to the contrary. The cleanup to agricultural/rural residential standards, consistent with the County General Plan and zoning designations, also previously promised, is simply ignored. Furthermore, the PEIR removes from consideration cleanup to the SRAM-based residential garden standard, based on the false claim that it was based on 100% of one's produce coming from one's garden. The removal of these cleanup approaches from consideration violates both CEQA and DTSC's past commitments about what its procedures require as a cleanup standard for the Boeing portion of SSFL.

The alternatives that are presented are erroneously set forth. The supposed AOC alternative for DOE and NASA in fact violates the AOCs, which bar "leave in place" alternatives. This alternative as described, however, contemplates leaving in place large amounts of contaminated soil. The AOCs also cover all structures, debris, and

anthropogenic materials and require the disposal of all waste with radioactivity over background at licensed low-level radioactive waste facilities; yet this, and the other alternatives in the PEIR, asserts that the RPs can do whatever they wish with the buildings and their debris, and does not even require monitoring of a large number of the buildings from the nuclear area.

The alternative described as utilizing the AOC biological and cultural exceptions in fact, as shown earlier, proposes breaching the AOCs and employing exceptions that go far beyond those allowed in the AOCs. It therefore is incorrectly described as the AOC exceptions alternatives, when it is not.

The assertion that these alternatives meet the project objectives is false. Since the project objectives include complying with the cleanup agreements, and since all the alternatives put forward violate those agreements, they do not meet the project objectives. Furthermore, leaving in place contamination, in violation of those agreements, also does not meet the objectives of protecting public health and the environment. Since the PEIR, in a fundamental failure to comply with CEQA, analyzes only the supposedly negative impacts from cleanup activities and completely neglects to analyze the negative impacts of the contamination and of not cleaning it up, there is simply no basis for making such an assertion. Indeed, by definition, leaving in place, not cleaned up, large amounts of soil contaminated above background fails to meet the fundamental project objectives as set forth in the AOCs:

> The end state of the site ... after cleanup will be background (i.e., at the completion of the cleanup, no contaminants will remain in the soil above local background levels.[99]

Furthermore, all options considered--for the DOE, NASA, and Boeing portions-- fail to meet the project objective of cleanup sufficient to safely allow all of the land uses permitted under Ventura County General Plan land use designations and zoning. Finally, all options considered, for all of the parts of the property, would leave in place large amounts of contamination at levels in excess of both human health and ecological risk based levels, thus failing to meet the project objectives of protecting human health and the environment.

The PEIR fails to identify as the proposed project what it is supposed to be: a cleanup to background for the DOE and NASA properties and a cleanup to agricultural/rural residential standards, equivalent to background, for the Boeing property. This is what the 2010 AOCs require for DOE and NASA and what DTSC stated at the time that its regular requirements mandate for Boeing. But not only is that not the proposed project, it is not even an alternative in the PEIR.

Furthermore, the proposed project should be a cleanup to the DTSC's own officially approved SRAM-based suburban residential garden standard for the Boeing land, which should be the proposed project if there were some basis, which there is not, for ignoring the

[99] AOCs, Appendix B, p. 1

agricultural/rural residential standard. But it is not. Indeed, it is not even an alternative considered in the PEIR. These are fundamental defects.

The assertions about the environmentally superior alternatives are fully in error. The PEIR asserts that the No Project Alternative (no cleanup whatsoever of the radioactive and toxic chemical contamination) is the environmentally superior alternative and that it involves no adverse environmental impacts whatsoever. This is of course absurd. There is no basis whatsoever provided in the PEIR for this extraordinary claim, because in fact there is no consideration whatsoever of the negative impacts of the contamination or of not cleaning it up.

CEQA Guideline §15126.6(e)(1) states regarding the no project alternative:

> The specific alternative of "no project" shall also be evaluated along with its impact. The purpose of describing and analyzing a no project alternative is to allow decisionmakers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project.
>
> (emphasis added)

CEQA Guideline §15126.6(e)(2) continues:

> The "no project" analysis shall discuss the existing conditions at the time the notice of preparation is published, or if no notice of preparation is published, at the time environmental analysis is commenced, as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved....
>
> (emphasis added)

The PEIR thus fails completely to meet the CEQA guidelines. It does not analyze at all what the adverse impacts of not cleaning up the contamination would be, what the existing contamination conditions are, or what would occur in the future regarding that contamination if the cleanup did not occur. The assertion that not cleaning up the radioactive and chemically toxic pollution would be the environmentally superior alternative and would have no impacts is incomprehensible and completely unsupported. The PEIR simply defaulted on analyzing any negative impacts; DTSC cannot use its failure to consider the harm from the contamination to defend a claim that there are no impacts from failing to clean it up.

Compounding this error, the PEIR similarly asserts that the alternative involving leaving in place vast but unspecified amounts of the contamination, in large measure by purported exceptions that go far beyond those allowed in the AOCs, is environmentally superior to what it purports to be an AOC cleanup. The more contamination left behind the better, claims the PEIR. This too has no basis in the PEIR—there is no analysis whatsoever of the environmental effects of the contamination proposed to not be cleaned up. Under these illogical assumptions, there would never be clean up of toxic and

radioactive contamination, anywhere. It is the contamination that poses the environmental impacts; it is the failure to clean it up that poses the risks; and the PEIR simply ignores entirely any analysis of the impacts from the contamination and that would ensue if DTSC allowed the RPs to walk away from their obligations to clean up the pollution for which they are responsible.

Furthermore, sensible alternatives are not even considered. For example, one could reduce truck and other impacts of cleanup by assuring that one does not remove clean soil. By requiring considerably more measurements to more accurately define the vertical and horizontal margins of contaminated areas, one could make sure that the only soil being removed is contaminated and non-contaminated soil is left in place. Furthermore, DOE and DTSC have raised questions about whether some Total Petroleum Hydrocarbons (TPH) measurements are inaccurate, measuring naturally occurring organic material unrelated to SSFL. If one could accurately resolve that matter it might also result in avoiding removal of soil that isn't in fact contaminated.

One could similarly reduce impacts by requiring far greater emphasis on less intrusive techniques such as *in situ* treatment of soils (whereby, for example, soils are treated to enhance biological decomposition of organic toxic chemicals in place). Only 15,000 cubic yards of soil are contemplated in the PEIR for such treatment, and an additional 15,000 cubic yards for *ex situ* treatment, according to Table 3-3, all in the Boeing area. This represents only about 1% of the soil estimated in the PEIR to be excavated and shipped. There is no explanation why such less intrusive *in situ* approaches cannot be relied on more heavily, nor why they cannot also be employed in the DOE and NASA areas.

Transportation Alternatives Not Adequately Addressed

The consideration of transportation alternatives (Appendix J) is similarly flawed. Sensible alternatives are dismissed out of hand or not even considered, while ones that make little sense are put forward. Cost and time estimates appear heavily inflated.

One questionable alternative put forward in Appendix J is to build a conveyor down Edison Road—to then put the soil onto trucks.[100] But taking the soil down Edison Road on trucks employing bimodal canisters and then simply transferring to train cars at rail locations close by is not even considered. Bimodal cannister options are rejected out of hand by the assertion trucks would still have to travel down Woolsey Canyon to get to the train (PEIR p. 6-9); but as we have shown, they could instead travel down Edison Road.[101]

[100] The PEIR at p. 6-9 rejects as an alternative conveyor to truck options, even though Appendix J uses it as one of its alternatives.

[101] Indeed, all truck to train options are rejected out of hand, for no defensible reason. PEIR p. 6-10.

The only conveyor alternatives considered are the afore-mentioned Edison Road to transfer to trucks, and something along North American Cutoff to a railspur. But the far shorter Middle Routes A and B and Western Conveyor Route identified in Figure 3 as initial routes considered were all dropped from consideration with no adequate reason. It is said that these don't go to the "preferred" rail site, but no basis whatsoever is given for asserting any deficiency for the rail location to which they do go.[102] Indeed, it appears that that rail site is not even considered. The one they prefer is preferred for no reason; others are not considered. It is said the land through which the conveyor would go is relatively undisturbed, but the conveyor uses very little land. And in order to avoid the impacts claimed from the truck traffic, and given that the conveyor could be an aerial one

[102] No reason whatsoever is given for failing to consider the Western Conveyor Route. There are generalized claims for not wishing to consider conveyors where there is no existing road, but there seems no basis for such a rejection of consideration.

with very limited ground footprint, and that any conveyor would be removed after use, this seems an unconvincing basis for refusing to even consider it.

Similarly, taking trucks down Edison Road to highway 118, passing few if any homes in the process, is considered but then declared environmentally inferior based on what appears a flimsy claim regarding impacts from improving the road. There is already a road there, Southern California Edison uses it to service the power towers along it, and it would appear overall impacts from transport would be reduced compared to the route proposed as the project. Additionally, the option of dispersing trucks along several routes so no one route gets all the traffic is not seriously considered. And, as indicated above, the options of bilmodal trucks down Edison Road to nearby rail and of conveyors down to rail via Middle Routes A or B or the Western Conveyor route are all either not considered at all or rejected out of hand. Finally, the consideration of the North American Cutoff conveyor options to rail seems to not evaluate the time or cost accurately. Given the cost for the cleanup itself, efforts to reduce impacts from truck traffic should not be given serious consideration, which the PEIR does not do.

The cost and time estimates appear inflated. For example, assuming over a million dollars to install lights at the rail loading location seems excessive. Much of the time presumed is said to come from CEQA review. However, this PEIR claims to be a Program EIR covering precisely these alternatives. Furthermore, the Consent Order was signed in 2007 and the AOCs in 2017; there is no reason that steps to put in place transportation alternatives were not taken long ago, given the extent to which the impact of trucks has been hyped as part of the effort to derail the cleanup. The environmental impacts of improving Edison Road or employing a conveyor to rail system seem minimal and readily reversible, and should be seriously considered if serious about trying to minimize transportation impacts.

One glaring deficiency in the PEIR transportation analysis is the failure to do a title search to determine what rights of way SSFL landowners may already have. For example, what easements already exist to the North American Cutoff, which was, though not disclosed in the PEIR, the main road into SSFL in the early days, named for North American Aviation, the predecessor owner and operator of SSFL. Does SSFL have any rights of way over Edison Road, the Runkle Haul Road, or Arness Fire Road, for example? Edison Road is for maintenance of the power lines that go up to and down from SSFL. What rights does S. Cal. Edison have to allow other use of that road? Does SSFL have any rights of way over any of the lands surround it? These questions are not addressed in the PEIR. It is assumed in the PEIR that SSFL would have to buy land through which these alternative routes pass. No consideration is given for simply buying temporary rights of way, or whether those rights of way are already possessed.

The analysis in Appendix J does nonetheless indicate the feasibility of trucks down Edison Road to the 118 Freeway and conveyors down the North American Cutoff to the railroad. It also indicates that aerial conveyors are considerably less expensive and have a smaller footprint than ground-based ones. So, with the options that were

considered and additional options that should have been, alternatives that can mitigate truck impacts seem credible and should be addressed more seriously.

A review of transportation alternatives was included in the report, *Preliminary Overview of Alternative Transportation Options for Santa Susana Field Laboratory Cleanup* by SSFL TRANSPORTATION OPTIONS TASKFORCE*,* August 7, 2014. It was provided numerous times to DTSC yet is not considered nor even referenced in the PEIR. We attach it here and incorporate its analysis herein by reference.

Boeing Easement

The PEIR notes that Boeing recently filed a conservation easement that it had entered into with the North American Land Trust. The PEIR rightly does not change the stated DTSC longstanding commitment and policy to require cleanup to all of the land uses allowed by Ventura County's General Plan designations and zoning, which, as we have discussed and Ventura has made clear, permit a wide range of agricultural and residential uses. Although we understand that Boeing has reversed its longstanding commitment to a suburban residential cleanup standard and is now pushing for cleanup to a far less protective recreational standard,[103] the PEIR rejects that as an alternative. Since it is not proposed as either the project or an alternative, we do not comment on it here. And were DTSC to subsequently reverse itself and propose that far weaker standard, or anything similar, we would strenuously object, as doing so would violate past DTSC commitments and policy and would be outside the matters evaluated in the CEQA review.

We do wish to make clear that we would oppose any use of that contaminated land as open space or park if that resulted in cleanup less than the promised cleanup to background. As DTSC itself noted, the lands surrounding SSFL entail a wide range of residential and agricultural uses. Not cleaning up the source of the contamination that can migrate offsite to the people who live and work nearby would result in continuing risk to them, irrespective of whatever use the site itself may be put to. The standard set forth in the PEIR, that DTSC relies on the local government's land use designations, is critical. Otherwise, every polluter would try to get out of its cleanup obligations by declaring the land it polluted as too polluted to use for anything except open space. The purpose of cleanup is to restore land so that all the uses which local government designations allow can in fact be safely undertaken.

We also note that the California Congressional sponsors of the Rim of the Valley legislation removed SSFL from Rim of the Valley proposed open space area because of the contamination there and to make clear Congress didn't want consideration of SSFL as open space so long as the promised full cleanup had not been completed.

[103] See letter from elected officials criticizing the Boeing reversal

[On a related matter, we wish to clarify for DTSC one matter related to who represents the people living and working near SSFL. We understand that DTSC may hear from one of more "neighborhood councils" purporting to be the elected representatives of people in the City of Los Angeles who live near SSFL. Neighborhood councils are, however, purely advisory bodies, established to provide advice to the Los Angeles City Council. It is the LA City Council which consists of the elected representatives of the residents of the City; the neighborhood councils (of which there are 96) merely provide advise the City Council, but it is the City Council that decides whether to take that advice, and it is the City Council, acting as here on legal matter through the elected City Attorney, that represents the City on all matters related to SSFL.]

Building Demolition and Disposal

The AOCs require cleanup of all soil to background and disposal of all wastes with radioactivity in excess of background at licensed low-level radioactive waste (LLRW) sites. "Soil" is defined in the AOCs are including all structures, anthropogenic materials, and debris. Buildings thus must be cleaned up to background and all debris above background from their demolition must be disposed of in LLRW disposal sites. The AOCs cover all soil, as so defined, in all of Area IV (the nuclear area), irrespective of who owns it (i.e., DOE has taken responsibility for the cleanup of all of Area IV, even though Boeing owns it.) Therefore, all buildings in the areas the AOCs cover must be cleaned up to background and all wastes above background disposed of at LLRW sites.

However, Boeing for some years was submitted to DTSC requests for approval to demolish buildings and dispose of their debris at other than licensed LLRW sites, even though the waste exceeded background. These actions were challenged in the Sacramento Superior Court in an action alleging, *inter alia,* CEQA violations in that these actions occurred without any CEQA review. The court has issued a temporary injunction barring DTSC from giving any further approvals, which remains in force at the present time.

In the PEIR, DTSC generally asserts that the cleanup and disposal of the contaminated buildings is outside the scope of the contemplated actions and outside its authority and will not be evaluated in the PEIR, aside from some general description. DTSC asserts it has no authority over or responsibility for the cleanup, demolition and disposal of the buildings, with a few limited exceptions, ignoring the express language in the AOCs including the buildings and all of Area IV.

Additionally, the PEIR suggests that DOE will take no measurements for radioactive contamination in many buildings and will treat them as non-radioactive even if there are no data to make that determination. Given the sketchy process history information from activities going back to the 1940s, and the widespread contamination in Area IV that is in no way restricted to buildings that DOE now designates as key radiological facilities, the determination to allow teardown and non-LLRW disposal of those potentially contaminated structures is a deficiency in the PEIR.

The cleanup of contaminated buildings at SSFL is obviously an integral part of the cleanup of SSFL itself. That cleanup and the associated disposal of radioactive and toxic waste is a critical part of what needs to be examined in terms of environmental impacts. Yet there is no analysis whatsoever of the potential impacts of allowing radioactive waste to be disposed of in landfills not designed or licensed for such waste, or to be recycled (e.g., radioactively contaminated metals recycled into the consumer metal supply, where they could end up in all sort of metal products to which the public would be routinely exposed). These are serious deficiencies in the PEIR.

The Program Management Plan is Deficient, and the PEIR Fails to Meet CEQA Requirements for Disclosure and Analysis of the Projects Actually Proposed

The PEIR is described as both a Program EIR and a Project-level EIR. However, almost all detail of the specific cleanup projects has been left out of the EIR. What cleanup standards will end up being employed, what areas will not be cleaned up, what contamination exists in the areas that will be proposed to not be cleaned up, and at what concentrations and how far above RBSLs that contamination will be, and the environmental impacts of not cleaning up that contamination –none of this is to be found in the PEIR. Instead, the public is told that the actual projects will not be disclosed until after closure of the comment period on the PEIR.

Attached to the PEIR is a draft Program Management Plan (PMP), which similarly contains virtually no information on what is in fact specifically proposed to be done. Instead, the PMP, like the PEIR, punts all the actual project proposals to the post PEIR-phase, doing an end run around the fundamental requirements of CEQA. The PMP indicates that the specific cleanup proposals, including what will get cleaned up and what won't, won't be submitted by the Responsible Parties until after the PEIR is finalized. The project proposals will come post-PEIR in the form of Corrective Measure Study submissions by the RPs. The PMP further indicates that DTSC contemplates doing no environmental review of those actual project proposals. It appears DTSC is attempting to issue a PEIR (which it claims is also project-level EIRs) with virtually no disclosure of what is being proposed, approve the hollow PEIR, and only then disclose what projects are being proposed and approve them without CEQA review. The brief discussion of initial activities suggests that what is really intended is to do just the initial activities and no further cleanup; but again, there is no disclosure or analysis of this prospect.

This appears to be part of the reason that the PEIR contains no analysis whatsoever of the impacts of leaving contamination in place. By arguing that the impacts have been enveloped by considering a maximum amount of cleanup, it would appear that DTSC hopes to subsequently be able to decide to instead leave in place very large amounts of contamination, without any disclosure during the CEQA review of those actual project plans nor any analysis of the impacts of not cleaning up that contamination. This would violate the core bases of CEQA – thorough disclosure of what is proposed, a hard look at alternatives, a detailed consideration of all of the environmental impacts from the proposed project and its alternatives, and serious efforts to minimize or mitigate those impacts. Here, the actual projects apparently being contemplated – breaking the

AOCs and the related commitment about full cleanup of the Boeing property, and instead cleaning up only a tiny fraction of the contamination – have been hidden from public review and environmental analysis. They are nowhere to be found in the PEIR. There is no reason for them not to be there; DTSC and the RPs have had many, many years since the agreements were entered into. Instead, there is a kind of bait-and-switch: a PEIR (and supposed project level EIR) released with the actual projects not disclosed, with them to be revealed only after the PEIR is finalized. This is an affront to the requirements of CEQA.

Failure of Transparency and Disclosure

At its heart, a CEQA document is supposed to be an instrument of transparency and disclosure. The public is to be put on notice, clearly and without obfuscation, or precisely what is being proposed. A hard look at genuine alternatives is to be included. The full range of potential impacts from the proposed project(s) and alternatives is to be assessed. An honest effort at identifying ways of mitigating impacts is to occur. The information necessary for review of the EIR is to be included, clearly and without obfuscation, in the EIR itself. Critical aspects of what is proposed are to be highlighted in the body of the EIR, not buried without explanation in obscure tables in appendices. All information necessary for review should be in the EIR, or if based on referenced material, that material should be made readily available for review as well. CEQA is a disclosure and transparency law, as said above; it is not a game of "hide the ball."

In this case, the fundamental project proposals are excluded from the PEIR, to be disclosed only after the comment period expires. How much contamination is proposed not to be cleaned up? Of what kind, and in what concentrations, and at what locations, and with what environmental impact? None of that is revealed in the PEIR. The draft Program Management Plan contains no detail, just generalities; but it does make clear that the actual projects will not be disclosed until after the conclusion of the PEIR comment period, essentially shielding from CEQA that fundamental matters CEQA is supposed to cover. DTSC wants to get the PEIR approved without the program or projects revealed, and only then to let people know what it really proposes to do. At that point, it will be too late; the extraordinary environmental impacts of failing to clean up plutonium-239, strontium-90, cesium-137, perchlorate, PCBs, dioxins, heavy metals, TCE, and hundreds of other very toxic materials will not have been analyzed in the PEIR, nor even will it have disclosed the actual plans to leave those poisons not cleaned up. This is not the way the public is supposed to be protected from toxic substances.

Most of what the PEIR relies upon has been kept hidden. DOE, at least, made available virtually all of its referenced documents as live links simultaneously with the release of its draft EIS for comment. DTSC, despite having an electronic "Document Library" on its SSFL website, did not do so. Requests to DTSC to make those documents available were ignored. The first email request received a response saying DTSC is pleased to make the referenced documents available, but only provided a handful that had already been made public. A follow-up email once again requesting the referenced documents and attaching a list of a subset of them was not even responded to.

California Public Records Act requests for a single referenced document still have not been responded to. One PRA request simply for the contract and MOU under which the PEIR was prepared—so as to see whether it was, as stated in the PEIR, performed for DTSC, or whether the contractor actually was contracted with one of the Responsible Parties—was evaded by DTSC, which said it would not provide the documents until three weeks after the comment period expires on the PEIR. Under CEQA, the documents should have been made readily available when the PEIR was issued, and certainly after requested. No PRA request should even be required. Yet both CEQA and PRA have been ignored, as DTSC attempts to shield from public scrutiny the material upon which the conclusory statements in the PEIR are purportedly based. It is difficult to draw a conclusion other than that the referenced material does not support the claims made in the PEIR and DTSC is actively attempting to frustrate the CEQA requirements of transparency and disclosure in order to prevent the public from discovering that and being able to comment accordingly.

This is not the way CEQA was intended to be carried out. SSFL is one of the most contaminated sites in the state. A full cleanup was promised. DTSC appears now to be breaking its cleanup commitments. And it appears to be evading its CEQA obligations in the process. We respectfully suggest a change of course, a complete reaffirmation of the promises for a full cleanup and rigorous compliance with CEQA.

Note: These comments, and associated tables, are being transmitted electronically via DTSC's comment webportal. A CD with exhibits is being sent separately by mail. For contact: dhirsch1@cruzio.com

D17 - Attachment 2/4

December 7, 2017

Secretary Matthew Rodriquez
California Environmental Protection Agency
1001 I Street
Sacramento CA 95812

Director Barbara Lee
California Department of Toxic Substances Control
1001 I Street
Sacramento CA 95812

Re: *Comments on the Draft Program Environmental Impact Report and Draft Program Management Plan for the Santa Susana Field Laboratory*

Dear Secretary Rodriquez and Director Lee:

Thank you for the opportunity to comment on the September 2017 Draft Program Environmental Impact Report (PEIR) for remediation of contamination at the Santa Susana Field Laboratory (SSFL). We object to the approval of the project as currently proposed based on various deficiencies in the PEIR described here and in other submitted comments.

Background – A Highly Contaminated Site With Half a Million People Living Nearby

SSFL is one of the most contaminated sites in the state.[1] Over the years, the site maintained ten nuclear reactors, a plutonium fuel fabrication facility, a "hot lab" for disassembling highly irradiated nuclear fuel, and open-air "burn pits" where radioactively and chemically contaminated items were burned. The poor environmental and safety practices of the Responsible Parties [the Department of Energy (DOE), NASA, and Boeing] and their predecessors resulted in numerous releases and spills on the site which subsequently

[1] The PEIR (p. 2-1) indicates that the cleanup of SSFL is in part pursuant to State Superfund law, which is for the most contaminated sites in the state.

contaminated soil, groundwater, and surface water with radioactivity and toxic chemicals, as well as numerous buildings. Examples of poor practices and negligence included a partial meltdown in one reactor; three others had accidents; radioactive fires occurred in the hot lab, and decades of open burning of contaminated items.[2] Tens of thousands of rocket tests and associated activities further contributed to widespread contamination with highly toxic substances such as polychlorinated biphenyls (PCBs), dioxins and furans, metals, perchlorate, and volatile and semi-volatile organic compounds.[3]

SSFL was established 70 years ago and was supposed to be a remote field lab for work too dangerous to conduct near populated areas. However, over the decades the nearby population mushroomed so that there are now more than 150,000 people living within 5 miles of the site and more than half a million people living within 10 miles.

Federally funded studies found significant increases in death rates from key cancers among previous SSFL workers associated with occupational exposures(s).[4] Additionally, studies have measured offsite migration of pollutants at concentrations in excess of U.S. Environmental Protection Agency (USEPA) levels of concerns, with a greater than 60 percent higher incidence of key cancers among people living near SSFL than those living further away.[5] Because SSFL is located in hills overlooking the City of Los Angeles and other populated areas below, the contamination migrates downgradient, where neighboring communities can be exposed. Cleanup of the contamination source is therefore critical. However, the Responsible Parties have had a history of resisting those cleanup obligations.

NRDC, City of Los Angeles, CBG v. DOE Lawsuit Blocked DOE's Prior Attempt to Walk Away from Cleaning Up Most of the Contamination

The Responsible Parties have had a history of resisting previous cleanup obligations. Fifteen years ago, DOE proposed cleanup standards for SSFL that would have left the great majority of the contamination not cleaned up. The City of Los Angeles, the Natural Resources Defense Council (NRDC), and the Committee to Bridge the Gap (CBG) filed a lawsuit in U.S. District Court, challenging the legality of DOE's actions under the National Environmental Policy Act (NEPA), 42 U.S.C. §4321, *et seq*. In 2007, in an Order highly critical of DOE,

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[2] HydroGeoLogic, Final Historical Site Assessment, Santa Susana Field Laboratory Site, Area IV Radiological Study, October 2012, prepared for US EPA

[3] Draft PEIR §2.2.2, Figure 3-5

[4] Morgenstern, Froines, Ritz, & Young, UCLA School of Public Health, Epidemiologic Study to Determine Possible Adverse Effects to Rocketdyne/Atomics International Workers from Exposure to Ionizing Radiation June 1997; and, same authors, Epidemiologic Study to Determine Possible Adverse Effects to Rocketdyne/Atomics International Workers from Exposure to Selected Chemicals, January 1999

[5] Yoram Cohen et al., Center for Environmental Risk Reduction, UCLA, The Potential for Offsite Exposures Associated with Santa Susana Field Laboratory, Ventura County, California, February 2, 2006; and Hal Morgenstern et al., Cancer Incidence in the Community Surrounding the Rocketdyne Facility in Southern California, February 2007; both prepared under contract to the federal Agency for Toxic Substances and Disease Registry

Federal District Judge Samuel Conti, granted summary judgment for the plaintiffs and against DOE.

In 2010, DOE, NASA, and the California Department of Toxic Substances Control (DTSC) executed Administrative Orders on Consent (AOC), legally binding agreements requiring the cleanup of contaminated soil (including the buildings) to background, i.e., to the condition it was in before being polluted. In 2010, DTSC committed that Boeing would be required to clean up its portion of the property to background concentrations so as to be safe for all land use designations allowed under the Ventura County General Plan.

As per the 2007 Consent Order and 2010 AOCs, the soil cleanups were to be completed by 2017. However, *2017 is nearly over and the promised cleanup not only has not been completed, it has not yet even begun.*

<u>The 2017 Draft PEIR Breaches DTSC's Cleanup Commitments</u>

The project description states that the primary objective of the proposed project is to implement the 2007 Consent Order and the 2010 AOCs. The Draft PEIR for the SSFL site cleanup, however, is at odds in numerous respects with this stated primary project objective and DTSC's longstanding commitments in the orders. These defects taint the entire PEIR from the proposed project description and analysis, to the selection and analysis of project alternatives, to the proposed mitigation. Examples are:

1. The AOCs bar consideration of "leave in place" alternatives.

a. Yet, in the Draft PEIR, DTSC proposes to leave in place large amounts of contamination in the hope that over long periods of time concentrations would "naturally attenuate."

b. DTSC also proposes to leave in place large amounts of contamination based on biological and cultural considerations that appear to go far beyond the tightly delimited exemptions allowed in the AOCs. Proposing to exempt contaminated areas from cleanup for supposed biological reasons would have a contrary effect – allowing biological receptors to be damaged by radioactive and toxic chemical contamination at levels well above concentrations DTSC has already determined to cause adverse effects. It is the failure to clean up the contamination that would place those ecological receptors at risk, yet the Draft PEIR fails to analyze those risks and proposes cleanup levels and cleanup exemptions that would allow exposures far above the level DTSC itself has determined would put them at risk.

2. For the Boeing-controlled areas, DTSC had stated in 2010 that its normal procedures applicable to all cleanups required a cleanup so that all of the land uses allowed by local zoning and General Plan designations would be safe; DTSC noted that those designations for SSFL allow a wide range of suburban residential and rural residential/agricultural uses, the latter of which is the most protective standard; and that cleanup to that standard would be equivalent to the cleanup-to-background standard of the AOCs.

a. However, in the Draft PEIR, DTSC does not propose cleanup to any of these promised standards, and indeed, removes each of them from even consideration. In the Draft PEIR, DTSC declares that the cleanup required will be less rigorous than that required by the AOCs; it removes from consideration cleanup to background; and it does not even mention or in any fashion consider cleanup to the promised rural residential/agricultural standards.

b. Both Boeing and DTSC had long promised that the cleanup of the Boeing-controlled portion of SSFL would at least be to a suburban residential standard, so that the people living nearby would be reassured as to their safety. That standard, which includes risks from consumption of fruit and vegetables from a backyard garden, was established in the Standardized Risk Assessment Methodology (SRAM) prepared by Boeing and approved by DTSC, as the SRAM-based suburban residential garden standard.

i. However, in the Draft PEIR, DTSC removes from consideration its own SRAM-based suburban residential garden standard and instead asserts that it will only consider cleanup to levels that are more than 25 times less protective. Elsewhere in the Draft PEIR, even weaker standards are put forward, approximately 60 times less protective than DTSC's official SRAM-based suburban residential standard. This would leave the great majority of contamination not cleaned up.

ii. Furthermore, Boeing has recently announced it is reversing its longstanding promise to a suburban residential standard at all and wants to instead use a recreational standard, even weaker than the extremely lax cleanup levels being considered in the Draft PEIR, that would relieve them of cleaning up virtually any of the contamination.

3. The AOCs require cleanup of all structures, anthropogenic materials, and debris to background and that all wastes with radioactivity above background be disposed of in offsite licensed/authorized Low Level Radioactive Waste disposal facilities. However, in the Draft PEIR, DTSC ignores these requirements and says buildings in the SSFL areas controlled by the AOCs can be demolished and disposed of without DTSC approval and the debris sent to recyclers and disposal sites not licensed or authorized for Low Level Radioactive Waste.

The Draft PEIR is deficient in other ways, including:

4. A draft Environmental Impact Report has at its core the requirement for full disclosure of what project is being proposed, the alternatives, and the proposed mitigation. These requirements under CEQA facilitate the statute's informational role and are to allow the public, not involved in the preparation of the draft document, to understand and consider meaningfully the environmental issues raised by the proposed project. These requirements have not been met by the PEIR. DTSC is years late in issuing the Draft PEIR. It has had plenty of time to include the true program proposal. There is no good reason why what is actually being contemplated and the alternatives to be considered are not specified and properly evaluated in the Draft PEIR. For example,

a. DTSC states in the Draft PEIR that it intends to allow an unspecified amount of soil at unspecified locations that is contaminated with unspecified concentrations of unspecified contaminants to "naturally attenuate" over unspecified times based on unspecified mechanisms of attenuation according to unspecified sources.

b. DTSC additionally says in the Draft PEIR that it intends to allow an unspecified amount of soil at unspecified locations that is contaminated with unspecified concentrations of unspecified contaminants to be exempted for unspecified purported biological or cultural reasons with no attempt to even try to demonstrate how that would comply with the very narrow exemptions allowed in the AOCs.

c. Furthermore, DTSC states that the actual amount of contamination it will consider allowing Boeing to avoid cleaning up will not be disclosed until after finalization of the Draft PEIR, nor will the alternative amounts it will choose from be disclosed in the Draft PEIR. Additionally, the Draft PEIR does not disclose how much contamination is in the Boeing areas, so there is no way to precisely assess how much contamination is being contemplated to not be cleaned up.

d. Particularly troubling is that DTSC has failed to make publicly available the documents referenced in the Draft PEIR as forming the basis for assertions and conclusions therein, making it impossible to meaningfully comment on the Draft PEIR and to ascertain the validity of many of the Draft PEIR claims.

5. An EIR also has as its core the requirement for a thorough examination of the environmental impacts of the alternatives being considered, including the No Action Alternative. However, this Draft PEIR contains hundreds of pages identifying the purported negative impacts of cleaning up contamination at SSFL, but essentially no analysis of the environmental impacts of not cleaning up part or all of it. There is basically no review of the environmental impacts of the radioactive and toxic chemical contamination and the impacts that would ensue were DTSC to break its commitment to a full cleanup. As such, the Draft PEIR becomes not a genuine environmental review but instead a kind of advocacy, attacking the very commitments DTSC had made without a word about the impacts were it to break those promises to remediate the pollution. This results in the extraordinary claim in the Draft PEIR that the environmentally superior alternative is the No Action Alternative, because it supposedly involves no environmental impacts. That assertion is baseless, and can only be made because DTSC failed altogether to analyze any impact from the contamination that is what led to the need for cleanup in the first place.

6. DTSC argues for not requiring the full cleanup it had promised in the AOCs in part based on generalized assertions about protecting biological features, despite the fact that the AOCs already have carefully tailored provisions for such protection, which DTSC now appears to intend to go far beyond. However, DTSC fails in the Draft PEIR to consider impacts on plants and animals from the contamination that DTSC now is contemplating not cleaning up. DTSC has Ecological Risk-Based Screening Levels (EcoRBSLs) for the contaminants at SSFL, levels set to determine what levels one needs to bring concentrations down to in order to protect ecological receptors such as birds, mammals, and various plants. The Draft PEIR needs to use the invertebrate, plant, and Ecological Low TRV-Based RBSLs.

7. The Draft PEIR simply repeats, without critical review, soil volume estimates by DOE and NASA that grossly inflate the actual volume of contaminated soil. At the same time, the Draft PEIR accepts soil volume estimates by Boeing that grossly underestimate the amount of contaminated soil it should clean up.

8. Much of the Draft PEIR appears to be an attempt to inflate the impacts of cleaning up while trivializing the risks of abandoning in perpetuity significant amounts of radioactive and chemical contamination.

9. The Draft PEIR fails to identify and meaningfully evaluate reasonable alternative methods of contaminated soil conveyance and routes, including direct site to rail conveyance and other options including the use of fire roads and routes with less impact to residents and reduced traffic impact. Instead, straw men are put forward and rejected. The Draft PEIR is also silent about the harm from the toxic and radioactive pollution but spends many pages about the inconvenience from the trucks needed to transport the contaminated soil for disposal. Transportation alternatives, including alternative routes and means of conveyance that could reduce truck impacts, are not seriously examined.

Draft Program Management Plan

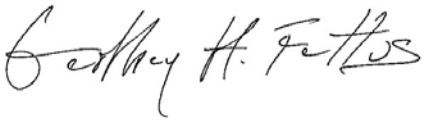
The Draft Program Management Plan is deficient in that it provides very little detail as to what is actually proposed regarding cleanup and defers to a post-PEIR, post-CEQA phase most identification of actual cleanup proposals.

Conclusion

The Draft PEIR is deficient in that it violates longstanding DTSC commitments for a full cleanup, is not clear in its disclosure of the proposed remediation, and does not address the negative ecological and human health impacts from exposure to the contamination itself and which would occur were the promised full cleanup not to occur. What DTSC appears to be contemplating is to leave in place the great majority of the contamination.

The public that resides in the area surrounding the site will be at continued and perpetual risk if DTSC continues on this course. CEQA also requires that the long term protection of the environment must be the guiding criterion in public decisions. Because the Draft PEIR is so fundamentally and basically inadequate and conclusory in nature, meaningful public review and comment have been precluded. We therefore request extensive revision and recirculation of the Draft PEIR, and careful selection of a responsible remediation approach that is fully in compliance with the DTSC's previous commitments for a complete cleanup of the SSFL contamination.

Sincerely,



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cc: John Laird, Secretary, California Natural Resources Agency
Councilman Mitchell Englander, City Council District 12, City of Los Angeles

D17 - Attachment 3/4

COMMITTEE TO BRIDGE THE GAP
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13 November 2006

Jose Diaz
Yvette LaDuke
Department of Toxic Substances Control
1011 North Grandview Avenue
Glendale, California 91201

Re: Centex Homes/Dayton Canyon Radiological Monitoring

Dear Mr. Diaz and Ms. LaDuke:

Thank you for the opportunity, belated though it may be, to comment on protocols for radiological monitoring at the proposed Centex housing development in Dayton Canyon just east of the Santa Susana Field Laboratory. Unfortunately, despite promises by DTSC to the contrary, the opportunity to comment comes after the fact – after the adoption and employment of those protocols for the vast majority of radiological measurements in Dayton Canyon – making such public review and comment opportunity an empty gesture.

Nonetheless, I hereby submit written comment, attached, on the technical details of the matter, but I wish at the outset to go on record expressing concern about how the Department is handling this belated effort at soliciting public input. Please consider these comments on the process part of the record.

To provide some perspective on these concerns, let me provide a bit of history. Local citizens have long urged DTSC and Centex to perform measurements for toxic and radioactive materials at the proposed housing development in Dayton Canyon, because of its proximity to SSFL. Both entities long resisted these requests. Finally, a year and a half ago, the *Daily News* ran a story raising questions why such measurements had not been undertaken. Two days later, the developer sent out a contractor to take measurements for perchlorate. Extremely high concentrations were found.

Because the contamination was found in Dayton Creek--which originates a short distance away at an area of SSFL which used large amounts of and is heavily contaminated with perchlorate--the public presumed there would be a serious effort to determine potential connections. Instead, as if to reinforce that there couldn't possibly be any connection between Dayton Canyon and the contaminated SSFL site just upstream, a decision was made to have the Glendale office of DTSC investigate Dayton while a Sacramento team continued to deal with SSFL. From day one, it appeared as if the Glendale DTSC team were under directions to clear the Dayton project to go ahead and to declare that there was no relationship between the contamination in the two nearby locations.

Rather than being treated as the entity DTSC was supposed to be serving, the public seemed to be viewed as a potential impediment to that predetermined outcome. In particular, the opportunity for public input prior to DTSC making decisions was treated as a nuisance that would get in the way of closed-door deals between DTSC, the developer, and, at a distance, Boeing.

So, decisions about monitoring and cleanup were made privately between DTSC and the developer, and then announced to the public as a *fait accompli*, in one case, a few hours before the approved actions were to begin. Promises were repeatedly made that this wouldn't happen again; and the promises were repeatedly broken.

For example, DTSC had promised that radiation monitoring wouldn't be done without a prior opportunity for public review and comment on the proposed protocols for the measurements. Nonetheless, without any such opportunity, the developer, with DTSC approval, conducted a radiological survey last year using hand-held survey equipment, a largely useless way of assessing radiological contamination, designed more for PR than for environmental investigation. Furthermore, the developer's contractor claimed background radiation was 360 millirem per year and he therefore used the counter to look for radiation at levels 150% of that, or over 500 milliirem/year. However, background radiation in the area is less than 50 millirem per year, an order of magnitude lower than that claimed by the developer. The public's right to review and comment – and thereby prevent such a biased and erroneous set of measurements – was abrogated. The measurements were made, with no opportunity for public review and comment.

In response to the outcry over this and other abrogations of promises to permit meaningful prior public review and comment, DTSC committed as follows:

> DTSC, in consultation with USEPA Region 9 and the State of California Department of Health Services, is developing a Sampling and Analysis Plan (SAP) that will specifically address potential radiological contamination. SAP will be based on the Multi-Agency Radiation Survey and Site Investigation Manual (MARSSIM). The SAP will have three components: 1) an alpha/gamma survey of the entire site using hand-held instruments; 2) collection of discrete samples for analysis of gross alpha and gamma radiation; and 3) analysis of discrete samples for isotope-specific analysis of strontium-90, Cesium-137 and Plutonium-238. **The SAP will be posted on the DTSC website and available for comments.**
>
> *Response to Comments on Preliminary Endangerment Assessment and Site Characterization Workplan*, emphasis added[1]

[1] The public presumes this is a DTSC document, as it is posted on DTSC's website and responds to public comments submitted to DTSC on the PEA and Workplan. However, DTSC ambiguously lists the document on its website as "Centex Homes Response to Comments on PEA and Site Characterization Workplan," to make matters more confusing, DTSC lists on its

Thus it was promised that no radiation measurement would be undertaken until there was a draft Sampling and Analysis Plan (SAP) --radiation sampling protocol -- posted and an opportunity for prior public input. It was further promised that US EPA would be brought in to help establish the protocols, that agencies, not the developer, would prepare the SAP, and that the SAP would rigorously follow the EPA's MARSSIM guidance. None of these commitment was fulfilled.

As indicated in our statement of 25 October 2006, attached to our current comments as Appendix I, the developer's report on its radiation measurements states:

"Due to the proximity of the Sterling Site to the SSFL, a radiological survey was planned as part of the Preliminary Endangerment Assessment Workplan, to evaluate the radiological conditions at the Sterling Homes site. As part of this evaluation, DTSC and DHS were to prepare a Radiological Sampling and Analysis Plan (SAP) to conduct the radiological survey, sampling, and laboratory analysis. The SAP was not prepared, and DTSC instructed Allwest Remediation to perform the survey, and collect samples at a rate of approximately 10 percent of the grids monitored, as described in the workplan approved by DTSC."

Thus, despite promises to the contrary, the developer went ahead with radiation measurements by its self-selected contractor and its self-selected protocols, with DTSC acquiescence but without any opportunity for public input. The measurement procedures were outrageous. A

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website the document as having a date of 1 October 2006, but the first page of the document states it is a response to comments submitted by Committee to Bridge the Gap on 14 October 2006. The document, posted by DTSC on its website, clearly is memorializing commitments made by DTSC. It is possible – and we ask DTSC to clarify the matter – that DTSC, instead of considering the public comments submitted to it, handed them over to the developer to respond for the agency, but if that were true, that would be even more scandalous a conflict-of-interest.

We note that DTSC, in its handout at the 25 October 2006 states, on p. 22, as "Next Steps," that "Centex to submit Final Supplemental Radiological Investigation SAP incorporating public comments (November 13, 2006)." This suggests that DTSC has indeed outsourced to the developer the duty of responding to public comments submitted to the agency, which would be an extraordinarily improper step. [We note that the date listed for Centex to submit the document incorporating the public comments is 13 November, the same day the comments are due, again a puzzling matter.]

In the same document, DTSC, in response to criticisms of the developer inappropriately claiming background was 360 millirem for radiation detected by Geiger Mueller detector, committed that it would review existing background surveys for the area to determine adequate background levels. This hasn't been done; there is no consideration in the documents currently being commented upon of what values should be used for such an area Geiger counter survey; and despite the criticisms raised of the competence of the developer's contractor for claiming such a high background value and relying on Geiger counters, DTSC permitted the scan anyway.

Geiger counter was used for much of the work, totally inappropriate to catch the kind of contamination likely. "Background" that was ten times actual background was employed. For the handful of soil measurements, concentrations were compared to Lawrence Livermore nuclear weapons laboratory, one of the most contaminated places in the country, as supposed "background." Other comparisons were made to the contaminated McLellan Air Force base outside Sacramento -- with significant plutonium and other radionuclide contamination, as well as the site of a nuclear test reactor. They further compared the Dayton measurements to Brandeis Bardin Camp Institute and Runkle Ranch as "background" -- even though both have been found to be contaminated by Boeing's SSFL activities. They further compare the Dayton measurements to maximum values found anywhere in the U.S. - when nuclear weapons fallout, for example, contaminated other parts of the country far higher than California (because we are upwind of the Nevada Test Site). All of this was done without opportunity for public input, despite DTSC's promises that no measurements would be undertaken without the protocols first being posted and public input solicited. The appearance is clear: the public had to be frozen out of the process of establishing radiation protocols for the investigation of the site because they couldn't withstand scrutiny otherwise, and there was pressure to "clear" the proposed development site as OK.

THE CURRENT SITUATION

1. **The relevant documents cannot be readily found on the DTSC website**.

DTSC has now belatedly solicited public comment. The public announcement/flyer of the availability of the documents directs the public to www.envirostor.dtsc.ca.gov/public. But one cannot readily get to the documents from that URL. No Dayton documents are posted at that URL. All one sees is a form to fill out with city, county and zip when you are inquiring about sites near you. If you do that, and type in, say, Chatsworth, you get five sites, none of which is Dayton Canyon. If you use Basic Search, and type in Dayton Canyon, you get zero records. If you type in Centex, you get 3 choices, one of which is right. When you click on "report," you get a bit of description of the site and its APNs, but only one link to a document is listed, a 2005 Voluntary Cleanup Agreement. Nothing about the radiation sampling protocols. Similarly, even if one can figure out that you need to type in a zip code, one merely gets a listing for the Centex property without the relevant documents listed. Most people will just give up at that point; if one is persistent and starts clicking everything on the page, by clicking on "community involvement" you get to a confused page that has some of the documents. But even then, the documents are out of order (within the document itself). For example, one document just begins on page 4.

There is simply no reason not to provide a URL that takes people to the documents in question, and have them in a form readily accessible. This "hide the ball" approach reinforces the impression that DTSC continues to be reluctant at best about providing a meaningful opportunity for review and comment.

I had to go instead to the main DTSC page, go to cleanup, to sites, and eventually find the materials. But these were completely mixed up.

2. **The documents that one can find via the main DTSC page (clicking on cleanup and then sites and then Centex) are without meaningful titles.**

If you manage to find the links to the documents via the main DTSC page -- and we guess far less than 1 in 10 people who try will succeed in finding the documents, given the difficulties DTSC has unnecessarily created -- you are left with five links with meaningless titles:

Centex%20RAD%20Survey%20Report_Figure2.pdf
Centex%20RAD%20SAP_Figure3.pdf
Centex%20RAD%20SAP_Figure1.pdf
and so on.

The actual documents are not Figures; they are each 100+ page piles of mixed up text. One cannot readily tell which file comes first, second, third, or even what the files are. Surely the Department could not have gone more out of its way to make public comment difficult.

3. **Pages All Out of Order, as Though Someone Shuffled a Deck of Cards, to Make Public Comment Even More Impossible**.

When one opens the various files, the text begins at random. The file called Figure 3.PDF begins with a Title Page called "Appendix B"; the next page is page 2 of some unidentified letter to Jose Diaz. Where is page 1? From whom is the letter? What is its date? The file called Figure1.PDF has a title page called Supplemental Radiological Investigation Sampling and Investigation Plan. The next page is page 4. Where are pages 1-3? Mixed in later like cards were shuffled. The file called Figure2.PDF begins on a page 000015 and Section 4. Where are pages 00001-14 and Sections 1-3? Another file has everything in the Figure 2 file, plus the missing Sections 1-3. Why is Figure 2.pdf included at all -- it appears, but we cannot tell for sure, to be duplicative of another file. Similarly, the Radiological Investigation report seems to be included two or three times in the mass of papers.

There is an old rule in bureaucracy: if you really don't want public input, because you've made deals with a developer or polluter that cannot withstand the light of day, throw the public a mass of disorganized, out of order, duplicative papers; better still, make it difficult to even locate the documents in the first place. In this case, the vast bulk of the papers are about what the developer has been permitted to already do, without public input--making comment meaningless anyway. But to make sure the comment opportunity is truly meaningless, DTSC has made it virtually impossible for anyone to find the documents or, once found, to make heads or tails of them. They are little all shuffled together, out of order, duplicative. You are supposed to make it easy for the public to comment, not close to impossible.

Despite these obstacles, and the fact that the comment opportunity is largely after the fact, please find enclosed our comments.

Sincerely,

/S/

Daniel Hirsch
President

cc w/ enclosure: Deputy Director Rick Brausch
Senator Sheila Kuehl
Assemblymember Fran Pavley

D17 - Attachment 4/4

Comments on Radiological Monitoring of Dayton Canyon

by

Daniel Hirsch
President
Committee to Bridge the Gap

13 November 2006

Prepared with support from the Citizens Monitoring and Technical Assistance Fund

Comments on Radiological Monitoring of Dayton Canyon

by

Daniel Hirsch
President
Committee to Bridge the Gap

Abstract

Despite strenuous efforts by DTSC and contractors for the proposed developer of the Dayton Canyon property to obscure the fact, the radiological measurements made at the site demonstrate that it is contaminated with radioactivity from the Santa Susana Field Laboratory (SSFL), the Atomic Energy Commission/Department of Energy nuclear reactor testing facility nearby.

Cesium-137 was found in the Dayton Canyon West area at levels on average twice that of local background. Five of the fourteen samples taken in that area were "hotter" than the hottest of any measured value for local background. The developer used a detection limit for strontium-90 so high that levels way over background would come back "non-detect"; even so, three of the strontium measurements were higher than anything seen in local background. Geiger counter measurements were on average several times background. The pattern of contamination was consistent with SSFL as the source, with higher readings in the part of the Dayton property closest to SSFL. Even so, when averaged over the entire Dayton Canyon area, cesium-137 measured on average 1.6 times average background. The hottest cesium measurements found in Dayton were 1.77 times as radioactive as the hottest measurements made of local background.

The developer's consultants try to divert attention from these facts by misleadingly comparing the measured values at Dayton with the nuclear weapons laboratory at Livermore, a contaminated air force base in Sacramento, and contaminated areas of the Brandeis Bardin Camp Institute and Runkle Ranch abutting SSFL. Similarly, DTSC inappropriately refuses to use EPA's mean local background figures and essentially "trims" high measured values at Dayton.

The proposed supplemental work is deeply flawed, based on a misrepresentation of the underlying data, poor detection levels, and an *a priori* assumption that there can't be contamination coming from SSFL. It should be rejected.

The actions by the developers' consultants should disqualify them from carrying out further work and analysis at Dayton. A new, independent team needs to be brought in that has public confidence, and the work done over, from the beginning.

Discussion

1. Conflict of Interest in Having the Developer Choose and Control the Contractors Performing the Radiological Investigation and Analysis

The evaluation of possible contamination at the proposed Dayton Canyon development resulting from its proximity to the highly polluted SSFL nearby has been troubled from its outset. Given the financial interest the developer has in a finding that the site is not contaminated by SSFL, it was inappropriate for DTSC to permit Centex Homes to select the contractor to perform the evaluation. Centex has a tremendous financial incentive for a clean bill of health; the contractors are being paid and controlled by the developer; the conflict of interest is overwhelming. As we will see below in discussion of the work by Allwest in establishing the protocols and carrying them out, and Cabrera in analyzing (or "spinning") the data obtained, this resulted in distortion of measurements so severe that DTSC should never have tolerated the situation—and should insist on starting over from the beginning, with truly independent entities.

2. The Geiger Counter Measurements

The distortion of science by this conflict of interest was apparent immediately. Allwest Remediation, the contractor, proposed to use a Geiger-Mueller counter to monitor the site; a technique good for PR but very poor for true evaluation. Demonstrating his lack of knowledge about radiation, or perhaps hoping that the public would not know the difference, the Allwest contractor claimed local background radiation of the sort that could be picked up by a Geiger counter was 360 millirem per year. He said he would use 150% of that figure, or 540 millirem/year, as the level to trigger additional investigation.

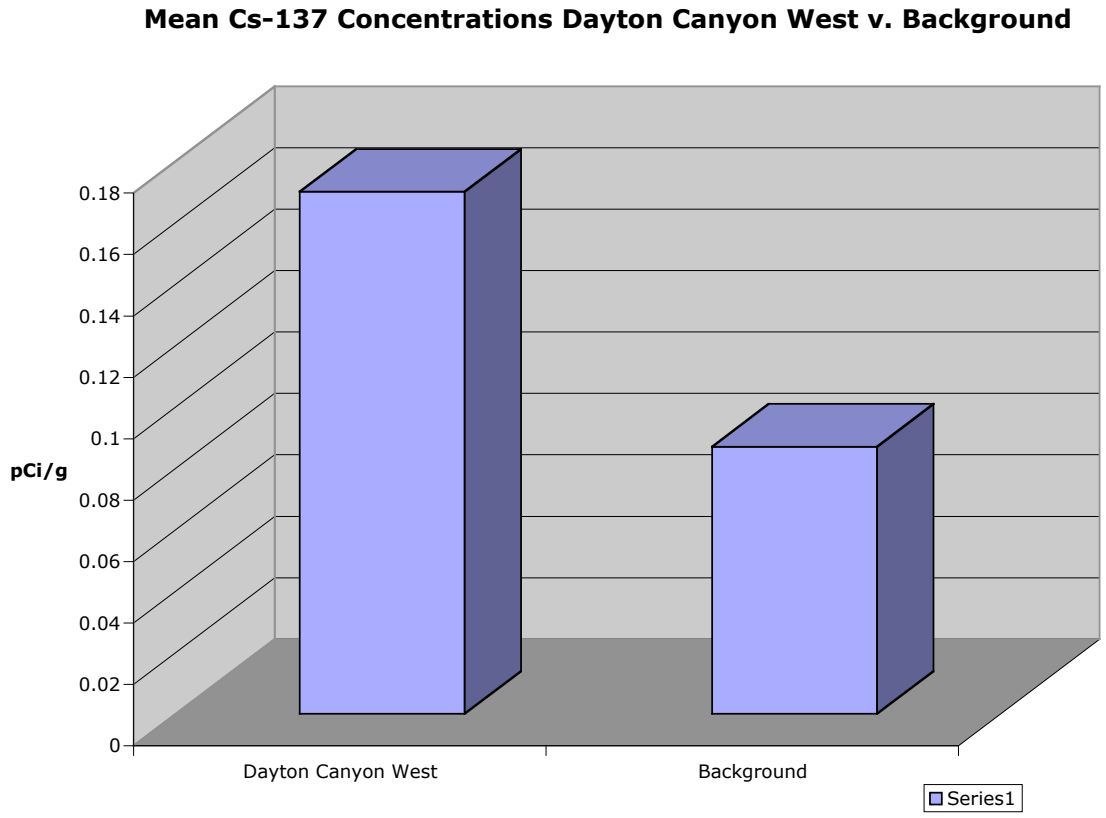
However, local background has been measured, for years, by the California Department of Health Services (DHS) and Boeing as 40-50 millirem/year, about 5 micro-rem/hour. See, e.g., Table 5-11, *Site Environmental Report for Calendar Year 2004, DOE Operations at the Boeing Company Santa Susana Field Laboratory*. Thus, Allwest inflated local background levels by an order of magnitude.

When one compares the Allwest readings against actual measured local background, one finds that the Dayton Canyon measurements (averaging about 15-20 microrem/hour) were 3-4 times mean local background. Furthermore, the mean highest values were found in the West section of the property – the portion closest to SSFL and the portion that also had the highest cesium-137 measurements.

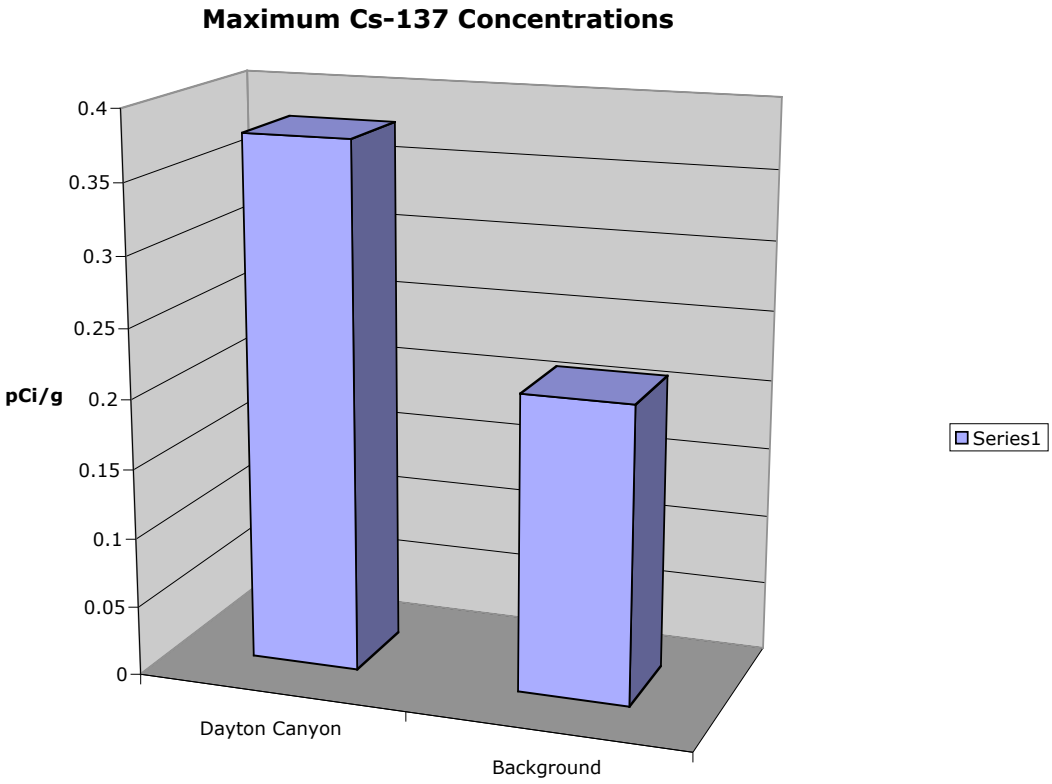
Allwest claims it used the Geiger counter readings to select locations for taking soil samples. But if so, it appears to have used the readings to *avoid* grids that were indicated as having the highest radiation levels. Pages 22-23 (Figures 3-1 and 3-2) of the Cabrera memorandum provides posting plots of lowest and highest exposure rate readings in each grid square, and then shows which grids were selected for soil sample analysis. Remarkably, the grids marked on both figures as having the highest exposure rates are almost without exception NOT selected for followup soil analysis for specific radionuclides.

3. **Cesium-137 Contamination**

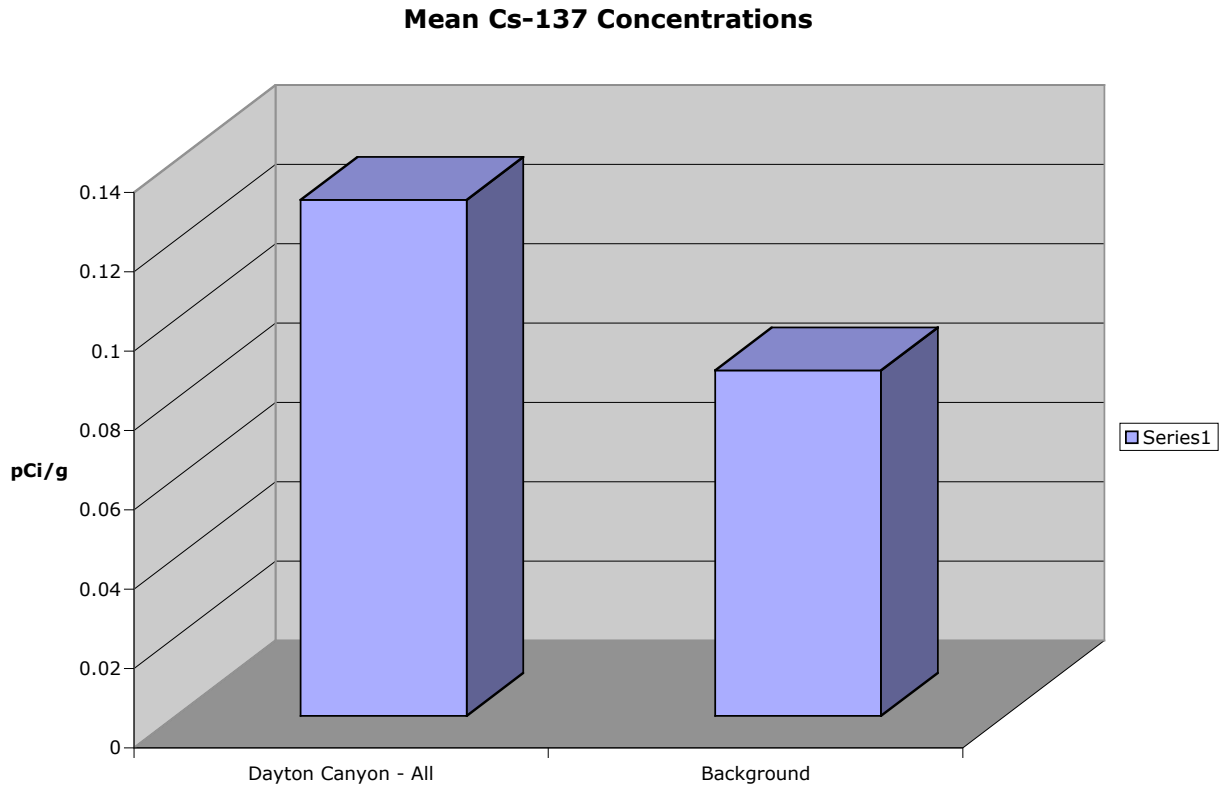
The 14 soil samples measured for cesium-137 in Dayton Canyon West, the area closest to the SSFL, averaged 0.17 pCi/g. Local background, as measured under US EPA control, averages 0.087 pCi/g. See McLaren-Hart 1995 study, Table 20, Background Levels of Radioactivity in Soil. **Thus, cesium-137 in Dayton West is twice local background.**



The maximum value for cesium-137 found in local background is 0.213 pCi/g. More than a third of the samples in Dayton West exceed anything seen in background. The highest value in Dayton Canyon, 0.378 pCi/g, is 1.77 times as high as the highest value in background.



Taking all samples collected throughout Dayton Canyon together, the cesium levels average 0.13 pCi/g, 1.6 times average local background.



4. **Strontium-90 Contamination**

The McLaren-Hart background measurements were made with a detection limit of ~0.005 pCi/g and had an average value of 0.052. The developer chose to use a greatly worse detection limit, two orders of magnitude higher (i.e., couldn't "see" any strontium unless it was about 0.5 pCi/g or even higher --the highest detection limit used was 0.9). Therefore, measurements as high as ten times background couldn't be detected by this remarkably poor detection limit. It was a set-up to report as "non-detect" values that could be greatly higher than background.

Three of the Dayton strontium measurements, however, were still so high that they were above even these high detection limits. **The three measurements averaged about 10 times background. They each exceed by a large amount the hottest strontium measurements found in local background—by as much as six-fold**. When one takes the other measurements into account, using EPA's standard practices, as used for the McLaren-Hart study, of using the Detection Limit (DL) when the reading isn't above the DL, the average Dayton strontium-90 value is 12 times background. Even if you use half the DL, as is sometimes done, the average Dayton strontium-90 value is about 6 times background.

It is remarkable that DTSC apparently didn't catch the inflated detection limit for strontium-90 used by the developer and permitted such a grossly inadequate technique to be employed.

5. **Plutonium Contamination**

The plutonium values are even more troubled by poor detection limits and inappropriate comparisons to supposed background values.

6. **Spatial Distribution of Contamination Supports SSFL as the Source**

There is, of course, no other source in the area for cesium, strontium, and plutonium above fallout background than SSFL. If one hypothesizes SSFL as the source and airborne deposition from accidents and releases from airborne burning of contaminated items in the SSFL burnpits, one might expect higher concentrations closer to SSFL. One might also expect lower concentrations in the creekbed, as contamination that fell out from the air would be flushed out by the running water.

When one examines the cesium data, that is exactly what one finds. Dayton West, closest to SSFL, has the highest concentrations; the streambed the lowest; with the areas of Dayton further from the site lower than Dayton West.

This, as discussed below, calls into question the rationale for doing the step-outs proposed in the supplemental sampling plan.

7. **Centex, Allwest, and Cabrera Engage in Extraordinarily Misleading Comparisons**

To determine if SSFL has contaminated Dayton Canyon, one must compare Dayton with local background. EPA has established local background values in the measurements conducted by McLaren-Hart in the early to mid-1990s. When one compares Dayton to local background, as discussed below, it is clear Dayton is radioactively contaminated – it has radioactivity that has been added, one must assume by SSFL, on top of the radioactivity in background.

Instead of doing the scientifically appropriate comparison, the developer and its contractors engage in deceptive activity that should have resulted in DTSC disqualifying them. They compare Dayton to the nuclear weapons laboratory in Northern California, Livermore. They compare Dayton to the contaminated McLellan Air Force Base near Sacramento. They compare Dayton to U.S. maximum and average values, when the rest of the U.S. has far higher fallout levels than S. California because we are upwind of the Nevada Test site, not downwind. They compare Dayton to contaminated areas of Brandeis Camp Institute and Runkle Ranch, abutting SSFL. And when they mention in passing (Table 1, Summary Statistics) the McLaren-Hart local background figures, they misrepresent them, claiming maximum Cs-137 levels of 0.46 and average of 0.14, when the McLaren-Hart figures are in fact 0.213 maximum and 0.087 average.

8. **DTSC Misrepresents the Data as Well**

EPA established mean local background values. DTSC has decided to throw those out and instead use log-transformed averages. This is a technique which essentially "trims" high values, discounting them from their true magnitude, and shrinking the differences between Dayton and background.

DTSC argues that the distribution of both background measurements and Dayton measurements are not normally distributed, and therefore justifies its trimming of the high values by the use of log-transformed values. EPA disagrees.

Dr. Bosan cites as the basis for his taking these steps what he said was guidance to do this. In fact, the cited reference is merely a report on arsenic related to LA schools. It provides no justification to throw out the EPA mean values for radioactivity in local background.

Despite the clear data showing that cesium-137 at Dayton is elevated above background and that even with improperly inflated detection levels, strontium-90 in excess of background was also found, DTSC evades those fundamental findings. And even though the body of its own report shows cesium and strontium levels in excess of anything found in local background, the cover letter to the Centex developer by DTSC states that there were several detections of cesium, strontium, and plutonium "at the upper limits of background concentrations." They weren't "at the upper limit" of background – they were considerably above the upper limits.

9. **The Proposed Supplemental Sampling is Nonsensical**

Sampling, by definition, is taking a few samples that are to represent those places one hasn't sampled. Finding contamination tells you that there is likely to be contamination in places you haven't looked.

Since the mechanism of contamination appears to be airborne deposition from SSFL, doing stepouts from a handful of the highest concentrations is doomed to failure. It is based on the same premise DTSC has used from the beginning – that the contaminated SSFL site can't be the source of contamination at nearby Dayton. Something else must be the cause—e.g., a terrorist.

Since there is clear evidence of widespread radioactive contamination at Dayton – average radioactivity levels exceed background – one needs to do a great many more samples, not just step outs from a handful of the highest measurements. This is designed to give DTSC and the developer the answer they wish, rather than finding out what level of contamination there is and how widespread it is.

And certainly strontium measurements with far better detection levels are essential.

10. **The developer's contractors should be removed from the process, and truly independent entities brought in, who have public confidence, and the measurements done over again, this time correctly.**

Appendix I
Letter from Daniel Hirsch to DTSC
Read at Public Meeting on Dayton Canyon Radiological Investigation
25 October 2006

Subject: Dayton Canyon radiation measurements

I have briefly reviewed the data and text about Dayton Canyon radiation, prepared by the Centex developer. I can understand why they wanted knowledgeable members of the public frozen out until they had OK'd it. A brief summary of issues raised:

1. Nearly a year ago, DTSC had made a written promise that EPA, DHS, and DTSC would prepare a draft Sampling Analysis Plan (SAP) for the radiation monitoring, and post it on the DTSC website for public review and comment before any sampling took place. DTSC broke this promise, among many others, and authorized the Centex develop to go ahead and do the radiation measurements without a SAP or public input. The public comment now being solicited is largely over procedures for measurements already made -- i.e., public input permitted only after the fact.

The developer's report on its radiation measurements states:

"Due to the proximity of the Sterling Site to the SSFL, a radiological survey was planned as part of the Preliminary Endangerment Assessment Workplan, to evaluate the radiological conditions at the Sterling Homes site. As part of this evaluation, DTSC and DHS were to prepare a Radiological Sampling and Analysis Plan (SAP) to conduct the radiological survey, sampling, and laboratory analysis. The SAP was not prepared, and DTSC instructed Allwest Remediation to perform the survey, and collect samples at a rate of approximately 10 percent of the grids monitored, as described in the workplan approved by DTSC."

Thus, here is a pretty explicit admission that the promised SAP, with input from other agencies (left out EPA), wasn't done, and DTSC just told the developer to go ahead and do the sampling itself based on its own plan, without public input.

Had there been input from EPA, and even DHS, it is doubtful such a remarkably inadequate survey would have been permitted; and public comment on the SAP beforehand would have made it difficult to do some of the more outrageous things they did here.

2. They measured almost exclusively for natural radioactivity. One isn't concerned here with natural radioactivity -- one wants to know if there is artificial radioactivity, i.e., added contamination from SSFL.

3. The Geiger counter measurements are a joke; such measurements were useless. Nonetheless, the measurements came in about 3-4 times background . The developer doesn't translate the

readings into anything explainable, merely says in a conclusory way everything is OK, when its own measurements show radiation well above background. DHS reports local background as 4.8 microrem-hour and Boeing measures it as 5.2 (see Boeing annual environmental monitoring report for 2005 at p. 5-17. The developer's scan of the Dayton site recorded radiation averaging about 20 micro-rem per hour in the Dayton Canyon West (DC-West) area, for example, the area of the proposed development closest to SSFL. That is four times what DHS and Boeing report for offsite background.

4. They did measure for cesium-137 and strontium-90, two key artificial radionuclides. Here the developer misreported the readings for background from the McLaren-Hart report on Brandeis and Sage Ranch -- deflating the former and inflating the latter. The McLaren-Hart report gives background values for cesium as 0.087 picocuries/gram (pCi/g), with a maximum measured value of 0.213. The developer found for the DC-West area cesium average values of .17 pCi/g -- twice background. More than a third of the measurements were hotter than the highest cesium value found in any the background measurements, as high as 0.378.

5. For all of the Dayton measurements combined, the average cesium value is 0.13 pCi/g (we agree on that), but it inflates the McLaren-Hart background values to make it seem that Dayton was lower than background. The developer reports background from the Brandeis measurements as 0.14 pCi/g average, with a high of 0.46. But, as indicated above, McLaren-Hart background for the Brandeis & Sage Ranch investigation (same source they cite), actually reports an average of 0.089 pCi/g and a high of 0.213. Thus, Dayton average cesium level, including all the areas further away from SSFL, is 60% above background, not a bit below it as they claim by completing misquoting background. And the highest Dayton measurement is 0.38 pCi/g, 80% higher than background, when they claim it is substantially below, again by misquoting the McLaren-Hart report. (What they are doing is citing the contaminated parts of Brandeis as "background!")

6. Even more damning, they go on to compare Dayton to -- you won't believe this -- the Lawrence Livermore nuclear weapons facility. They also compare it to the McLellan Air Force base outside Sacramento where extensive radioactive contamination is being remediated (they had a reactor; nuclear weapons; bombers that flew through radioactive clouds from nuclear testing and were washed off there; and a nuclear dump with plutonium and other bad stuff found in buried barrels). The developer also compares Dayton to Brandeis, as indicated above, which, as you will recall, was contaminated by SSFL, sued, and got a large settlement; the McLaren-Hart study in fact is the initial study that found the contamination at Brandeis. Lastly, they astonishingly also compare Dayton to the contaminated Runkle Ranch area abutting SSFL to the north. You will remember that a couple of years ago Runkle was found to be heavily contaminated, particularly with strontium-90, at way above background.

7. For strontium-90, the story gets even worse The McLaren-Hart background measurements were made with a detection limit of ~0.005 pCi/g and had an average value of 0.052. The developer chose to use a greatly worse detection limit, two orders of magnitude higher (i.e., couldn't "see" any strontium unless it was about 0.5 pCi/g or even higher --the highest detection limit used was 0.9). Therefore, measurements as high as ten times background couldn't be detected by this remarkably poor detection limit. It was a set-up to report wrong values.

8. Three of the Dayton strontium measurements, however, were still so high that they were above even these high detection limits. The three measurements averaged about 10 times background. When one takes the other measurements into account, using EPA's standard practices, as used for the McLaren-Hart study, of using the Detection Limit (DL) when the reading isn't above the DL, the average strontium-90 value is 12 times background.

SUMMARY: The use of detection limits a hundred times poorer than used for the background measurements, so that one couldn't "see" contamination that is there; of primarily measuring for natural radioactivity, when the issue is artificial radioactivity from SSFL; of misreporting background so as to make it seem as though they were below background when they are significantly above it; and other matters that skew and misrepresent the situation--all explain why it was so important DTSC should have lived up to its promise to have EPA and other agencies establish a draft Sampling Analysis Plan and permit public input prior to the measurements being made. Instead, the developer, with a huge vested interest, has been given free rein to design and perform the measurements as it sees fit, with the expected result -- a declaration that everything is clean when in fact the data show significant radioactive contamination.

What the data actually show is: the Geiger counter measurements are at about 4 times background; the cesium measurements about 60-80% above background; and some strontium measurements about ten times background.

Thus, all four areas monitored for radioactivity offsite from SSFL have shown contamination: Brandeis Bardin Camp Institute, Sage Ranch, Runkle Ranch, and now Dayton Canyon. That's four for four.

D18

County of Los Angeles Department of Parks and Recreation
Planning Division
Attn: Julie Yom, Park Planner
510 South Vermont Avenue, Los Angeles, California 90020
jyom@parks.lacounty.gov

December 16, 2017

RE: Comment on Los Angeles County Draft Trails Plan

Dear Ms. Yom,

Thank you for accepting comments on the Santa Susana Mountains Trails Master Plan- Phase II.

Teens Against Toxins is a non-profit, community advocacy group that was founded in 2009 to help raise awareness about the Santa Susana Field Laboratory (SSFL) in the Santa Susana Mountains on the border of Ventura and Los Angeles County. Vast amounts of harmful radioactive and chemical contamination exist at SSFL from decades of nuclear reactor work and rocket testing, which resulted in numerous spills and accidents, including a partial nuclear meltdown of one of the reactors in 1959. 1

SSFL is undeniably contaminated, and with some of the most harmful substances in existence: cesium-137, strontium-90, plutonium, and uranium. Hundreds of gallons of a highly toxic chemical solvent, trichloroethylene (TCE), was washed into surface and groundwater as a consequence of cleaning the rocket test stands.

Even though two of the three polluters of the site promised in 2010 that all remediation of the contamination would be completed by the beginning of 2017, no cleanup has even begun. Extensive evidence points to the likelihood of contamination migrating off-site, including a federally-funded study conducted by the University of Michigan. Boeing, one of the polluters, has been fined in excess of 80 times for water-run off violations. Two other federally-funded studies out of UCLA demonstrate an increased death rate from key cancers amongst former workers of SSFL, as well as a 60% increase in cancer diagnoses within two miles of SSFL.

It is explicitly for this reason that Teens Against Toxins is imploring you to halt all consideration of trails that enter the areas in or bordering SSFL until a fully-protective cleanup has been completed. Specifically, proposed trails such as W0S3 in the figures on pages 115 and 116 of the Master Plan, should be eliminated from consideration until after remediation is completed at SSFL. Other examples of trails that should be considered only after a full cleanup of SSFL are the John Luker Trail and connections, as they border areas of the site that are known to be contaminated.

We all want to be able to enjoy the beauty of those mountains and landscapes, but certainly not if the cost is sacrificing the health of our community and the environment itself. In order to protect the organisms and environment onsite, as well as the communities surrounding SSFL (the people 2

who live at its base day in and day out), it is imperative that a cleanup occurs that restores SSFL to its original pristineness. Until that time, please do not propose any hiking trails near or through the site, as that would only minimize the risk of the contamination (if only symbolically) and potentially delay the cleanup further. 2 (cont.)

Thank you.

Sincerely,

DEVYN GORTNER
Founder

D19

From: Denise Duffield [mailto:dduffield@psr-la.org]
Sent: Saturday, December 16, 2017 9:56 PM
To: Julie Yom <jyom@parks.lacounty.gov>
Cc: kathryn@bos.lacounty.gov; JDeGonia@bos.lacounty.gov; sheila@bos.lacounty.gov; Lippman, Timothy <tlippman@bos.lacounty.gov>; Young, Katy <kyoung@bos.lacounty.gov>; councilmember.englander@lacity.org; Nicole Bernson <nicole.bernson@lacity.org>; Stephanie Uy <stephanie.uy@lacity.org>; Dumlao, Matthew <Matthew.Dumlao@sen.ca.gov>; senator.hertzberg@senate.ca.gov; Worth Girvan, Barri <barri.girvan@sen.ca.gov>
Subject: Comments on Santa Susana Mountains Trails Master Plan

Dear Ms. Yom,

Attached please find comments by Physicians for Social Responsibility-Los Angeles on the Draft Santa Susana Mountains Trails Master Plan. 1

As a physicians and health advocate organization, we have serious concerns about any trails being located near the contaminated Santa Susana Field Laboratory (SSFL) until it has been fully remediated. The site is heavily polluted with nuclear and chemical contamination that migrates offsite, risking public exposure and health impacts.

Our attached comments and supporting materials contain more information regarding these concerns.

Sincerely,

Denise Duffield

--
Denise Duffield
Associate Director
Physicians for Social Responsibility-Los Angeles
617 S. Olive Street, Suite 1100
Los Angeles, CA 90014
213-689-9170 ext. 104
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http://www.psr-la.org/

The physician and health advocate voice for a world free from nuclear threats and a safe, healthy environment for all communities.

PSR LA
Physicians for Social Responsibility
Los Angeles

December 16, 2017

County of Los Angeles Department of Parks and Recreation
Planning Division
Attn: Julie Yom, Park Planner
510 South Vermont Avenue, Los Angeles, California 90020
jyom@parks.lacounty.gov

RE: Comment on Draft Santa Susana Mountains Trails Master Plan

Dear Ms. Yom:

2

Physicians for Social Responsibility-Los Angeles (PSR-LA) is a physician and health professional organization dedicated to protecting public health from nuclear and environmental threats. We have been involved in efforts to clean up the Santa Susana Field Laboratory (SSFL) for nearly forty years to ensure that radiological and chemical contamination is remediated in a manner that is fully protective of public health, particularly to address the potential for migration of that contamination to offsite areas where people live, work, and might engage in recreation in areas near the contaminated site.

SSFL is one of the most contaminated places in the state, indeed, in the nation. It was recommended by US EPA for consideration for inclusion on the Superfund list of the country's most hazardous sites (i.e., the National Priority List). Its cleanup is to be conducted in part pursuant to the State Superfund law, for the state's worst sites. That cleanup, according to 2010 agreements, was to be completed by 2017, but unfortunately it has not only not been completed, it has not even begun. The risks from that radioactive and toxic chemical pollution, both on and offsite, thus remains a serious problem.

After reviewing the Draft Trail Plan and Initial Study, we have several concerns, focused on the trails leading up to and near the SSFL. We were struck that there is not a word in any of the documents, including the Initial Study, regarding the contamination at SSFL and the evidence of potential for migration of contamination into offsite areas such as those proposed for these trails. Under CEQA, an Initial Study and Negative Declaration are allowed only when there are no potential significant environmental impacts. Otherwise, and Environmental Impact Report is required. Yet no EIR has been prepared, and the Initial Study is completely silent on the central environmental impacts associated with the proposed project in the Phase IIb area, which is right up against SSFL—radioactive and hazardous chemical contamination. [Note that we are not expressing any concerns about the Phase IIa area, which is far from SSFL.]

PSR-LA | 617 S. Olive St, Ste. 1100, Los Angeles, CA 90014 | **phone** 213-689-9170 | **fax** 213-689-9199 | **email** info@psr-la.org | **www.psr-la.org**

SSFL has a history of decades of nuclear reactor development and tens of thousands of missile tests. Accidents--including a partial nuclear meltdown--spills and other releases that have left behind widespread levels of contamination of dangerous radionuclides including cesium-137, strontium-90, plutonium-239/240, and tritium, as well as numerous hazardous chemicals including trichloroethylene, perchlorate, hydrazines, dioxins, PCBs, heavy metals, and volatile and semi-volatile organic compounds. These toxic materials can cause cancers and leukemias, developmental disorders, genetic disorders, neurological disorders, immune system disorders, and more. 3

Federally-funded studies by the UCLA School of Public Health have found elevated rates of death from cancers of the lung, lymph and blood systems among workers associated with their exposures to radiation and chemicals.[1] A subsequent multi-year study, prepared for the Agency for Toxic Substances and Disease Registry (ATSDR) by a separate group of UCLA researchers, found contamination from SSFL had migrated offsite at concentrations in excess of EPA levels of concern, particularly within two miles of the site boundary.[2] In a parallel study, also for ATSDR, a team led by the University of Michigan's Professor Hal Morgenstern found a greater than 60% increase in incidence of key cancers for people living within two miles of SSFL compared to those who live further away. Most recently, families who live near SSFL have identified rare pediatric cancers in the area. The fact that some of the proposed trails are considering to travel up to SSFL is a major concern for PSR-LA, as we know that children are far more vulnerable to health impacts from SSFL contaminants than adults.

A key point to make here is that, contamination from the site has migrated offsite, and continues to migrate offsite. There have been over a hundred exceedances of LA Regional Water Quality Control Board pollution standards in runoff from the site reported in recent years, resulting in numerous fines. A TCE plume extends offsite, perchlorate has been found in numerous wells in Simi Valley and in soil at Dayton Canyon. Strontium-90, arsenic, and vanadium was found in Runkle Canyon. Other contamination has been found at Brandeis-Bardin and at Sage Ranch, where hundreds of cubic yards of toxic soil contaminated with antimony and asbestos were removed and where more remediation needs to be done. The proposed trails in question are in areas below SSFL where migration could readily have occurred from SSFL or may in the future.

Furthermore, there are serious questions as to whether there was any dumping of radioactive or toxic waste in the areas where the trails are contemplated. There has been evidence, for example, of material dumped in Dayton Canyon, and that it once provided access to and from SSFL. Additionally, exceedingly high levels of perchlorate, a very toxic component of solid rocket fuels, was found in Dayton Canyon (levels exceeding 60 million parts per billion). Dayton Creek, which runs through the Canyon, has its origins above at "Happy Valley" in the SSFL, a location where substantial perchlorate was used and where substantial perchlorate contamination had been found. Apparently elevated radioactivity was also found in Dayton Canyon. We are unaware of any recent measurements for toxic chemicals or radioactivity in any of the areas proposed for the IIb trails. It is troubling that the Initial Study does not consider the issue of SSFL contamination and potential migration at all. 4

[1] See http://www.ssflpanel.org/files/panel_worker_radiation.pdf, http://www.ssflpanel.org/files/UCLA_rad.pdf, http://www.ssflpanel.org/files/panel_worker_chem.pdf, and http://www.ssflpanel.org/files/UCLA_chem.pdf

[2] Cohen *et al., Potential for Offsite Exposures Associated with the Santa Susana Field Laboratory,* 2006, accessible at http://www.rocketdynecleanupcoalition.org/resources/documents/potential-for-offsite-exposures-associated-with-santa-susana-field-laboratory/

Boeing itself has performed risk assessments of the contamination levels at SSFL, estimating extraordinary risk levels as high as that 96 out of 100 people would get cancer from the contamination if they lived there now. Nonetheless Boeing proposed to leave much of the contamination not cleaned up. Supervisor Kuehl and other elected officials wrote to the California Department of Toxic Substances Control in December 2015 about these extraordinary risks and how they reflect great hazards to people in the vicinity, even were there some dilution as the material migrated.[3] PSR-LA has recently conducted an extensive review of these very high risk estimates, and we attach it hereto. 5

Furthermore, LA County has long supported the promised full cleanup of SSFL to background and opposed efforts to breach those commitments.[4] Supervisors and Kuehl, who represent the areas near SSFL, have been particularly concerned about recent efforts by the Boeing Company, one of the Responsible Parties at SSFL, to get out of the promised full cleanup by instead declaring it wishes to declare the land too contaminated for any use other than open space and thus to only clean up to a recreational standard, by far the weakest of all standards, one which would leave the great majority of the contamination in place.[5] 6

Due to these concerns, PSR-LA opposed inclusion of SSFL into the proposed Rim of the Valley Corridor Preservation Act until the nuclear and chemical contamination was fully remediated. Local community members protested as well, circulating a petition signed by over 1,400 asking that SSFL not be considered for any kind of recreational or parkland until it was fully cleaned up per DTSC's cleanup commitments. Congressional sponsors did remove SSFL from the Rim of the Valley legislation when they reintroduced the bill this fall because of SSFL's contamination.[6]

We are concerned that the proposal for trails leading to SSFL and the discussion in the trails documents about connecting those trails with future trails at SSFL based on Boeing's claims to want to make the site open space could inadvertently conflict with the position of the County for the full cleanup of SSFL to the most protective standard. Boeing and others might point to these County documents, if not revised, to suggest it is the County's position that SSFL should be open space and therefore cleaned up only to the very weak recreational standard, rather than the cleanup to background that the County's position has always been. 7

Additionally, we must respectfully urge the reconsideration of naming a trail after John Luker. Mr. Luker is a very divisive figure, who is an active member of the SSFL CAG, which has been secretly funded by one of the parties responsible for the contamination at SSFL and which has been working hard to get out of its obligations for a full cleanup of SSFL. Mr. Luker has been very active in pushing for the parties who polluted SSFL to be relieved of having to clean up much if not most of the contamination. The creation of a "John Luker Trail" leading up to the site he has worked so hard to not be cleaned up as promised in the 2010 cleanup agreements, agreements which the County has strongly supported, would be very troubling. 8

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[3] The Kuehl *et al.* letter is attached.

[4] See, e.g., resolution by the Board of Supervisors expressing concern about the Department of Energy's actions that appear to be at odds with the commitments to a cleanup to background, copy attached.

[5] See September 6, 2017 letter from Supervisors Kuehl and Barger and other elected officials, attached.

[6] See October 18, 2017 *LA Daily News* article: "Rim of the Valley: New plan emerges to add nearly 191K acres to Santa Monica Mountains Recreation Area" http://www.dailynews.com/2017/10/18/rim-of-the-valley-new-plan-emerges-to-add-nearly-191k-acres-to-santa-monica-mountains-recreation-area/

Conclusions

1. The Initial Study is flawed in that it fails to analyze at all the central environmental issue associated with the proposal to open trails in the potentially contaminated area near SSFL.

2. It errs therefore is asserting that there are no potential significant environmental impacts and that an EIR is not needed.

3. Before there is *any* consideration of trails near and/or that lead up to SSFL, the promised full cleanup of SSFL to background must be completed.

4. Even then, extensive and careful sampling of soil for radioactive and toxic chemical contamination in the areas where trails might go would need to be conducted.

5. We note that the County cannot merely rely on reflexive statements by the California Department of Toxic Substances Control (DTSC) as to whether there is a risk. DTSC has been widely criticized, including by the County, for its dysfunctional state and inadequacies, exemplified in part by its much-denounced handling of the Exide matter.

6. There should be nothing in these proposals that can be used to suggest the County supports an open space designation for SSFL and resulting cleanup to that very weak cleanup standard, in contrast to the longstanding official position of the County supporting the cleanup to background required under the SSFL cleanup agreements. A trails proposal should not conflict with or frustrate the long efforts of the County for a full cleanup of all contamination at SSFL.

Sincerely,

Denise Duffield
Associate Director
Physicians for Social Responsibility-Los Angeles

CC: LA County Supervisor Kathy Barger
LA County Supervisor Sheila Kuehl
LA Councilmember Mitch Englander
CA Senator Henry Stern
CA Senator Robert Hertzberg

D19 Attachment 1/4

Analysis of Boeing's Risk Assessments for the Santa Susana Field Laboratory

by
Physicians for Social Responsibility – Los Angeles

Prepared by

Michael Rincon

With contributions by
Janie Flores
Liora Huebner
Joseph Rodgers

December 2017

Table of Contents

Executive Summary

The Draft Program Environmental Impact Report (PEIR) for cleanup of the contaminated Santa Susana Field Laboratory (SSFL) is grossly deficient in that it contains hundreds of pages of material presenting exaggerated claims of purportedly negative impacts of cleaning up the radioactive and toxic chemical contamination, but essentially not a word about the negative impacts from the contamination itself and what would ensue if some or all of it were not cleaned up as promised. The PEIR contains no analysis whatsoever of the risks to public health and the environment from the contamination and from DTSC proposals to breach its longstanding commitments to a full cleanup thereof.

Because of this fundamental flaw in the PEIR, we here put forward data culled from Boeing's own risk assessments that show extreme levels of contamination and associated unacceptable risks to public health and to ecological receptors. It is important to note that Boeing's own analyses show that these risks to the public and to biological features would continue at unacceptable levels *after* the proposed minimal cleanup contemplated, in breach of the full cleanup long promised. Furthermore, the PEIR suggests vast but unspecified exceptions to cleanup, again with no analysis of the ecological or public health impacts of so doing. The data discussed in this report below, however, indicate that to exempt contaminated areas from cleanup could result in concentrations remaining at levels that create risks to public health and the environment far beyond what is acceptable.

In June and July of 2015, the Boeing Company[1] submitted to the Department of Toxic Substances Control (DTSC) 14 Draft[2] RCRA Facility Investigation Data Summary and Findings Reports (RFI)[3] for approval. These reports provided Boeing' own risk assessments for nine contaminated sites at SSFL in Subareas 1A Central and 5/9 South, as well as requests for approval to declare the great majority of the areas for No Further Action (NFA). NFA, in other words, means relief of any cleanup requirement.

Each report varied in length, from sixty to thousands of pages, consisting mostly of graphs, tables, and repetitive methodologies and information. The most important information, however, resided in appendices[4] in the far rear of each report and in tables with tiny print that you must zoom in very closely in order to read. In both cases, the

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[1] The Boeing Company owns much of SSFL, and has been named by DTSC as a Responsible Party for the contamination, along with NASA and the Department of Energy.

[2] Boeing released final versions of these reports in early 2017, but none of them include a Human Health or Ecological Risk Assessments. Instead, in a brief sentence, stated that the Human Health and Ecological Risk Assessments would be published at a later date as separate documents from the RFI reports.

[3] Suspiciously, after public disclosure of the extremely high-risk estimates in these reports, DTSC ordered removal of all risk estimates from RCRA Facility Investigation Reports. See Dec. 9, 2016 DTSC letter to Boeing.

[4]The appendices from each report to which we are referring are:

Appendix E1: Human Health Risk Assessment (HHRA)

Appendix E2: Ecological Risk Assessment (ERA)

Appendix E3: Identification of CMS and NFA Areas Based on Risk Assessments

information was hidden where the general public wouldn't find it easily.[5] We have undertaken an independent analysis of these risk assessment reports, and have reached several astonishing conclusions, summarized below.

Boeing estimates extraordinarily high excess lifetime cancer risks (the risk of getting a cancer from the contaminated sites, beyond one's regular cancer risk) if people were to live on the site. Below are some of Boeing's own risk estimates from their Human Health Risk Assessments (HHRA)[6]:

- An astonishing **96 people out of a 100** exposed, at the Systems Test Lab IV, would get a cancer from the contamination on site.
- **Every third person** exposed at the Environmental Effects Lab would get a cancer from the contamination on site.
- **Every fifth person** exposed at Happy Valley North would get a cancer from the contamination on site.
- **Every tenth person** exposed at Compound A site would get a cancer from the contamination on site.

These are remarkable figures that are far, far above the U.S. Environmental Protection Agency's (USEPA) acceptable risk range[7] of aiming for a one in a million risk and going no higher than one in ten thousand, and far above DTSC's target risk[8] of one in a million. Other high-risk figures found in these reports are presented in a table below (Table ES-1). These values, provided in the HHRA of each report, are current risk values if one were to be exposed at the site. Boeing's own estimates of the risk on their sites are thus orders of magnitude far beyond what would be generally allowable by the federal and state standards.

These reports, however, include requests for approval to designate something on the order of 98% of the soil as NFA, or to not be cleaned up. This is extremely concerning because these reports also provide risk estimates for what the contamination levels would be after the supposed "cleanup," which are still far above the allowable USEPA and DTSC levels if these requests were approved. Furthermore, Boeing proposes to not clean up Happy Valley North at all. The HHRA risk estimate and the post-clean up risk estimate are the exact same number, thus reiterating that Boeing's intention is to not provide the quality cleanup that was promised. Other post-cleanup values can be found in Table ES-2, below.

Additionally, a number of assumptions in the risk assessments underestimate the risks. For example, the reports separately calculate the risk from a suite of PCBs[9], converting the risk into a "Toxicity Equivalent Quotient" (TEQ) tied to the risk of a

[5] DTSC, in September 2016 reviews of the 2015 Boeing risk assessments, directed Boeing to combine the suburban residential garden and direct contact risk estimates and move them to the beginning of the risk assessments, and expressed clearly there, but that has not been done as of this writing.

[6] Three elected officials, concerned about these extremely high risks, raised the matter in a letter to DTSC Director Barbara Lee on December 15, 2015, attached.

[7] U.S. EPA Target Risk Range: 1E-06 to 1E-04 (1×10^{-6} to 1×10^{-4})

[8] Also known as DTSC's "Point of Departure" 1E-06 (1×10^{-6})

[9] PCB: Polychlorinated Biphenyl

standard dioxin congener.[10] However, the PCB TEQs are not included in the estimate of total risk, and because of this intentional separate calculation for PCB TEQs, it gives the illusion of a lower total risk, when in fact the risk is much higher than what it is being claimed, as the total risk should include all PCBs. In some cases, the risks from the estimated PCB-TEQs alone were far above allowable levels for cancer risk or hazard index, and at times with a cancer risk of greater than one in ten.

Similarly, despite USEPA guidance to the contrary, the reports average contaminant concentrations over significant areas, so that an area that is high would not get cleaned up because it has been averaged with soil samples taken in areas where contamination levels are far lower.[11] Furthermore, large areas are declared NFA based on not exceeding soil characterization levels (SCLs), but these SCLs are based neither on the required agricultural exposure scenario, nor the suburban residential scenario supposedly employed, but a far weaker standard, so measurements on which these judgments are based are incapable of detecting and reporting contamination at the levels of concern. The reports divide the suburban residential scenario into exposures from two sources: direct soil contact with contaminated soil and consumption of fruits and vegetables from a backyard garden. The latter is generally two or three orders of magnitude more restrictive than the former, and for proper risk estimates both are to be added together. However, after calculating the backyard garden scenario, the reports do not use it for cleanup decisions or for the establishment of SCLs, resulting in very large estimated risks after cleanup and large areas declared NFA based on SCLs that are orders of magnitude higher than the suburban residential garden risk-based screening level.

Under normal DTSC and USEPA procedures, cleanup is based on the future land use permitted by County zoning and General Plan designations that would produce the greatest exposure. In 2010 DTSC stated:

> "The local government General Plan land designations and local zoning designations are the most reliable expressions of prospective land use…DTSC and USEPA defer to local governments' land use plans and zoning decisions, and base their cleanup level calculations on the assumption that the land will be used as the land use requirements would allow, irrespective of its current use."[12]

In early 2015, Ventura County reaffirmed, in a letter to DTSC, that its General Plan allowed a wide range of agricultural and residential uses. DTSC subsequently said it would adhere to the Ventura County letter and require cleanup sufficient so that any of the land uses allowed by the County could be safely conducted after the cleanup. Thus,

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[10] Congeners are related chemical substances "related to each other by origin, structure, or by function"; IUPAC, *Compendium of Chemical Terminology*, 2nd ed. (the "Gold Book") (1997). http://goldbook.iupac.org/html/C/CT06819.html

[11] See EPA "Radiation Risk Assessment at CERCLA Sites: Q&A," OSWER 9285.6-20, June 13, 2014, p. 8-9. The Boeing risk assessments also frequently report risk in terms of incremental risk (i.e., the risk above background), which also is contrary to EPA and DTSC policy, requiring total risk to be estimated and compared to risk-based standards. While one doesn't clean up below background, when there is contamination (i.e., total contaminant concentration exceeds background), it is to total concentration that is to be compared to cleanup levels and risk goals.

[12] Page 12; http://www.dtsc-ssfl.com/files/lib_correspond/agreements/64765_AIP_Response_to_Comments_Volume_I.pdf

the most protective cleanup standard is agricultural, then residential (with garden), and lastly recreational, which is orders of magnitude less protective than required by DTSC policy.

The Boeing risk assessments, however, are not based on agricultural exposure scenarios. Instead, Boeing has said it would clean up to a suburban residential standard so that, even if no one were to ever live on the site, people living nearby would be protected. Boeing has also said the sites would be cleaned up so that if people could live on the site, have a backyard garden, and drink from a well. Yet, deep within its own reports, are estimates that demonstrate risks far above the safe threshold levels that the DTSC and USEPA consider acceptable.

Each RFI report also includes hypothetical post-remediation risk values, or "residual" risk values. We've included in each chapter Boeing's own residual risk values to show how much contamination is getting cleaned up and what the risk will be after the supposed cleanup. We've summarized residual risk values for the garden use pathway for each site that was listed in Table ES-2.

Additionally, cleanup should meet the most protective Ecological Risk Based Screening Levels (Low TRV EcoRBSLs and EcoRBSLs for invertebrates and terrestrial plants based on true No Adverse Effects Levels.) It is clear, however, that what is proposed would leave contamination at concentrations far above the levels deemed to pose risk to ecological receptors.

To summarize, Boeing's own Human Health Risk and Ecological Risk Assessments have shown risk estimates that are far beyond what is deemed acceptable by USEPA and DTSC standards. Not only that, but it adds insult to injury that Boeing's own calculated post-cleanup risk values are still far above USEPA and DTSC standards, and Boeing had the audacity to request DTSC let them move forward with those risk values.

Furthermore, Boeing released new draft versions of RFI reports in early 2017, none of which included a Human Health Risk Assessment or Ecological Risk Assessment. We can understand the desire to suppress its own damning estimates of risk, but removing them and eventually coming forward with new "massaged" numbers that presumably would claim far lower risks than its own risk estimates from the reports examined here is not appropriate.

The draft PEIR is completely silent on the risk from the contamination and from not cleaning it up. Deferring such estimates to a time after the close of the comment period on the PEIR is an unseemly form of "hiding the ball," contrary to the disclosure and transparency requirements of CEQA and its mandate to thoroughly consider environmental impacts. Were DTSC to include such risk analyses in the final PEIR, after failing to do so in the draft, would be an end-run around the public's right to review and comment. Given the errors in the PEIR and the cloud that hangs over DTSC's conduct at SSFL and statewide, subsequently changing input parameters so as to drive risk estimates down would lack any credibility.

The lack of any analysis about impacts from the contamination and proposals to not clean it up is a major concern because the whole purpose of the cleanup is to protect the health of the residents in the area and the environment, yet there is no analysis in the PEIR about what the health or ecological impacts are if the contamination is left behind in DTSC's document. Boeing's own documents, as we have summarized in this report,

show the health and ecological risks of leaving the contamination behind, and it is beyond unacceptable by USEPA and DTSC standards.

DTSC had promised that it would ensure that Boeing cleans up its portions of SSFL to levels that are safe enough for agriculture and for residences with backyard gardens on site, because the county's then and updated General Plan include agriculture and such residential use for the zoning at SSFL—and in the nearby areas. Whatever the use of site ends up, it needs to be safe for all uses permitted. But more importantly, whatever the end use, people live nearby in residences with gardens and there is agriculture nearby as well. Even assuming some level of dispersion for migrating contaminants, risks as high as these reports estimate if one lived on the site suggests unacceptable risks for people living nearby if the source contamination is not cleaned up. For example, take a site that Boeing estimates would still, after its proposed minimal cleanup, have a cancer risk of 2×10^{-1} (i.e., 2 out of every 10 people exposed would get an excess cancer), as shown in Table ES-2 below. Even if the contamination were to be diluted by a factor of, say, ten or one hundred as it migrates offsite, the resulting risk offsite would still be 2×10^{-3}, about two thousand times higher than the target risk of one in a million.[13]

ES-1: Boeing Risk Estimates in Ranking Order for Current Suburban Residential Garden Pathway*

Site	Risk Value Provided
Systems Test Lab IV	9.6E-01
Environmental Effects Lab	3.0E-01
Happy Valley North	2.0E-01
Compound A	1.0E-01
Advanced Propulsion Test Facility	2.0E-02
Sewage Treatment Plant	1.0E-02
Building 1359	2.0E-03
Unaffiliated Area 5/9 South	3.0E-04
Unaffiliated Area 1A Central	-

"*" Risk Figures taken from Boeing's DSFR's Appendix E1

"-" no value provided

DTSC Point of Departure is 1E-06

USEPA Threshold is 1E-04 to 1E-06

[13] Furthermore, dilution may not always be the case. Over time, concentrations at the source diminish as material migrates, and it can concentrate in the locations to which it migrates, e.g., low-lying areas. For example, the extraordinarily high perchlorate concentrations found in the Dayton Creek bed in Dayton Canyon, offsite, were higher than the remaining perchlorate concentrations in Happy Valley at SSFL, the headwaters of Dayton Creek, where perchlorate was used and soil was contaminated.

ES-2: Boeing Residual Risk Estimates in Ranking Order for Suburban Residentiall Garden Pathway*	
Site	Risk Value Provided
Happy Valley North	2.0E-01
Advanced Propulsion Test Facility	1.0E-02
Environmental Effects Lab	2.0E-03
Systems Test Lab IV	2.0E-03
Building 1359	7.0E-04
Sewage Treatment Plant	3.0E-04
Unaffiliated Area 5/9 South	3.0E-04
Compound A	-
Unaffiliated Area 1A Central	-

"*" Risk Figures taken from Boeing's DSFR's Appendix E3
"-" no value provided
DTSC Standard: 1E-6
USEPA Threshold: 1E-4 to 1E-6
Residual=Post-cleanup values

[Note to the lay reader: The cancer risk figures are given as, for example, 2.0E-01, which mean 2 x 10 to the exponent -1, or 2 x 10^{-1}, or 0.2. In other words, 2 out of every 10 people exposed would get a cancer from the contamination (in addition to the number that would get a cancer otherwise). The risk goal is one in a million, so this risk level would be 200,000 times higher than the target risk.]

The way to protect people nearby is to assure that DTSC's promises (and those of Boeing) that SSFL would be cleaned up such that it would be safe to live on site, eat produce grown on it, and drink from wells are fully carried out. If the source is cleaned up to those safe levels, it is then safe for the people nearby. Failing to do so, however, could result in risks in perpetuity for the people in the area. Additionally, it is imperative that the site be safe enough for ecological resources at the low TRV EcoRBSLs to ensure no effects on animals and plants that reside in the area. The PEIR asserts that vast amounts of contamination should not be cleaned up, supposedly to protect biological receptors, but there is no analysis of the harm to those receptors from the pollution that wouldn't get cleaned up. Our review of the data from the Boeing risk assessments indicates that to breach the commitments to full cleanup and instead exempt large areas would have the opposite effect—exposing biological receptors to contaminants at levels far in excess of the concentrations deemed to pose harm for them.

The draft PEIR is deeply flawed, evidenced by the complete failure to disclose how much contamination, of what types and what concentrations and in what locations, is proposed not be cleaned. It is further entirely inadequate in that it extensively hypes purported impacts from the cleanup while being completely silent regarding the impacts on public health and the environment of radioactive and toxic chemical contamination that would not get cleaned up if the PEIR proposals proceed to breach the cleanup

commitments and instead leave large amounts of contamination not cleaned up. Those flaws are so fundamental that there is no alternative but for the PEIR to be redone and reissued for public review and comment.

Santa Susana Field Laboratory Background

SSFL is a former nuclear reactor and rocket-testing facility located at the boundary between Los Angeles County and Ventura County, just thirty miles from downtown Los Angeles. Founded in the 1940s, it housed ten nuclear reactors, one of which suffered a partial nuclear meltdown in 1959, while three others suffered other accidents. None of the reactors, had containment structures to prevent the radioactivity from being released into the environment. Other facilities on site included a plutonium fuel fabrication facility and a hot lab that reprocessed irradiated nuclear fuel and experienced several radioactive fires. The site also conducted tens of thousands of rocket tests, involving an array of toxic rocket fuels, and two open-air burn pits where radioactive and toxic wastes were burned and that released radioactivity and toxic chemicals into the atmosphere, much of which fell back to earth some distance downwind. Lastly, millions of gallons of TCE were dumped into the ground and much of it percolated into groundwater.

Due to SSFL's history, the site is contaminated with radioactive materials such as cesium-137, strontium-90, and plutonium-239, as well as hazardous chemicals such as perchlorate, PCBs, dioxins, volatile organic compounds, semi-volatile organic compounds, and heavy metals. Federally funded studies found significantly increased rates of cancer among the SSFL workers associated with their exposures, and a more than 60% increase in incidence of key cancers to the public associated with proximity to the site.

The Resource Conservation and Recovery Act (RCRA) Corrective Action program at SSFL began with the RCRA Facility Assessment (RFA) in 1989. The RFA was completed in 1994 and was followed by the RCRA Facility Investigation (RFI), which commenced in 1996 under oversight of the California Environmental Protection Agency (CalEPA) and DTSC. In 2007, DTSC issued a Consent Order for Corrective Action that identified the RCRA Corrective Action requirements for the SSFL to be implemented by the Responsible Parties (RP): Boeing, the United States Department of Energy (DOE), and the National Aeronautics and Space Administration (NASA). In 2010, DOE and NASA signed Administrative Orders of Consent for Remedial Action (AOCs) in agreement with DTSC. The AOCs govern characterization and remedial action activities for soil in portions of SSFL in which those RPs' operations respectively occurred. The portions of land that are not subject to the DOE or NASA AOCs were reorganized in 2013 into nine Boeing subareas for RFI reporting to complete the RFI in accordance with the 2007 Consent Order and DTSC's 2010 commitments for a cleanup of the Boeing portion to agricultural standards associated with Ventura County land use designations.

This report is based on the Data Summary and Findings Reports (DSFRs) that were submitted to DTSC for RFI sites within Boeing's jurisdiction. Each DSFR summarizes the identified sources of contamination, characterization data, and applicable migration pathways for each site within the subareas. The DSFRs also summarize the findings of the human health and ecological risk assessments, and recommendations for corrective measure areas for each site based on the RFI characterization and risk

assessment findings in accordance with Sections 3.4.2[14] and 3.4.3[15] of the 2007 Consent Order.

Risk Assessment Summaries

As a part of each RFI report, the Risk Assessment Summary sections are supposed to present the summary of the HHRA and Ecological Risk Assessment (ERA) findings for each RFI site, but that is not the case with these summaries. Most of these summaries leave out key data that shows high level of risk in the HHRA.

For example, the Exposure Assessment[16] description in this summary states that the only "potential exposure scenarios considered" in these reports are:

- Hypothetical Suburban Resident-Soil Contact
- Hypothetical Suburban Resident-Indoor Air
- Future Recreator-Soil Contract
- Future Recreator-Surface Water Contact
- Garden Use

However, when we look at the "Estimated Risks and Hazards" section[17] of the summary, no description, data, or conclusions were presented for the garden use scenario, when Appendix E1 clearly presents data, calculations, and a summary. The same can be said about the Groundwater Pathway. These summaries do not mention a Groundwater pathway, but there are data tables present in Appendix E. This gives the impression that Boeing is intending to leave out the garden risk estimates to lower the level of cleanup requirements, which is the case in several of these reports.

Human Health Risk Assessments

Each RFI contains within its appendices an HHRA unique to its sub-site. The objective of each HHRA is to determine whether exposure to the environmental media at the site could pose unacceptable risks to human health, thus requiring further evaluation of corrective action as part of a corrective measure study (CMS), or if potential risks to human receptors exposed to current concentrations of chemicals in environmental media area acceptable. If current concentrations of chemicals in environmental media at the site pose unacceptable human health risks and CMS areas are identified, the HHRA asserts that the areas of the site outside of identified CMS areas would be eligible for an NFA designation.

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[14] Section 3.4.2 of DTSC's 2007 Consent Order states that respondents shall submit to DTSC for approval RFI reports for the Surficial Media OU, including Large Home-Range Ecological Risk Assessment Report.
[15] Section 3.4.3 of DTSC's 2007 Consent Order states that the comprehensive Surficial Media OU reports shall summarize the findings from all phases and areas of the SSFL, including all current and historical assessment data collected to date, for the vicinity of the unit being investigated in the RFI program.
[16] Section 5.1.2 "Exposure Assessment", of each DSFR
[17] Section 5.1.3, of each DSFR

Each Boeing RFI report contains an HHRA that is supposed to identify the types of toxic effects a chemical can exert to humans. We have reviewed all of the data tables that are provided in each HHRA, and have created our own tables (below), using the data provided by Boeing, which show only high-risk values that are above USEPA (1E-06 to 1E-04) and DTSC (1E-06) allowable levels. We have also summarized high-non-carcinogenic risk (Hazard Index; HI) values that are above USEPA and DTSC threshold of 1.[18]

The toxicity assessment component of the HHRAs identifies the types of toxic effects a chemical can exert. Chemicals of potential concern are divided into two broad groups based on their effects on human health: carcinogens and non-carcinogens. Health risks are calculated quite differently for carcinogenic and non-carcinogenic effect, and separate toxicity values have been developed for each. Carcinogens are those chemicals suspected of causing cancer following exposure, while non-carcinogenic effects cover a wide variety of systemic effects, such as liver toxicity or developmental effects.

Ecological Risk Assessments

In Boeing's Ecological Risk Assessment (ERA), risk figures were separated into different receptor categories due to the different exposure pathways[19] as listed below.

- **"Terrestrial Plants**: Potential root uptake from soils (0-2 ft bgs[20]).
- **Soil Invertebrates**: Potential ingestion and direct contact with soils (0-2 ft bgs).
- **Birds (*Hermit Thrush*)**: Potential exposure to soil, which includes incidental ingestion of soil (0-2 ft bgs) and food chain uptake (ingestion of food sources that may have bio-accumulated chemicals. Also exposure to surface water by ingestion of surface water containing chemicals.
- **Mammals (*Deer Mice*)**: Potential exposure to soil, which includes incidental ingestion of soil and food chain uptake (ingestion of food sources that may have bio-accumulated chemicals). The soil depth interval with the maximum potential risk is used and can include 0-2 ft bgs, 0-4 ft bgs, or 0-6ft bgs. Exposure from soil vapor through inhalation, and surface water from ingestion.
- **Aquatic Organisms**: Aquatic organisms (plants and water-column invertebrates) may be exposed to chemicals in surface water through root/foliar uptake, dermal/direct contact, or ingestion. Surface water onsite does not support fish."

Risk for some species may be greater as these organisms are more likely to have higher concentrations of chemicals due to greater bioaccumulation as one moves up the food chain. Unlike the HHRA, the ERA does not provide Hazard Indices, so we had to create our own HI calculation. The hazard index we provide for the ERA sections of each RFI report are calculated using only HI's that are above the DTSC and USEPA HI

[18] Two kinds of health effects are considered, carcinogenic and non-carcinogenic. The first is estimated in terms of risk of excess cancer, with a goal of no more than one in a million from all of the contaminants combined. The non-carcinogenic effects (e.g., neurotoxic, impairment of reproduction) are measured in terms of Hazard Index (HI), where the any total HI greater than 1 is supposed to be cleaned up.
[19] Taken from the "Exposure Scenarios" sections of the ERAs provided in each RFI report.
[20] Below ground surface

threshold value of 1. For plants and soil invertebrates, EcoRBSLs for them are "equivalent to their respective medium-specific benchmarks that represent effect levels, values adjusted to a "no effect" level, as well as reported "no effect." As a result, a single set of EcoRBSLs was developed for each group".[21]

For avian and mammal ecological risk, a Hazard Index (HI)/Quotient (HQ) of 1 is used to assess risk. Note, values provided in the "High-HQ" or "High EcoRBSL" columns are meant for further assessment of the site and do not pertain to the cleanup. *Low EcoRBSLs* on the other hand are risk levels where no adverse effects purportedly would occur to any organism, and should be used as cleanup goals. Unlike HHRA, estimated risks for an ERA are only provided as a Hazard Index/Quotient (HI/HQ).

CMS and NFA Areas

Each RFI report contains an "Appendix E3" which is referred to as "Identification of Corrective Measures Study and No Further Action Areas Based on Risk Assessments." The chemicals listed as Chemicals of Concern (COC) or Chemicals of Ecological Concern (COEC) area identified based on the results of the HHRA and Ecological Risk Assessment (ERA), which serve to focus the selection of those media and areas to be evaluated for corrective actions. Once a CMS area is identified, the remaining areas outside the CMS areas are also evaluated to confirm that residual concentrations of COCs result in incremental site risks or hazards below or near the CalEPA and DTSC's limits.

The primary drivers to unacceptable human health risk for the hypothetical suburban resident at an RFI site area identified as COCs, or COECs for ecological risk drivers. The overall objective for identification of CMS areas is to delineate the areas that, if remediated, would result in an acceptable residual risk and hazard. "Residual" in the context of CMS/NFA and Appendix E3, refers to post-remediation risk and hazard estimates.

Unfortunately, Boeing removed a large number of contaminants found in its part of SSFL from the Contaminants of Concern it considers in its analyses.

[21] Section 2.2.3 "Ecological Risk Based Levels" of each ERA.

Subarea 5/9 South

Systems Test Lab-IV[22]

Site Background

The Systems Test Laboratory-IV (STL-4) RFI site is located on the western portion of SSFL. The site is currently inactive, and all previous structures have been demolished. STL-4 was a test site area for small rocket and missile engine testing from the mid-1950s through the early 2000s. Various fuels and oxidizers, including monomethyl hydrazine[23] (MMH), nitrogen tetroxide (NTO), and inhibited red-fuming nitric acid (IRFNA) were used over time at different test stands. After performing an engine test, the engines were flushed and cleaned with trichloroethylene (TCE) and Freon until 1992. Half a million gallons of TCE percolated into the soil and groundwater. The STL-4 site impoundments were used for the collection of engine testing cooling water, aspiration water, area wash down water, and runoff, as well as emergency spill containment and treatment from 1958 through 1985. Other former facilities or former features include 24 buildings, 102 aboveground storage tanks, two underground storage tanks, 1 transformer, the leach field, 4 test stands, 1 pond, 2 explosive storage magazines, and an air stripping tower.

Appendix E1: Human Health Risk Assessment[24]

Garden Use[25]

For the homegrown produce consumption pathway, the total site Estimated Lifetime Cancer Risk (ELCR) is **9.6E-01**, or **96 out of a 100 people**, which is above the USEPA target risk range of 1E-4 to 1E-06 or 1 in 1000 to 1 in 1,000,000 and exceeds DTSC point of departure[26] of 1E-06. The main contributors to the site soil ELCR above USEPA and DTSC thresholds are listed in the Table STL-1. The main contributor, Monomethylhydrazine (MMH) is used as a high-energy fuel in military applications, as a rocket propellant and fuel for thrusters, and as a fuel for small electrical power generating units. Exposure to MMH can cause nasal and respiratory irritation, vomiting, Convulsions, kidney and liver impairment and failure, and can cause convulsions in animals.[27] The epidemiological study of the SSFL workers by the UCLA School of Public Health found significantly elevated cancer death rates among the workers most exposed to MMH.

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[22] http://www.dtsc-ssfl.com/files/lib_rcra_soils/boeingsubarea59south/draft_rfi_rpts/Draft%20RCRA%20Facility%20Investigation%20Data%20Summary%20and%20Findings%20Report%20%E2%80%93%20Systems%20Test%20Laboratory%20IV%20RFI%20Site.pdf

1: https://www.ncbi.nlm.nih.gov/books/NBK222412/

2: https://www.epa.gov/sites/production/files/2015-07/documents/niosh-3510.pdf

[24] PDF pages 2,851-2,899

[25] This pathway evaluates for the hypothetical future suburban resident the consumption of homegrown produce that has accumulated toxic chemicals from the soil.

[26] Point of Departure is another term for cleanup goal.

[27] https://pubchem.ncbi.nlm.nih.gov/compound/methylhydrazine#section=Top

The total site incremental risk[28] is 9E-01, which also exceeds USEPA and DTSC risk standards. The total site HI for this scenario is **727** and with an incremental HI of 453, which exceeds the USEPA and DTSC threshold HI value of 1. Primary contributors above USEPA and DTSC thresholds to the site soil HI are listed below in Table STL-2. The primary contributor, cadmium, is a highly toxic metal known to cause cancer and targets the body's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems if one is exposed[29]

Table STL-1: Garden Use Cancer Values*

Analyte	Carcinogenic RBSL (mg/kg)	Cancer Risk	% Contribution to Overall Total
2,3,7,8-TCDD TEQ	7.5E-09	6.0E-04	0.1%
Aroclor 1254	4.9E-04	2.6E-04	0.0%
Aroclor 1260	4.9E-04	6.2E-05	0.0%
Aroclor 1262	4.9E-04	1.2E-05	0.0%
Aroclor 5460	4.9E-04	6.1E-05	0.0%
Arsenic	9.9E-05	7.0E-02	7.3%
Benzo(a)anthracene	8.1E-04	6.1E-04	0.1%
Benzo(a)pyrene	8.1E-05	4.7E-03	0.5%
Benzo(b)fluoranthene	8.1E-04	7.1E-04	0.1%
Benzo(k)fluoranthene	8.1E-04	2.6E-04	0.0%
Chrysene	8.1E-03	7.2E-05	0.0%
Dibenzo(a,h)anthracene	2.4E-04	1.3E-04	0.0%
Dieldrin	6.0E-05	1.0E-05	0.0%
Hexavalent Chromium	1.9E-03	5.3E-04	0.1%
Indeno(1,2,3-cd)pyrene	8.1E-04	1.1E-04	0.0%
Mirex	5.4E-05	3.4E-05	0.0%
Monomethylhydrazine	1.5E-08	8.8E-01	91.6%
n-Nitrosodimethylamine	9.5E-07	1.9E-03	0.2%
Trichloroethene	9.8E-03	2.0E-06	0.0%
Total Risk		**9.6E-01**	
PCB TEQ[a]	7.5E-09	2.0E-02	-

"*" data taken from Table E1-5 in Appendix E1
RBSL=Risk Based Screening Levels
USEPA Target Risk Range of 1E-06 to 1E-04
DTSC Point of Departure Risk Value of 1E-06
PCB-TEQ= Polychlorinated biphenyl-Toxic Equivalent Quotient
"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, the correct Risk would be 9.8E-1 or 98/100 people.
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

[28] Incremental Risk is defined as that portion of the site risk in excess of that resulting from background/ambient concentrations of chemicals found in soil at the STL-4 RFI Site. Note as previously indicated that risk is supposed to be based on total risk, not incremental.
[29] https://www.osha.gov/SLTC/cadmium/

Table STL-2: Garden Use Non-Cancer Values*			
Analyte	Non-Carcinogenic RBSL (mg/kg)	Hazard Quotient	% Contribution to Overall Total
1,1-Dimethylhydrazine	0.000248	3.23	0.4%
2,3,7,8-TCDD TEQ	0.000000252	17.7	2.4%
Antimony	0.139	2.38	0.3%
Arochlor 1254	0.00721	17.3	2.4%
Aroclor 1260	0.00723	4.2	0.6%
Aroclor 5460	0.00719	4.15	0.6%
Arsenic	0.104	66.7	9.2%
Butyl benzyl phthalate	68.7	0.000216	0.0%
Cadmium	0.00165	547	75.2%
Copper	11.1	1.76	0.2%
Formaldehyde	3.7	1.67	0.2%
MCPA	0.131	9.95	1.4%
Mercury	0.0504	1.02	0.1%
Monomethylhydrazine	0.00298	4.33	0.6%
n-Nitrosodimethylamine	0.0000449	40.1	5.5%
Zinc	53.8	1.68	0.2%
Hazard Index		**727**	
PCB TEQ[a] Hazard Index	0.000000252	467	-

"*" data taken from Table E1-5 of Appendix E1
MCPA= 2-methyl-4-chlorophenoxyacetic acid
RBSL=Risk Based Screening Levels.
USEPA and DTSC Threshold HI is a value of 1.
PCB-TEQ= Polychlorinated biphenyl-Toxicity Equivalent Quotient
"a" PCB TEQ was calculated, but not included in the total. If it was included, the correct HI would be 1194
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Groundwater Use[30]

For groundwater use at Chatsworth Formation well HAR-18, the ELCR is **3E-02**, which is above the USEPA target risk range and exceeds the DTSC point of exposure of 1E-01. The main risk drivers to the groundwater ELCR that are above USEPA and DTSC thresholds are listed in Table STL-3. The primary contributor, vinyl chloride, is used to make a variety of plastics and vinyl products. Acute exposure to vinyl chloride in air can result in central nervous system effects, and chronic exposure (via inhalation and oral) can result in liver damage and cancer.[31]

The HI for this scenario is **426**, which dramatically exceeds the USEPA and DTSC threshold HI value of 1. The primary contributors to the pathway HI above USEPA and DTSC thresholds of 1 are listed below in Table STL-4. The primary contributor, Trichloroethene (TCE), is a nonflammable, colorless liquid, which is mainly used as a solvent to remove grease from metal parts. Exposure to TCE affects reproductive organs and impairs neurological function, as well as kidney cancer, and liver cancer.[32]

Also note that although there are no data provided in the tables of Appendix E1, the RFI report does address lead in water:

> The potential risk from exposure to lead in groundwater is evaluated separately from other carcinogens and noncarcinogens. For this HHRA, potential risk from lead is evaluated by comparing the maximum Exposure Point Concentration (EPC) for lead in Chatsworth Formation groundwater to the USEPA Action

[30] Potential routes of exposure to chemicals in Chatsworth Formation groundwater include ingestion, dermal contact, and inhalation of vapors during assumed hypothetical domestic use.
[31] https://www.epa.gov/sites/production/files/2016-09/documents/vinyl-chloride.pdf
[32] https://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=30

Level in water 15 ug/L. Only one of the well points in Boeing RFI Subarea 5/9 South had an EPC exceeding 15 ug/L, at well point RD-55A where the EPC was 40.5 ug/L." [33]

Table STL-3: Chatsworth Groundwater Cancer Values*			
Analyte	Carinogenic RBC (ug/L)	Cancer Risk	Percent Contribution
1,1-Dichloropropene	2.19E-01	2.79E-05	0.1%
Heptachlor	1.86E-03	2.37E-05	0.1%
n-Nitrosodimethlyamine	1.51E-03	2.38E-03	7.8%
Trichloroethene	4.24E-01	1.53E-03	5.0%
Vinyl chloride	1.36E-02	2.65E-02	86.9%
Total Risk		**3.00E-02**	

"*" data taken from Table E1-12 of Appendix E1
RBC= Risk-based concentration computed using the USEPA's Regional Screening Level online calculator.
ug/L=microgram per liter
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.
USEPA Target Risk Range of 1E-06 to 1E-04
DTSC Point of Departure Risk Value of 1E-06

Table STL-4: Chatsworth Groundwater Noncancer Value*			
Analyte	Noncarcinogenic RBC (ug/L)	Hazard Quotient	Percent Contribution
cis-1,2-Dichloroethene	1.04E+01	163	38.30%
n-Nitrosodimethylamine	1.60E-02	22.5	5.30%
Trichloroethene	2.82E+00	230	54.10%
Vinyl chloride	4.44E+01	8.11	1.90%
Hazard Index		**426**	

"*" data taken from Table E1-12 from Appendix E1
RBC= Risk-based concentration computed using the USEPA's Regional Screening Level online calculator.
ug/L=microgram per liter
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.
USEPA and DTSC Threshold HI is a value of 1.

Direct Contact With Soil[34]

For the direct soil contact pathway, the total site ELCR is **1E-04**, which exceeds DTSC's point of departure of 1E-06. Primary contributors above USEPA and DTSC thresholds are listed in Table STL-5 below. The primary contributor, arsenic, is a natural component of the earth's crust, but is highly toxic in its inorganic form, and can be exposed through drinking water, inhalation, and consumption of food that has been exposed to arsenic. Exposure to arsenic can cause, vomiting, abdominal pain, muscle cramping, pigmentation changes, skin lesions, cancer in the lungs, skin, and bladder, pulmonary and cardiovascular diseases.[35] Boeing claims in its HHRA summary "the inclusion of arsenic as a COPC appears to be biasing the incremental risks downward. Arsenic was selected as a soil COPC only because the maximum site detect exceeded two times the background comparison value, even though onsite arsenic levels are not statistically higher than background. If arsenic were excluded as a COPC, the incremental risk for this exposure scenario would be 3E-05" (p. 2856).

The total site HI for soil for this scenario is **0.9**, and the incremental HI is **0.3**, which is below the USEPA and DTSC threshold HI value of 1.

[33] 8.1.1.4 Groundwater Use Pathway (Page 2,857 of pdf)
[34] Potential routes of exposure to chemicals from direct contact with soil include incidental ingestion, dermal contact, and inhalation of fugitive dust and vapors emitted from soil to ambient air.
[35] http://www.who.int/mediacentre/factsheets/fs372/en/

Table STL-5: Direct Soil Contact Cancer Values*			
Analyte	Carcinogenic RBSL (mg/kg)	Cancer Risk	Percent Contribution
Arsenic	6.6E-02	1.1E-04	79.8%
Benzo(a)anthracene	3.9E-01	1.3E-06	1.0%
Benzo(a)pyrene	3.9E-02	9.8E-06	7.4%
Benzo(b)fluoranthene	3.9E-01	1.5E-06	1.1%
Monomethylhydrazine	1.2E-03	1.0E-05	7.8%
Total Risk		**1.0E-04**	
PCB-TEQ[a]	3.6E-06	3.0E-05	-

"*" data take from Table E1-5 from Appendix E1
RBSL=Risk Based Screening Level
DTSC Point of Exposure is 1E-06
PCB-TEQ= Polychlorinated biphenyl-Toxicity Equivalent
"a" PCB TEQ was calculated, but not included in the total. If it was included, the risk would be 1.3E-04.

Indoor Air Pathway[36]

For the indoor air pathway, the total site ELCR is **3E-05**, which exceeds the DTSC point of departure of 1E-06. The primary contributor is to the pathway ELCR is TCE (97%; 3E-04), other contributors are below USEPA and DTSC thresholds. The total site HI is 8 for this scenario, which exceeds the USEPA and DTSC threshold HI value of 1. The primary contributor to the site HI is TCE (98%; HQ=7).

Appendix E2: Ecological Risk Assessment[37]

For avian species, the risk estimation from the site is an HI of **344**, which is far above the threshold of 1. The primary contributor to the ecological risk for avian species is lead, which lead poisoning in birds can cause lethargy, progressive weakness causing the inability to fly, and usually accumulates in the liver, kidneys, and blood.[38] As of yet, no data has been provided for the effects of silver in avian species, though it has shown in poultry to affect the liver.[39] Other chemicals above the threshold of 1 are listed in Table STL-6 below.

For mammals, the risk estimation from the site is an HI of **103**, which is well above the threshold on 1. The primary contributor to the ecological risk for mammals is cadmium, which can cause cancer, and targets the animal's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems if an animal is exposed[40]. All chemicals above the threshold of 1 are listed in Table STL-7 below.

[36] For the indoor air pathway, the potential route of exposure to volatile COPCs detected in soil vapor is inhalation of chemicals that could migrate from the vadose zone to inside a future residence.
[37] PDF pages 2,949-3,033
[38] https://www.nwhc.usgs.gov/disease_information/lead_poisoning/
[39] http://www.inchem.org/documents/cicads/cicads/cicad44.htm#6.0
[40] https://www.osha.gov/SLTC/cadmium/

Table STL-6: Risk Estimates for Birds (Hermit Thrush)-Food Chain Uptake via Soil*				
Analyte	Low EcoRBSL	High EcoRBSL	HQ-Low	HQ-High
Cadmium	0.2	3	5	0.3
Chromium	2.4	14	10	2
Copper	1.1	24	20	0.8
Lead	0.062	39	300	0.5
Zinc	32	320	3	0.3
Aroclor 1254	0.083	0.83	2	0.2
Di-n-butyl phthalate	0.11	1.1	4	0.4
Hazard Index			**344**	
PCB-TEQ Birds[a]	5.70E-06	0.000057	300	30

* Data taken from Table E2-8 of Appendix E2
PCB-TEQ=Polychlorinated biphenyl-Toxicity Equivalent
"a" PCB TEQ Bird was calculated separately, but not included in the total HI, or explained why. If included in the total, the correct HI would be 644.
HQ/HI=Hazard Quotient/Index
EcoRBSL=Ecological Risk Based Screening Level
Low EcoRBSLs are conservative and are mostly based on no observed adverse levels.
High EcoRBSLs are based on mid-level effects or low observed adverse effect levels.
USEPA and DTSC Threshold HI is 1.
Since no Hazard Index was calculated, we had to calculate it ourselves. Note, the HI we've provided only includes HQs above 1.

Table STL-7: Risk Estimates for Mammals (Deer Mouse)-Food Chain Uptake via soil*				
Analyte	Low EcoRBSL	High Eco RBSL	HQ-Low	HQ-High
Antimony	0.042	2	7	0.1
Arsenic	2.1	31	3	0.2
Cadmium	0.019	0.81	40	0.8
Chromium	1.9	46	10	0.6
Copper	1.5	350	10	0.05
Lead	3.8	910	4	0.02
Molybdenum	0.13	1.3	5	0.5
Selenium	0.1	2.4	3	10
Zinc	19	820	4	0.1
DioxinFuran TEQ Mammal	5.00E-07	0.000005	7	0.7
MCPA	0.12	0.61	10	2
Hazard Index			**103**	
PCB-TEQ Mammal[a]	5.00E-07	0.000005	900	90

* Data taken from Table E2-9 of Appendix E2
PCB-TEQ= Polychlorinated biphyl-Toxicity Equivalent
"a" PCB-TEQ Mammal was calculated separately, but not included in the total HI, or explained why. If included in the total, the correct HI would be 1,003
HQ/HI=Hazard Quotient/Index
EcoRBSL=Ecological RBSL
Low EcoRBSLs are conservative and are mostly based on no observed adverse levels.
High EcoRBSLs are based on mid-level effects or low observed adverse effect levels.
USEPA and DTSC Threshold HI is 1.
Since no Hazard Index was calculated, we had to calculate it ourselves. Note, the HI we've provided only includes HQs above 1.

Appendix E3: Residual[41] Risk[42]

Garden Use

For the Suburban Residential Garden Exposure Scenario, Boeing estimates the total ELCR after remediation would be **2E-03**, which is far above DTSC's point of exposure of 1E-06. Primary contributors above USEPA and DTSC thresholds are listed below in Table STL-8. The primary contributor, 2,3,7,8-TCDD TEQ, is a dioxin that is an unintentional byproduct of some forms of combustion and several industrial chemical processes, thus they are found in the air and are deposited on surfaces. Exposure to dioxins and dioxin-compounds may result in skin lesions, altered liver function, impairment to the immune, nervous, and endocrine systems, and alter reproductive functions.[43]

[41] Post-remediation risk values for human health risk
[42] PDF Pages 3,135-3,153
[43] http://www.who.int/mediacentre/factsheets/fs225/en/

The HI for this scenario is **376**, still several hundreds of times higher than the USEPA and DTSC threshold of 1. Primary contributors above USEPA and DTSC thresholds are listed below in Table STL-9. The primary contributor is cadmium, which if exposed, can cause cancer and targets the body's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems if one is exposed[44]

Another key point to make is that monomethylhydrazine (MMH) was a primary contributor in the HHRA, but as we look at the tables in Appendix E3, we noticed that the EPC for MMH was missing from these tables. In other words, MMH was "removed," thus making it difficult to provide a cancer risk, or an HQ. This makes a clear statement that Boeing is once again making another attempt to reduce its cleanup obligations by altering data for their own benefit.

Table STL-8: Residual Human Health Risk-Garden Exposure Scenario*

Analyte	Carcinogenic RBSL[a] (mg/kg)	Cancer Risk	Percent Contribution
2,3,7,8-TCDD TEQ	7.51E-09	5.37E-04	28%
Aroclor 1254	4.88E-04	1.68E-04	8.7%
Aroclor 1260	4.89E-04	7.13E-05	3.7%
Aroclor 1262	4.88E-04	1.21E-05	0.6%
Aroclor 5460	4.86E-04	6.78E-05	3.5%
Benzo(a)anthracene	8.05E-04	1.80E-04	9.4%
Benzo(a)pyrene	8.09E-05	4.00E-04	20.9%
Benzo(b)fluoranthene	8.05E-04	1.71E-04	8.9%
Benzo(k)fluoranthene	8.09E-04	7.35E-05	3.8%
Chrysene	8.06E-03	2.72E-05	1.4%
Dibenzo(a,h)anthracene	2.38E-04	8.57E-05	4.5%
Dieldrin	5.99E-05	1.04E-05	0.5%
Indeno(1,2,3-cd)pyrene	8.13E-04	7.41E-05	3.9%
Mirex	5.42E-05	3.74E-05	2%
Total Risk		**2.00E-03**	

"*" Data taken from Table E3-2 of Appendix E3

"a" RBSL=Risk Based Screening Levels. RBSLs used in this HHRA are for assessing cancer risk and/or noncancer hazard incoporate these toxicity values, which are route specific. RBSL values were obtained from Section 3.3 of Attachment 1 of Appendix B

TEQ=Toxic Equivalent

USEPA Target Risk Range of 1E-06 to 1E-04

DTSC Point of Departure Risk Value of 1E-06

The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table STL-9: Residual Human Health Non-Cancer Risk- Garden Exposure Scenario*

Analyte	Non-Carcinogenic RBSL[a] (mg/kg)	Hazard Quotient	Percent Contribution
1,1-Dimethylhydrazine	0.000248	3.23	0.9%
2,3,7,8-TCDD TEQ	0.000000252	16	4.2%
Antimony	0.139	2.05	0.5%
Aroclor 1254	0.00721	11.4	3%
Aroclor 1260	0.00723	4.83	1.3%
Aroclor 5460	0.00719	4.59	1.2%
Cadmium	0.00165	326	86.6%
Copper	11.1	1.48	0.4%
Formaldehyde	3.7	1.77	0.5%
Zinc	53.8	1.67	0.40%
Hazard Index		**376**	

"*" Data taken from Table E3-2 of Appendix E3

"a" RBSL=Risk Based Screening Levels. RBSLs used in this HHRA are for assessing cancer risk and/or noncancer hazard incoporate these toxicity values, which are route specific. RBSL values were obtained from Section 3.3 of Attachment 1 of Appendix B

TEQ=Toxic Equivalent

USEPA and DTSC Threshold HI is a value of 1

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

[44] https://www.osha.gov/SLTC/cadmium/

Groundwater Use Pathway

It is also significant to note that Boeing did not provide post remediation calculations for the Chatsworth Groundwater Pathway (Well HAR-14), this gives us the impression that Boeing is not intending to do anything about the groundwater well.

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and as we have shown above, the risk values are still far above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA (which are summarized in the tables above) "demonstrate that *acceptable* risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at the STL-4 RFI site" (emphasis added)[45]. However, it is clearly shown in their own tables and data that the risks are *not* acceptable. Therefore DTSC must ensure that a full cleanup is done at this RFI site.

[45] Appendix E3 Section 3.0 "Conclusions"

Environmental Effects Laboratory[46]

Site Background

The Environmental Effects Laboratory (EEL), also known as the Hydrogen Lab, is located on the boundary between Administrative Areas III and IV in the western portion of SSFL. The Site is currently inactive, and all structures have been demolished. Buildings 3268 and 3271 were used for the EEL Cryogenic Laboratory and associated test cells from 1968 through 2008. These buildings were used for testing various materials under high-pressure hydrogen conditions. Other structures associated with the testing operations included an equipment and material storage building, a mechanics workshop, a hazardous materials storage pad, transformers, and over 25 small aboveground storage tanks that were mostly used to store gases and hydraulic oil.

Appendix E1: Human Health Risk Assessment[47]

Direct Contact with Soil[48]

Potential routes of exposure to chemicals from direct contact with soil include incidental ingestion, dermal contact, and inhalation of fugitive dust and vapors emitted from soil to ambient air. For the direct soil contact pathway, the total site ELCR is **4E-04** with an incremental[49] risk of 3E-04, which both exceed DTSC's point of departure of 1E-06. The primary risk drivers above USEPA and DTSC thresholds are listed in Table EEL-1. The primary contributor, arsenic, is a natural component of the earth's crust, but is highly toxic in its inorganic form, and can be exposed through drinking water, inhalation, and consumption of food that has been exposed to arsenic. Exposure to arsenic can cause, vomiting, abdominal pain, muscle cramping, pigmentation changes, skin lesions, cancer in the lungs, skin, and bladder, pulmonary and cardiovascular diseases.[50] Keep in mind, Boeing notes "a statistical comparison of arsenic levels at the EEL RFI site (site EPC of 26.4 milligrams per kilogram and maximum detected value of 110 mg/kg) with background concentrations indicated that onsite arsenic levels are statistically higher than background" (p. 622).

Both the total site HI for soil and the incremental HI for this scenario are 2, which exceeds the USEPA and DTSC threshold HI value of 1. Primary contributors are listed in Table EEL-2.

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[46] http://www.dtsc-ssfl.com/files/lib_rcra_soils/boeingsubarea59south/draft_rfi_rpts/66635_Draft_RCRA_Facility_Investigation_Data_Summary_and_Findings_Report_-_Environmental_Effects_Laboratory.pdf

[47] PDF pages 617-656

[48] Potential routes of exposure to chemicals from direct contact with soil include incidental ingestion, dermal contact, and inhalation of fugitive dust and vapors emitted from soil to ambient air.

[49] Risk from contamination above background levels onsite

[50] http://www.who.int/mediacentre/factsheets/fs372/en/

Table EEL-1: Direct Soil Contact Carcinogenic Risk*			
Analyte	Carcinogenic RBSL	Cancer Risk	Percent Contribution
2,3,7,8-TCDD TEQ	4.81E-06	4.37E-06	1.1%
Arsenic	6.58E-02	4.01E-04	96.8%
Benzo(a)anthracene	3.87E-01	1.12E-06	0.3%
Benzo(a)pyrene	3.87E-02	4.62E-06	1.1%
Total Risk		**4.00E-04**	
PCB TEQ[a]	3.57E-06	2.00E-05	

* Data taken from Table E1-5 of Appendix E1 of EEL RFI Report
TEQ= Toxic Equivalet Quotient
PCB TEQ= Polychlorinated Biphenyl
"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, would be 4.2E-4
USEPA Risk Range is 1E-06 to 1E-04
DTSC Point of Departure is 1E-06
RBSL=Risk Based Screening Level
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table EEL-2: Direct Soil Contact Noncarcinogenic Risk*			
Analyte	Noncarcinogenic RBSL	Hazard Quotient	Percent Contribution
2,3,7,8-TCDD TEQ	0.0000505	0.416	23.3%
Antimony	26.4	0.03	1.7%
Aroclor 1254	1.1	0.0429	2.4%
Aroclor 1260	1.1	0.0344	1.9%
Arsenic	21.6	1.22	68.6%
MCPA	34.3	0.0274	1.5%
Hazard Index		**2**	
PCB TEQ	0.0000386	2	

*Data taken from Table E1-5 of Appendix E1 of EEL RFI Report
TEQ= Toxic Equivalet Quotient
PCB TEQ= Polychlorinated Biphenyl
"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, would be 4.
USEPA and DTSC threshold HI value is 1.
RBSL=Risk Based Screening Level
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Garden Use[51]

For the homegrown produce consumption pathway, the total ELCR is **3E-01** and the incremental risk is 2E-01, which is far above DTSC point of departure of 1E-06. Primary contributors above USEPA and DTSC threshold are listed in Table EEL-3. The primary contributor is arsenic, which if exposed can cause vomiting, abdominal pain, muscle cramping, pigmentation changes, skin lesions, cancer in the lungs, skin, and bladder, pulmonary and cardiovascular diseases.[52]

The total site HI for this scenario is **486**, and the incremental HI of **377**, which both *greatly exceed* USEPA and DTSC threshold HI value of 1. The primary contributor is arsenic, and other contributors for this HI are listed in Table EEL-4. Notably, in the HHRA summary, it lists the HI for this scenario as 486, but Table E1-5 of the HHRA

[51] Another pathway evaluated for the hypothetical future suburban resident is the consumption of homegrown produce that has accumulated chemicals from soil.
[52] http://www.who.int/mediacentre/factsheets/fs372/en/

lists the HI as 363. For the sake of our table (EEL-4), we will use the lower value (363) since the chemicals listed are associated with that HI.

Table EEL-3: Garden Use Carcinogenic Risk*			
Analyte	Carcinogenic RBSL	Cancer Risk	Percent Contribution
2,3,7,8-TCDD TEQ	7.51E-09	2.80E-03	1%
Aroclor 1254	4.88E-04	9.70E-05	0.0%
Aroclor 1260	4.89E-04	7.75E-05	0.0%
Arsenic	9.92E-05	2.66E-01	97.3%
Benzo(a)anthracene	8.05E-04	5.39E-04	0.2%
Benzo(a)pyrene	8.09E-05	2.21E-03	0.8%
Benzo(b)fluoranthene	8.05E-04	4.47E-04	0.2%
Benzo(k)fluoranthene	8.09E-04	2.71E-04	0.1%
Chrysene	8.06E-03	6.68E-05	0.0%
Dibenzo(a,h)anthracene	2.38E-04	4.41E-05	0.0%
Hexavalent Chromium	1.94E-03	5.81E-04	0.2%
Indeno(1,2,3-cd)pyrene	8.13E-04	8.31E-05	0.0%
Mirex	5.42E-05	3.39E-05	0.0%
Total Risk		**3.00E-01**	
PCB TEQ[a]	7.50E-09	8.00E-03	

* Data taken from Table E1-5 of Appendix E1 of EEL RFI Report
TEQ= Toxic Equivalet Quotient
PCB TEQ= Polychlorinated Biphenyl
"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, the correct risk would be 3.08E-1
RBSL=Risk Based Screening Level
USEPA Risk Range is 1E-06 to 1E-04
DTSC Point of Departure is 1E-06
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table EEL-4: Garden Use Noncarcinogeic Risk*			
Analyte	Noncarcinogenic RBSL	Hazard Quotient	Percent Contribution
2,3,7,8-TCDD TEQ	0.00000025	0.0028	1%
Antimony	0.139	5.68	1.6%
Aroclor 1254	0.00721	6.56	1.8%
Aroclor 1260	0.00723	5.24	1.4%
Arsenic	0.104	253	69.6%
Hexavalent Chromium	1.08	1.05	0.3%
MCPA	0.131	7.2	2%
Hazard Index		**363**	
PCB TEQ[a]	2.52E-07	247	

* Data taken from Table E1-5 of Appendix E1 of EEL RFI Report
TEQ= Toxic Equivalet Quotient
PCB TEQ= Polychlorinated Biphenyl
"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, would be 610.
USEPA and DTSC threshold HI value is 1.
RBSL=Risk Based Screening Level
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Indoor Air Pathway[53]

[53] For the indoor air pathway, the potential route of exposure to volatile chemicals detected in soil vapor is inhalation of volatile chemicals that could migrate from the vadose zone to inside a future residence.

For the indoor air pathway, the total site ELCR is **3E-05**, which exceeds the DTSC point of departure of 1E-06 by a factor of 30. The primary risk drivers are trichloroethene (TCE; 94%; 3E-05), and benzene (6%; 2E-06). The total site HI is 7 for this scenario, which exceeds the USEPA ad DTSC threshold value of 1. The primary contributor to the site HI is TCE (>99%; HQ=7). As mentioned in the previous chapter, exposure to TCE can affect reproductive organs and impairs neurological function, as well as kidney cancer, and liver cancer.[54]

Groundwater Use Pathway[55]

For groundwater use at Chatsworth Formation well HAR-18, the ELCR is **3E-02**, which is above both the USEPA target risk range of 1E-06 to 1E-04 *and* exceeds the DTSC point of departure of 1E-06.The primary contributor, vinyl chloride, is used to make a variety of plastics and vinyl products. Acute exposure to vinyl chloride in air can result in central nervous system effects, and chronic exposure (via inhalation and oral) can result in liver damage and cancer.[56] Other primary risk drivers above USEPA and DTSC thresholds are listed below in Table EEL-5.

The HI for this scenario is **426**, which greatly exceeds the USEPA and DTSC threshold HI value of 1. The primary contributors are TCE and cis-1,2-dichloroethene. To elaborate, cis-1,2-dichloroethene is a highly flammable, colorless liquid and is used to produce solvents and in chemical mixtures, which if inhaled or direct contact can have toxic effects, such as irritation of the lungs, skin, and eyes.[57] Other contributors are listed in Table EEL-6.

Note, the risk estimates for radionuclides of potential concern identified for Chatsworth Formation groundwater (at HAR-18) were calculated separately from those associated with chemicals of potential concern. The risk calculation table provided in Boeing's HHRA (Table E1-11) indicates that the ELCR is 2E-05, which exceeds DTSC's point of departure, with the primary contributor being Uranium-233/234 (94%; 1E-05). This calculated risk adds on to the total risk of groundwater well HAR-18.

[54] https://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=30
[55] Potential routes of exposure to chemicals in Chatsworth Formation groundwater include ingestion, dermal contact, and inhalation of vapors during assumed hypothetical domestic use.
[56] https://www.epa.gov/sites/production/files/2016-09/documents/vinyl-chloride.pdf
[57] https://pubchem.ncbi.nlm.nih.gov/compound/_Z_-1_2-Dichloroethylene#section=GHS-Classification

Table EEL-5: Groundwater Use Carcinogenic Risk*			
Analyte	Carcinogenic RBC (ug/L)	Cancer Risk	Percet Contribution
1,1-Dichloroethane	2.51E+00	2.07E-06	0.0%
1,1-Dichloropropene	2.19E-01	2.79E-05	0.1%
1,4-Dioxane	2.47E+00	5.67E-06	0.0%
Aldrin	3.94E-03	3.05E-06	0.0%
gamma-BHC	3.49E-02	3.72E-06	0.0%
Heptachlor	1.86E-03	2.37E-05	0.1%
n-Nitrosodimethylamine	1.51E-03	2.38E-03	7.8%
Trichloroethene	4.24E-01	1.53E-03	5%
Vinyl Chloride	1.36E-02	2.65E-02	86.9%
Total Risk		**3.00E-02**	
* Data taken from Table E1-10 of Appendix E1			

RBC= Risk-based concentration
ug/L= Microgram per liter
USEPA Target Risk Range is 1E-06 to 1E-04
DTSC Point of Departure is 1E-06
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table EEL-6: Groundwater Use Noncarcinogenic Risk*			
Analyte	Noncarcinogenic RBC (ug/L)	Hazard Quotient	Percent Contribution
cis-1,2-Dichloroethene	1.04E+01	163	38.3%
Manganese	4.33E+02	0.346	0.1%
n-Nitrosodimethylamine	1.60E-01	22.5	5.3%
Thalium	2.00E-01	0.24	0.1%
Trichloroethene	2.82E+00	230	54.1%
Vinyl Chloride	4.44E+01	8.11	1.9%
Hazard Index		**426**	
* Data taken from Table E1-10 of Appendix E1			

RBC= Risk-based concentration
ug/L= Microgram per liter
USEPA and DTSC threhold HI value is 1.
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Appendix E2: Ecological Risk Assessment[58]

For avian species, the risk estimation from the site is an HI of >**4**[59] (move footnote to end of sentence), which is above the threshold of 1. All chemicals with a low HQ above the USEPA and DTSC threshold of 1 are listed in Table EEL-7 below. For mammals, the risk estimation from the site is an HI of **>61**, which is well above the threshold on 1. All chemicals above the USEPA and DTSC threshold of 1 are listed in Table EEL-8 below.

[58] PDF Pages 699-763
[59] Since the HI was not calculated for this table, we had to calculate our own, but we focused on Hazard Quotients that were above and HQ of 1, therefore HQ's below 1 were not included in our calculation, but we are acknowledging the fact that the HI is higher than what we have calculated.

Table EEL-7: Risk Estimates for Birds (Hermit Thrush)-Food Chain Uptake via Soil*					
Analyte	RME EPC	Low EcoRBSL	High EcoRBSL	HQ Low	HQ High
DioxinFuran TEQ Bird	1.17E-05	5.70E-06	0.000057	2	0.2
4,4'-DDT	0.00637	0.0035	0.58	2	0.01
Hazard Index				**>4**	
PCB TEQ Bird[a]	0.000145	5.70E-06	5.70E+05	30	3

* Data take from Table E2-7 of Appendix E2
PCB=Polychlorinated Biphenyl
TEQ=Toxic Equivalent Quotient
"a" PCB TEQ Birdwas calculated separately from the total HI. If added, the correct Hi would be >34.

Table EEL-8: Risk Estimates for Mammals (Deer Mice)-Food Chain Uptake via Soil*					
Analyte	RME EPC	Low EcoRBSL	High EcoRBSL	HQ Low	HQ High
Antimony	0.546	0.042	2	11	0.3
Arsenic	16.1	2.1	31	8	0.5
DioxinFuran TEQ Mammal	1.57E-05	5.00E-07	0.000005	30	3
MCPA	0.94	0.12	0.61	8	2
Aroclor 1248	0.0233	0.0064	0.064	4	0.4
Hazard Index				**>61**	
PCB TEQ Mammal[a]	3.27E-05	5.00E-07	5.00E-06	70	7

* Data taken from Table E2-8 of Appendix E2
PCB=Polychlorinated Biphenyl
TEQ=Toxic Equivalent Quotient
"a" PCB TEQ mammal was calculated separately from the total HI. If added, the correct Hi would be >131
Note, no actual Hazard Index was provided, we had to calculate our own.

Appendix E3: Residual Risk[60]

Direct Soil Contact (0-2ft below ground surface (bgs))

For this scenario, the residual risk is **2E-06**, which is above DTSC's point of departure. Primary contributor is 2,3,7,8-TCDD TEQ (41.1%; 1.02E-06), which if exposed, it may result in skin lesions, altered liver function, impairment to the immune, nervous, and endocrine systems, and alter reproductive functions.[61] Other main contributors include Aroclor 1254 (10.1%; 2.51E-07), and Hexavalent Chromium (38.8%; 9.66E-07).

Direct Soil Contact (0-10ft bgs)

The residual risk estimates for the 0-10 ft bgs interval are higher and therefore used for computation of incremental risk. For this scenario, the ELCR was **2E-04**, which is both above USEPA's target risk range and exceeds DTSC's point of departure. The primary contributor was arsenic (98.8%; 1.64E-04), which if exposed can cause vomiting, abdominal pain, muscle cramping, pigmentation changes, skin lesions, cancer in the lungs, skin, and bladder, pulmonary and cardiovascular diseases.[62]

Garden Use

[60] PDF Pages 837-855
[61] http://www.who.int/mediacentre/factsheets/fs225/en/
[62] http://www.who.int/mediacentre/factsheets/fs372/en/

For this scenario, the residual risk estimate is **2E-03**, which exceeds USEPA's target risk range of 1E-06 to 1E-04, and DTSC's point of departure of 1E-06. This is a major concern because Boeing claims that the risk after the cleanup would still be very high. The primary contributor to the risk is 2,3,7,8-TCDD TEQ, which if exposed could cause skin lesions, altered liver function, impairment to the immune, nervous, and endocrine systems, and alter reproductive functions.[63] Other contributors are listed in Table EEL-9 below.

The HI for this scenario is 33, which is also above USEPA and DTSC's threshold HI value of 1. The primary contributor is once again, 2,3,7,8-TCDD TEQ, and other contributors are listed in Table EEL-10.

Table EEL-9: Garden Use Residual Carcinogenic Risk*			
Analyte	Carcinogenic	Cancer Risk	Percent Contribution
2,3,7,8-TCDD TEQ	7.51E-09	6.55E-04	42.2%
4,4'-DDT	2.87E-03	4.63E-06	0.3%
Aroclor 1254	4.88E-04	1.19E-04	7.7%
Benzo(a)anthracene	8.05E-04	3.49E-06	0.2%
Benzo(a)pyrene	8.09E-05	3.46E-05	2.2%
Benzo(b)fluoranthene	8.05E-04	6.20E-06	0.4%
Dibenzo(a,h)anthracene	2.38E-04	9.83E-06	0.6%
Heptachlor epoxide	1.71E-04	2.74E-06	0.2%
Hexavalent Chromium	1.94E-03	6.43E-04	41.4%
Indeno(1,2,3-cd)pyrene	8.13E-04	3.10E-06	0.2%
Mirex	5.42E-05	7.03E-05	4.5%
Total Risk		**2.00E-03**	

*Data taken from Table E3-2 of Appendix E3
USEPA Risk Range is 1E-06 to 1E-04
DTSC Point of Departure is 1E-06
RBSL=Risk Based Screening Level
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table EEL-10: Garden Use Residual Noncarcinogeic Risk*			
Analyte	Noncarcinog	Hazard Quotier	Percent Contribution
2,3,7,8-TCDD TEQ	2.52E-07	19.5	59.2%
Antimony	1.39E-01	2.33	7.1%
Aroclor 1254	7.21E-03	8.07	24.5%
Hexvalent Chromium	1.08E+00	1.16	3.5%
Perchlorate	1.58E-02	1.11	3.4%
Hazard Index		**33**	

*Data taken from Table E3-2 of Appendix E3
RBSL=Risk Based Screening Level
USEPA and DTSC Threshold HI value is 1.
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

[63] http://www.who.int/mediacentre/factsheets/fs225/en/

Groundwater

Boeing did not provide post remediation calculations for the Chatsworth Groundwater Pathway (Well HAR-18), giving the impression that Boeing is not intending to do anything about the groundwater well.

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and as we have shown above, the risk values are still above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA (our summaries of which are discussed above) "demonstrate that acceptable risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at the EEL RFI site if the CMS areas presented are included in site cleanup activities"[64]. But as evidenced in these tables, the risks are not protective of human and ecological health. Therefore, DTSC must ensure that a full cleanup is done at this RFI site.

[64] Appendix E3 Section 3.0 "Conclusions"

Area III Sewage Treatment Plant[65]

Background

The Area III Sewage Treatment Plant (STP-3) RFI site is located in the west-central portion of Administrative Area III at SSFL. The RFI site is currently inactive and all structures have been demolished. Facilities at the STP-3 RFI site identified during the RFA include Building 3600 (the sewage treatment plant); Buildings 3251, 3252, and 3267 (known collectively as the former Ranch House, where a metallurgical laboratory is believed to have been operated); the STP-3 RFI Site Pond; and the STP-3 RFI Site Clarifier period of operation of the suspected metallurgical laboratory are not available from historical documentation, although the ranch house buildings were demolished in the late 1980s.

Appendix E1: Human Health Risk Assessment[66]

Direct Soil Contact

For the direct soil contact pathway, the total site ELCR is **3E-05**, and the incremental risk is also 3E-05, which exceeds DTSC's point of departure of 1E-06. The primary contributors are listed in Table STP-1. The total site HI for soil for this scenario is **4**, which exceeds the USEPA and DTSC threshold HI value of 1. Primary contributors are listed in Table STP-2 below.

Also, the PCB-TEQ risk and HI for this scenario is higher than the calculated total risk and HI, but Boeing is not including the PCB-TEQs because it claims that there are "uncertainties" in the numbers.

Table STP-1: Direct Soil Contact Carcinogenic Risk*

Analyte	Carcinogenic RBSL	Cancer Risk	Percent Contribution
2,3,7,8-TCDD TEQ	4.81E-06	5.50E-06	21.6%
Aroclor 1254	2.32E-01	4.60E-06	18%
Benzo(a)anthracene	3.87E-01	1.40E-06	5.5%
Benzo(a)pyrene	3.87E-02	1.10E-05	43.2%
Benzo(b)fluoranthene	3.87E-01	1.60E-06	6%
Total Risk		**3.00E-05**	
PCB-TEQ[a]	3.57E-06	2.00E-04	-

*Data taken from Table E1-5 of Appendix E1
PCB=Polychlorinated Biphenyl
TEQ=Toxic Equivalent Quotient
"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, would be 2.3E-04
DTSC Point of Departure 1E-06
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

[65] http://www.dtsc-ssfl.com/files/lib_rcra_soils/boeingsubarea59south/draft_rfi_rpts/66620_Draft_RCRA_Facility_Investigation_Data_Summary_and_Findings_Report_-_Area_III_Sewage_Treatment_Plant_RFI_Site.pdf
[66] PDF Pages 408-452

Table STP-2: Direct Soil Contact Noncarcinogenic Risk*			
Analyte	NonCarcinogenic RBSL	Hazard Quotient	Percent Contribution
2,3,7,8-TCDD TEQ	5.05E-05	0.527	11.7%
Aroclor 1254	1.10E+00	0.971	21.6%
Cadmium	4.60E+00	0.35	7.8%
Mercury	1.68E+01	0.997	22.2%
Silver	2.30E+02	0.83	18.5%
Thallium	7.61E-01	0.674	15%
Hazard Index		**4**	
PCB-TEQ[a]	3.86E+00	22	

*Data taken from Table E1-5 of Appendix E1
PCB=Polychlorinated Biphenyl
TEQ=Toxic Equivalent Quotient
"a" PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would be 26
USEPA and DTSC threshold HI value is 1
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Garden Use

For the homegrown produce consumption pathway, the total site ELCR is **1E-02** and the incremental risk is also 1E-02, which exceeds the DTSC point of departure of 1E-06. The primary risk driver is benzo(a)pyrene, which is an adhesive and sealant, as well as a fuel and fuel additive. Exposure to benzo(a)pyrene has carcinogenic effects and can cause chronic bronchitis, dermatitis, keratosis, damage to the reproductive system and leukemia[67]. Other main risk drivers are listed in Table STP-3.

The HI is **1,838**, and the incremental HI is 1,599, which are almost two thousand of times greater than the USEPA and DTSC threshold HI. The primary risk driver is cadmium, which if exposed, can cause cancer and targets the body's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems if one is exposed[68]. Primary risk drivers are listed in Table STP-4. Note also that the PCB-TEQs for both risk and HI are not included in the totals because Boeing claims there are "uncertainties" in the numbers, which is convenient for Boeing because then it gives the illusion that a lesser quality cleanup is then needed when the risk is **1E-01**, and the HI is about **3,304**.

[67] https://pubchem.ncbi.nlm.nih.gov/compound/benzo_a_pyrene#section=Health-Hazard
[68] https://www.osha.gov/SLTC/cadmium/

Table STP-3: Garden Use Carcinogenic Risk*			
Analyte	Carcinogenic RBSL	Cancer Risk	Percent Contribution
2,3,7,8-TCDD TEQ	7.51E-09	3.54E-03	26.9%
Aroclor 1254	4.88E-04	2.19E-03	16.7%
Aroclor 1262	4.88E-04	2.25E-05	0.2%
Benzo(a)anthracene	8.05E-04	6.75E-04	5.1%
Benzo(a)pyrene	8.09E-05	5.30E-03	40.3%
benzo(b)fluoranthene	8.05E-04	7.45E-04	5.7%
benzo(k)fluoranthene	8.09E-04	3.98E-04	3.0%
Chrysene	8.06E-03	1.21E-04	0.9%
dibenzo(a,h)anthracene	2.38E-04	8.57E-04	0.7%
Indeno(1,2,3-cd)pyrene	8.13E-04	6.61E-05	0.5%
Total Risk		**1.00E-02**	
PCB TEQ	7.50E-09	1.00E-01 -	

*Data taken from Table E1-5 of Appendix E1
PCB=Polychlorinated Biphenyl
TEQ=Toxic Equivalent Quotient
"a" PCB TEQ was calculated, but not included in the total risk. If included, the total risk would be 1.1E-01
USEPA Target Risk Range 1E-06 to 1E-04
DTSC Point of Departure 1E-06
RBSL=Risk Based Screening Level
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table STP-4: Garden Use Noncarcinogenic Risk*			
Analyte	NonCarcinogenic RBSL	Hazard Quotient	Percent Contribution
2,3,7,8-TCDD TEQ	2.52E-07	105	5.7%
Antimony	1.39E-01	7.9	0.4%
Aroclor 1254	7.21E-03	148	8.1%
Aroclor 1262	7.21E-03	1.53	0.1%
Cadmium	1.65E-03	976	53.1%
Copper	1.11E+01	5.29	0.3%
Mercury	5.04E-02	332	18.0%
Nickel	6.07E+00	8.92	0.5%
Silver	1.81E+00	1.06	5.7%
Thallium	3.60E-03	142	7.7%
Zinc	5.38E+01	4.38	0.2%
Hazard Index		**1,838**	
PCB-TEQ[a]	2.52E-07	3,304	

*Data taken from Table E1-5 of Appendix E1
PCB=Polychlorinated Biphenyl
TEQ=Toxic Equivalent Quotient
"a" PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would be 5,142
USEPA and DTSC threshold HI value is 1
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Groundwater Use

For groundwater use at Chatsworth Formation well HAR-18, the ELCR is **3E-02**, which exceeds the DTSC point of departure of 1E-06. The primary risk driver is vinyl chloride, which if exposed can result in central nervous system effects, and liver damage

and cancer. Other risk drivers are listed in Table STP-5. The HI for this scenario is **426**, which exceeds both the USEPA and DTSC threshold HI value of 1. The primary contributor is TCE, other contributors are listed in Table STP-6.

Boeing states "the potential risk from exposure to lead in groundwater is evaluated separately from other carcinogens and noncarcinogens. For this HHRA, potential risk from lead is evaluated by comparing the maximum EPC for lead in Chatsworth Formation groundwater to the USEPA Action Level in water 15 ug/L. Only one of the 10 well points in Boeing RFI Subareas 5/9 South had an EPC exceeding 15 ug/L at well point RD-55A where the EPC was 40.1 ug/L".

Table STP-5: Groundwater Use Carcinogenic Risk*			
Analyte	Carcinogenic RBC	Cancer Risk	Percent Contribution
1,1-Dichloroethane	2.5E+00	2.1E-06	0.0%
1,1-Dichloropropene	2.2E-01	2.8E-05	0.1%
1,4-Dioxane	2.5E+00	5.7E-06	0.0%
Aldrin	3.9E-03	3.1E-06	0.0%
Heptachlor	1.9E-03	2.4E-05	0.1%
N-Nitrosodimethylamine	1.5E-03	2.4E-03	7.8%
Trichloroethene	4.2E-01	1.5E-03	5.0%
Vinyl Chloride	1.4E-02	2.7E-02	86.9%
Total Risk		**3.0E-02**	

*Data taken from Table E1-12 of Appendix E1
USEPA Target Risk Range 1E-06 to 1E-04
DTSC Point of Departure 1E-06
RBSL=Risk Based Concentration
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table STP-6: Groundwater Use NonCarcinogenic Risk*			
Analyte	NonCarcinogenic RBC	Hazard Quotient	Percent Contribution
1,1-Dichloroethene	1.3E+02	0.19	0.0%
1,1-Dichloropropene	3.9E+01	0.157	0.0%
cis-1,2-Dichloroethene	1.0E+01	163	38.3%
Manganese	4.3E+02	0.346	0.1%
N-Nitrosodimethylamine	1.6E-01	22.5	5.3%
Thallium	2.0E-01	0.24	0.1%
trans-1,2-Dichloroethene	9.3E+01	0.495	0.1%
Trichloroethene	2.8E+00	230	54.1%
Vinyl Chloride	4.4E+01	8.11	1.9%
Hazard Index		**426**	

*Data taken from Table E1-12 of Appendix E1
RBSL=Risk Based Concentration
USEPA and DTSC threshold HI value is 1
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Appendix E2: Ecological Risk Assessment[69]

For plant species, we've calculated an HI of **130**, which is more than a 100 times above the USEPA and DTSC HI threshold value of 1. The two main contributors above an HI of 1 are chromium (HQ=70), and mercury (HQ=60)[70]. Chromium is highly toxic for biota, and accumulation of chromium in plants causes high toxicity in terms of reduction in growth and biomass accumulation, induces structural alterations, interferes with photosynthetic and respiration process, and water and minerals uptake mechanisms, and lastly, death of the plant species.[71] Mercury on the other hand can cause serious damage to plants and wildlife. Mercury concentrations in an ecological setting can cause death of biota, reduced reproduction, slower growth and development, and abnormal behavior.[72]

For invertebrates, we've calculated and HI of at least **202**, with the main contributors being Mercury and Zinc. The effects of mercury have been explained above. Exposure to excessive amounts of zinc can have serious effects in the digestive system.[73] Also take into consideration that invertebrates tend to be a primary food source for other animals in the food chain, and bioaccumulation of zinc can be even more harmful as you go up the trophic levels. Other primary risk drivers above the threshold HI value of 1 are listed in Table STP-7.

For avian species, we've calculated with Boeing's data an HI of **1,367**, which is far above USEPA and DTSC's HI threshold value of 1. The primary contributors are lead and silver. Lead poisoning in birds can cause lethargy, progressive weakness causing the inability to fly, and usually accumulates in the liver, kidneys, and blood.[74] As of yet, no data has been provided for the effects of silver in avian species, though it has shown in poultry to affect the liver.[75] Other contributors can be found in Table STP-7.

Lastly, for mammals, we've calculated an HI of **638**, which is far above USEPA and DTSC's HI threshold value of 1. The primary contributor is nickel, which if exposed, an animal would affect the kidneys and have serious developmental and reproductive effects.

[69] PDF pages 454-505
[70] Table E2-5, PDF page 484
[71] https://link.springer.com/article/10.1007/s10311-013-0407-5
[72] https://www.epa.gov/mercury/basic-information-about-mercury#ecological
[73] https://www.merckvetmanual.com/toxicology/zinc-toxicosis/overview-of-zinc-toxicosis
[74] https://www.nwhc.usgs.gov/disease_information/lead_poisoning/
[75] http://www.inchem.org/documents/cicads/cicads/cicad44.htm#6.0

Table STP-7: Risk Estimates for Birds (Hermit Thrush)-Exposure in Soil*					
Analyte	RME EPC	Low Eco RBSL	High EcoRBSL	HQ-Low	HQ-High
Cadmium	1.61	0.2	3	8.0	0.5
Chromium	73.6	2.4	14	30.0	5.0
Copper	58.5	1.1	24	50.0	2.0
Lead	59	0.062	39	1000.0	2.0
Mercury	16.7	0.87	1.7	20.0	10.0
Nickel	54.1	1.5	60	40.0	0.9
Silver	191	0.99	29	200.0	7.0
Zinc	236	32	320	7.0	0.7
Aroclor 1254	1.07	0.083	0.83	10.0	1.0
DioxinFuran_TEQ_Bird	1.42E-05	5.70E-06	0.000057	2.0	0.2
Hazard Index				**1367**	
PCB TEQ Bird	0.001951	5.70E-06	5.70E-05	300.0	30.0

*Data taken from Table E2-7 from Appendix E2
RME-Reasonable Maximum Exposure
USEPA and DTSC threshold HI value is 1
EcoRBSL=Ecological Risk Based Screening Level
Note, no actual Hazard Index was provided, we had to calculate our own.
The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.
"a" PCB TEQ Bird was calculated separately, but not included in the total HI, or explained why. If included in the total, the correct HI would be 1667

Table STP-8: Risk Estimates for mammals (Deer Mice)-Exposure in Soil*					
Analyte	RME EPC	Low Eco RBSL	High EcoRBSL	HQ-Low	HQ-High
Antimony	0.748	0.042	2	20.0	0.4
Cadmium	1.05E+00	0.019	0.81	60.0	1.0
Chromium	50.9	1.9	46	30.0	1.0
Copper	43.9	1.5	350	30.0	0.1
Lead	40	3.8	910	10.0	0.4
Mercury	11.5	2.2	-	5.0	-
Nickel	53.6	0.13	30	400.0	2.0
Silver	75.9	3.5	2.00E+01	1.0	
Zinc	177	19	820	9.0	0.2
Aroclor 1248	2.00E-02	6.40E-03	0.064	3.0	0.3
Aroclor 1254	5.62E-01	3.90E-02	0.39	10.0	1.0
DioxinFuran_TEQ_Mammal	2.64E-05	5.00E-07	0.000005	50.0	5.0
Aroclor 1260	3.41E-01	2.50E-02	0.25	10.0	1.0
Hazard Index				**638**	
PCB TEQ Mammal	0.000437	5.00E-07	5.00E-06	900.0	90.0

*Data taken from Table E2-8 from Appendix E2
RME-Reasonable Maximum Exposure
USEPA and DTSC threshold HI value is 1
EcoRBSL=Ecological Risk Based Screening Level
Note, no actual Hazard Index was provided, we had to calculate our own.
The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.
"a" PCB TEQ Bird was calculated separately, but not included in the total HI, or explained why. If included in the total, the correct HI would be 1538

Appendix E3: Residual Risk[76]

Garden Use

The post remediation risk value that Boeing predicts for this scenario is **3E-04**, which is still above the USEPA target risk range, and DTSC's Point of Departure. The primary contributors are listed below in Table STP-9. The main contributor to the post remediation risk is 2,3,7,8-TCDD TEQ, 2,3,7,8-TCDD TEQ (41.1%; 1.02E-06), which if

[76] PDF Pages 557-566

exposed, it may result in skin lesions, altered liver function, impairment to the immune, nervous, and endocrine systems, and alter reproductive functions.[77]

The post remediation HI that Boeing predicts for this scenario is 553, still far above the USEPA and DTSC threshold HI value of 1. The primary contributors are listed below in Table STP-10. The primary contributor is cadmium, which can cause cancer and targets the body's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems if one is exposed[78]

Table STP-9: Garden Use Residual Carcinogenic Risk*			
Analyte	Carcinogenic RBSL	Cancer Risk	Percent Contribution
2,3,7,8-TCDD TEQ	7.51E-09	2.28E-04	74.9%
Aroclor 1254	4.88E-04	1.23E-05	4%
Aroclor 1262	4.88E-04	2.25E-05	7.4%
benzo(a)pyrene	8.09E-05	3.58E-05	11.8%
Benzo(b)fluoranthene	8.05E-04	4.61E-06	1.5%
Total Risk		**3.00E-04**	

*Data taken from Table E3-2 of Appendix E3
USEPA Target Risk Range 1E-06 to 1E-04
DTSC Point of Departure 1E-06
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table STP-10: Garden Use Noncarcinogenic Risk*			
Analyte	NonCarcinogenic RBSL	Hazard Quotient	Percent Contribution
2,3,7,8-TCDD TEQ	2.52E-07	6.78	1.2%
Antimony	1.39E-01	9.33	1.7%
Aroclor 1262	7.21E-03	1.53	0.3%
Cadmium	1.65E-03	391	70.7%
Mercury	5.04E-02	1.46	0.3%
Nickel	6.07E+00	7.52	1.4%
Thallium	3.60E-03	1.32	24%
Hazard Index		**553**	

*Data taken from Table E3-2 of Appendix E3
USEPA and DTSC threshold HI value is 1
RBSL=Risk Based Concentration
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Groundwater Use

Boeing did not provide post remediation calculations for the Chatsworth Groundwater Pathway (Well HAR-18), giving the impression that Boeing is not intending to do anything about the groundwater well.

[77] http://www.who.int/mediacentre/factsheets/fs225/en/
[78] https://www.osha.gov/SLTC/cadmium/

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and the tables make clear, the risk values are still often above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA "demonstrate that acceptable risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at the STP-3 RFI site if the CMS areas presented are included in site cleanup activities"[79]. But as we see in the provided evidence above, the risks are *not* acceptable. Therefore, DTSC must ensure that a full cleanup is done at this RFI site.

[79] Appendix E3 Section 3.0 "Conclusions"

Compound A[80]

Background

The Compound A Facility RFI site is in the northeastern portion of Boeing RFI Subarea 5/9 South, located north of the STL-4 RFI site and south and east of the EEL and STP-3 RFI sites. The site is currently inactive, and all structures have been demolished. The Compound A Facility site was used in support of Rocketdyne Propulsion and Power operations. The Compound A Facility RFI site contains one solid waste management unit (SWMU)-Building 3418 (SWMU 6.4) that was identified in the RFA. Building 3418 was used for manufacturing chlorine pentafluoride (this chemical is referred to as "Compound A") and for manufacturing laser chemicals (nitrogen, fluoride, and antimony compounds) from 1967 through 1969. The Compound A Facility RFI Site boundary was defined to include operations associated with Building 3418. In addition, facilities or features near this SWMU were included in the Compound A Facility RFI site boundary. These include Buildings 3430 and 3768, the STL-4 air-stripping towers and transformer demolished in 2011, two forming pits, and explosive storage bunker, the Compound A on the east side of Building 3418, one suspect pond, and a debris area southwest of Building 3418.

Appendix E1: Human Health Risk Assessment[81]

Direct Soil Contact

For the direct soil contact pathway, the total site ELCR is **2E-04** and the incremental risk is 8E0-06, which exceeds the DTSC point of departure of 1E-06. The primary risk driver to the incremental soil ELCR is arsenic (99%; 2E-04). Boeing then states "a statistical comparison of arsenic levels at the Compound A Facility RFI site (site EPC of 11.2 mg/kg) and maximum detected value of 107 mg/kg with background concentrations indicating that onsite arsenic levels are not statistically higher than background. However, arsenic is considered a chemical of potential concern since the maximum detect exceeded two times the background comparison value". The total site HI for soil for this scenario is **2** and the incremental HI is 1, which exceeds the USEPA and DTSC threshold HI value of 1.

Garden Use

For the homegrown produce consumption pathway, the ELCR is **1E-01**, which is well above the USEPA target risk range and exceeds DTSC's point of departure of 1E-06. Boeing also states that there is no incremental risk over background. The primary contributor to the site ELCR is arsenic (99.9%; 1.09E-01), which if exposed can cause

[80] http://www.dtsc-ssfl.com/files/lib_rcra_soils/boeingsubarea59south/draft_rfi_rpts/66621_Draft_RCRA_Facility_Investigation_Data_Summary_and_Findings_Report_-_Compound_A_Facility_RFI_Site.pdf
[81] PDF Pages 1,187-1,229

vomiting, abdominal pain, muscle cramping, pigmentation changes, skin lesions, cancer in the lungs, skin, and bladder, pulmonary and cardiovascular diseases.[82]

The total site HI for this scenario is **1,112**, and the incremental HI is 715, which exceed the USEPA and DTSC threshold HI value of 1.[83] The primary contributor is cadmium, which can cause cancer and targets the body's cardiovascular, renal, gastrointestinal, neurological, reproductive, and respiratory systems if one is exposed[84] One thing we would like to address is that in the HHRA, are no tables that show Hazard Indices that would add up to the value above, which is extremely unprofessional, and they aren't even completing a full analysis.

Indoor Air Pathway

For the indoor air pathway, the total site ELCR is **5E-04**, which is above the USEPA target risk range of 1E-06 to 1E-04 and exceeds DTSC's point of departure of 1E-06. The primary risk driver is TCE (>99%; 5E-04). The total site HI is **154** for this scenario, which exceeds the USEPA and DTSC threshold HI value of 1. The primary contributor to the site HI is TCE (>99%; HQ=154). As mentioned in the previous chapter, exposure to TCE can affect reproductive organs and impairs neurological function, as well as kidney cancer, and liver cancer.[85]

Groundwater Use Pathway

For groundwater use at Chatsworth Formation well HAR-18, the ELCR is **3E-02**, which is both above the USEPA target risk range and the DTSC point of departure of 1E-06. Primary contributors are listed in Table CA-1. The primary risk driver is vinyl chloride, which if exposed can result in central nervous system effects, and liver damage and cancer.

The site HI is **426** for this scenario, which exceeds the USEPA and DTSC threshold HI value of 1. The primary contributors are listed in Table CA-2. The main contributor is Cis-1,2-dichloroethene, which if inhaled or direct contact can have toxic effects, such as irritation of the lungs, skin, and eyes.[86] For radionuclides in groundwater, the calculated ELCR is **2E-05**, which exceeds the DTSC point of departure of 1E-06. The primary risk driver is Uranium-233/234 (94%; 1E-05).

[82] http://www.who.int/mediacentre/factsheets/fs372/en/
[83] PDF Page 1,192
[84] https://www.osha.gov/SLTC/cadmium/
[85] https://www.atsdr.cdc.gov/substances/toxsubstance.asp?toxid=30
[86] https://pubchem.ncbi.nlm.nih.gov/compound/_Z_-1_2-Dichloroethylene#section=GHS-Classification

Table CA-1: Groundwater Use Carcinogenic Risk*			
Analyte	Carcinogenic RBC	Cancer Risk	Percent Contribution
1,1-Dichloroethane	2.51E+00	2.07E-06	0.0%
1,1-Dichloropropene	2.19E-01	2.79E-05	0.1%
1,4-Dioxane	2.47E+00	5.67E-06	0.0%
Aldrin	3.94E-03	3.05E-06	0.0%
Heptachlor	1.86E-03	2.37E-05	0.1%
N-Nitrosodimethylamine	1.51E-03	2.38E-03	7.8%
Trichloroethene	4.24E-01	1.53E-03	5.0%
Vinyl Chloride	1.36E-02	2.65E-02	86.9%
Total Risk		**3.00E-02**	
*Data taken from Table E1-12 of Appendix E1			
USEPA Target Risk Range 1E-06 to 1E-04			
DTSC Point of Departure 1E-06			
RBSL=Risk Based Concentration			

Table CA-2: Groundwater Use NonCarcinogenic Risk*			
Analyte	NonCarcinogenic RBC	Hazard Quotient	Percent Contribution
1,1-Dichloroethene	1.26E+02	0.19	0.0%
1,1-Dichloropropene	3.88E+01	0.157	0.0%
cis-1,2-Dichloroethene	1.04E+01	163	38.3%
Manganese	4.33E+02	0.346	0.1%
N-Nitrosodimethylamine	1.60E-01	22.5	5.3%
Thallium	2.00E-01	0.24	0.1%
trans-1,2-Dichloroethene	9.29E+01	0.495	0.1%
Trichloroethene	2.82E+00	230	54.1%
Vinyl Chloride	4.44E+01	8.11	1.9%
Hazard Index		**426**	
*Data taken from Table E1-12 of Appendix E1			
RBSL=Risk Based Concentration			
USEPA and DTSC threshold HI value is 1			

Appendix E2: Ecological Risk Assessment[87]

For plant species, we've calculated an HI of **35**, which is above USEPA and DTSC threshold HI value of 1. Chromium is the primary contributor at a Hazard Quotient of 30. Chromium is highly toxic for biota, and accumulation of chromium in plants causes high toxicity in terms of reduction in growth and biomass accumulation, induces structural alterations, interferes with photosynthetic and respiration process, and water and minerals uptake mechanisms, and lastly, death of the plant species.[88]

For soil invertebrates, we've calculated an HI of **8**, which is above the USEPA and DTSC threshold HI value of 1. The primary contributor is zinc, with an HQ of 4. For birds, we've calculated an HI of **1,141**, which is more than a thousand times higher than the USEPA and DTSC threshold HI value of 1. The primary contributor is nickel, and can affect the kidneys and have serious developmental and reproductive effects of the bird.

[87] PDF Pages 1,259-1,323
[88] https://link.springer.com/article/10.1007/s10311-013-0407-5

Table CA-3: Risk Estimates for Birds (Hermit Thrush)-Exposure in Soil*					
Analyte	RME EPC	Low Eco RBSL	High EcoRBSL	HQ-Low	HQ-High
Barium	130	44	89	3.0	1.0
Cadmium	1.2	0.2	3	6.0	0.4
Chromium	32.1	2.4	14	10.0	2.0
Copper	37.7	1.1	24	30.0	2.0
Fluoride	72.9	35	140	2.0	0.5
Lead	70.8	0.062	39	1000.0	2.0
Nickel	34	1.5	60	20.0	0.6
Silver	21.5	0.99	29	20.0	0.7
Zinc	463	32	320	10.0	1.0
2-Amino-4,6-Dinitrotoluene	2.55E-01	6.00E-03	0.78	40.0	0.3
Hazard Index				**1141**	
PCB TEQ Bird	0.000205	5.70E-06	5.70E-05	40.0	4.0

*Data taken from Table E2-7 from Appendix E2
RME-Reasonable Maximum Exposure
USEPA and DTSC threshold HI value is 1
EcoRBSL=Ecological Risk Based Screening Level
Note, no actual Hazard Index was provided, we had to calculate our own.
The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.
"a" PCB TEQ Bird was calculated separately, but not included in the total HI, or explained why. If included in the total, the correct HI would be 1181

Table CA-4: Risk Estimates for mammals (Deer Mice)-Exposure in Soil*					
Analyte	RME EPC	Low Eco RBSL	High EcoRBSL	HQ-Low	HQ-High
Antimony	2.56	0.042	2	60.0	1.0
Arsenic	1.12E+01	2.1	31	5.0	0.4
Cadmium	0.902	0.019	0.81	50.0	1.0
Chromium	32.2	1.9	46	30.0	0.7
Copper	31.1	1.5	350	20.0	0.1
Lead	55	3.8	910	10.0	0.1
Manganese	485	79	920	6.0	0.5
Molybdenum	0.749	0.13	1.3	6.0	0.6
Nickel	33.9	0.13	30	300.0	1.0
Selenium	3.13E-01	1.00E-01	2.4	3.0	0.1
Silver	1.51E+01	3.50E+00	69	4.0	0.2
Zinc	3.51E+02	1.90E+01	820	20.0	0.4
Aroclor 1254	7.82E-02	3.90E-02	0.39	2.0	0.2
DioxinFuran_TEQ_Mammal	6.85E-06	5.00E-07	0.000005	10.0	1.0
Hazard Index				**526**	
PCB TEQ Mammal	6.92E-05	5.00E-07	5.00E-06	100.0	10.0

*Data taken from Table E2-8 from Appendix E2
RME-Reasonable Maximum Exposure
USEPA and DTSC threshold HI value is 1
EcoRBSL=Ecological Risk Based Screening Level
Note, no actual Hazard Index was provided, we had to calculate our own.
The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.
"a" PCB TEQ Bird was calculated separately, but not included in the total HI, or explained why. If included in the total, the correct HI would be 626

Appendix E3: Residual Risk[89]

Direct Soil Contact

For soil contact, Boeing estimates the residual risk (post-cleanup) will be **2E-04**, still above both the USEPA target risk range and DTSC point of departure. The primary risk driver is arsenic (98.1%; 1.55E-04). The estimated residual HI is 2, still above the USEPA and DTSC threshold HI value of 1.

Garden Use

There are no calculations provided by Boeing for the Garden Use pathway for residual risk. In other reports, the garden use pathway residual risk was provided, so why was it not included in this report? This gives us the impression that Boeing will not attempt to clean up this pathway.

Groundwater Use

Boeing did not provide post remediation calculations for the Chatsworth Groundwater Pathway (Well HAR-18), giving the impression that Boeing is not intending to do anything about the groundwater well either.

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and as our table's demonstrate, the risk values are still often above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA "demonstrate that acceptable risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at the Compound A RFI site if the CMS areas presented are included in site cleanup activities"[90].Once again, as we see from the data Boeing provided, the risks are *not* acceptable. Therefore, DTSC must ensure that a full cleanup is done at this RFI site.

[89] PDF Pages 1,397-1,413
[90] Appendix E3 Section 3.0 "Conclusions"

Unaffiliated Areas[91]

The Unaffiliated Areas (UA) of 5/9 South was not used for any industrial purposes. No SSFL activities were conducted on this land. The area does include several drainage channels and surface water. Boeing did not do any modeling for this area, arguing that contamination could not be present because no SSFL activities happened in this region.

Boeing has also found that many of the sites that are in close proximity to the UA are incredibly contaminated as shown by the other RFI reports. However, Boeing claims that the UAs are not contaminated whatsoever because no previous activity had ever occurred on that portion of the property. This is an unrealistic assumption, however, as contamination does not stay in one place—on the contrary, it travels via wind and ground and surface water. We argue that these areas must be tested before these areas are deemed for No Further Action.

We'd also like to note that this RFI report was incomplete; for example, Boeing submitted data charts on compact disks instead of including the charts in this RFI report. The data was then uploaded to the DTSC's website upon our request, months after they should have been posted. Furthermore, the data that was posted is quite inadequate and does not include basic summaries for human or ecological risk assessments.

[91] http://www.dtsc-ssfl.com/files/lib_rcra_soils/boeingsubarea59south/draft_rfi_rpts/66636_Draft_RCRA_Facility_Investigation_Data_Summary_and_Findings_Report_-_Unaffiliated_Areas_of_5_9_South.pdf

Subarea 1A Central

Happy Valley North[92]

Background

The Happy Valley Area of Concern identified in the RFA was subdivided into two RFI sites – the Happy Valley North (HVN) RFI site in Boeing Subarea 1A Central, and the Happy Valley South RFI Site in Boeing Subarea 1A South. A ridge separates the two RFI sites, forming a natural divide between the surface water in each area. The HVN RFI comprises an area of approximately 1.3 acres surrounding the former Chemistry Laboratory (Building 1315), the former Tunnel Facility (Building 1773), and various support buildings where energetics and propellants were stored and tested from the early 1950s to the mid-1990s.

In the northern part of the HVN RFI site, experiments utilizing energetics compounds and detonators were conducted at the Building 1315 Chemistry Lab, the adjacent test cells, and the detonation and energetics sups southwest of the building. In the southern portion of the HVN RFI site, the Tunnel Facility and the associated Control Center and its test cells were used to test rocket and gun propellants. Other structures associated with HVN operations included the Instrumentation/Mechanics Shops, an incinerator, a chemistry lab, workshops, the Peroxide Catalyst Production Building, the High Altitude Test Chamber, cooling towers, and several small storage and support buildings.

Two phases of interim measures were conducted at the HVN RFI Site. Between 1999 and 2000, an interim measure was implemented to screen debris and remove suspected energetic and ordnance items. Small piles of sand (approximately 5 cubic yards of material) near the Tunnel Facility, sediment from concrete lined drainages, and sediment within the detonation sump at Building 1315 were excavated, sifted, and disposed of offsite (UXB, 2002). During the Happy Valley Interim Measures (HVIM) conducted from 2003 to 2004, approximately 800 cubic yards of metals-impacted shallow soil at the Building 1316 and Tunnel Facility area were excavated to address elevated arsenic concentrations. Additionally, 30 cubic yards of perchlorate-impacted soil were excavated from the hill-slope east of Building 1316 (MWH, 2004a). Between 2004 and 2006, perchlorate-impacted soils were bio remediated *in situ* (without being moved from where they are onsite) in the Building 1316 area.

Appendix E1: Human Health Risk Assessment[93]

When the HHRA summary lists off the main risk contributors to either the ELCR or HI, the risk values Boeing lists do not match with the risk values listed in the tables throughout the HHRA.

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[92] http://www.dtsc-ssfl.com/files/lib_rcra_soils/boeingsubarea1acntrl/DraftRFIReports/Draft_RCRA_Facility_Investigation_Data_Summary_and_Findings_Report_-_Happy_Valley_North_RFI_Site.PDF

[93] PDF Pages 583-687

Direct Soil Contact

For the direct soil contact pathway, the total site ELCR is **4E-04** and the total incremental risk is 2E-04, which exceeds the USEPA target risk range of 1E-06 to 1E-04 and the DTSC point of departure of 1E-04. The primary risk drivers are arsenic (77%; 1.9E-04) and 1,4-dichlorobenzene (22%; 5.5E-05). Arsenic, being the main contributor can cause vomiting, abdominal pain, muscle cramping, pigmentation changes, skin lesions, cancer in the lungs, skin, and bladder, pulmonary and cardiovascular diseases.[94]

The total site HI for soil for this scenario is **2**, which exceeds the USEPA and DTSC threshold HI value of 1. Boeing also states "the potential risks from exposure to lead in soil at the HVN RFI site were not evaluated since lead was not identified as a chemical of potential concern. A comparison of lead levels with background concentrations indicated that onsite lead levels are lower than background lead levels."

Garden Use

For the homegrown produce consumption pathway, the total site ELCR is **2E-01** and the total incremental ELCR is 1E-01, both of which are above USEPA target risk range of 1E-06 and 1E-04 and exceeds DTSC's point of departure of 1E-06. The main contributor is arsenic (100%; 1.2E-01). The total site HI for this scenario is **700** and the incremental HI is 400, both of which surpass by far the USEPA and DTSC threshold HI value of 1. The primary risk drivers are listed in Table HVN-1.

Table HVN-1: Noncarcinogenic Risk*		
Analyte	NonCarcinogenic RBSL	Hazard Quotient
Arsenic	1.00E-01	220
Cadmium	1.60E-03	410
Mercury	5.00E-02	4.4
2,3,7,8-TCDD TEQ	2.50E-07	7.1
Aroclor 1254	7.20E-03	10
Aroclor 1260	7.20E-03	1.5
Hazard Index		**700**
PCB TEQ	2.50E-07	210
*Data taken from Table E1-5 of Appendix E1		
PCB=Polychlorinated Biphenyl		
TEQ=Toxic Equivalent Quotient		

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would be 910
USEPA and DTSC threshold HI value is 1
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Indoor Air Pathway

For the indoor air pathway, the total site ELCR is **1E-05**, which is within the USEPA and target risk range of 1E-06 to 1E-04 and above the DTSC point of departure of 1E-06. The risk driver associated with the site ELCR for indoor air is trichloroethene

[94] http://www.who.int/mediacentre/factsheets/fs372/en/

(TCE) (100%; 1.2E-05). The total site HI for this scenario is **4**, which is above the USEPA and DTSC threshold HI value of 1. The risk driver associated with the site HI for indoor air is also TCE (100%; HQ=3.5).

Groundwater Use

For groundwater use at Chatsworth Formation well HAR-16, the ELCR is **2E-02**, which is above the USEPA target risk range of 1E-06 to 1E-04 and exceeds DTSC point of departure of 1E-06. The primary contributors are listed in Table HVN-2, with TCE being the main contributor.

The HI is **2,000** for this scenario, which is above and way beyond the USEPA and DTSC threshold HI value of 1. The risk drivers above the USEPA and DTSC threshold are listed in Table HVN-3.

The potential risk from exposure to lead in groundwater is evaluated separately from other carcinogens and non-carcinogens. For this HHRA, the potential risk from lead is evaluated by comparing the maximum EPC for lead in Chatsworth Formation groundwater to the USEPA Action Level in water of 15ug/L. None of the well points in Boeing RFI Subarea 1A Central had an EPC exceeding 15ug/L.

For radionuclides in groundwater, the risk estimates for radionuclides of potential concern identified for Chatsworth Formation groundwater (at HAR-16) were calculated separately from those associated with chemicals of potential concern. The risk calculation indicates that the ELCR is **6E-04**, which is above the USEPA target risk range of 1E-06 to 1E-04 and exceeds the DTSC point of departure of 1E-06. The only groundwater radionuclide of potential concern in HAR-16 was radium-226 (100%; 6.4E-04).

Table HVN-2: Groundwater Use Carcinogenic Risk*

Analyte	Carcinogenic RBC	Cancer Risk
1,2,3-Trichloropropane	1.80E-04	4.60E-05
Tetrachloroethene	7.10E-02	6.20E-05
Trichloroethene	4.20E-01	1.30E-02
n-Nitrosodimethylamine	1.50E-03	6.50E-03
Total Risk		**2.00E-02**

*Data taken from Table E1-12 of Appendix E1
USEPA Target Risk Range 1E-06 to 1E-04
DTSC Point of Departure 1E-06
RBSL=Risk Based Concentration
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table HVN-3: Groundwater Use NonCarcinogenic Risk*

Analyte	NonCarcinogenic RBC	Hazard Quotient
Perchlorate	1.40E-01	26.0
1,1,2-Trichloroethane	4.20E-01	1.2
cis-1,2-Dichlorothene	1.00E+01	8.1
Trichloroethene	2.80E+00	1900.0
n-Nitrosodimethylamine	1.60E-01	62.0
Hazard Index		**2,000**

Appendix E2: Ecological Risk Assessment[95]

For Avian species, we've calculated an HI of **100**, which is exactly a 100 times above the USEPA and DTSC threshold HI value of 1. The primary contributor is 2-Amino-4,6-dinitrotoluene, other contributors are listed in Table HVN-4. For mammals, we calculated an HI of **276**, which is above USEPA and DTSC threshold HI value of 1.

Table HVN-4: Risk Estimates for Birds (Hermit Thrush)-Exposure in Soil*

Analyte	RME EPC	Low TRV	High TRV	HQ-Low	HQ-High
Cadmium	6.80E-01	2.00E-01	3.00E+00	3.4	0.2
Selenium	8.00E-01	3.90E-01	1.50E+00	2.0	0.5
2,4,6-Trinitrotoluene	3.90E-01	2.30E-01	5.80E+00	1.7	0.1
2-Amino-4,6-dinitrotoluene	3.90E-01	6.00E-03	7.80E-01	66.0	0.5
Pentachlorophenol	8.00E+00	2.80E+00	2.10E+01	2.9	0.4
p-Nitroaniline	8.00E+00	3.40E+00	3.40E+01	2.4	0.2
PCB TEQ Bird (Coplanar PCBs)	1.20E-04	5.70E-06	5.70E-05	22.0	2.2
Hazard Index				**100**	

*Data taken from Table E2-5 from Appendix E2
RME-Reasonable Maximum Exposure
USEPA and DTSC threshold HI value is 1
TRV=Toxicity reference value.
Note, no actual Hazard Index was provided, we had to calculate our own.
The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

Table HVN-5: Risk Estimates for mammals (Deer Mice)-Exposure in Soil*

Analyte	RME EPC	Low Eco TRV	High TRV	HQ-Low	HQ-High
Arsenic	2.40E+01	2.10E+00	3.10E+01	11.0	0.8
Cadmium	4.10E-01	1.90E-02	8.10E-01	21.0	0.5
Selenium	7.50E-01	1.00E-01	2.40E+00	7.5	0.3
2,4,6-Trinitrotoluene	3.90E-01	1.30E-01	6.50E-01	3.0	0.6
2-Amino-4,6-dinitrotoluene	3.90E-01	6.10E-02	4.60E-01	6.5	0.9
1,2-dichlorobenzene	5.80E+02	1.30E+02	1.30E+02	4.5	4.5
1,3-dichlorobenzene	5.40E+01	2.30E+01	1.10E+02	2.3	0.5
1,4-Dichlorobenzene	9.20E+01	5.60E+00	2.80E+01	16.0	3.3
Pentachlorophenol	8.00E+00	3.80E+00	1.00E+01	2.1	0.8
MCPA	9.40E+00	1.20E-01	6.10E-01	78.0	15.0
2,3,7,8-TCDD TEQ Mammal	1.50E-06	5.00E-07	5.00E-06	3.0	0.3
Aroclor 1248	5.30E-02	6.40E-03	6.40E-02	8.3	0.8
Aroclor 1254	7.60E-02	3.90E-02	3.90E-01	1.9	0.2
PCB TEQ Mammal (coplanar PCBs)	5.40E-05	5.00E-07	5.00E-06	110.0	11.0
Hazard Index				**275**	

*Data taken from Table E2-6 from Appendix E2
RME-Reasonable Maximum Exposure
USEPA and DTSC threshold HI value is 1
TRV=Toxicity reference value.
Note, no actual Hazard Index was provided, we had to calculate our own.
The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

Appendix E3: Residual Risk[96]

In researching the residual risk, we were disturbed to find that three chemicals in these residual risk assessments were "taken out." This was evidenced by the fact that the Exposure Point Concentration values have been set to "0", which prevents the ability to

[95] PDF Pages 689-827
[96] PDF Pages 829-849

calculate the cancer risk or HI. These chemicals are: 1,1,1-Trichloroethane; Hexachlorobutadiene; and p-Cymene. We've also seen this with Monomethylhydrazine (MMH) in the Systems Test Lab-IV residual risk values where MMH's (the primary contributor to the human health risk) EPC was also set to "0" in the residual risk assessment tables.

Direct Soil Contact

For this scenario, the site residual ELCR is **3E-04**, which is still above USEPA's target risk range, and DTSC's point of departure. The primary risk driver for this ELCR is arsenic (2.5E-04).

Garden Use

For this pathway, the site residual ELCR is **2E-01,** which is still above USEPA's target risk range and DTSC's point of departure. The primary risk drivers are listed in Table HVN-6. We also want to make another key point that Boeing's estimated residual risk of 2E-01 is the same as the risk level before the cleanup (see Appendix E1 of this chapter, above), this is another clear statement that Boeing is not intending to cleanup this site at all.

For this pathway, Boeing estimates that the residual HI will be **600**, which is still far above USEPA and DTSC's threshold HI value of 1. Primary risk drivers are listed in Table HVN-7.

Table HVN-6: Garden Use Residual Carcinogenic Risk*		
Analyte	Carcinogenic RBSL	Cancer Risk
Arsenic	9.90E-05	1.70E-01
Benzo(a)pyrene	8.10E-05	2.40E-04
Benzo(b)fluoranthene	8.10E-04	1.50E-05
Dibenzo(a,h)anthracene	2.40E-04	1.30E-05
2,3,7,8-TCDD TEQ	7.50E-09	1.40E-04
Aroclor 1254	4.90E-04	1.90E-04
Aroclor 1260	4.90E-04	2.20E-05
Total Risk		**2.00E-01**
PCB TEQ[a]	7.50E-09	9.10E-03

*Data taken from Table E3-2 of Appendix E3
USEPA Target Risk Range 1E-06 to 1E-04
DTSC Point of Departure 1E-06
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table HVN-7: Garden Use Noncarcinogenic Risk*		
Analyte	NonCarcinogenic RBSL	Hazard Quotient
Arsenic	1.00E-01	160
Cadmium	1.60E-03	450
Mercury	5.00E-02	4.7
2,3,7,8-TCDD TEQ	2.50E-07	4.2
Aroclor 1254	7.20E-03	13
Aroclor 1260	7.20E-03	1.5
Hazard Index		**553**
PCB TEQ	2.50E-07	270

*Data taken from Table E3-2 of Appendix E3
USEPA and DTSC threshold HI value is 1
RBSL=Risk Based Concentration
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Groundwater Use

Boeing did not provide post remediation calculations for the Chatsworth Groundwater Pathway (Well HAR-16), giving the impression that Boeing is not intending to do anything about the groundwater well either.

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and as we have shown above, the risk values are still above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA (which our summaries are listed above) "demonstrate that acceptable risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at the Happy Valley North RFI site if the CMS areas presented are included in site cleanup activities"[97]. But as we see from Boeing's own risk numbers, the risks are *not* acceptable. Therefore DTSC must ensure that a full cleanup is done at this RFI site.

[97] Appendix E3 Section 3.0 "Conclusions"

Advanced Propulsion Test Facility[98]

Background

The APTF RFI Site is approximately 3.3 acres located in the northeastern portion of Administrative Area I, generally west of the HVN and B359 RFI Sites. The RFI Site is currently inactive and contains no structures. The APTF test area (SWMU 4.9) has been used for research and development programs, including testing components used in liquid-fueled rocket engines, propellant research, and advanced laser research and testing. The site was activated in 1953 and supported research programs until 2005, when operations ceased (Boeing, 2008). Between 1960 and 1985, operational wastewater at the APTF RFI Site discharged to the APTF-1 surface impoundment (SWMU 4.10); the water was treated with hydrogen peroxide or hypochlorite and transferred to the APTF-2 surface impoundment (SWMU 4.11) where it would receive further treatment and/or be discharged to the Area I Road Drainage leading to R-1 Pond. Between 1985 and 1996, APTF wastewater was treated in a 1,000-gallon ozonator tank (Area I Area of Concern) and discharged to the R-1 Pond (ICF, 1993; SAIC, 1994). In 1985, APTF-1 and APTF- 2 impoundment closure was initiated and conducted under the oversight of the California Department of Health Services. Soils were excavated, gunite liners were removed, and the impoundments were backfilled with soil from an unspecified borrow source in Administrative Area IV. A concrete slab was constructed over APTF-1, and a 6-inch vegetated topsoil layer was placed over APTF-2. Concrete-lined surface water diversion ditches were constructed around former impoundment APTF-2. Closure activities were completed in December 1988 (EMCON, 1989; SAIC, 1994), and the impoundments were certified closed by DTSC in 1995 (DTSC, 1995).

Site operations at the APTF RFI Site were conducted at test stands located in four aboveground test pits (Buildings 1342, 1786, 1764 and 1767). Components tested included injectors, combustors, pulse engines, cryogenic engines, thrust chambers, small turbopumps, bearings, and seals. Tests were monitored and controlled from Building 1314 located in the center of the site. A machine shop (Building 1338) located adjacent to the control center was used to store equipment and tools, and to assemble, disassemble, and clean equipment and components used in testing operations. The administrative office was located in Building 1383. Buildings 1370 and 1446 were constructed in the 1980s to support advanced laser research and testing programs. After the completion of the laser research programs, Building 1446 was used as a workshop and Building 1370 was used for the storage of charts, gauges, and miscellaneous instrumentation (Boeing, 2002). Over 150 ASTs have been documented as being present at the APTF RFI Site. Due to program changes and upgrades to the APTF area, tanks were commonly installed and removed throughout the site operational history. The ASTs contained water, fuels, oxidizers, and other chemicals used in testing operations and were located throughout the operational area of the site.

[98] http://www.dtsc-ssfl.com/files/lib_rcra_soils/boeingsubarea1acntrl/DraftRFIReports/Draft_RCRA_Facility_Investigation_Data_Summary_and_Findings_Report_-_Advanced_Propulsion_Test_Facility_RFI_Site.pdf

Appendix E1: Human Health Risk Assessment[99]

Direct Soil Contact

For the direct soil contact pathway, both the total site and incremental ELCRs are **1E-05**, which are within the USEPA target risk range of 1E-06 to 1E-04 and DTSC point of departure of 1E-06. The total site and incremental His for soil for this scenario are **2**, both of which exceed the USEPA and DTSC threshold HI value of 1. The primary risk drivers associated with the HI are Aroclor 1254 and Aroclor 1260. Aroclors can cause serious liver damage, and can also severely damage the nervous system, as well as irritate the lungs and throat, cancers and birth defects.[100]

Garden Use

For the homegrown produce consumption pathway, both the total site and incremental ELCR are **2E-02**, which are above the USEPA target risk range of 1E-06 and 1E-04 and the DTSC point of departure of 1E-06. The primary risk driver is n-Nitrosodimethylamine, which is used as an antioxidant, as an additive for lubricants, and formerly used in the production of rocket fuels. This chemical targets the liver; kidneys, lungs, and can cause cancer in these organs, as well as tumors in the stomach, and decreased pulmonary function.[101] Other contributors are listed in Table APTF-1.

The total site and incremental His for this scenario are **2,000**, which exceed USEPA and DTSC threshold HI of 1. Primary risk drivers are listed in Table APTF-2, and the primary risk driver is cadmium. Boeing notes "lead was identified as a chemical of potential concern in the 0-2 ft bgs soil interval. The lead EPC (14mg/kg) in the 0-2 ft bgs soil interval exceeds the lead suburban residential garden RBSL of 6.9 mg/kg".

[99] PDF Pages 1,589-1,771
[100] https://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+6357
[101] https://pubchem.ncbi.nlm.nih.gov/compound/n-nitrosodimethylamine#section=GHS-Classification

Table APTF-1: Garden Use Carcinogenic Risk*		
Analyte	Carcinogenic RBSL	Cancer Risk
Hexavalent Chromium	1.90E-03	5.30E-04
n-Nitrosodimethylamine	9.50E-07	1.10E-02
Benzo(a)anthracene	8.10E-04	1.10E-05
Benzo(a)pyrene	8.10E-05	1.00E-04
Benzo(b)fluoranthene	8.10E-04	1.40E-05
Benzo(k)fluoranthene	8.10E-04	1.10E-05
Dibenzo(a,h)anthracene	2.40E-04	1.80E-05
Heptachlor epoxide	1.70E-04	1.40E-04
2,3,7,8-TCDD TEQ	7.50E-09	2.30E-03
Aroclor 1260	4.90E-04	1.00E-03
Total Risk		**2.00E-02**
PCB TEQ[a]	7.50E-09	1.00E-01

* Data taken from Table E1-4 of Appendix E1 of APTF RFI Report
TEQ= Toxic Equivalet Quotient
PCB TEQ= Polychlorinated Biphenyl
"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, would be 1.2E-01
USEPA Risk Range is 1E-06 to 1E-04
DTSC Point of Departure is 1E-06
RBSL=Risk Based Screening Level
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table APTF-2: Garden Use Noncarcinogenic Risk*		
Analyte	NonCarcinogenic RBSL	Hazard Quotient
Antimony	1.40E-01	2.6
Cadmium	1.60E-03	1100
Copper	1.10E+01	37
Mercury	5.00E-02	14
Zinc	5.40E+01	3
Formaldehyde	3.70E+00	1.1
n-Nitrosodimethylamine	4.50E-05	240
Heptachlor epoxide	4.50E-03	5.1
MCPP	2.50E-01	9.6
2,3,7,8-TCDD TEQ	2.50E-07	69
Aroclor 1254	7.20E-03	130
Aroclor 1260	7.20E-03	70
Hazard Index		**2,000**
PCB TEQ	2.50E-07	3,000

* Data taken from Table E1-4 of Appendix E1 of APTF RFI Report
PCB=Polychlorinated Biphenyl
TEQ=Toxic Equivalent Quotient
"a" PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would be 3,000
USEPA and DTSC threshold HI value is 1
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Indoor Air Pathway

For the indoor air pathway, the total site ELCR is **9E-05**, which is above the DTSC point of departure of 1E-06. The risk driver associated with the site ELCR is trichloroethene (TCE) (99%; 9.2E-05). The total site HI for this scenario is **30**, which is above the USEPA and DTSC threshold HI value of 1. The risk driver for the site HI is TCE (99%; HQ=26).

Groundwater Use

For groundwater use at Chatsworth Formation well HAR-16, the ELCR is **2E-02**, which is above the USEPA target risk range of 1E-06 to 1E-04 and exceeds DTSC's point of departure of 1E-06. The primary risk drivers are listed in Table APTF-3. The HI is **2,000** for this scenario, which exceeds the USEPA and DTSC threshold value of 1. Primary contributors are listed in Table APTF-4.

The risk estimates for radionuclides of potential concern identified for Chatsworth Formation groundwater (at HAR-16) were calculated separately from the chemicals of potential concern. The risk calculated for these radionuclides in groundwater is **6E-04**, which is above USEPA's target risk range, and exceeds DTSC's point of departure of 1E-06. The only groundwater radionuclide of potential concern in HAR-16 was radium-226 (6.4E-04; 100%).

Table APTF-3: Groundwater Use Carcinogenic Risk*

Analyte	Carcinogenic RBC	Cancer Risk
1,2,3-Trichloropropane	1.80E-04	4.60E-05
Tetrachloroethene	7.10E-02	6.20E-05
Trichloroethene	4.20E-01	1.30E-02
n-Nitrosodimethylamine	1.50E-03	6.50E-03
Total Risk		**2.00E-02**

*Data taken from Table E1-12 of Appendix E1
USEPA Target Risk Range 1E-06 to 1E-04
DTSC Point of Departure 1E-06
RBSL=Risk Based Concentration
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table APTF-4: Groundwater Use NonCarcinogenic Risk*

Analyte	NonCarcinogenic RBC	Hazard Quotient
Perchlorate	1.40E-01	26
1,1,2-Trichloroethane	4.20E-01	1
cis-1,2-Dichlorothene	1.00E+01	8
Trichloroethene	2.80E+00	1900
n-Nitrosodimethylamine	1.60E-01	62
Hazard Index		**2,000**

*Data taken from Table E1-12 of Appendix E1
RBSL=Risk Based Concentration
USEPA and DTSC threshold HI value is 1
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Appendix E2: Ecological Risk Assessment[102]

For avian species, we've calculated an HI of **1,010**, which is far above the USEPA and DTSC threshold HI value of 1. The primary contributor is copper, which if exposed by oral consumption (such as water with high copper levels) can cause liver damage, hemolytic crisis, and ultimately death.[103] Other contributors are listed in Table APTF-5.

[102] PDF Pages 1,773-1,980
[103] https://www.ncbi.nlm.nih.gov/books/NBK225400/#ddd00077

For mammals, we've calculated an HI of **1,984**, which is far above USEPA and DTSC threshold HI value of 1. The primary contributor is the PCB TEQ Mammal, other contributors are listed in Table APTF-6.

Table APTF-5: Risk Estimates for Birds (Hermit Thrush)-Exposure in Soil*					
Analyte	RME EPC	Low TRV	High TRV	HQ-Low	HQ-High
Cadmium	1.80E+00	2.00E-01	3.00E+00	9.0	0.6
Copper	4.10E+02	1.10E+00	2.40E+01	370.0	17.0
Cyanides	2.10E-01	1.80E-01	1.80E+00	1.1	0.1
Fluoride	4.00E+01	3.50E+01	1.40E+02	1.2	0.3
Lead	1.40E+01	6.20E-02	3.90E+01	220.0	0.4
Zinc	1.60E+02	3.20E+01	3.20E+02	5.0	0.5
2,4,6-Trinitrotoluene	4.00E-01	2.30E-01	5.80E+00	1.7	0.1
2-Amino-4,6-dinitrotoluene	4.00E-01	6.00E-03	7.80E-01	67.0	0.5
bis(2-Ethylhexyl) phthalate	3.80E-01	3.20E-01	-	1.2	-
2,3,7,8-TCDD TEQ Bird	1.10E-05	5.70E-06	5.70E-05	1.9	0.2
Aroclor 1254	9.60E-01	8.30E-02	8.30E-01	12.0	1.2
Aroclor 1260	5.10E-01	5.30E-02	5.30E-01	9.6	1.0
PCB TEQ Bird (coplanar PCBs)	1.80E-03	5.70E-06	5.70E-05	310.0	31.0
Hazard Index				**1010**	

*Data taken from Table E2-5 from Appendix E2
RME-Reasonable Maximum Exposure
USEPA and DTSC threshold HI value is 1
TRV=Toxicity reference value.
Note, no actual Hazard Index was provided, we had to calculate our own.
The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

Table APTF-6: Risk Estimates for mammals (Deer Mice)-Exposure in Soil*					
Analyte	RME EPC	Low Eco TRV	High TRV	HQ-Low	HQ-High
Antimony	3.60E-01	4.20E-02	2.00E+00	8.6	0.2
Cadmium	1.80E+00	1.90E-02	8.10E-01	95.0	2.2
Copper	4.10E+02	1.50E+00	3.50E+02	270.0	1.2
Lead	1.40E+01	3.80E+00	9.10E+02	3.7	0.0
Molybdenum	6.30E-01	1.30E-01	1.30E+00	4.8	0.5
Selenium	3.80E-01	1.00E-01	2.40E+00	3.8	0.2
Zinc	1.60E+02	1.90E+01	8.20E+02	8.5	0.2
2,4,6-Trinitrotoluene	4.00E-01	1.30E-01	6.50E-01	3.1	0.6
2-Amino-4,6-dinitrotoluene	4.00E-01	6.10E-02	4.60E-01	6.6	0.9
2,3,7,8-TCDD TEQ Mammal	1.70E-05	5.00E-07	5.00E-06	35.0	3.5
Aroclor 1254	9.60E-01	3.90E-02	3.90E-01	25.0	2.5
Aroclor 1260	5.10E-01	2.50E-02	2.50E-01	20.0	2.0
PCB TEQ Mammal (coplanar PCBs)	7.50E-04	5.00E-07	5.00E-06	1500.0	150.0
Hazard Index				**1984**	

*Data taken from Table E2-6 from Appendix E2
RME-Reasonable Maximum Exposure
USEPA and DTSC threshold HI value is 1
TRV=Toxicity reference value.
Note, no actual Hazard Index was provided, we had to calculate our own.
The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

Appendix E3: Residual Risk[104]

We found that two chemicals in these residual risk assessments were "taken out". By that we mean the Exposure Point Concentration values have been set to "0", which prevents the ability to calculate the cancer risk or HI. These chemicals are: Heptachlor Epoxide, and MCPP. We've also seen this with Monomethylhydrazine (MMH) in the Systems Test Lab-IV residual risk values where MMH's (the primary contributor to the human health risk) EPC was also set to "0" in the residual risk assessment tables. We've also seen this happen with the Happy Valley North residual risk values.

[104] PDF Pages 1,982-2,005

Direct Soil Contact

For this scenario, the site residual ELCR is **2E-06**, which is above DTSC's point of departure.

Garden Use

For this pathway, the site residual ELCR is **1E-02,** which is still above USEPA's target risk range and DTSC's point of departure. The primary risk drivers are listed in Table APTF-7. To leave this high risk amount of contamination behind even after a said "cleanup" is unacceptable. For this pathway, Boeing estimates that the residual HI will be **700**, which is still far above USEPA and DTSC's threshold HI value of 1. Primary risk drivers are listed in Table APTF-8.

Table APTF-7: Garden Use Residual Carcinogenic Risk*		
Analyte	Carcinogenic RBSL	Cancer Risk
Hexavalent Chroium	1.90E-03	8.60E-05
n-Nitrosodimethylamine	9.50E-07	1.10E-02
Benzo(a)anthracene	8.10E-04	1.10E-05
Benzo(a)pyrene	8.10E-05	1.10E-04
Benzo(b)fluoranthene	8.10E-04	1.50E-05
Benzo(k)fluoranthene	8.10E-04	1.10E-05
Dibenzo(a,h)anthracene	2.40E-04	1.90E-05
2,3,7,8-TCDD TEQ	7.50E-09	2.30E-04
Aroclor 1254	4.90E-04	1.50E-04
Total Risk		**2.00E-01**
PCB TEQ[a]	7.50E-09	1.50E-02

*Data taken from Table E3-2 of Appendix E3
USEPA Target Risk Range 1E-06 to 1E-04
DTSC Point of Departure 1E-06
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table APTF-8: Garden Use Residual Noncarcinogenic Risk*		
Analyte	NonCarcinogenic RBSL	Hazard Quotient
Antimony	1.40E-01	2.5
Cadmium	1.60E-03	370
Copper	1.10E+01	1.1
Mercury	5.00E-02	11
Zinc	5.40E+01	1.6
Formaldehyde	3.70E+00	1.1
n-Nitrosodimethylamine	4.50E-05	240
2,3,7,8-TCDD TEQ	2.50E-07	6.7
Aroclor 1254	7.20E-03	10
Hazard Index		**700**
PCB TEQ	2.50E-07	440

*Data taken from Table E3-2 of Appendix E3
USEPA and DTSC threshold HI value is 1
RBSL=Risk Based Concentration
PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would be 1,140
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Groundwater Use

Boeing did not provide post remediation calculations for the Chatsworth Groundwater Pathway (Well HAR-16), giving the impression that Boeing is not intending to do anything about the groundwater well either.

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and as we have shown above, the risk values are still above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA "demonstrate that acceptable risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at the Advanced Propulsion Test Facility RFI site if the CMS areas presented are included in site cleanup activities"[105]. But as we've shown above from Boeing's own documents, the risks are *not* acceptable. Therefore DTSC must ensure that a full cleanup is done at this RFI site.

[105] Appendix E3 Section 3.0 "Conclusions"

Building 1359[106]

Background

The B359 RFI Site is located in the central portion of Administrative Area I, generally east of the APTF and HVN RFI Sites. The B359 RFI Site is currently inactive and contains no structures. The B359 RFI Site consists of approximately 3.5 acres. The B359 site was used primarily as an energetics research, testing, and storage area from the early 1950s to the early 1990s and includes the former North American Kindelburger Atwood (NAKA) area (Buildings 1325, 1328, 1741, and 1997), the Neptune Test Area/Potassium Loop Facility (Building 1790), and various support buildings where energetics and propellants were stored and tested. Perchlorate was used at the B359 RFI Site for the preparation and assembly of turbine spinners and igniters during the 1950s and 1960s. At the northwest portion of the facility was the High Energy Solids Lab (Building 1359), where the primary energetic material tests were performed within four test cells positioned along the north side of the building and facing a soil berm. The Propellant Physical Property Testing Building (Building 1325), located in the southwestern portion of the B359 RFI Site, was used for perchlorate milling and mixing with other compounds for rocket propellant development. The northeastern corner of the facility included the Neptune Test Area (also referred to as the Potassium Loop Facility), where saltwater conversion experiments were conducted in the 1960s. Other structures at the B359 RFI Site included the Igniter Curing Building (Building 1328), Lower Research Auxiliary Workshop (Building 1353), Photo Elastic Lab (Building 1354), Oxidizer Preparation Building (Building 1376), Hydrogen Peroxide Storage-Gas Flow Facility (Building 1373), and numerous chemical, igniter, and ordnance storage facilities. The B359 RFI Site also included three leach fields (B359 Areas of Concern): the Northeast Leach Field (associated with Building 1301 in the Instrument and Equipment Laboratory [IEL] RFI Site to the east); the Building 1374 Leach Field (associated with Building 1374 in the APTF RFI Site to the west); and the Building 1315 Leach Field (potentially associated with Building 1315 in the HVN RFI Site to the southwest).

During 2003 and 2004, soils with elevated concentrations of perchlorate from the Happy Valley South (HVS) RFI Site were excavated and transported to the B359 RFI Site as part of the Happy Valley Interim Measures (HVIM) project. These soils were transported to the B359 site for biotreatment of perchlorate. Prior to transportation of these soils from the HVS RFI Site, soils with elevated concentrations of metals within the B359 RFI Site were excavated and disposed offsite. Biotreatment activities then took place between 2004 and 2006 (MWH, 2007).

Appendix E1: Human Health Risk Assessment[107]

[106] http://www.dtsc-ssfl.com/files/lib_rcra_soils/boeingsubarea1acntrl/DraftRFIReports/Draft_RCRA_Facility_Investigation_Data_Summary_and_Findings_Report_-_Building_1359_RFI_Site.pdf

[107] PDF pages 1,308-1,467

Direct Soil Contact

For the direct soil contact pathway, both the total site and incremental ELCR are **1E-05**, which exceed the DTSC point of departure of 1E-06. The total site HI for soil for this scenario is **3** and the total incremental HI is 2, both of which exceed the USEPA and DTSC threshold HI value of 1. The only risk driver to the total incremental soil HI is Aroclor 1254 (HQ = 1.5; 66% contribution). Aroclors can cause serious liver damage, and can also severely damage the nervous system, as well as irritate the lungs and throat, cancers and birth defects.[108]

Garden Use

For the homegrown produce consumption pathway, both the total site and incremental ELCR are **2E-03**, which are above the USEPA target risk range of 1E-06 to 1E-04 and the DTSC point of departure of 1E-06. Primary risk drivers are listed in Table B-1. The total site HI for this scenario is **500** and the incremental HI is 300, both of which exceed the USEPA and DTSC threshold HI value of 1. Main contributors are listed in Table B-2. Lead was identified as a COPC in the 0 to 2 feet bgs soil interval. The lead EPC (27 mg/kg) in the 0 to 2 feet bgs soil interval exceeds the lead suburban residential garden RBSL of 6.9 mg/kg.

Table B-1: Garden Use Carcinogenic Risk*		
Analyte	Carcinogenic RBSL	Cancer Risk
Benzo(a)anthracene	8.10E-04	1.20E-04
Benzo(a)pyrene	8.10E-04	4.40E-04
Benzo(b)fluoranthene	8.10E-04	6.90E-05
Benzo(k)fluoranthene	8.10E-04	1.70E-05
chrysene	8.10E-03	1.20E-05
Dibenzo(a,h)anthracene	2.40E-04	6.10E-05
Indeno(1,2,3-cd)pyrene	8.10E-04	2.60E-05
2,3,7,8-TCDD TEQ	7.50E-09	4.40E-04
Aroclor 1254	4.90E-04	6.50E-04
Aroclor 1260	4.90E-04	1.40E-04
Total Risk		**2.00E-03**
PCB TEQ[a]	7.50E-09	3.30E-02

* Data taken from Table E1-4 of Appendix E1 of APTF RFI Report
TEQ= Toxic Equivalet Quotient
PCB TEQ= Polychlorinated Biphenyl
"a" PCB TEQ was calculated, but not included in the total risk. If included in the total risk, would be 3.5E-02
USEPA Risk Range is 1E-06 to 1E-04
DTSC Point of Departure is 1E-06
RBSL=Risk Based Screening Level
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

[108] https://toxnet.nlm.nih.gov/cgi-bin/sis/search/a?dbs+hsdb:@term+@DOCNO+6357

Table B-2: Garden Use Noncarcinogenic Risk*		
Analyte	NonCarcinogenic RBSL	Hazard Quotient
Antimony	1.40E-01	2.9
Barium	7.20E+01	2.8
Cadmium	1.60E-03	330
Copper	1.10E+01	1.3
Mercury	5.00E-02	6.2
Silver	1.80E+00	19
Thallium	3.60E-03	87
Zinc	5.40E+01	4.4
HMX	7.30E-01	1
Perchlorate	1.60E-02	4.1
MCPP	2.50E-01	6.8
2,3,7,8-TCDD TEQ	2.50E-07	13
Aroclor 1254	7.20E-03	44
Aroclor 1260	7.20E-03	9.6
Hazard Index		**500**
PCB TEQ	2.50E-07	970

* Data taken from Table E1-4 of Appendix E1 of Building 1359 RFI Report

PCB=Polychlorinated Biphenyl

TEQ=Toxic Equivalent Quotient

"a" PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would USEPA and DTSC threshold HI value is 1

The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Groundwater Use

For the groundwater use at Chatsworth Formation well HAR-16, the ELCR is **2E-02**, which is above the USEPA target risk range of 1E-06 to 1E-06 and exceeds the DTSC point of departure of 1E-06. The primary risk drivers are listed in Table B-3. The HI is **2,000** for this scenario, which exceeds the USEPA and DTSC threshold HI value of 1. The primary contributors are listed in Table B-4.

For the radionuclides in groundwater, the ELCR is **6E-04**, which is above USEPA's target risk range and DTSC's point of departure. The only groundwater chemical of concern in HAR-16 was radium-226 (100%; 6.4E-04).

Table B-3: Groundwater Use Carcinogenic Risk*		
Analyte	Carcinogenic RBC	Cancer Risk
1,2,3-Trichloropropane	1.80E-04	4.60E-05
Tetrachloroethene	7.10E-02	6.20E-05
Trichloroethene	4.20E-01	1.30E-02
n-Nitrosodimethylamine	1.50E-03	6.50E-03
Total Risk		**2.00E-02**
*Data taken from Table E1-12 of Appendix E1		

USEPA Target Risk Range 1E-06 to 1E-04
DTSC Point of Departure 1E-06
RBSL=Risk Based Concentration
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table B-4: Groundwater Use NonCarcinogenic Risk*		
Analyte	NonCarcinogenic RBC	Hazard Quotient
Perchlorate	1.40E-01	2.60E+01
1,1,2-Trichloroethane	4.20E-01	1.20E+00
cis-1,2-Dichlorothene	1.00E+01	8.10E+00
Trichloroethene	2.80E+00	1.90E+03
n-Nitrosodimethylamine	1.60E-01	6.20E+01
Hazard Index		**2,000**
*Data taken from Table E1-12 of Appendix E1		

RBSL=Risk Based Concentration
USEPA and DTSC threshold HI value is 1
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Appendix E2: Ecological Risk Assessment[109]

For avian species, we calculated an HI of **677**, with lead being the main contributor. Lead poisoning in birds can cause lethargy, progressive weakness causing the inability to fly, and usually accumulates in the liver, kidneys, and blood.. Other contributors are listed in Table B-5. For mammals, we calculated and HI of **597**.

[109] PDF Pages 1,470-1,639

Table B-5: Risk Estimates for Birds (Hermit Thrush)-Exposure in Soil*					
Analyte	RME EPC	Low TRV	High TRV	HQ-Low	HQ-High
Antimony	2.00E+02	4.40E+01	8.90E+01	4.6	2.3
Cadmium	5.40E-01	2.00E-01	3.00E+00	2.7	0.2
Copper	1.40E+01	1.10E+00	2.40E+01	13.0	0.6
Lead	2.70E+01	6.20E-02	3.90E+01	440.0	0.7
Silver	3.40E+01	9.90E-01	2.90E+01	35.0	1.2
Zinc	2.40E+02	3.20E+01	3.20E+02	7.4	0.7
2,4,6-Trinitrotoluene	4.00E-01	2.30E-01	5.80E+00	1.7	0.1
2-Amino-4,6-dinitrotoluene	4.00E-01	6.00E-03	7.80E-01	67.0	0.5
Aroclor 1254	3.20E-01	8.30E-02	8.30E-01	3.8	0.4
Aroclor 1260	6.90E-02	5.30E-02	5.30E-01	1.3	0.1
PCB TEQ Bird (coplanar PCBs)	5.80E-04	5.70E-06	5.70E-05	100.0	10.0
Hazard Index				**677**	

*Data taken from Table E2-5 from Appendix E2
RME-Reasonable Maximum Exposure
USEPA and DTSC threshold HI value is 1
TRV=Toxicity reference value.
Note, no actual Hazard Index was provided, we had to calculate our own.
The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

Table B-6: Risk Estimates for mammals (Deer Mice)-Exposure in Soil*					
Analyte	RME EPC	Low Eco TRV	High TRV	HQ-Low	HQ-High
Antimony	4.10E-01	4.20E-02	2.00E+00	9.7	0.2
Barium	2.00E+02	1.20E+02	2.00E+02	1.7	1.0
Cadmium	5.40E-01	1.90E-02	8.10E-01	28.0	0.7
Copper	1.40E+01	1.50E+00	3.50E+02	9.2	0.0
Lead	2.70E+01	3.80E+00	9.10E+02	7.1	0.0
Selenium	2.30E-01	1.00E-01	2.40E+00	2.3	0.1
Silver	3.40E+01	3.50E+00	6.90E+01	9.8	0.5
Zinc	2.40E+02	1.90E+01	8.20E+02	12.0	0.3
2,4,6-Trinitrotoluene	4.00E-01	1.30E-01	6.50E-01	3.1	0.6
2-Amino-4,6-dinitrotoluene	4.00E-01	6.10E-02	4.60E-01	6.6	0.9
2,3,7,8-TCDD TEQ Mammal	3.30E-06	5.00E-07	5.00E-06	6.6	0.7
Aroclor 1254	3.20E-01	3.90E-02	3.90E-01	8.1	0.8
Aroclor 1260	6.90E-02	2.50E-02	2.50E-01	2.8	0.3
PCB TEQ Mammal (Coplanar PCBs)	2.50E-04	5.00E-07	5.00E-06	490.0	49.0
Hazard Index				**597**	

*Data taken from Table E2-6 from Appendix E2
RME-Reasonable Maximum Exposure
USEPA and DTSC threshold HI value is 1
TRV=Toxicity reference value.
Note, no actual Hazard Index was provided, we had to calculate our own.
The Hazard Index provided in this table only includes HI values above 1, other contrinutors were not included.

Appendix E3: Residual Risk[110]

Garden Use

For this pathway, Boeing's residual risk estimates an ELCR of **7E-04**, which is above DTSC's point of departure. Primary risk drivers are listed in Table B-7. A key point we want to make here is that the PCB-TEQ (is calculated separately because Boeing claims there are "uncertainties" in the numbers, therefore Boeing did not include the PCB-TEQ ELCR and HI's in the total risk and HI) shows a higher risk than the total site. For this scenario, the residual ELCR is **1.1E-02**, which is higher than the total residual ELCR that Boeing has calculated.

[110] PDF Pages 1,642-1,665

For this pathway, Boeing's residual HI is **400**, which is still far above USEPA and DTSC's threshold HI value of 1. Primary contributors are listed in Table B-8.

Table B-7: Garden Use Residual Carcinogenic Risk*		
Analyte	Carcinogenic RBSL	Cancer Risk
Benzo(a)anthrcene	8.10E-04	1.40E-05
Benzo(a)pyrene	8.10E-05	1.50E-04
Benzo(b)fluoranthene	8.10E-04	1.60E-05
Benzo(k)fluoranthene	8.10E-04	1.40E-05
Dibenzo(a,h)anthracene	2.40E-04	1.50E-04
Indeno(1,2,3-cd)pyrene	No RBSL listed	2.50E-05
2,3,7,8-TCDD TEQ	7.50E-09	1.70E-04
Aroclor 1254	4.90E-04	1.60E-04
Arocor 1260	4.90E-04	3.40E-05
Total Risk		**7.00E-04**
PCB TEQ[a]	7.50E-09	1.10E-02

*Data taken from Table E3-2 of Appendix E3 of Building 1359 RFI Report
USEPA Target Risk Range 1E-06 to 1E-04
DTSC Point of Departure 1E-06
The "Total Risk" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Table B-8: Garden Use Residual Noncarcinogenic Risk*		
Analyte	NonCarcinogenic RBSL	Hazard Quotient
Antimony	1.40E-01	2.7
Barium	7.20E+01	1.1
Cadmium	1.60E-03	260
Mercury	5.00E-02	4.5
Thallium	3.60E-03	85
Zinc	5.40E+01	1.1
HMX	7.30E-01	1
Perchlorate	1.60E-02	4.4
MCPP	2.50E-01	6.8
2,3,7,8-TCDD TEQ	2.50E-07	5
Aroclor 1254	7.20E-03	11
Aroclor 1260	7.20E-03	2.3
Hazard Index		**400**
PCB TEQ	2.50E-07	330

*Data taken from Table E3-2 of Appendix E3 of Building 1359 RFI Report
USEPA and DTSC threshold HI value is 1
RBSL=Risk Based Concentration
PCB TEQ was calculated, but not included in the total risk. If included in the total HI, would be 730
The "Hazard Index" value in this table includes other chemicals that were not listed in this table. This value was provided By Boeing in the HHRA.

Chapter Conclusion

Appendix E3 provides residual risk numbers for what the site would be after the "cleanup", and as shown above, the risk values are still above the allowable USEPA and DTSC levels. Furthermore, this Boeing document attempts to argue that the HHRA and ERA "demonstrate that acceptable risks and hazards from potential exposure to soil and soil vapor by hypothetical suburban residents and ecological receptors are expected at Building 1359 RFI site if the CMS areas presented are included in site cleanup activities"[111]. However, Boeing's own tables demonstrate that the risks are not acceptable, and DTSC must therefore ensure that a full cleanup is done at this RFI site.

[111] Appendix E3 Section 3.0 "Conclusions"

Unaffiliated Areas[112]

As explained in this report, a total of 14 samples were collected from 8 locations throughout the Subarea 1A Central Unaffiliated Areas (UA). These samples were analyzed for Volatile Organic Compounds (VOCs), dioxins and furans, total petroleum hydrocarbons (TPH), semi-volatile organic compounds (SVOCs), metals, polychlorinated biphenyls (PCBs), and formaldehyde. Utilizing only 8 locations for sampling is not enough to determine how contaminated an area is. The areas could not be topographically arranged so that less chemicals flow there from the surrounding areas. It is not mentioned if these areas were chosen completely at random or chosen intentionally to give results with the least concentrations of chemicals. Boeing states:

> "No SSFL historical operations were conducted in the Subarea 1A Central Unaffiliated Areas. Consequently, groundwater flow and contaminant transport modeling was not completed for these sites. Groundwater flow and contaminant transport modeling was performed for nearby Boeing RFI sites in Subareas 1A Central, 1A North, and 1A South that might contribute to groundwater contamination underlying the Subarea 1AC Unaffiliated Areas; refer to the Boeing RFI Subarea 1A Central, Subarea 1A North, and Subarea 1A South RFI site DSFRs for details on this modeling".

Despite operations not occurring above the ground in these UAs, groundwater systems are intrinsically connected and the groundwater in this area is most certainly contaminated as we have seen in these RFI reports of high-risk levels in groundwater. Chemicals and radionuclides are above characterization levels in these subareas, therefore it is only appropriate that groundwater flow and contaminant transport modeling be done in Subarea 1A Central UAs.

This UA is considered for No Further Action (because "no chemicals were detected at concentrations that exceeded human health or ecological-based characterization levels in the Subarea 1A Central UAs; therefore, human health and ecological risk assessments were not performed for these sites". However, 2 pages later, the reader is presented with information delegitimizing this information. Boeing states "Table 4-1 summarizes the nature and extent evaluations performed for soil at Subarea 1A Central UAs. Tables 4-2 and 4-3, which are provided electronically on the CDs that accompanies this DSFR, present details on the detect and non-detect sample results, respectively, exceeding characterization levels". These two statements are conflicting. Characterization levels are in place so that any chemical or radionuclides found above this concentration are an unacceptable threat to human and ecological life. This document does not even include by how much these levels are exceeded.

[112] http://www.dtsc-ssfl.com/files/lib_rcra_soils/boeingsubarea1acntrl/DraftRFIReports/Draft_RCRA_Facility_Investigation_Data_Summary_and_Findings_Report_-_Unaffiliated_Areas_of_1A_Central.PDF

Conclusion

The Draft Program Environmental Impact Report for cleanup of contamination at the Santa Susana Field Laboratory is fundamentally flawed. It wholly fails to evaluate the most important impacts of all—the impacts on public health and the environment from the radioactive and toxic chemical contamination that would remain under all of the alternatives put forward. Because DTSC in the PEIR has abrogated its longstanding commitments to a full cleanup of all the contamination at SSFL, which barred "leave in place" alternatives, and is instead proposing to leave in place large but unspecified amounts of contamination, the impacts of doing so must be examined. But they are not. Instead, what one gets is essentially a propaganda document, a one-sided attack on the very cleanup commitments DTSC itself had long made, rather than a scientifically defensible environmental impact report.

Boeing's own risk assessments for areas within 1A Central and 5/9 South, however, provide significant information that partially addresses the question of the impacts from the contamination itself. The results are startling—immense risks to public health and extreme exceedances of contaminant levels that pose harm to biological receptors—even after the minimal cleanup proposed. Furthermore, these data make clear that excepting contaminated areas from cleanup, for biological or other reasons, as vaguely proposed without detailed disclosure in the PEIR, would actually result in unacceptable risk to those biological receptors as the levels far exceed acceptable hazardous indices, and would similarly pose great risks to public health.

The entire premise of DTSC's longstanding commitments to a full cleanup of SSFL was that irrespective of the use of the SSFL land in the future, people reside nearby and agriculture is conducted nearby, so one must clean up SSFL to all the land uses allowed by Ventura County's land use designations for SSFL and the surrounding areas. If it is cleaned up so it is safe to live on SSFL or do agriculture there, it would therefore be safe for the people who live nearby or engage in agriculture in the area. Furthermore, claiming to want to protect biological features by not cleaning up the contamination that is polluting them is illusory. The data analyzed here demonstrate that what DTSC is now proposing, breaking its long commitments, would place at risk public health as well as those very biological receptors.

There are few acceptable remedies to such a fundamental set of flaws in the PEIR. Were DTSC to attempt to purportedly address in the final PEIR the risks to public health and ecological receptors from the contamination proposed to not be cleaned up pursuant to the various alternatives (including the No Action Alternative), this essential element of the PEIR would have been shielded entirely from public review and comment, in violation of CEQA. However, to finalize the PEIR without addressing the risks to public health and ecological receptors from the contamination that would remain under the various alternatives proposed would nullify the PEIR as a valid CEQA document.

Furthermore, DTSC has so severely lost public credibility, at SSFL and statewide, and the job done on the PEIR is so flawed, so much an effort to help the Responsible

Parties get out of their cleanup obligations, that any risk assessment that might be now included would have little authority or plausibility. (Indeed, since it appears DTSC allowed the EIR contractor to actually be a contractor of one of the RPs rather than contracted to DTSC, and because DTSC allowed the RPs to write and edit much of the PEIR, that conflict of interest further eliminates any credibility were there to be at this late stage such an assessment.

If the pattern seen to date continues, and DTSC attempt to arrange (probably through one or more of the RPs) preparation of evaluation of risks to public health and ecological receptors from the contamination, one would expect DTSC to throw out its own official risk based screening levels (RBSLs) from the approved Standardized Risk Assessment Methodology (SRAM) and selectively change the inputs (e.g., alter the Mass loading Factor but not the root uptake factors and produce ingestions rates) so as to dramatically drive down risk estimates. DTSC has already attempted such manipulation of the approved SRAM RBSLs by falsely claiming in the PEIR that the suburban residential SRAM-based garden RBSLs were based on assuming 100% of one's produce comes from a backyard garden and thus attempting to reject, based on misrepresentation, its own officially approved RBSLs. Elsewhere in the PEIR the SRAM is ignored entirely and cherry-picked changed inputs, not officially approved in the SRAM, are used to try to dramatically further drive down cleanup goals. We note that there is only one officially approved SRAM, that DTSC did direct Boeing to propose revisions to the residential risk levels but Boeing refused, submitting a proposed SRAM that simply removed the residential scenario entirely. DTSC is thus stuck. The official SRAM is the official DTSC-approved risk assessment methodology, and must be used. (We note that it was approved by DTSC without formal opportunity for public input or any CEQA coverage, and is absolutely critical to the cleanup.)

There really is only one approach that would meet CEQA requirements. A fundamentally redone PEIR needs to be prepared, one that includes an honest disclosure of the amounts of contamination, of what kind and what concentrations, proposed to be left in place, and an evaluation of how those levels exceed the SRAM-based suburban residential garden RBSLs (and rural residential RBSLs, revised to fix the grossly erroneous produce ingestion rates), and Low-TRV EcoRBSLs. This needs to be performed by a contractor who is not contracted to the Responsible Parties and be prepared independently, rather than just repeat claims made by the RPs. The revised draft PEIR would then need to be recirculated for public comment.

It is deeply unfortunate that DTSC has dragged its feet for so many years that the promised 2017 date for completion of cleanup has passed without that long-sought completion; indeed, the cleanup hasn't commenced. By producing such a grossly deficient draft PEIR, DTSC has now created a situation where one either is faced with a terribly weak cleanup, in violation of past commitments and the need to protect public health and the environment, or the need to essentially start over again, this time doing it right. It is tragic that DTSC has failed so thoroughly in its obligation to protect public health and the environment, that it has demonstrated such a complete capture by the

polluting interests it is to regulate. But a great deal is stake, and the only option is for DTSC to prepare a valid PEIR and recirculate it for public review and comment.

September 6, 2017

Secretary Matthew Rodriquez
California Environmental Protection Agency
1001 I Street
P.O. Box 2815
Sacramento, CA 95812-2815

Director Barbara Lee
Department of Toxic Substances Control
1001 I Street
P.O. Box 806
Sacramento, CA 95812-0806

Re: Santa Susana Field Laboratory Cleanup Standards and the Boeing Company's "Updated Standardized Risk Assessment Methodology Work Plan"

Dear Secretary Rodriquez and Director Lee:

As elected officials whose constituents are directly and adversely impacted by contamination at the Santa Susana Field Laboratory (SSFL), we are writing with great concern about The Boeing Company's August 22nd announcement that it is abandoning its commitment to clean their portion of SSFL – at least 85% of the site – to a level that will no longer pose a danger to people's health. SSFL is contaminated with some of the most lethal toxins known, including Strontium-90, Cesium-137, trichloroethylene, dioxins, and PCBs. Boeing's attempt to reduce the level of clean up to a much weaker standard will leave some of these toxicants in place, risking people's health long into the future.

In the past, Boeing had stated that it wanted the SSFL site to remain undeveloped, and it committed to clean up the site to what it referred to as the "suburban residential" standard. Now they wish to change the cleanup standard to "recreational" rather than "residential", putting the surrounding communities at greater risk from offsite migration of contaminants. It is discouraging that, even though nothing has changed, Boeing wants to break its pledge.

Fortunately, while Boeing can make this brazen announcement, the authority to determine cleanup standards rests with the State, not Boeing. The State has repeatedly stated that the

site should be cleaned up to at least residential standards. We strongly urge CalEPA and the Department of Toxic Substances Control to follow through with that commitment and not allow Boeing's dangerous efforts to cut costs and responsibilities.

Sincerely,

SHEILA KUEHL
Los Angeles County Supervisor
Third District

LINDA PARKS
Ventura County Supervisor
Second District

KATHRYN BARGER
Los Angeles County Supervisor
Fifth District

JOHN C. ZARAGOZA
Ventura County Supervisor
Fifth District

MITCHELL ENGLANDER
Councilmember, Twelfth District
City of Los Angeles

cc: Senator Dianne Feinstein
Senator Kamala Harris
Congressmember Julia Brownley
Congressmember Steve Knight
Congressmember Brad Sherman
State Senator Henry Stern
Assemblymember Dante Acosta
Assemblymember Matthew Dababneh
Assemblymember Jacqui Irwin
Los Angeles Mayor Eric Garcetti

D19 Attachment 3/4

COUNTY OF LOS ANGELES
BOARD OF SUPERVISORS

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EXECUTIVE OFFICER

April 5, 2017

Ms. Stephanie Jennings
NEPA Document Manager, SSFL Area IV EIS
U.S. Department of Energy
4100 Guardian Street, Suite 160
Simi Valley, CA 93063

Dear Ms. Jennings:

I am writing on behalf of the Los Angeles County Board of Supervisors. The County of Los Angeles has reviewed the draft Environmental Impact Statement (EIS) for Remediation of Area IV and the Northern Buffer Zone of the Santa Susana Field Laboratory (SSFL) proposed by the U.S. Department of Energy (DOE) as lead agency under the National Environmental Policy Act. The draft EIS analyzes the potential environmental impacts of alternatives for conducting cleanup activities in Area IV of the SSFL and the adjoining Northern Buffer Zone, located in the County of Ventura, adjacent to the County of Los Angeles. The County of Los Angeles Board of Supervisors has noted that radioactive and chemical contaminants from the long-closed SSFL have affected the soil, air and water in nearby Los Angeles County communities for decades and have posed serious health risks, such as possible clusters of rare cancers in children and adults, in neighboring communities. The County of Los Angeles therefore urges a full and timely cleanup of the site.

The County of Los Angeles Board of Supervisors submits the following comments on the draft EIS during the public comment period which is currently scheduled to end on April 13, 2017:

1. Lack of Full Cleanup

   The EIS does not address the full cleanup of the site, a clear violation of the 2010 Administrative Order on Consent (AOC) between the California Department of Toxic Substances Control and DOE. There are currently four alternatives considered in the EIS: three that address partial cleanups (i.e. “leave in place alternatives”) and

one that is the null (no cleanup). The AOC does not allow for consideration of lower levels of cleanup. The EIS should be based on remediation of SSFL to the levels stipulated in the AOC, provide full analysis of Full Cleanup and full restoration back to the site's environmental native state, and not include consideration of alternatives that would violate the AOC.

2. Lack of Full Analysis of Multiple Alternative Routes and Modes of Transportation

   The EIS offers limited analysis of routes and transportation methods, and has pre-selected certain routes and methods that may have the most impact on surrounding neighborhoods. The limited analysis and pre-selection are misleading because the EIS makes it appear as though no other options are available that would further minimize impacts on residents and businesses. However, during the 2012-2014 alternatives development period, a number of other routes and transport methods were identified that could further minimize neighborhood impacts. These are not analyzed in the EIS and are dismissed as too time consuming to evaluate and/or implement (Pages 2-11 and 2-12). The lack of comprehensive analysis is a disservice to Los Angeles County neighborhoods, residents, businesses, and travelers. Alternate transportation types, methods, and routes should be analyzed in full including, but not limited to, the direct conveyance of contaminated materials from the site to rail and other options, as well as the use of fire roads and other routes to minimize truck traffic and impacts to residents and traffic.

3. Burden of Proof

   The AOC mandates full cleanup with limited exemptions allowed only if based upon a Biological Opinion rendered by the U.S. Fish and Wildlife Service (USFWS). However, even though the Biological Opinion has not yet been rendered, every one of the EIS' cleanup alternatives already exempt several hundred thousand cubic yards of soil. Further, this exemption is contrary to a 2010 USFWS Biological Opinion issued to the U.S. Environmental Protection Agency that stated there were no unavoidable or unmitigable negative biological impacts at SSFL. It is not within the DOE's discretion to make such a determination of exemption. Exemptions utilized in the EIS that violate the AOC, and those that could increase the risk of cancers, should be excluded. The DOE should provide compelling and fact-based evidence rather than assertions as to why it believes certain amounts of soil should be exempt from cleanup.

4. Additional Public Review Period Between Release of Biological Opinion and Final EIS

   The EIS should be recirculated for additional public review and comments after the USFWS Biological Opinion is submitted and all public comments from the current review period are addressed, and before the EIS is finalized.

On behalf of the Los Angeles County Board of Supervisors, your consideration of the above issues related to this critical public health and safety cleanup project is greatly appreciated. The County of Los Angeles looks forward to your response with respect to the comments on the draft EIS.

Sincerely,

Celia Zavala for

Lori Glasgow
Executive Officer

LG:ls

c: Board of Supervisors

D19 Attachment 4/4

BOARD OF SUPERVISORS
COUNTY OF LOS ANGELES

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SHEILA KUEHL
SUPERVISOR, THIRD DISTRICT

December 15, 2015

Barbara Lee
Director
California Department of Toxic Substances Control
1001 I Street
Sacramento, CA 95812

Dear Director Lee:

The Department of Toxic Substances Control has pending before it for approval a series of remarkable documents submitted by the Boeing Company regarding the contamination risks at the Santa Susana Field Laboratory (SSFL). The Boeing documents pending before DTSC are risk assessments and proposals for "no further action." They constitute Boeing's own estimates of the risks stemming from its own contamination, and request to be allowed to take no cleanup actions to redress most of those risks. As such, the documents are deeply troubling.

The documents disclose never before known extraordinarily high risks from the pollution, but, nonetheless, request that Boeing be relieved of the obligation to clean up most of it. Boeing's requests, if granted, would breach commitments DTSC made for a full cleanup and would result in the great majority of the contamination for which Boeing is responsible not being remediated. We urge you to reject Boeing's requests and reaffirm DTSC's commitment to a full cleanup.

Background

In 2010, as you know, DTSC entered into Agreements on Consent (AOCs) with the Department of Energy and NASA for the cleanup of all contamination that could be detected on their portions of SSFL. At the same time, DTSC stated that for the remaining parts of the property controlled by Boeing, DTSC's standard procedures required a comparable cleanup. DTSC said that even if there were no AOC and no SB990 (Kuehl, 2007), DTSC would rely on Ventura County zoning and General Plan designations, which allow uses, according to DTSC, that would require Boeing to employ the most protective cleanup standard at SSFL.

In July of this year, Ventura County confirmed again for DTSC that the zones permitted under its General Plan for SSFL "allow for a wide array of both residential and agricultural uses." In response, DTSC has publicly pledged to assure that the site is cleaned up to levels that would safely allow any of the uses allowed under the County's General Plan and zoning, as set forth in the County's July letter. However, Boeing's submissions propose cleaning up the site to a markedly less protective standard. We urge DTSC to reject that request and adhere to the 2010

commitments, reiterated recently in Ventura County's letter, with due regard to the transportation impacts on residents.

Indeed, what Boeing is now proposing is dramatically weaker than even what it has publicly promised, which was to clean the site to a "suburban residential" standard. Boeing earlier said that it would clean the site up so that it would be safe for people to live on site, grow a backyard garden, and drink water from wells. Even if no one lives on the site in the future, people who do live nearby (our constituents) would be protected by a "suburban residential" standard of cleanup. But the documents Boeing has submitted propose allowing concentrations of toxic materials in soil very much higher than Boeing's own figures for protecting suburban residents.

Boeing's Extraordinary Risk Estimates

Buried thousands of pages into Boeing's documents are the company's estimates of the cancer risk from the toxic pollution. They are, frankly, mind-boggling. At one portion of the site, Boeing estimates every fifth person would get cancer from the contamination were they living on the site. (This is in addition to the number who would get cancer otherwise.) At a second location, approximately every third person exposed would get cancer from the exposure. And at another location, Boeing's own estimate is that 96 out of 100 people exposed would get cancer from the contamination there. This is absolutely astonishing, but these are Boeing's own figures.

Boeing, however, then goes on to propose that it not be required to clean up the vast majority of the contaminated soil, despite the fact that Boeing, itself, estimates that the risk after such proposed minimal cleanup would remain so high that every fifth person would most likely get cancer from the remaining contamination.

Risk estimates this high are unprecedented. Site cleanups generally aim for risks of one in a million. DTSC has committed publicly to ensuring that this will be the risk factor remaining after cleanup. Boeing's estimated risk post-clean up, however, is thousands to hundreds of thousands of times higher than what DTSC promised.

These are Boeing's estimates for a suburban resident with a garden (the weaker standard than that which DTSC has said it would require, but the one Boeing has said it wants to use). We recognize that these are the estimated risks were one living on-site and no one at present does. But our constituents live nearby where they can also be exposed— albeit at lower levels— to toxic materials migrating from the site. The extraordinary magnitude of the contamination Boeing has now disclosed is greatly disturbing.

Conclusion

By proposing to declare as needing "no further action" about 98% of the SSFL soil for which it is responsible, Boeing is asking DTSC to allow it to walk away from its cleanup obligations. We urge you to reject the Boeing submissions and reaffirm DTSC's commitments to a full cleanup of the contamination in order to assure that any allowed future land uses can be conducted safely and without restriction. This is essential for protecting our constituents who live in the communities nearby.

Over the nearly seventy years since the site was established, there have been reactor accidents, open-air burning of radioactive and chemically hazardous wastes, and releases of large quantities of toxic compounds into the soil and groundwater and surface water. Boeing has now disclosed that the contamination is far worse than we had ever known before, with astonishing estimated risks. DTSC promised in 2010 to assure cleanup of all the detectible contamination by 2017, yet the cleanup hasn't even begun. We urge an end to delays and diversions and efforts to undo the cleanup commitments. It is time to get the cleanup done, carefully and completely. Thank you for considering my comments.

Sincerely,

SHEILA KUEHL
Supervisor, Third District

MITCHELL ENGLANDER
Council President Pro-Tempore
Councilmember, Twelfth District

SENATOR FRAN PAVLEY
California State Senate
27th District

KY:ea

D20

Comment on Los Angeles County Draft Trails Plan
by
The Southern California Federation of Scientists
December 15, 2017

1

The Southern California Federation of Scientists (SCFS) was organized in the early 1950s as the Los Angeles Chapter of the Federation of American Scientists, founded by former Manhattan Project Scientists concerned about the nuclear threat. SCFS is an interdisciplinary organization of scientists, engineers, technicians, and scholars dedicated to providing independent scientific and technical analyses and expertise on issues affecting science, society, and public policy.

SCFS has been involved in matters related to SSFL since 1979, when it provided technical assistance related to disclosures of the partial nuclear meltdown that occurred in 1959 at SSFL. We've also been involved in providing technical assistance to the communities near the site on matters related to cleanup of SSFL's chemical and radioactive contamination resulting from decades of poor environmental practices regarding rocket and reactor testing at the site.

SSFL is heavily contaminated from decades of reactor and rocket testing, sloppy practices, improper waste disposal, spills and releases. At least four of the nuclear reactors suffered accidents, one of which, the Sodium Reactor Experiment (SRE), suffered a partial nuclear meltdown, with one third of its fuel experiencing melting. Radiation levels went off-scale. none of the reactors had a containment structure to prevent any radiation release. In the case of the SRE partial meltdown, radioactivity was intentionally pumped out of the reactor vessel and vented into the environment for weeks.

Other operational areas of the site were no more environmentally prudent. Tens of thousands of rocket tests resulted in widespread chemical contamination involving volatile organic compounds (VOCs) such as TCE, as well as Semi-volatiles, perchlorate, heavy metals, PCBs, and dioxins and furans. Contamination of soil and groundwater, surface water, and other environmental media resulted from the environmentally damaging practices.

The contamination also did not remain solely on site; some of it has migrated into offsite areas and neighborhoods, which poses serious risks to public health and the environment. A study by the UCLA School of Public Health found elevated cancer death rates among the nuclear workers and the rocket workers from exposures to these toxic materials. Another study by UCLA found that the rocket testing had led to offsite exposures to hazardous chemicals by the neighboring communities at levels exceeding EPA standards. Lastly, a federal study for the Agency for Toxic Substances and Disease Registry found elevated cancer rates in the offsite population associated with proximity to SSFL.

In 2010, cleanup agreements were entered into that required cleanup of SSFL to background—to return it to the condition it was in before being polluted. SCFS has

strongly supported those agreements, as has the County. Unfortunately, the promised cleanup has yet to occur.

We are therefore concerned about the proposal for hiking trails in potentially contaminated areas up against SSFL. We are puzzled why the environmental documentation for the proposal contains not a word, let alone any serious analysis, of the contamination and the potential for exposures, and for worsening the situation by disturbing polluted areas. Performing the review as an Initial Study and Negative Declaration would appear to violate CEQA, as an EIR is required if there is the potential for any significant environmental impact, as there clearly is here. And, as indicated above, it seems hard to defend that an environmental review would fail to review the radioactive and toxic chemical pollution issues. In the very brief few sentences on hazardous materials, there is not a mention of the SSFL contamination.

1 (cont.)

There is a substantial effort underway to breach the cleanup agreements that the County and we have long supported and to instead leave most of the contamination at SSFL not cleaned up. Nothing in this document by the parks department should suggest County support for open space designation of SSFL prior to the promised full cleanup to background being completed. That would be used by the Responsible Parties to argue to be relieved of their cleanup obligations and to instead clean up only to the extraordinarily weak open space standards, which would leave almost all of the contamination not cleaned up. This would undercut longstanding County support for the promised full cleanup. And frankly, there should be no consideration of any trails in the areas near SSFL until the full cleanup as promised has been completed.

2

To not heed our warning, could result in exposure of highly toxic radionuclides and chemicals that have migrated offsite and into the soil in the areas around SSFL, as well as surface water, and can continue to migrate if the source is not fully cleaned up. To ensure the safety of public health, we again reiterate that any consideration of the trails near and leading to SSFL be put on hold until the cleanup has occurred.

CC:
Los Angles County Supervisor Kathy Barger
Los Angeles County Supervisor Sheila Kuehl
Los Angeles Councilmember Mitch Englander
California Senator Henry Stern
California Senator Robert Hertzberg

D21

VIA EMAIL

December 16, 2017

County of Los Angeles Department of Parks and Recreation
Planning Division
Attn: Julie Yom, Park Planner
510 South Vermont Avenue, Los Angeles, California 90020
Email: jyom@parks.lacounty.gov

Re: Michael Collins Comments on Santa Susana Mountains Trails Master Plan - Phase II Project

Dear Julie and Planning Division Staff;

Thank you for the opportunity to comment on the Santa Susana Mountains Trails Master Plan - Phase II Project (SSMTMP-PII).

As a Los Angeles County resident living in Santa Monica, it is important to me that you are successful in this endeavor without endangering public safety and "Develop a plan consistent with relevant County plans and policies" as stated in your Nov. 9, 2017 public meeting presentation.[i] 1

The SSMTMP-PII is also important to me as an environmental investigative journalist who has, covered issues related to the Santa Susana Field Laboratory (SSFL) and its surroundings since 1998. This work has appeared in newspapers and magazines as well as existing in its entirety on www.EnviroReporter.com of which I am publisher and lead reporter. 2

My comments concern Phase II.b and the proposed John Luker Trail which is located primarily in Dayton Canyon west of the San Fernando Valley in the foothills of the Santa Monica Mountains.

These comments are backed up with source material, much of it my own which has been fact-checked and published over the years in such publications as *Los Angeles* magazine, *LA Weekly*, *Ventura County Reporter*, *Los Angeles CityBeat & ValleyBeat* and other publication. All of my material from this 19 years of reporting now resides on *EnviroReporter.com* as we approach our third decade of SSFL-related journalism.

I do not have endnotes for your documents of the SSMTMP-PII as you already possess that material and are assumed to be familiar with it.

COMMENTS SUMMARY

1. Plans to open existing Dayton Canyon-area (DC) "social trails" and the proposed trail that, in draft form, is called the "John Luker Trail" (JLT), should not be opened until completion of a full cleanup of SSFL. 3

2. All DC, Bell Canyon and Woolsey Canyon trail heads and staging areas should have warning signs to alert trail users of the potential dangers of chemicals in the soil, dust and water, much like the real estate warning given to nearby residents of the dangers of SSFL when property is purchased in the area. 4

3. The proposed "John Luker Trail" has been tentatively named for a controversial public figure without input from the public, the majority of which would object to this person being so honored after his long record of public slander, libel, racism and homophobia, all of which are document herein, as it does not conform to the standards of decency that the County of Los Angeles (County) represents. The JLT needs to be renamed or not named at all. 5

COMMENT 1

Much of Phase II.b and Dayton Canyon (Project Area) border and/or are downhill from the Area I of SSFL which is grossly polluted. Much of this contamination has migrated down through the Project Area via effluent runoff in Dayton Canyon Creek and through dust and dirt migration to lower elevations. 3

The SSMTMP-PII acknowledges this: "Immediately to the west of Phase II.b, the newly announced conservation area on the Santa Susana Field Laboratory implies future opportunities to connect with that open space following a major clean-up." [My emphasis]

No major cleanup has yet occurred though SSFL-owner Boeing has torn down some buildings as noted following. No "major clean-up" will begin for at least two years in 2019, that is if there is any major cleanup at all as the lead state agency overseeing SSFL remediation is sabotaging its own cleanup as I reported recently in Toxics agency buries Santa Susana Field Laboratory cleanup - *Fuzzy environmental impact report proposes leaving lab contamination in place as Boeing produces new greenwashing website against cleanup*.[ii]

Impediments to a full cleanup of SSFL, exposed in this article, make trail blazing in Dayton Canyon up to the SSFL property line premature and potentially hazardous to the trail blazers and subsequent users of the trail. Los Angeles

The SSMTMP-PII envisions constructing new trails to complete a 4.5-mile-long JLT: "This mostly new natural surface trail on private land would be an important connector that, with the completion of the proposed Rim of the Valley Trail, would connect the John Luker Trail from Dayton Canyon Road to Sage Ranch via the Rim of the Valley Trail, creating a major regional connection and alternate route for the Rim of the Valley Trail itself."

County planners should be aware that the Rim of the Valley Trail endeavor has recently *removed* SSFL from its project area planning because of the contamination issues. Rep. Adam Schiff (D-Burbank) "removed the Santa Susana Field Laboratory, a contaminated site located 7 miles northwest of Canoga Park where radiation leaked in the 1950s. The lab closed in 2006. Inclusion may have sparked a debate as to whether the National Park Service would be responsible for paying for cleanup." [iii]

3 (cont.)

The Los Angeles County Board of Supervisors wrote to the U.S. Department of Energy (DOE), one of the parties responsible for SSFL contamination, on April 5, 2017 expressing the County's concern that SSFL be fully cleaned up before it is released.[iv]

"The County of Los Angeles Board of Supervisors has noted that radioactive and chemical contaminants from the long- closed SSFL have affected the soil, air and water in nearby Los Angeles County communities for decades and have posed serious health risks, such as possible clusters of rare cancers in children and adults, in neighboring communities," the letter said. "The County of Los Angeles therefore urges a full and timely cleanup of the site."

That cleanup of SSFL, in this commenter's opinion, should happen before trails are opened and/or created in the Phase II.b project area because they are all in the impact zone of the lab. Vast amounts of contamination have impacted the Dayton Canyon, some of which came from controversial Boeing demolition activities captured on video in 2009 as I reported in 2012 in Dirty Deeds[v]:

One video shows heavy machinery in Area I of the lab roaring around destroying and grading the last of what once was the Instrument and Equipment Laboratories or IEL complex. Huge clouds of dust are launched into the air landing on any SSFL subcontractors and full-time lab workers that may have been in the area as well as drifting towards the San Fernando Valley. Most of the contaminated dust falls out on hills that drain down Happy Valley above Chatsworth into Dayton Canyon Creek and finally the Los Angeles River.

The IEL and the land around it are contaminated from decades of use of the toxins trichloroethylene, perchlorate, trichloroethane, hydrazine, perchloroethylene, hexavalent chromium, and heavy metals. [My comment emphasis]

Another 2012 *EnviroReporter.com* article, Up a River Without a Cleanup[vi], detailed polluted effluent flowing though the Phase II.b project area:

Around 118 million gallons of Rocketdyne runoff pour into the Los Angeles River every year through Bell and Dayton canyons in Canoga Park. The gushing goo prompted a $471,000 fine from the Los Angeles Regional Water Quality Control Board in 2007 for 79 pollution violations of it slushing into the river. [My comment emphasis]

A 2006 article I wrote called The Fallout[vii] reported on a UCLA study that found the potential for cancer-inducing offsite exposures in Dayton Canyon:

Cohen's report notes that "there is potential for offsite chronic exposures within 1-2 miles of SSFL which includes, but is not limited to TCE emissions from SSFL-activities via inhalation in West Hills, Bell Canyon, Dayton Canyon, and Simi Valley," as well as "hydrazine (and oxidation product NDMA) via inhalation of emissions from SSFL in Bell Canyon and West Hills." [My comment emphasis]

In 2005, the *Los Angeles Daily News* reported on a huge amount of the toxic rocket fuel oxidizer perchlorate being discovered in Dayton Canyon by a developer's consultant:

A Centex consultant detected the rocket-fuel ingredient at levels as high as 62,000 parts per million in the sediment along Dayton Canyon Creek, about 1 1/2 miles from the lab.

3 (cont.)

That is 850 times more potent than perchlorate samples taken at Rocketdyne's laboratory, where rocket fuel was spilled onto the soil, and it is nearly 8,000 times the level allowed for residential neighborhoods.[viii] [My comment emphasis]

COMMENT 1 CONCLUSION

It would not be prudent or fiscally wise to open or build trails in the effluent zone of SSFL contamination on the east side of the lab until the site is completely cleaned up. A specific provision should be inserted in the SSMTMP-PII that the Phase II.b project area trails will not be opened and/or developed until the lab is fully cleaned up as demanded by the Los Angeles Board of Supervisors.

COMMENT 2

4

The SSMTMP-PII Public Meeting Flyer for November 16, 2017 states that "Authorized trails help pass the liability risks and hazards of trail use from the property owner to the trail user."

The trail user, however, should be warned of the possible hazards of use of the Phase II.b project area trails if the trail user is going to be completely liable. Indeed, real estate transactions around SSFL warn potential buyers of the hazards of buying near the lab according to this Southland Regional Association of Realtors, Inc ADDENDUM TO RESIDENTIAL PURCHASE AGREEMENT[ix]:

3. Boeing Rocketdyne Santa Susana Facility: Buyer is aware that there is a former Rocketdyne testing facility located in the Santa Susana Mountains between Chatsworth and Simi Valley. The U.S. Department of Energy has indicated that there are some radioactive materials and industrial solvents on this site, which are in the process of clean-up. Lawsuits have been filed alleging that the Rocketdyne facility has caused environmental contamination beyond the site. Two recent studies by UCLA and the University of Michigan have indicated that residents living within two miles of this facility may have been exposed to toxic chemicals and have slightly higher cancer rates than people in communities farther from the lab. However, authors of both reports have warned the results of these studies do not conclusively show that contamination from this facility caused cancer or other illnesses in the surrounding community. The Seller and Real Estate Brokers are unable to give any definitive answers regarding potential health hazards that may result from the proximity of the property to this former testing facility. Buyer is advised to conduct an independent investigation of this matter. It is strongly recommended that Buyer have a soil test conducted of the Subject Property to determine any potential contamination. [My comment emphasis]

Every person who buys a home near SSFL is warned of the potential dangers. It has not been found to have had any measured negative effect on property values or the area's reputation. The same holds true for warning signs for Phase II.b project area trails because otherwise the trail

user will have no idea that so much highly toxic contamination has impacted the area immediately uphill.

4 (cont.)

COMMENT 2 CONCLUSION

Once the provisions of Comment 1 are met SSFL totally cleaned up in accordance with the wishes expressed in the Los Angeles Board of Supervisors' letter of April 5, 2017, then trail openings and building will only then commence. Each one of the 4 (four) Phase II.b project area trailheads and 5 (five) staging facilities should have warning signs. These signs should match other signs there and advise trail users that they are libel for anything that transpires on the land. The signs should also explicitly state that the trails are next to and/or connect to SSFL leaked chemical contamination, including trichloroethylene and perchlorate, off the lab.

COMMENT 3

5

A significant number of people in Los Angeles that I am aware of who care about SSFL and SSFL-related issues that didn't know about the SSMTMP-PII were outraged when they found out that there was a 4.5-mile-long set of trails to be named the "John Luker Trail" (or JLT). You may receive comments from them at the last minute as are mine. I only found out about the SSMTMP-PII and the Phase II.b project area three days ago.

How this JLT idea came to fruition without awareness of Luker's history is mystifying as any *john luker ssfl* Google search[x] would show. There on the first page of the search is a Sep 1, 2016 *EnviroReporter.com* article called Dept. of Energy secretly funding front group to sabotage its own Santa Susana Field Lab cleanup[xi] and a December 12, 2012 piece entitled Operation Astoturf[xii].

The 2016 article exposed Luker being part of a secret $34,100 grant from DOE to apparently help Luker and anti-cleanup opponents fighting against full remediation which would save DOE, Boeing and NASA hundreds of millions of dollars. From the article regarding a talk Luker gave opposing the SSFL cleanup:

DOE's grantee went on for an interminable and oft-time surreal 70 minutes, barking at anyone who dared interrupt him. It went from weird to worse, now courtesy of the American taxpayer via the DOE. "In any case, I talked to Kamara [Sams, Boeing representative] earlier yesterday and they're going to publish a map that shows where contamination is in the Southern Buffer Zone and what levels so people can see what they're walking through," Luker said without a trace of irony. [My comment emphasis]

As bizarre as that sounded, the article documented shed even more light on this person who has alienated so many people in the community in and around the SSMTMP-PII area:

Luker's say-anything-mean-nothing Trumpian hucksterism is bewildering even to the seasoned CAG observer.

5 (cont.)

Oft times appearing disturbed to this reporter who listened to the August 17 CAG meeting via a cell phone set on a chair by Bonnie Klea, Luker would periodically shout at the phone assuming that this reporter was on it, calling me "Mikey" at one point amidst rants detailing his lobbying efforts which have included State Senator Fran Pavley (D-District 27).

"Did you get enough?" Luker bellowed into the cell phone. "Yeah, DID YOU GET ENOUGH? What do you think, Bonnie? Michael you got enough to trash me again?"

True to form, though, the truth inevitably tumbles from one of DOE's new grant recipients including Luker himself. By the end of the meeting, he became more introspective speaking to no one in particular.

"I find myself falling into these fallacies and it's really easy to," Luker said quietly. "It's really easy to attack [this reporter] instead of the data and that's one of the big problems I have with this stuff.

Now the one of the big problems many in the SSFL community have, myself included, is the County actually naming a trail after Luker. The 2012 Operation Astroturf article detailed Luker's public metamorphosis from cleanup advocate to a greenwashing astroturfers hell-bent on destroying the cleanup.

How could this information have escaped SSMTMP-PII and the Phase II.b project area planners? As shown, a simple Google search would have revealed this just one search results page in. A deeper search would have brought county planners to my 2016 article Critics question safety of Boeing's Santa Susana Field Lab hikes[xiii] which read, in part:

Odd that Luker would question our veracity and then not confirm the exact hiking route. Luker says on his Facebook page that he has personally led 1,000 people through SSFL and the SBZ. Surely he and Sams know the way the hikers are taking – and they should know the numbers on the high radiation, volatile organic compounds, heavy metals, PCBs and dioxins in the Southern Buffer Zone that EnviroReporter.com has found. Because it's Boeing's *own data.* [My comment emphasis]

The preceding shows that Luker has had no compunction leading the unwary through contaminated lands he deems safe, which is a strong argument against naming a trail after him. The following passage, from the same article, shows Luker vocalizing a racist stereotype:

"[I]f you get three Indians in a room you're going to have a fight," Luker said at a January 21, 2013 meeting about the proposed Rim of the Valley National Park with Gary Polakovic and Bill Bowling in the audience. "Pretty much I've seen that to be true." [My comment emphasis]

Pomposity and fabrication are not good characteristics one would envision the County of Los Angeles honoring. Wrapping up his talk where he insulted Native Americans, he claimed that he would actually clean SSFL to the highest level *himself*:

"I will clean to background."

5 (cont.)

There was a time when Luker seemed to understand the severity of the contamination at SSFL and around it presenting himself, somewhat pompously, as pro-cleanup. My 2009 article Runkle Rousing[xiv] quotes him addressing the Simi Valley City Council during a Runkle Canyon development community meeting:

Runkle Ranch is going to be built adjacent to the sodium burn pit. I don't know if you guys know what the sodium burn pit is or was. If you did, I think you'd think twice about this. Based on my research, they took primary reactor core coolant – liquid sodium – pumped it into a pond on the back forty and just let it burn off. The resulting fallout blew in all directions and it has contaminated a wide area up there. That includes Runkle Ranch. If you found any strontium-90, cesium-137, plutonium-238, uranium-235 or any other constituents of chemicals and or rads from this property; the combination is deadly. And all you're going to need is from three to five years from now a case retinoblastoma to be developed in this development, and I'll be back here with that child's mother to address you again.

By the time Runkle Canyon started to be graded and built, Luker had adopted a different tact at a meeting of the Department of Toxic Substances Control (DTSC) which is overseeing the SSFL cleanup: insult mothers, and fathers, at government meetings, as I documented in 2014 in Truth or Scare?[xv]:

A similar DTSC scoping meeting took place in Simi Valley December 14 [2013], attracting more improbable anti-cleanup tales along with insults. "Most of the people talking here today are just ranting and raving," said John C. Luker III.

That certainly did not describe people such as Arline Matthews, who lost a son to a radiation-related cancer she thinks could have been caused by manmade radiation at Rocketdyne.

"Bobby was a champion runner from Chatsworth High and every organ of his body was perfect," Matthews said after Luker was admonished by the DTSC moderator to keep his language respectful. "A perfect specimen. Bobby died of brain cancer and his son developed leukemia. [My comment emphasis]

By 2017, jettisoning the truth and shedding all shame, Luker upped his anti-cleanup rhetoric as I documented in Brandeis-Bardin's Toxic Denial[xvi]:

"If there was the remotest chance that there actually is cancer, somebody's got to start doing some soil testing because the contamination is not *at SSFL," Luker said without the slightest trace of irony. "So we have to start looking at, maybe, school yards, public parks where we could do the testing and sampling and see if there's anything there."*

Granted, a person is allowed to have his or her opinions, but when that person is quietly given the honor of a to-be-constructed 4.5 mile long trail named after that person, they should at least not be given to wild insults, homophobic jokes and libel on various public platforms such as Facebook. John Luker has done all this and in the SSMTMP-PII seems a fait accompli with no public input.

5 (cont.)

That would be an outrage. But without providing you this oft-times distasteful information, the Planning Division and the Board of Supervisors would not have enough facts in hand to make a considered decision to remove Luker's name from any trail or other feature within the project area. Hence, more facts for you folks to consider.

Luker has used Facebook to vent, libel and share his like of the odd homophobic joke. On Luker's June 12, 2014 Facebook page[xvii] is his 'liking' and sharing on his 'timeline' a homophobic joke showing a photo of out-gay man Sir Ian McKellan with the text "A wizard walks into a gay bar… … and disappears with a poof!"

Granted that an anti-gay joke isn't that serious; what is serious is the County naming a trail after the man who made it. Would the Chair of the County Board of Supervisors countenance such a decision? At least the public will have one last chance to ask her if the JLT name isn't changed or dropped before final approval of the SSMTMP-PII.

Sounding like then President-elect Trump on Facebook November 28, 2016[xviii], Luker leveled these shots:

John Luker-The two articles from the EnviroReporter are fake news! They attack me personally so I have a good idea of their veracity. Most of the sources you quote have the same earmarks as Mr Collins' pieces.

I'm used to looking for red flags... I've been attacked repeatedly by forces making money off of fear. [My comment emphasis]

Here's another example on his Facebook page May 19, 2017[xix] where he slams us with all manner of libelous nonsense:

"If you believe chemtrails are a plot to turn America gay, if you are an anti-vaxxer, if you believe that SSFL is poisoning everyone in a 20 mile radius… DON'T reply to this post… I'll laugh at you.

Yes, this is what is destroying Americas [sic] faith in their institutions… Dan Hirsch, RCC, Cindy Gortner, Michael Collins, Denise Duffield, you are all complicit!"

Luker's latest attempt to disrupt the a public event in an effort to smear pro-cleanup residents reached a zenith, even for him, at a public meeting of DTSC to discuss the Programmatic Environmental Impact Report for SSFL in Chatsworth October 7, 2017 which I attended and witnessed[xx]. Luker told a DTSC public participation person that a woman at the meeting was harassing him and to call the police. Two LAPD units quickly arrived, interviewed Luker, the woman and the DTSC person and found no problem. They told Luker to leave as the best solution. Luker left but not without disrupting the event and adding a sense of trepidation into the proceedings.

But Luker was not done. He took to Facebook October 8[xxi]:

5 (cont.)

John Luker
October 8 at 7:39am ·
Ok, time to vent... I was threatened yesterday. I was told "I was going to get what I deserved." Then that person followed me around taking photos of me...
This was at a DTSC meeting about SSFL. This person intimidated me until I left. I asked DTSC to call the cops, they did. The cops said this person did not break the law so there was nothing they could do...
Now what?
SSFL will never get cleaned up. There is an atmosphere of hatred and conflict that has been stirred up by people who are making a very good living off NOT cleaning this place up.
Dan Hirsch, Denise Duffield, Michael Collins, Consumer Watchdog and PSRLA all have a financial and political interest in keeping this level of anger and, now, violence, at a fever pitch.
There is NO way a reasoned, logical, civil discussion can take place.
I'm very tired of it. [My comment emphasis]

Luker went on in this libelous fashion further along in the Facebook thread. "And how will that help quiet the people with personality disorders that are threatening my life?" Luker said in response to a commenter's suggestion. "I AM in REAL physical danger RIGHT NOW!"

The only danger John Luker is in is the possibility he'll be sued for these kinds of libelous remarks. The real danger the community faces is if Luker's anti-cleanup cabal succeeds in derailing the cleanup of the old Rocketdyne lab. Adding his name to a trail does not seem like wise policy and should be reversed.

COMMENT 3 CONCLUSION

Under the SSMTMP-PII "Project Objectives" it says "Develop a plan consistent with relevant County plans and policies." Naming a prospective trail after John Luker is not consistent with the policies of the County against defamation, racism and homophobia.

Under the SSMTMP-PII "Benefits of Trails Master Planning" it says "Attract or obtain funding for trail development and/or maintenance" I assert that naming a prospective trail after as controversial a public figure as John Luker with hurt attempts to get funding for anything having to do with him.

Luker has publicly harassed this reporter, my wife and community members including mothers with children with rare cancers like leukemia calling them "screaming harpies." His behavior is contrary to standards of public decency. I have reported on and witnessed this person behaving and acting in a manner that I do not believe reflect the values of this county for nearly a decade.

Naming a trail after Luker would be a travesty once you consider the information presented here. It would be an insult to not only the mothers of children stricken with rare illnesses they blame on SSFL, but to the people who have fought for decades for SSFL cleanup and, not the least, to the County of Los Angeles as well.

Thank you again for this opportunity to comment on the SSMTMP-PII.

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[iii] "Rim of the Valley: New plan emerges to add nearly 191K acres to Santa Monica Mountains Recreation Area," *Los Angeles Daily News*, October 18, 2017, http://www.dailynews.com/2017/10/18/rim-of-the-valley-new-plan-emerges-to-add-nearly-191k-acres-to-santa-monica-mountains-recreation-area/

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[xvii] John Luker's Facebook page, June 12, 2014, homophobic joke https://www.enviroreporter.com/wp-content/uploads/2017/12/6-12-14-John-Luker-FB-likes-gay-joke-1024x420.jpg

[xviii] John Luker's Facebook page screenshot; November 28, 2016

https://www.enviroreporter.com/wp-content/uploads/2017/12/2016-John-Luker-Facebook-Fake-News.jpg

[xix] John Luker's Facebook page screenshot; May 19, 2016
https://www.enviroreporter.com/wp-content/uploads/2017/12/5-19-17-Facebook-Luker-attacking-us.jpg

[xx] https://www.enviroreporter.com/wp-content/uploads/2017/12/John-Luker-at-10-7-17-DTSC-meeting.jpg

[xxi] https://www.enviroreporter.com/wp-content/uploads/2017/12/10-8-17-Luker-lying-about-being-threatened-by-us.jpg

E

SUPERSTICKY EASELPAD
TABLEAU À FEUILLES MOBILES SUPERCOLLANTES
SUPERADHESIVAS BLOC DE HOJAS REPOSICIONABLES

30 25 IN/PO x 30 IN/PO
63,5 cm x 76,2 cm
5.2 SQ FT/PI² (0,48 m²)

3M

- Would be nice to continue the through Rice Canyon along creek, would make a beautiful hike 1

- Would like trail access along Oat Mountain (Rim of the Valley) Pkwy above gas fields – very important 2

Palo Sola Rd

- Slope is not factored into trail types in the manual 3

- Supports the trail master planning process 4

Expand wherever possible

- ORD6 - ensure the route is above the freeway to the south (of freeway) ✓ 5

- Geofencing to keep people on trail/off private property 6

- Allow disabled or people w/ visual disabilities and/or veterans to hike using a cane that detects metal/copper that could be checked out/rented 7

MC?
11/9/2017

8

Q. How will people with bicycles (non-motorized) get to the bicycle path

A: trails are multi-use → bicyclists + hikers

↓

concern about safety from fast cyclists

9

How can we expedite the perimeter trail and connecting trails?

Prioritize perimeter trails and connections to existing trails.

Concern about timeline and completion in consideration of private property.

LAM 1/1

Concerned about trail's impact on wildlife (abundance) 10

+ wildfire impacts (manmade fire) 11

+ increased trash 12

How many people are likely to use the trails? 13

Page 1 of 1
11/9/2017
MBG

F1. A brief question-and-answer period was held after the presentation:

Comment F1.1
When will the trails be done?

Comment F1.2
Will we be able to track progress on the website?

Comment F1.3
Why is cost not addressed?

Comment F1.4
Where would each user group use trails? If multi-use, mountain biker can go through all in the plan.

Comment F1.5
Paved trails?

F2

SUGGESTION TO USE LIST OF WORKSHOP ATTENDEES FOR VOLUNTEER ~~LIST~~: SIGN UPS: 1

- No added Roads (Freeway) from Newhall to Simi Valley & West Valley. 2

R/BG
11/16/17
1 of 1

Post-it SUPERSTICKY EASELPAD
TABLEAU À FEUILLES MOBILES SUPERCOLLANTES
SUPERADHESIVAS BLOC DE HOJAS REPOSICIONABLES

30 25 IN/PO x 30 IN/PO
63,5 cm x 76,2 cm
5.2 SQ FT/PI² (0,48 m²) 3M

Suggestion: bike bells (Montana de Oro example) to alert (+) equestrians + horses that a bicycle is coming [(-) bike bells may scare horses] 3

yield triangle - who yields to who — is a helpful sign in Montana de Oro so that people remember what to do 4

person coming down has ROW

Concerned about safety on narrow trails & blind curves even wider trails, 5
Some horses are wary of bicycles (+)
(might be skittish)

People on horses/bicycles love to travel in loops 6

Horses cannot take street back; loop better than out + back

Suggestion: mountain bike speed limit 7

Suggestion: 4' wide trail & single track on side at corners 8

Like signs explaining (eg. everyone yields to a horse) (+) 9

Chatsworth area has steep + rocky areas → signage is a good reminder 10

We get several bicyclists on Valley Circle Blvd → scary 11
Suggest LADWP creating a bike + horse path on other side of fence
Valley Circle bicyclists hit by vehicles
Suggested loop around Chatsworth Reservoir for safe place away from cars
Plummer/Valley circle crossing recommended

There are times when separation of use is better 12

Support signage for safety 13

11/16/17
LAM 1/2

Support additional trails on west side of valley (not many existing like Santa Monica Mountains) 14

Would love to have bike skills areas for mountain bikers so that they do not interfere with the trails 15

TS7 should be moved 830 feet to west for more gradual slope and potential water connection at trailer park (also has fire hydrants) 16

11/16/17
LAM 2/2

17

- COUNTY SHOULD HAVE A WAY FOR VOLUNTEERS TO SIGN UP TO SUPPORT TRAIL DEVELOPMENT AND MAINTENANCE -- WHO WOULD YOU CONTACT

18

- ARE THERE ANY TRAILS INSIDE THE NATURE PRESERVE

19

- LOCAL RESIDENTS OPPOSED TO DEVELOPMENT INSIDE THE FENCED PORTION OF THE NATURE PRESERVE

20

- CONCERNED ABOUT TRASH IN TRAIL AREAS
  NEED A PUBLIC EDUCATION TO ADDRESS NEW USERS PROACTIVELY
  BILINGUAL — HISPANIC
  "LEAVE NO TRACE" "TAKE ONLY PICTURES / LEAVE ONLY FOOTPRINTS"

21

- WANTS TO KNOW SCHEDULE TARGET DATES FOR IMPLEMENTATION AND COST OF SEGMENTS

22

- CONCERNED ABOUT MANAGING / LIMITING THE PUBLIC TO DESIGNATED AREAS

1/2
11/16/2017
MC²

23

☐ IMPORTANT TO DESIGN TRAILS TO "SAFELY" ACCOMODATE MULTI-USE

PARTICULARLY SUITABLE SIGHT LINES TO FACILITATE ABILITY FOR ~~SAFE~~ SAFE PASSAGE OF EQUESTRIANS/HIKERS/MOUNTAIN BIKERS

24

☐ PARKED CAR SITUATION JOHNSON MOTORWAY IN PHASE 1 "PRESCRIPTIVE RIGHTS" TRAILS

REQUEST ALTERNATIVE ROUTE TO CIRCUMVENT PRIVATE DRIVEWAY ON JOHNSON MOTORWAY

PLEASE CONTACT APRIL

2/2
11/16/2017
mc²

- Will the county reach out to public to help with trail construction; low risk offenders? 25

- The current plan does not connect to trails to the south. Should activity seek to connect to trail Santa Clarita to the ocean 26

  County working with other jurisdictions to the South; City

- Some consideration to incorporate fine arts into facilities; trail heads 27

- will there be signs on the trails with information on tribal use of the area 28

DMK
11/16/17

Appendix K

Response to Comments

Response to Comments
on the
Initial Study/Mitigated Negative Declaration
for the
Santa Susana Mountains Trails Master Plan (SCH # 2017111009)

COMMENTS AND RESPONSES

The County of Los Angeles Department of Parks and Recreation (DPR) prepared a proposed Mitigated Negative Declaration (MND) to assess the potential environmental effects of the Santa Susana Mountains Trails Master Plan (proposed project, SSMTMP-PII, or Trails Master Plan). DPR circulated the proposed MND for public review between November 2, 2017, and December 16, 2017. The public meetings for the proposed project were publicized via U.S. Postal Service mailings to nearly 10,000 addresses of property owners of parcels within the project study area and parcels located within a half-mile radius of the project study area and via email to approximately 198 individuals and private organizations on the project distribution list regarding the Notice of Intent (NOI) to adopt a proposed MND for public review. The NOI was also emailed to federal, state, and local agencies potentially having an interest in the proposed project. This information was presented in the legal notices section of the *Santa Clarita Valley Signal* newspaper on November 8, 2017. Copies of the proposed MND were made available online via the County of Los Angeles Department of Parks and Recreation website,[1] the County Trails website,[2] at Stevenson Ranch Library, at Chatsworth Branch Library, and at the DPR office for 45 days.

DPR hosted an agency meeting on Thursday, November 16, 2017, between 10:00 a.m. and 12:00 p.m. at the DPR office, 510 South Vermont Avenue, Los Angeles, California 91384. DPR hosted two public meetings on Thursday, November 9, 2017, between 6:00 p.m. and 8:00 p.m. at the Community Room of Stevenson Ranch Library, 25950 The Old Road, Stevenson Ranch, California 91381; and on Thursday, November 16, 2017, between 6:00 p.m. and 8:00 p.m. at the Multi-Purpose Room of Chatsworth Branch Library, 21052 Devonshire Street, Chatsworth, California 91311.

The public comment period closed on December 16, 2017. A total of 28 letters of comment were received on the proposed MND. The County received eight (8) letters in opposition to a number of the improvements proposed in conjunction with Phase II.b, the Bell Canyon area. Sapphos Environmental, Inc. called the Governor's Office of Planning and Research (OPR), State Clearinghouse (SCH) in January 2018 to inquire about a response from the California Environmental Protection Agency Department of Toxic Substances Control (DTSC). OPR did not forward the NOI/MND/TMP to DTSC for review during the public review period as requested in the NOI because trails and supporting recreational facilities do not typically result in significant impacts regarding hazards and hazardous materials. Sapphos Environmental, Inc. and the County reached out to the DTSC to request a comment letter regarding the Trails Master Plan MND. The County has not received a comment letter from DTSC regarding the Trails Master Plan. The County reached out to two commenters, Los Angeles City Council and Physicians for Social Responsibility.

[1] http://parks.lacounty.gov/wps/portal/dpr/Newsroom/EnvironmentalDocuments/

[2] https://trails.lacounty.gov/

As a result of this correspondence, Phase II.b has been removed from consideration, and Phase II.a has been renamed Phase II in the Final MND. On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II.

This section includes written and verbal comments received that specifically pertain to the scope and content of the proposed MND. This section provides all written responses received on the proposed MND and DPR's responses to each comment. Comment letters and specific comments are given letters and numbers for reference purposes. The comment letter is shown demarcated with numbers representing the point addressed and subsequent response.

A. TOPICAL COMMENTS

A1.
Woolsey to Sage Ranch Trail (Segments WOS1, WOS2, and WOS3) and Trailhead TS7

Response to Comment No. A1:

These commenters expressed their opinion that the County should not engage in trail planning activities in the vicinity of the Santa Susana Field Lab (SSFL) and specifically requested that the proposed Woolsey to Sage Ranch trail corridor be removed. On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

The DTSC has not made a determination that this public road needs to be closed to protect public health and safety in the existing conditions or in relation to their investigation. The County will abide by all land use planning restrictions imposed by DTSC, the SWRCB, or the LA-RWQCB, in consideration of the protection of public health and safety.

A2.
Santa Susana Field Laboratory (SSFL) and California Department of Toxic Substances Control (DTSC)

Response to Comment No. A2:

These commenters expressed concerns regarding the proximity of the Phase II.b area to the SSFL.

On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation involving consideration of clean-up options and associated allowable post-clean-up land uses.

The public comment period for the SSFL Draft Program Environmental Impact Report (PEIR) closed on December 14, 2017. Based on a review of all available data on government records, there is no available data showing that there is health hazard or risk to recreation users in the areas considered for trail planning and development by the County. The DTSC has regulatory oversight for sites with contaminated soils or air emissions that pose a risk or hazard to public health and safety. The SSFL is located in Ventura County, adjacent to the western boundary of the Phase II.b area. The County has reviewed the Draft PEIR prepared by DTSC to evaluate the impact of remediation of contaminated soil and groundwater at the SSFL (SCH#2013111068). There is no data in the SSFL Draft PEIR indicating a risk to recreation users in the Phase II.b area. The Draft PEIR for the proposed SSFL states that the proposed cleanup level would not conflict with the allowable uses identified for the RA-5, AE-40, and OS-160 zones; allowable uses within the OS-160 zone (adjacent to the Phase II.b area) include outdoor recreation, "including but not limited to: areas of outstanding scenic, historic and cultural value; areas particularly suited for park and recreation purposes, including access to lakeshores, beaches, and rivers and streams; and, areas which serve as links between major recreation and open-space reservations, including utility easements, banks of rivers and streams, trails, and scenic highway corridors." Risk-based site remediation is designed based on inhalation unit risk and exposure concentration. Recreational use has a lower exposure duration, and therefore lower risk, than residential use and would require a lower level of remediation treatment. A recreational scenario could consist of an exposure for a few hours per day and a few days per month.

Sapphos Environmental, Inc. called the Governor's Office of Planning and Research (OPR), State Clearinghouse (SCH) in January 2018 to inquire about a respond from the California Environmental Protection Agency Department of Toxic Substances Control (DTSC). Although OPR determined that review of the Plan and the MND by DTSC was not warranted, DPR transmitted to the Plan to the DTSC for review and comment. The DTSC provided no comments on the Plan or MND. There are no existing restrictions on use of the Phase II.b area in Los Angeles County. The County will abide by all land use planning restrictions imposed by DTSC, the SWRCB, or the LA-RWQCB, in consideration of the protection of public health and safety. The County has not received a comment letter from DTSC regarding the Trails Master Plan. The County reached out to two commenters,

Los Angeles City Council and a public health advocacy group. Phase II.b has been removed from consideration, and Phase II.a has been renamed Phase II in the Final MND.

A3.
Trail Names

Response to Comment No. A3:

On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

Several commenters expressed concerns regarding use of the name John Luker in the Trails Master Plan. The interim labels for the proposed trail corridors and trailheads indicated in the Trails Master Plan were developed to facilitate trails planning and are temporary in nature. In general, the interim labels are based on the place names from the U.S. Geological Survey (USGS) topographic maps. Where such place names were not available, other recognized place names, such as the nearest street or planned community, were used. John Luker was chosen as an interim name for these trails as Mr. Luker guided County and consultant staff on hikes along trails in this area. This proposed trail corridor has been removed from the Trails Master Plan with the removal of the Phase II.b study area.

The County will use its recreational facility naming policy to ultimately ascribe names to trails as they are developed at the project level.

A4.
Safety and Security

Response to Comment No. A4:

Several commenters expressed concerns regarding fire danger / smoking in fire hazard areas, theft, littering / illegal dumping, trespassing/loitering, and excessive noise / car lights after dark. Safety and security are social issues that the County takes very seriously during the design and development of trails. As stated in Section 2.8, *Background,* of the MND, DPR has established the *County of Los Angeles Trails Manual* (County Trails Manual) as a procedural document to provide guidelines for trail planning, design, development, and maintenance of DPR trails.[3] However, these are not environmental issues pursuant to the California Environmental Quality Act (CEQA). As reported by multiple parties during the scoping process, unsanctioned recreational use occurs in the project study area. The Trails Master Plan has been developed to recommend conditions for improvement of unmet local recreation demands in the 5th Supervisorial District. Existing trespassing concerns have been reported by the community regarding de facto trails created illegally across private property that have been mistaken for open space. The purpose of the Trails Master Plan is to replace unsanctioned use with a designated trail system that facilitates safe and secure recreational use, anticipated to reduce trespassing. Trespassing and cruelty to animals are illegal actions that should be reported to local law enforcement. Complaints regarding theft, vandalism, and trespassing on County property and private property should be directed to the County of Los Angeles Sheriff Department (LASD) in unincorporated territory of the County, or to the City of Santa Clarita Police Department or City of Los Angeles Police Department (LAPD) within the City of Los Angeles.

According to national crime statistics, parks and trails are among the safest places to be. People are two to three times safer on a trail than in a parking lot, on the street, or even inside their own homes.[4] A study surveying 372 trail managers about trail safety showed that only 3 percent reported that major criminal activity (crimes against a person) had occurred on their trail.[5] Studies of homeowners adjacent to trails indicate no increase in crime due to trails.[6] Trail safety and security considerations are accounted for in the planning of trail locations. Safety is a concern when a new recreational route is created. To improve safety, trail hours of operation (from sunrise to sunset) are indicated, outdoor security lighting may be used at structures and parking lots between 10 p.m. and sunrise, and a curfew is used to restrict access during after-hours. Other design measures improve pedestrian access, alleviate traffic hazards, and promote safety, including provisioning for volunteer trail patrol and augmenting public agency information, coordination, and support. In addition, DPR is seeking to work with landowners to address safety or privacy concerns through the use of measures such as providing landscaping to act as a screen or barrier or fencing on a case-by-case basis.

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[3] County of Los Angeles Department of Parks and Recreation. [May 2011] June 2013. County of Los Angeles Trails Manual. Available at: https://trails.lacounty.gov/Files/Documents/128/LA%20County%20Trails%20Manual%20%28Revised%2020171031%29.pdf

[4] Tracy, Tammy, and Hugh Morris. January 1998. Rail-Trails and Safe Communities: The Experience on 372 Trails. Washington, DC: Rails-to-Trails Conservancy. Available at: http://safety.fhwa.dot.gov/ped_bike/docs/rt_safecomm.pdf

[5] Tracy, Tammy, and Hugh Morris. January 1998. Rail-Trails and Safe Communities: The Experience on 372 Trails. Washington, DC: Rails-to-Trails Conservancy. Available at: http://safety.fhwa.dot.gov/ped_bike/docs/rt_safecomm.pdf

[6] Lagerwey, P., and B. Puncochar. 1988. Evaluation of the Burke-Gilman Trails Effect of Property Values and Crime. Transportation Research Record 1168: 57–59.

The County is responsible for trail maintenance within trail easements (County property). To report trail maintenance issues, contact the County's Parks Facilities Call Center at 877-601-4850 to report any trail-related issue.[7] The Center receives requests/concerns for service and then creates a work order that is quickly dispatched to alert County maintenance staff. Users can also download a free app (iPhone or Android) to report and track services at http://dpw.lacounty.gov/theWorks. DPR's new "The Works" app offers a point-and-shoot approach to cleaning up quality-of-life nuisances in unincorporated County territory, including illegal dumping, graffiti, overgrown brush and trees, and other trail-related issues. Once the free app is downloaded, users can use the camera on their phone to send the County's Call Center an instant image of the problem, get a ticket number, and keep tabs on how the issue is resolved. It is also possible to send a message about the problem anonymously and without including a photograph. The proposed trails would be clearly marked in accordance with the County's signage program to delineate between each trail and private property.

As stated in Section 2.15, *Public Services*, of the MND, the project study area receives fire protection services from the Los Angeles County Fire Department (LACoFD). LACoFD has reviewed the NOI and MND and indicated that they had no comments (please see Comment Letter B5). As stated in Section 2.9, *Hazards and Hazardous Materials*, of the MND, landscaping around trailheads and along trails would be designed to balance fire mitigation with habitat conservation and slope preservation. As reported by multiple parties during the scoping process, there is a tremendous amount of unsanctioned recreational use in the project study area. The purpose of the proposed project is to replace unsanctioned use with a designated trail system that facilitates safe and secure recreational use.

Consistent with Section 4.3.6, *Way-finding Signs*, of the County Trails Manual, the proposed project would include reassurance marker signs at every quarter mile of trail that will identify the name of the trail and quarter milepost number in order to orient search and rescue services in the case of an emergency. DPR would be responsible for providing updated data to LACoFD and LASD marking the location of each quarter milepost along the trail for emergency response purposes. Consistent with the County Trails Manual, landscaping around trailheads and along trails would be designed to balance fire mitigation with habitat conservation and slope preservation.[8] In accordance with County Code, fires are only permitted in signed and designated areas of County Parkland (County Code 17.04.590), fireworks or other combustible materials are not permitted along any trail (County Code 17.04.520 and 17.04.610), and firearms are not permitted on County trails except in designated areas (County Code 17.04.620 and 17.08.300).[9] Structures and parking lots would be constructed in accordance with the requirements of the County of Los Angeles Fire Code (Title 32).[10] Language has

[7] County of Los Angeles Department of Parks and Recreation. Accessed 31 January 2018. Frequently Asked Questions. Keyword: "maintenance." Available at: https://trails.lacounty.gov/Search?searchKeyword=maintenance

[8] County of Los Angeles Department of Parks and Recreation. [Adopted 17 May 2011] Revised June 2013. County of Los Angeles Trails Manual. Available at: https://trails.lacounty.gov/Files/Documents/69/LA%20County%20Trails%20Manual%20%28Revised%2006-20-13%29.compressed.pdf

[9] Municode Library. Accessed 7 February 2018. Los Angeles County, CA: Part 3 – Park Rules and Regulations. Available at: https://www.municode.com/library/ca/los_angeles_county/codes/code_of_ordinances?nodeId=TIT17PABEOTPUAR_CH17.04PAREAR_PT3PARURE

[10] Municode Library. Accessed 7 February 2018. Los Angeles County, CA: Title 32 – Fire Code. Available at: https://www.municode.com/library/ca/los_angeles_county/codes/code_of_ordinances?nodeId=TIT32FICO

been added to Section 1.9, *Project Description*, of the MND to clarify that trails developed consistent with the County Trails Manual would include reassurance marker signs and require coordination with LACoFD and LASD.

As stated in Section 2.14, *Population and Housing*, of the MND, the proposed project would not directly or indirectly induce population growth because it involves no new homes or businesses, and it does not propose the extension of roads or other infrastructure to support new trails and related facilities. However, the proposed project would be expected to serve as a regional recreation facility that would generate day use from throughout the area, which has the potential to result in a very minor increase in emergency response, search and rescue, and other sheriff services if any injuries or crime incidents occur. Multiple studies have shown that adopted trails tend to result in a negligible increase, neutral effect, or reduction in crimes including vandalism, theft, and trespassing, in the area through regular use and high visibility of users.[11,12,13]

[11] Greer, Donald L. October 2001. Nebraska Rural Trails: Three Studies of Trail Impact. Available at: http://headwaterseconomics.org/wphw/wp-content/uploads/Trail_Study_5-nebraska-rural-trails.pdf

[12] Seattle Engineering Department. May 1987. Evaluation of the Burke-Gilman Trail's Effect on Property Values and Crime. Available at: http://headwaterseconomics.org/wphw/wp-content/uploads/Trail_Study_82-burke-gilman-trail-property-values.pdf

[13] National Park Service. January 2008. Benefits of Trails & Greenways. Available at: http://www.cdlandtrust.org/sites/default/files/publications/Benefits%20of%20Trails-NPS.pdf

A5.
Trail Easement and Open Space Acquisition

Response to Comment No. A5:

Several comments reflected concerns, from the perspective of private property owners located within or adjacent to the proposed project, regarding the development of trails on or adjacent to their property. The proposed Trails Master Plan is conceptual in nature, and the location of each proposed trail alignment is subject to adjustment should development of the trail be pursued.

At the direction of Supervisor Kathryn Barger, the County embarked on the development of the proposed project due to the emerging need for additional multi-use trail and recreation opportunities in the unincorporated area of the County. As stated in Section 1.8, *Background and Existing Conditions*, of the MND, the proposed project is intended to address the existing practice of conceptualizing and requiring implementation of trail segments in conjunction with the approval process for development projects on a case-by-case basis to guide the development of a backbone trail system that meets the needs of the Santa Susana Mountains and Chatsworth region.

On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

Consistent with provisions of the Los Angeles County General Plan 2035 (County General Plan) to provide recreation opportunities to meet the diverse needs of County residents and visitors, the development of trail planning in the project study area is needed in order to maintain and increase trail connectivity and access to open space with anticipated future private development and projected population growth in the Santa Susana Mountains and Chatsworth region. As stated in Section 2.16, *Recreation*, of the MND, the Santa Clarita Valley Planning Area had a local recreation deficit of approximately 308 acres to support its population in 2010, with approximately 0.7 acre of local parkland per 1,000 persons.[14] A total of 70.9 acres of local parkland facilities are located within a two-mile radius of the project study area. There are no park nodes within a quarter-mile radius of the project study area. There are no pocket parks within a quarter-mile radius of the Phase II area. There is an existing recreational need as a result of the development of residential uses in the Santa Clarita Valley. As reported by multiple parties during the scoping process, unsanctioned recreational use occurs in the project study area. The purpose of the Trails Master Plan is to replace unsanctioned use with a designated trail system that facilitates safe and secure recreational use.

The maps in the Trails Master Plan depict conceptual routes that the proposed trail system would provide, although land acquisition and design at the project level would be determined on a case-by-

[14] County of Los Angeles Department of Regional Planning. Adopted 6 October 2015. Los Angeles County 2035 General Plan: Chapter 10: Parks and Recreation Element. Available at: http://planning.lacounty.gov/assets/upl/project/gp_final-general-plan-ch10.pdf

case basis based on property rights and site-specific conditions. As stated in Section 5.3, *Trail Access Acquisition Methods*, of the Trails Master Plan, the County can use the following tools and techniques for trail access acquisition and open space conservation: (1) fee simple purchase, (2) purchase and sale with easement, (3) lease or license, (4) land donations, (5) bargain sale, (6) bequest or living trust, (7) purchase option or (8) right of first refusal. Should the County decide to pursue development in the future, the County will work collaboratively with the property owners to grant a trail easement to the County. Wherever feasible, the alignments have been rerouted to minimize encroachment on parcels where the homeowner has expressed opposition to accommodating a trail segment. Trail corridors proposed within incorporated cities such as the City of Santa Clarita indicate recommended regional trail network connections but are located outside DPR's jurisdiction, and would be developed either by the City or the property owner. The County is not proposing to develop without the City's or the property owner's consent.

If property owners wish to sell land to the County for recreational purposes, DPR will work closely with its Land Management section to determine the County's interest in the property and the value it may add to the proposed trail network. DPR is awaiting final approval of the proposed project before determining any property's value to the County for trail-related purposes. Landowners who are interested in selling or donating property or providing an easement to accommodate development of multi-use trails in the 5th Supervisorial District should contact Mr. Zachary Likins at zlikins@parks.lacounty.gov.

A6.
Development Projects

Several commenters expressed concerns regarding development projects in the vicinity of the project study area. Development projects are beyond the scope of the proposed project. As stated in Section 1.8, *Background and Existing Conditions*, of the MND, the proposed project is intended to address the existing practice of conceptualizing and requiring implementation of trail segments in conjunction with the approval process for development projects on a case-by-case basis to guide the development of the backbone trail system that meets the needs of the Santa Susana Mountains region.

On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

B. AGENCY WRITTEN COMMENTS

B1.
CALIFORNIA DEPARTMENT OF FISH AND WILDLIFE HABITAT CONSERVATION PLANNING

308 S. Dunning St.
Ventura, CA 93003

Scott P. Harris
Environmental Scientist

Response to Comment No. B1-1:

There is no projected construction schedule for the proposed Trails Master Plan because it is conceptual in nature, and the location of the trail alignment is subject to adjustment should development of the trails be pursued. Trails proposed in the Trails Master Plan are not, as of the completion of the plan, scheduled for construction. It is anticipated that the trails will be constructed incrementally over the 2035 planning horizon as a result of a variety of factors: conditions of approval of development projects, particularly residential subdivisions, segments funded by Measure A grant monies, and segments for which private property owners provide easements or DPR acquires fee-title of an easement to construct. Should the development of the trails in the Trails Master Plan be pursued, the exact alignment of trails will be subject to adjustment, and no trail development will take place without the explicit consent of current property owners. Any references to a construction schedule in the MND are for evaluation of a reasonable worst-case scenario only.

As stated in Section 1.8, *Background and Existing Conditions*, of the MND, SSMFTMP (Phase I) was adopted by the County in May 2015 to identify recreational trail opportunities in the Santa Susana Mountains area, located within the southern portion of the project study area, with the intent of adopting the proposed trails as party of the County's Regional Trail System. As stated in Section 1, *Project Description*, of the MND, DPR proposes to complete the SSMTMP-PII (Phase II), ultimately to amend the Parks and Recreation Element of the County General Plan to include the SSMTMP-PII, which would guide future trail development and recommend improvements to existing trails.

Response to Comment No. B1-2:

The proposed project does not meet the threshold for an EIR as there are no potentially significant impacts that cannot be mitigated below the threshold of significance. Subsequent activities conducted under the proposed project would require separate CEQA review and noticing to ensure consistency with the assumptions and analysis in the MND. Should a subsequent action to be determined to result in a new impact or substantially more adverse impact than what is disclosed in the MND, subsequent environmental analysis may be warranted.

B2.
STATE OF CALIFORNIA
GOVERNOR'S OFFICE OF PLANNING AND RESEARCH
State Clearinghouse and Planning Unit

Scott Morgan
Director, State Clearinghouse

Response to Comment No. B2-1:

Thank you for verifying that the County has complied with the State Clearinghouse review requirements for draft environmental documents, pursuant to CEQA, and enclosing a letter provided by the Native American Heritage Commission (NAHC) during the public review period for the MND.

B3.
STATE OF CALIFORNIA
NATIVE AMERICAN HERITAGE COMMISSION
Environmental and Cultural Department
1550 Harbor Boulevard, Suite 100
West Sacramento, CA 95691

Gayle Totton
Associate Governmental Project Analyst

Response to Comment No. B3-1:

To further differentiate between the Cultural Resources and Tribal Cultural Resources environmental issue areas, Mitigation Measures CULTURAL-1, CULTURAL-2, and CULTURAL-4 have been revised to remove Tribal Cultural Resources. Mitigation Measures TRIBAL-1, TRIBAL-2, and TRIBAL-3 have been added to Section 2.18, *Tribal Cultural Resources*, of the MND. As indicated in Section 2.18 of the MND, consultation was undertaken with the Fernandeño Tataviam Band of Mission Indians and Gabrieleno Band of Mission Indians – Kizh Nation. The County is working with the Tribes to identify BMPs that can be employed to avoid impacts and provide educational opportunities in conjunction with trail development. Implementation of Mitigation Measures TRIBAL-1, TRIBAL-2, and TRIBAL-3 would reduce impacts to below the level of significance.

Assembly Bill (AB) 52 applies to the proposed project. Formal notification was initiated approximately eight months before the draft CEQA environmental document was released for public review.

- **March 15, 2017:** a draft NAHC request form for Native American Tribal Consultation Lists was submitted to NAHC.
- **March 29, 2017:** A list of tribal contacts from the NAHC was received by the County.
- **April 5, 2017:** Letters were mailed to identified Tribal Contacts for review as part of the AB 52 consultation process.
- **April 11, 2017:** One tribal consultation request was received.
- **April 20–November 2, 2017:** The consultation process occurred for the first tribal contact. At the first tribal consultation meeting held on June 7, 2017, the following topics were discussed:
    - Overview of the proposed project and study area
    - Baseline conditions for cultural resources
    - Potential for significant effects on cultural resources
    - Project refinements
    - Recommendations for mitigation measures

  Proposed trail corridors were routed to avoid known tribal cultural resources sites and alternative routes were reviewed by the tribal contact before the draft Trails Master Plan and Proposed MND were released for public review.
- **May 11, 2017:** A second tribal consultation request was received.
- **May 15–November 2, 2017:** The consultation process occurred for the second tribal contact. At the first tribal consultation meeting held on June 14, 2017, the following topics were discussed:

- Overview of the proposed project and study area
- Baseline conditions for cultural resources
- Potential for significant effects on cultural resources
- Project refinements
- Recommendations for mitigation measures

Proposed trail corridors were routed to avoid known tribal cultural resources sites and alternative routes were reviewed by the tribal contact before the draft Trails Master Plan and Proposed MND were released for public review.

- **May-November 2017:** The draft Trails Master Plan was developed and released concurrently with the Proposed MND on November 2, 2018, for public review.

B4.
COUNTY OF LOS ANGELES FIRE DEPARTMENT
1320 North Eastern Avenue
Los Angeles, CA 90063-3294

Michael Y. Takeshita
Acting Chief, Forestry Division
Prevention Services Bureau

Response to Comment No. B4-1:

Thank you for verifying that the Planning Division of the County of Los Angeles Fire Department has no comments.

Response to Comment No. B4-2:

Thank you for verifying that the Land Development Unit of the County of Los Angeles Fire Department has no comments.

Response to Comment No. B4-3:

Thank you for verifying that the Forestry Division of the County of Los Angeles Fire Department has no comments.

Response to Comment No. B4-4:

Thank you for verifying that the Health Hazardous Materials Division of the County of Los Angeles Fire Department has no comments or requirements.

B5.
COUNTY SANITATION DISTRICTS OF LOS ANGELES COUNTY
1955 Workman Mill Road
Whittier, CA 90607-4998

Adriana Raza
Customer Service Specialist
Facilities Planning Department

Response to Comment No. B5-1:

It is understood that the proposed Santa Clara River trail corridor would cross the Sanitation Districts of Los Angeles County's (LACSD) Valencia Water Reclamation Plant access roads and would require coordination with LACSD to ensure the safety of passing pedestrian, bicyclists, and equestrians. As requested, DPR will coordinate to ensure that planning for trails that cross that cross LACSD's access adequately considers the safety of passing pedestrians, bicyclists, and equestrians.

Language has been added to Section 1.9, *Project Description*, of the MND clarifying that development of proposed trails across LACSD's property, access roads, and rights-of-way would require coordination with LACSD to ensure the safety of passing pedestrians, bicyclists, and equestrians.

B6.
LOS ANGELES COUNTY DEPARTMENT OF REGIONAL PLANNING
320 West Temple Street
Los Angeles, CA 90012

Susan Tae, AICP
Supervising Regional Planner
Community Studies North Section

Response to Comment No. B6-1:

Thank you for the Department of Regional Planning's general support of the plan and the proposed approach to avoiding and mitigating impacts to biological resources.

The MND's discussion of indirect impacts has been expanded to acknowledge the potential for indirect impacts from the dispersal of weeds and invasive plants within close proximity of trails. Biological resources mitigation measures have been modified to consider invasive species. Surveys conducted prior to the start of activities shall include documentation of areas with invasive species. Where trail segments are constructed as conditions of approval by the County of Los Angeles Department of Regional Planning, DPR will request that the developer be further conditioned to monitoring constructed trail segments for weeds and exotic plant identified by the California Exotic Pest Plant Council and such plants be controlled at least once annually. Where trails are constructed by DPR, weeds and exotic plant identified by the California Exotic Pest Plant Council and such plants shall be controlled in conjunction with scheduled maintenance. Additionally, equipment used in sensitive areas shall be cleaned prior to reduce the potential of introduction of invasive species.

As stated in Table 4-2, *Trail Facility Descriptions*, of the Trails Master Plan, and Table 1.9-3, *Proposed Facilities*, in the MND, trash receptacles and wayfinding signage would be provided at all trailhead, trailhead & staging area, equestrian park, equestrian center, and bike skills area facilities. Mitigation Measure BIO-1 has been expanded to include reminders on the wayfinding signage provided at these facilities. Littering and vandalism are illegal actions that should be reported to local law enforcement. Complaints regarding littering and vandalism should be directed to the LASD.

Section 4.5, *Decommissioned Trails*, of the Trails Master Plan recommends that the County identify opportunities to close access to unauthorized trails and promote access to new official trails. Mitigation Measure BIO-1 has been expanded to include a plan for environmental restoration during the decommissioning of trails.

Response to Comment No. B6-2:

Mitigation Measure BIO-1 has been revised to clarify timing of surveys and include data to be documented. Additionally, a minimum mitigation ratio for unavoidable impacts to special status plant species/habitat has been defined.

Response to Comment No. B6-3:

Mitigation Measure BIO-2 has been revised to include a minimum mitigation ratio of 2:1 and specify the use of hand tools where economically and physically feasible.

Response to Comment No. B6-4:

Both the Biological Resources Technical Report (Appendix C to the MND) and the MND were based off database and literature review. Although no vernal pools were identified during the search, the MND does recognize the possibility of additional wetlands being encountered during the implementation of the Trails Master Plan. In the event additional wetlands are encountered, Mitigation Measure BIO-2 includes measures for state and federally protected wetlands.

Response to Comment No. B6-5:

Thank you for reviewing the biological resources mitigation measures. Mitigation Measures AES-2 and BIO-4 have been revised to specify that mitigation for trees afforded protection pursuant to the County Oak Tree Ordinance and related monitoring shall be undertaken consistent with the provisions of the County Oak Tree Ordinance and the Los Angeles County Oak Woodlands Conservation Management Plan.[15]

Response to Comment No. B6-6:

As explained in the Project Description, the MND is based on an evaluation of the construction that would be required to build out the proposed trails in the general configurations of the conceptual plan. Proposed trail alignments are conceptual and would require additional survey, design, and engineering work to support dedication of easements and ultimately trail construction, operation, and maintenance. The design and construction of bridges would be subject to a building permit from the County of Los Angeles Department of Public Works, including review of the hydrology and structural engineering.

Response to Comment No. B6-7:

Construction activities are set forth in Section 1.11, *Construction Scenario*, of the MND. The construction contractor would be required to incorporate best management practices (BMPs) consistent with the guidelines provided in the *California Stormwater Best Management Practice Handbooks: Construction*, for elimination of non-stormwater discharge from the project site; retaining eroded sediments and other pollutants on the site; retaining stockpiles of earth and other construction-related materials on-site; proper storage of fuels, oils, solvents, and other toxic materials to prevent spills from being washed into the drainage system; retaining concrete wastes on-site until they can be disposed as solid waste; proper covered storage of trash and construction related solid wastes to prevent contamination of rainwater and dispersal by wind; stabilization of roadways to inhibit sediments from being deposited into the public way; and stabilization of any slopes with disturbed soils or denuded of vegetation to inhibit erosion by wind and water. Should the construction period continue into the rainy season, supplemental erosion measures would need to be implemented.

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[15] Prepared by the Los Angeles County Oak Woodlands Habitat Conservation Strategic Alliance for the County of Los Angeles. May 2011. Los Angeles County Oak Woodlands Conservation Management Plan. Available at: http://planning.lacounty.gov/assets/upl/project/oakwoodlands_conservation-management-plan.pdf Main website: http://planning.lacounty.gov/oakwoodlands/background

Wherever possible, grading activities would be undertaken outside the normal rainy season (i.e., October 15 to April 15 for most of Southern California), thus minimizing the potential for increased surface runoff and the associated potential for soil erosion. A recommended construction period would begin in late April or early May and completed in late January, assuming the majority of the construction would be completed in this recommended nine-month period. BMPs to control surface runoff and soil erosion would be required for construction activities. In accordance with the guidelines in Section 4.5.2, *Construction Scenario*, of the County Trails Manual, in locations with steep sideslopes; loose soils and rocks; areas that are prone to destabilization; large retaining structures; or areas that require extensive annual maintenance work, grading, and earthwork shall be performed under the supervision of an engineering geologist or soils engineer to ensure that appropriate recommendations are made to remediate site-specific erosion and soil stability conditions.

Response to Comment No. B6-8:

Thank you for the Department of Regional Planning's review and verification that the proposed project would be consistent with Trails Plan Goals 1, 2, 4, and 6; Conservation and Open Space Policies CO-9.2.1, CO-9.2.2, CO-9.2.4, CO-9.2.5, CO-9.2.8; and Circulation Policy C-7.1.10 of the Santa Clarita Valley Area Plan, a component of the County General Plan. A statement regarding the consistency has been added for clarification purposes to Section 2.11, *Land Use and Planning*, of the MND.

Objective 7 in Section 2.1, *Goals and Objectives*, of the Trails Master Plan, which addresses consistency with relevant County plans and policies, has been expanded to include "h. Santa Clarita Valley Area Plan (2012)." The Santa Clarita Valley Area Plan is described on page 228 of Appendix C, *Applicable Planning Documents*, of the Trails Master Plan.

B7.
LOS ANGELES CITY COUNCIL
12th District
City Hall Office
200 N. Spring Street, Room 405
Los Angeles, CA 90012

Mitchell Englander
Council President Pro-Tempore
Councilmember, 12th District

Response to Comment No. B7-1:

Please see Response to Topical Comment A2 regarding the SSFL. The DTSC is the responsible agency whose mission includes protection of California's people and environment from harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of chemically safer products. Similarly, the State Water Resources Control Board (SWRCB) develops statewide water quality policies that are enforced by the State's nine Regional Water Quality Control Boards (RWQCBs). The MND was provided to the Governor's Office of Planning and Research for distribution to DTSC, the SWRCB, and the Los Angeles RWQCB (LA-RWQCB). Neither DTSC, SWRCB, nor LA-RWQCB provided comments suggesting that the SSFL represents a risk or hazard to recreation users in the Phase II.a or Phase II.b planning areas. Despite the lack of comments from the regulatory oversight agencies, on April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

Response to Comment No. B7-2:

Please see Response to Topical Comment A3 regarding trail names.

Please see response to No. B7-1 regarding removal of the Phase II.b area from the Plan.

C. AGENCY IN-PERSON COMMENTS – NOVEMBER 16, 2017 AGENCY MEETING

C1.
SANITATION DISTRICTS OF LOS ANGELES COUNTY
1955 Workman Mill Road
Whittier, CA 90601

Ed Stewart
Civil Engineer

Response to Comment No. C1-1:

Social trails cannot become official trails automatically.

There is extensive information publicly available regarding prescriptive easements and the process for property owners to protect themselves from the prescriptive easements process. The process for prescriptive rights trails involves a third party demonstrating use (a public agency advocate is required). Until this process has been completed, it is trespassing.

Response to Comment No. C1-2:

It is understood that the related Newhall Ranch project (Related Project I, or Entrada North) will include a trail easement for the Santa Clara River trail that is proposed to cross through the Valencia Water Reclamation Plant (WRP), which is now shown as Segment SCR3 of the proposed Santa Clara River trail corridor in the Trails Master Plan. The March 2015 Initial Study for this related project has determined that the Entrada North project would result in significant impacts to Hazards and Hazardous Materials including impacts regarding reasonably foreseeable upset and accident conditions involving the release of hazardous materials or waste into the environment, as well as Transportation/Traffic, that would be carried forward in an EIR.[16,17]

It is understood that the proposed Santa Clara River trail corridor would cross the Sanitation Districts of Los Angeles County's (LACSD) Valencia Water Reclamation Plant access roads and requires coordination with LACSD to ensure the safety of passing pedestrian, bicyclists, and equestrians. DPR will coordinate with LACSD to ensure that planning for trails that cross LACSD's access roads adequately considers the safety of passing pedestrians, bicyclists, and equestrians. At a minimum, it is anticipated that Traffic Control Plans would be required for the construction, operations, and maintenance phases of any trail segments that cross LACSD's access roads.

[16] County of Los Angeles Department of Regional Planning Released for public review March 10, 2015. Entrada North: Environmental Checklist Form (Initial Study). Available at: http://planning.lacounty.gov/assets/upl/case/tr071377_initial-study.pdf

[17] County of Los Angeles Department of Regional Planning Released for public review March 10, 2015. Entrada North: Notice of Preparation of a Draft Environmental Impact Report and Public Scoping Meeting. Available at: http://planning.lacounty.gov/assets/upl/case/tr071377_nop.pdf

Response to Comment No. C1-3:

Please see Response to Comment C1-2. The proposed The Old Road trail corridor segment of concern in this in-person comment has now been labeled as Segments SCR3, SCR4, and SCREX of the Santa Clara River Trail corridor in the Trails Master Plan.

As stated in Section 2.17, *Transportation/Traffic*, of the MND, during construction of trail segments, contractors would utilize traffic warning signs, flag persons, and other measures to maintain access for all properties and to facilitate traffic flow during construction of trails. This language from Section 2.17 has been inserted into Section 1.11, *Construction Scenario*, of the MND for clarification. DPR shall initiate coordination efforts to ensure safe crossing is implemented as individual trail segments are identified for development. DPR posts signs on trails that are closed during construction recommending other trails in the area and posts trail closure notifications on the County's trails website (https://trails.lacounty.gov/). Language regarding DPR's existing trail closure notification methods has been added to Section 1.12, *Operations and Maintenance*, of the MND for clarification purposes.

Response to Comment No. C1-4:

DPR appreciates LACSD's support of the proposed project. Please see Response to Comment C1-2.

D. PUBLIC WRITTEN COMMENTS

D1
Alan Salazar
chumashstories@gmail.com

Response to Comment No. D1-1:

The County and Sapphos Environmental, Inc. conducted two consultation meetings at the Fernandeño Band of Tataviam Indians Tribal Office with Rudy Ortega and Kimia Fatehi. The tribe representatives were provided maps and GIS data of the proposed trail segments before public review. The tribe representative ranked each of the segments based on sensitivity for tribal cultural resources and notified the County of which segments they would like to be monitored by a Tataviam Native American monitor during construction of the trails. The Fernandeño Band of Tataviam Indians tribe representatives agreed with mitigation measures proposed in the MND. To further differentiate between the Cultural Resources and Tribal Cultural Resources environmental issue areas, Mitigation Measures CULTURAL-1, CULTURAL-2, and CULTURAL-4 have been revised to remove Tribal Cultural Resources. Mitigation Measures TRIBAL-1, TRIBAL-2, and TRIBAL-3 have been added to Section 2.18, *Tribal Cultural Resources*, of the MND. Mitigation Measures TRIBAL-1 and TRIBAL-2 state that the "DPR shall require monitoring of all ground disturbing activities by a Native American monitor within 60 feet of a known tribal cultural resource. In addition, consultation shall be undertaken with the Native American local Tribal contacts designated by the NAHC to determine if a Native American monitor shall be present during all or a portion of the ground-disturbing activities within additional areas that are sensitive for Tribal Resources." Coordination with the Fernandeño Band of Tataviam Indians regarding the Native American monitoring will continue as the individual trail segments are developed.

D2.
Manuel Santana
25208 Wheeler
Newhall, CA 91321

Response to Comment No. D2-1:

The Minnie-Lotta Trail, as conceptualized in 2017, would cross APN 2826020028. An alternative alignment to the proposed MIL-2 trail segment has been provided to avoid this property (see Figure 4-13, *Phase II-7*, and revised details regarding the Minnie-Lotta Trail in the Trails Master Plan; see Figure 1.9-1, *Proposed Trails Plan*, and revised details regarding the Minnie-Lotta Trail in the MND). The new alignment of the Minnie-Lotta Trail would not allow for continuation of the Minnie-Lotta Trail, as previously planned, but would provide the same overall connectivity between Mentryville and Lyons Ranch. As noted in Response to Topical Comment No. A5 regarding Trail Easement and Open Space Acquisition, the proposed project is conceptual in nature, and the locations of proposed trails are subject to adjustment should development be pursued. Additionally, if the property owner were to grant a trail easement to the County, the County would work collaboratively with them to find a route that works for both parties. The County is not proposing to develop without the property owner's consent.

No other parcels belonging to the Santana Land Trust have been identified within the study area.

D3.
Ralph Combs
The Termo Company
RalphC@TermoCo.com

Response to Comment No. D3-1:

The County is in receipt of comments the provided by Termo. As requested, a pdf of the large-scale map, of trails on the vicinity of Termo property, was transmitted via e-mail.

Updated DOGGR well and oil field data from January 2018 has been reviewed to verify that there are no active oil wells located within 100 feet of proposed trail corridors or trail-related facilities. The Oak Canyon Oil Field is located approximately 3.5 miles northwest of the Phase II.a area, the Oat Mountain Oil Field is located approximately 0.3 mile south of the Phase II.a area, and the Aliso Canyon Oil Field is located approximately 0.5 mile south of the Phase II.a area. Within the Oat Mountain Oil Field, the proposed Towsley to RIVA trail corridor would be located approximately 367 feet west of the nearest active oil well; the nearest inactive well would be a plugged well located approximately 850 feet southwest of the proposed Towsley to RIVA trail corridor. Within the Aliso Canyon Oil Field, the proposed Wiley to RIVA trail corridor would be located approximately 885 feet north of the nearest active oil well; the nearest inactive well would be a plugged well located 754 feet northeast of the proposed Wiley to RIVA trail corridor.

Response to Comment No. D3-2:

On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses. As stated in Section 2.12, *Mineral Resources*, of the MND, there are four active oil wells within the Phase II area (formerly Phase II.a area) and no active oil wells within the Phase II.b area.

The applicable figure in the MND (Figure 2.12-1, *Known Mineral Resources*), has been updated to address revisions made to the proposed trails and trail facilities. There are no proposed trail corridors or trail facilities which would be located within 100 feet of an active oil well. The nearest proposed trail corridor to an active oil well is the Pico Canyon trail corridor, which is located approximately 744 feet south of an active well. The location where a proposed trail facility (Trailhead & Staging Area TS2) most closely approaches one of the four active oil wells ("Ferguson" 8 in the Phase II area (formerly Phase II.a area) is approximately 674 feet (see Figure 2.12-1 in the MND).

D4.
Matthew Booth
parks@neighborhoodla.com

Response to Comment No. D4-1:

The Mountains Recreation and Conservation Authority (MRCA)[18] and other agencies have been invited to review the Trails Master Plan at the outset and upon completion of the draft Trails Master Plan and MND. The NOI to adopt an MND and hyperlinks to the draft Trails Master Plan and MND have been sent to California State Parks, Caltrans, the City of Los Angeles, the County of Ventura including the County of Ventura Parks Department, the Rancho Simi Recreation & Park District, MRCA, the Trust for Public Land (TPL),[19] and other agencies and organizations for review during the 45-day public review period. MRCA has reviewed draft alignments and provided no recommendations for changes. DPR will continue coordination with agencies and organizations active in the area, specifically MRCA and TPL.

[18] The MRCA is a local partnership between the Santa Monica Mountains Conservancy, the Conejo Recreation and Park District, and the Rancho Simi Recreation and Park District. Website: http://www.mrca.ca.gov/

[19] The TPL helps communities raise funds, conduct research and planning, acquire and protect land, and design and renovate parks, playgrounds, trails, and gardens. Website: https://www.tpl.org/about/overview#sm.001dd41srsl1eed11up2jsm3ffa9k

D5.
Sonia Plank
23942 Box Canyon Road
West Hills, California 91304

Response to Comment No. D5-1:

Please see Response to Topical Comment A5 regarding Trail Easement and Open Space Acquisition, regarding the conceptual nature of the Trails Master Plan. The maps in the Trails Master Plan are intended to show the overall routes that the proposed trail system would provide, although land acquisition and design at the project level would be determined on a case-by-case basis based on property rights and site-specific conditions. The County is not proposing to develop without the property owner's consent.

On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses. Please note that the National Park Service's conceptual route for the Rim of the Valley is shown as going through this same parcel in the most recently available maps (2016).[20]

Response to Comment No. D5-2:

Please see Response to Topical Comment A4 on Safety and Security regarding trespassing concerns. The purpose of the Trails Master Plan is to replace unsanctioned use with a designated trail system that facilitates safe and secure recreational use, anticipated to reduce trespassing.

Please see Response to Topical Comment A5 on Trail Easement and Open Space Acquisition regarding proposed trail corridors adjacent to property owned by the City of Los Angeles Department of Water and Power (LADWP).

Please see response to Comment No. D5-1 regarding removal of the Phase II.b area from the Plan. Trail corridors proposed within incorporated cities indicate recommended regional trail network connections but are located outside DPR's jurisdiction, and would be developed either by the City or the property owner. The County is not proposing to develop without the property owner's consent.

[20] National Park Service. Transmitted to Congress February 16, 2016. Rim of the Valley Corridor Special Resources Study. Final Study Documents. Selected Alternative Map Available at:
https://parkplanning.nps.gov/document.cfm?parkID=422&projectID=31945&documentID=70887

Response to Comment No. D5-3:

Revising the County's multi-use trails policy is beyond the scope of the proposed project. With the exception of some natural areas which exclude mountain biking, all County regional trails are multi-use, in accordance with the County's multi-use trail policy. Section 1.9, *Project Description*, of the MND has been revised to clarify that, consistent with Section 4.3.6, *Way-finding Signs*, of the County Trails Manual and DPR's adopted trail way-finding sign program, way-findings signs would be designed to orient the trail user, describe etiquette for all users consistent with the County's multi-use policy.

D6.
George Tash
P.O. Box 152
Sumis, California 93066
George@gtwaterproducts.com

Response to Comment No. D6-1:

The County appreciates the expressed willingness to cooperate in the ultimate development of the Trails Master Plan. A detailed map was provided to George Tash on December 12, 2017. DPR will engage in ongoing discussions with property owners if easements are to be negotiated, and this property owner's interest in providing an easement has been noted.

D7.
Dina Fisher
9340 Ventura Way
Chatsworth CA
i@dinafisher.com

Response to Comment No. D7-1:

Thank you for your suggestion. The design of trailhead centerpieces is beyond the scope of the proposed Trails Master Plan. As stated in Section 5.3, *Trail Access Acquisition Methods*, of the Trails Master Plan, the County can use the following tools and techniques for trail access acquisition and open space conservation: (1) fee simple purchase, (2) purchase and sale with easement, (3) lease or license, (4) land donations, (5) bargain sale, (6) bequest or living trust, (7) purchase option, or (8) right of first refusal. Should the County decide to pursue development in the future, the County will work collaboratively with the property owners to grant a trail easement to the County. The County Trails Manual allows for the consideration of interpretative elements in conjunction with the design of trailhead and trail segments. As project proponents advance projects to implement trailheads or trail segments, design solutions could be considered in conjunction with the trail design.

D8.
Tom Gerardi

Response to Comment No. D8-1:

Please see Response to Topical Comment A3 regarding Trail Names.

On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

Response to Comment No. D8-2:

Thank you for bringing your concern about off-road use and dumping in the Phase II.b area to the County's attention. Please see Response to Topical Comment A4 on Safety and Security regarding vandalism and trespassing concerns.

Please see response to Comment No. D8-1 regarding removal of the Phase II.b area from the Plan.

D9.
Darlene Brothers Wageman
Chatsworth Neighborhood Council & SSMPA
P.O. Box 5225
West Hills, California
Darlene@wpins.com

Response to Comment No. D9-1:

Johnson Motorway Trail is beyond the scope of the proposed project.

However, the County is investigating the referenced violations to address conflicts between gated communities and public trail easement users, including review of the trail signage. The County Trails Manual may be updated as a result of the investigation. The public may contact the County Sherriff any time access to a public trail is being blocked, or any obstruction is placed on a County-sanctioned trail.

D10.
Thomas Gerardi
tjag@dslextreme.com

Response to Comment No. D10-1:

Please see Response to Topical Comment A1 regarding Trailhead TS7.

On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

Response to Comment No. D10-2:

Responses to your comments will be provided by DPR 10 days prior to the Board of Supervisors hearing for the Final Trails Master Plan and MND. The responses will include an update on changes made to the Trails Master Plan and MND.

D11.
Mr. and Mrs. Altmayer
Georgia17a23@gmail.com

Response to Comment No. D11-1:

Please note that no trailhead has been proposed at 9955 Andora Avenue outside of the Phase II.b area near the intersection of Andora Avenue with Valley Circle Boulevard, Lassen Street, and Baden Avenue. In addition, on April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

Please see Response to Topical Comment A5 regarding trail easement acquisition. Trail corridors proposed within incorporated cities indicate recommended regional trail network connections but are located outside DPR's jurisdiction, and would be developed either by the City or the property owner. The County is not proposing to develop without the City's or property owner's consent.

Response to Comment No. D11-2:

Please see Response to Topical Comment A4 regarding safety and security concerns.

The Santa Susana Pass State Historic Park is located approximately 0.6 mile north of the Phase II.b area and approximately 4.5 miles south of the Phase II.a area of the SSMTMP-PII. Please see response to Comment No. D11-1 regarding removal of the Phase II.b area from the Plan. Santa Susana Pass State Historic Park is a state park managed by the California Department of Parks and Recreation. DPR does not manage or maintain this park. It is understood that the park hours are 8:00 a.m. to sunset, which is similar to County park and trail hours (sunrise to sunset). Noise complaints should be filed with the LAPD or by calling the Santa Susana State Historic Park at (818) 784-4849 or info@parks.ca.gov.

Response to Comment No. D11-3:

Please see Response to Topical Comment A6 regarding development projects.

Please see Response to Topical Comment A5 regarding trail easements within the City of Los Angeles. Please see response to Comment No. D11-1 regarding removal of the Phase II.b area from the Plan. Trail corridors and trail facilities proposed within incorporated cities indicate recommended regional trail network connections but are located outside DPR's jurisdiction, and would be developed either by the City or the property owner.

Traffic and safety issues have been taken into consideration during the development of the Trails Master Plan and in the MND. During the project development phase, traffic levels are assessed for each of the major trails and population centers at City of Santa Clarita and the Interstate 5 Freeway,

and recommendations are made to balance the recreational needs of the users while minimizing on-road and off-road impacts to traffic to the community, both on roads and freeways. Trip generation is estimated for proposed trail locations at trail access points. Recommendations for the location of proposed trail access points are made in a way that balance the community needs and not conflict with peak roadway demands. Minimal impacts on traffic conditions are anticipated during weekdays. Furthermore, the proposed trails would be located off-street so they would not change the capacity for automobiles or trucks. The Transportation Element of the County General Plan and the 2016 Southern California Association of Governments (SCAG) Regional Transportation Plan (RTP) principles would be adhered to, in order to maximize trail use for biking, pedestrian, and equestrian functions while minimizing impacts to roads and traffic. The 2016 SCAG RTP places a priority on reducing per capita vehicle miles traveled (VMT) by providing recreation opportunities nearer to where people live and work.

Response to Comment No. D11-4:

Please see Response to Topical Comment A4 regarding safety and security concerns.

Santa Susana Pass State Historic Park is a state park managed by the California Department of Parks and Recreation. Security-related complaints within the park should be filed by calling the Santa Susana State Historic Park at (818) 784-4849 or info@parks.ca.gov. Complaints regarding theft, vandalism, and trespassing on County property and private property should be directed to the County of Los Angeles Sheriff Department in unincorporated territory and the City of Santa Clarita or City of Los Angeles Police Department within the City of Los Angeles. To report County trail related issues, contact the County's Parks Facilities Call Center at 877-601-4850.[21]

[21] County of Los Angeles Department of Parks and Recreation. Accessed 31 January 2018. Frequently Asked Questions. Keyword: "maintenance." Available at: https://trails.lacounty.gov/Search?searchKeyword=maintenance

D12.
Bonnie Klea
Bonnie1@dslextreme.com

Response to Comment No. D12-1:

Please see Response to Topical Comment A3 regarding trail names. In addition, on April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

D13.
Chatsworth Nature Preserve Coalition Delegates
Carla.Bollinger@halo.com

Response to Comment No. D13-1:

The plan does not propose trails within the preserve, and respects LADWP's decision to not install trails within the preserve; the Trails Master Plan proposed only a trail around the perimeter. In addition, on April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

As noted in Response to Topical Comment No. A5 on Trail Easement and Open Space Acquisition, the proposed project is conceptual in nature, and the locations of proposed trails are subject to adjustment should development be pursued. Trail corridors proposed within incorporated cities indicate recommended regional trail network connections but are located outside DPR's jurisdiction, and would be developed either by the City or the property owner. The County is not proposing to develop without the property owner's consent.

Response to Comment No. D13-2:

Please see response to Comment No. D13-1 regarding removal of the Phase II.b area from the Plan.

Response to Comment No. D13-3:

Please see response to Comment No. D13-1 regarding removal of the Phase II.b area from the Plan.

The maps in the Trails Master Plan are intended to show the overall routes that the proposed trail system would provide and recommended locations for trail facilities, although land acquisition and design at the project level would be determined on a case-by-case basis based on property rights and site-specific conditions. As stated in Section 5.3, *Trail Access Acquisition Methods*, of the Trails Master Plan, the County can use the following tools and techniques for trail access acquisition and open space conservation: (1) fee simple purchase, (2) purchase and sale with easement, (3) lease or license, (4) land donations, (5) bargain sale, (6) bequest or living trust, (7) purchase option or (8) right of first refusal. Should the County decide to pursue development in the future, the County will work collaboratively with the property owners to grant a trail easement to the County. Wherever feasible, the alignments have been rerouted to minimize encroachment on parcels where the homeowner has expressed opposition to accommodating a trail segment. Trail corridors and related trail facilities proposed within incorporated cities indicate recommended regional trail network connections but are located outside DPR's jurisdiction, and would be developed either by the City or the property owner. The County is not proposing to develop trails or related trail facilities without the City's or property owner's consent.

Response to Comment No. D13-4:

The Trails Master Plan does not propose trails within the preserve, and respects LADWP's decision to not install trails within the preserve. Please see response to Comment No. D13-1 regarding removal of the Phase II.b area from the Plan. The analysis of Cultural Resources in the MND involved obtaining records searches at the Natural History Museum of Los Angeles County and South Central Coastal Information Center, coordination with the NAHC and Native American representatives, and tribal consultation in accordance with Assembly Bill 52. Cultural consultants will be consulted when specific trails are established at the project level. Mitigation Measure CULTURAL-2: Pre-Construction Surveys states that at the time that any new segment of trail is proposed for development that would require ground-disturbing activities in soils that have been predominantly in situ during the past 50 years, records and archival information shall be reviewed to determine if there are any recorded unique archaeological resources and significant historical resources as defined in Section 15064.5(a) of the CEQA Guidelines, or Tribal cultural resources as defined by AB 52 in the project footprint. Where all or a portion of the project footprint has not been surveyed for cultural resources within two years of a proposed ground-disturbing activity, a qualified archaeologist who meets the Secretary of the Interior's professional qualification standards for archaeology and shall conduct a Phase I Walkover Survey to ascertain the presence or absence of unique archaeological and/or significant historical resources, as defined in Section 15064.5(a) of the CEQA Guidelines.

As noted in Response to Topical Comment No. A5 on Trail Easement and Open Space Acquisition, the proposed project is conceptual in nature, and the locations of proposed trails are subject to adjustment should development be pursued. Trail corridors proposed within incorporated cities indicate recommended regional trail network connections but are located outside DPR's jurisdiction, and would be developed either by the City or the property owner. The County is not proposing to develop without the property owner's consent.

Response to Comment No. D13-5:

Please see Response to Topical Comment A6 regarding development projects. Please note that the lead agency for the Andora Estates subdivision project is the City of Los Angeles.[22] Please see response to Comment No. D13-1 regarding removal of the Phase II.b area from the Plan. Trail corridors proposed within incorporated cities such as the City of Los Angeles indicate recommended regional trail network connections but are located outside DPR's jurisdiction, and would be developed either by the City or the property owner. The County is not proposing to develop without the property owner's consent.

Response to Comment No. D13-6:

Please see Response to Topical Comment A6 regarding development projects.

[22] City of Los Angeles Department of City Planning. Accessed 10 January 2018. Andora Subdivision Project. Available at: https://planning.lacity.org/eir/andorasubdivision/DEIR/index-andora.html

Response to Comment No. D13-7:

Please see Response to Topical Comment A6 regarding development projects.

D14.
Devyn Gortner
devyngortner@gmail.com

Response to Comment No. D14-1:

On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

The maps in the Trails Master Plan depict conceptual routes that the proposed trail system would provide, although land acquisition and design at the project level would be determined on a case-by-case basis based on property rights and site-specific conditions. If the California Department of Toxic Substance Control (DTSC) determines that restrictions on recreation use in an area are warranted to protect public health and safety, the County would comply with any relevant recommendations.

Response to Comment No. D14-2:

Please see Response to Topical Comment A3 regarding trail names. Please see response to Comment No. D14-1 regarding removal of the Phase II.b area from the Plan.

Response to Comment No. D14-3:

The DTSC is the responsible agency whose mission includes protection of California's people and environment from harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of chemically safer products. Similarly, the SWRCB develops statewide water quality policies that are enforced by the State's nine RWQCBs. The MND was provided to the Governor's Office of Planning and Research for distribution to DTSC, the SWRCB, and the LA-RWQCB. Neither DTSC, SWRCB, nor LA-RWQCB provided comments suggesting that the SSFL represents a risk or hazard to recreation users in the Phase II.a or Phase II.b planning areas. Please see response to Comment No. D14-1 regarding removal of the Phase II.b area from the Plan. The County will abide by all land use planning restrictions imposed by DTSC, the SWRCB, or the LA-RWQCB, in consideration of the protection of public health and safety.

Please see Response to Topical Comment A2 regarding the SSFL. The implementation plan for the Trails Master Plan is envisioned to occur between the time of approval and the 2035 planning horizon. The County's ability to implement proposed trails and trail amenities will be influenced by several factors: (1) availability of property, (2) funding, (3) successful Measure A grant applications, (4) subdivisions within the planning area with Quimby dedications, and (5) general fund appropriations. Sources of funding dictate the pace of trail development, in consideration of (1) subdivisions (Quimby Act – trails as parks), (2) Measure A can fund park projects (CEQA process facilitates the ability to match/leverage funds), and (3) the generosity of neighbors (people donating

lands/easements). If DTSC determines that restrictions on recreation use in an area are warranted to protect public health and safety, Los Angeles County would comply with any relevant recommendations.

D15.
Ken Raleigh
Chairperson for SCV Trail Users
scvtrailusers@gmail.com

Response to Comment No. D15-1:

Trails within the plan have been prioritized for implementation based upon many criteria. Major linkages such as the Palo Sola Truck Road will be a high priority, but are subject to negotiations, agreements, and land acquisitions, which cannot be fully anticipated.

The Safe, Clean Neighborhood Parks and Beaches Measure of 2016 (Measure A) was approved by voters to continue funding for parks, open space, and natural local water resources through the provision of an annual parcel tax of 1.5 cents per square foot of development:[23]

> It is the intent of this proposition to provide funds to benefit property and improve the quality of life throughout the District by preserving and protecting parks, safe places to play, community recreation facilities, beaches, rivers, open spaces, water conservation, youth and veteran career development, and the urban tree canopy. Funds will be disbursed by the District consistent with the 2016 Countywide Park Needs Assessment to ensure all communities within the County can fund local priorities.

The Los Angeles County Regional Park and Open Space District is responsible for implementing Measure A. As stated in Measure A, proceeds of the tax shall be allocated by the District to develop and implement grant programs investing in eligible projects consistent with or similar to the projects identified in the 2016 Park Needs Assessment. Funding will be awarded in response to grant applications.

Your support of the Trails Master Plan shall be taken into consideration during the decision-making process by the County Board of Supervisors.

[23] County of Los Angeles. November 8, 2016. Full Text of Ballot Measures A. PR-004791-1. LA 227-028. Available at: http://rposd.lacounty.gov/wp-content/uploads/2016/10/Measure_A_Ballot.pdf

D16.
Marie Mason
Rocketdyne Cleanup Coalition
info@rocketynecleanupcoalition.org

Response to Comment No. D16-1:

Please see Response to Topical Comment A1 regarding removal of the proposed Woolsey to Sage Ranch trail corridor from consideration in the Trails Master Plan.

Please see Response to Topical Comment A2 regarding the SSFL. On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

Response to Comment No. D16-2:

Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D16-3:

Please see Response to Topical Comment A2 regarding the SSFL. Trails proposed in the Trails Master Plan are not, as of the completion of the plan, scheduled for construction. It is anticipated that the trails will be constructed incrementally over the 2035 planning horizon as a result of a variety of factors: conditions of approval of development projects, particularly residential subdivisions, segments funded by Measure A grant monies, and segments for which private property owners provide easements, or the Department and Parks and Recreation acquires fee-title of an easement to construct. Should the development of the trails in this plan be pursued, the exact alignment of trails will be subject to adjustment, and no trail development will take place without the explicit consent of current property owners. Similarly, if DTSC determines that restrictions on recreation use in an area are warranted to protect public health and safety, Los Angeles County would comply with any relevant recommendations.

Response to Comment No. D16-4:

Please see Response to Topical Comment A3 regarding trail names. Please see response to Comment No. D16-1 regarding removal of the Phase II.b area from the Plan.

Response to Comment No. D16-5:

The DTSC is the responsible agency whose mission includes protection of California's people and environment from harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of chemically safer products. Similarly, the SWRCB develops statewide water quality

policies that are enforced by the State's nine RWQCBs. The MND was provided to the Governor's Office of Planning and Research for distribution to DTSC, the SWRCB and the LA-RWQCB. Neither DTSC, SWRCB, nor LA-RWQCB provided comments suggesting that the SSFL represents a risk or hazard to recreation users in the Phase II.a or Phase II.b planning areas. Please see response to Comment No. D16-1 regarding removal of the Phase II.b area from the Plan. DPR will comply with any restrictions to access to public open space for recreation use specified by DTSC, the SWRCB or the LA-RWQCB. Please see Response to Topical Comment A2 regarding the SSFL.

D17.
Committee to Bridge the Gap
Daniel Hirsch
Dhirsch1@cruzio.com

Response to Comment No. D17-1:

Please see Response to Topical Comment A2 regarding the SSFL. It is anticipated that the trails will be constructed incrementally over the 2035 planning horizon as a result of a variety of factors: conditions of approval of development projects, particularly residential subdivisions, segments funded by Measure A grant monies, and segments for which private property owners provide easements, or the DPR acquires fee-title of an easement to construct. Should the development of the trails in this plan be pursued, the exact alignment of trails will be subject to adjustment, and no trail development will take place without the explicit consent of current property owners. Similarly, if DTSC determines that restrictions on recreation use in the Phase II.b area are warranted to protect public health and safety, Los Angeles County would comply with any relevant recommendations.

Response to Comment No. D17-2:

Please see Response to Topical Comment A2 regarding the SSFL.

On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

Response to Comment No. D17-3:

Please see Response to Topical Comment A1 regarding removal of the proposed Woolsey to Sage Ranch trail corridor from consideration in the Trails Master Plan.

Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D17-4:

Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D17-5:

Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D17-6:

Please see Response to Topical Comment A1 regarding removal of the proposed Woolsey to Sage Ranch trail corridor from consideration in the Trails Master Plan.

The DTSC is the responsible agency whose mission includes protection of California's people and environment from harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of chemically safer products. Similarly, the SWRCB, develops statewide water quality policies that are enforced by the State's nine RWQCBs. The MND was provided to the Governor's Office of Planning and Research for distribution to DTSC, SWRCB and LA-RWQCB. Neither DTSC, SWRCB, nor LA-RWQCB provided comments suggesting that the SSFL represents a risk or hazard to recreation users in the Phase II.a or Phase II.b planning areas. Please see response to Comment No. D17-2 regarding removal of the Phase II.b area from the Plan. DPR will comply with any restrictions to access to public open space for recreation use specified by DTSC, the SWRCB or the LA-RWQCB. Please see Response to Topical Comment A2 regarding the SSFL.

Thank you for bringing to the County's attention that the SSFL has recently been removed from the proposed Rim of the Valley unit of the Santa Monica Mountains National Recreation Area under consideration in U.S. House Resolution (H.R.) 4086 (Rim of the Valley Corridor Preservation Act).[24,25] The proposed Rim of the Valley unit does not involve trails. The language in the proposed Rim of the Valley Corridor Preservation Act has been reviewed, and trails are not addressed in the bill. The bill would enable the National Park Service and the local community to "better protect natural resources and habitats, and provide members of the community with improved access to nature for recreational and educational purposes." As the bill is written as of February 2018, there is no mention of the Rim of the Valley trail corridor. Congressman Adam Schiff's staff have verified that the proposed bill does not mention trails.[26] The proposed Rim of the Valley unit has been added to Section 1.13, *Related Projects*, in the MND as Related Project M.

The final Rim of the Valley Corridor Special Resource Study was transmitted to Congress on February 2016.[27] The Rim of the Valley area shown as Related Project C in Figure 1.13-1a, *Related Projects (Regional)*, in the Project Description of the MND is based on the February 2016 Rim of the Valley Special Resource Study and was obtained from the National Park Service on January 20, 2017. The Selected Alternative Map for the Rim of the Valley Corridor Special Resource Study does not indicate any realignments of the Proposed Rim of the Valley Trail.[28]

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[24] Steve Scauzillo. San Gabriel Valley Tribune. October 18, 2017. *Rim of the Valley: New plan emerges to add nearly 191K acres to Santa Monica Mountains Recreation Area.* Available at: https://www.dailynews.com/2017/10/18/rim-of-the-valley-new-plan-emerges-to-add-nearly-191k-acres-to-santa-monica-mountains-recreation-area/

[25] 115th Congress. Introduced October 19, 2017. *H.R.4086 - Rim of the Valley Corridor Preservation Act.* Available at: https://www.congress.gov/bill/115th-congress/house-bill/4086

[26] Male, Laura. 30 January 2018. Conversation with Ms. Courtney Fogwell, Legislative Assistant in the office of U.S. Congress Rep. Adam Schiff (D-CA28). Washington, D.C.

[27] National Park Service. Accessed 25 January 2018. *Rim of the Valley Corridor Special Resource Study.* Available at: https://parkplanning.nps.gov/document.cfm?parkID=422&projectID=31945&documentID=70887

[28] National Park Service. Transmitted to Congress February 16, 2016. *Rim of the Valley Corridor Special Resources Study.* Final Study Documents. Selected Alternative Map Available at: https://parkplanning.nps.gov/document.cfm?parkID=422&projectID=31945&documentID=70887

Response to Comment No. D17 Attachment 1:

The County has reviewed this 69-page attachment, "Supplemental Detailed Comments Regarding the Department of Toxic Substances Control Draft Program Environmental Impact Report on Cleanup of the Santa Susana Field Laboratory," which describes the history of the SSFL being established in a remote location that has since been developed, accidents associated with its nuclear and rocket testing activities, a summary of the litigation history and studies of the site, a background of established cleanup orders and deadlines, a review of the 2017 SSFL Draft PEIR, and a note that the SSFL has recently been removed from the proposed Rim of the Valley unit of the Santa Monica Mountains National Recreation Area under consideration in U.S. H.R.4086. It is understood that the Committee to Bridge the Gap and the Natural Resource Defense Council (NRDC) have been actively engaged in review of the SSFL PEIR. Please see Response to Topical Comment A2 regarding the SSFL. Please see response to Comment No. D17-2 regarding removal of the Phase II.b area from the Plan

The proposed Rim of the Valley unit does not involve trails. The language in the proposed Rim of the Valley Corridor Preservation Act has been reviewed, and trails are not addressed in the bill. Congressman Adam Schiff's staff have verified that the proposed bill does not mention trails.[29] The proposed Rim of the Valley unit has been added to Section 1.13, *Related Projects*, in the MND as Related Project M. The Selected Alternative Map for the Rim of the Valley Corridor Special Resource Study does not indicate any realignments of the Proposed Rim of the Valley Trail; it also does not provide a timeline for development of the Rim of the Valley Trail corridor.[30]

Response to Comment No. D17 Attachment 2:

The County has reviewed this seven-page attachment, a letter to Secretary Matthew Rodriguez at Cal-EPA and Director Barbara Lee at the DTSC regarding comments on the Draft PEIR and Draft Program Management Plan for the SSFL, which provided a summary of the history of the SSFL being established in a remote location that has since been developed, accidents associated with its nuclear and rocket testing activities, a summary of the litigation history and studies of the site, a background of established cleanup orders and deadlines, and a review of the 2017 SSFL Draft PEIR. It is understood that the NRDC, City of Los Angeles, and Committee to Bridge the Gap have been actively engaged in review of the PEIR. Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D17 Attachment 3:

The County has reviewed this six-page attachment, a 2006 cover letter to Jose Diaz and Yvette LaDuke at the DTSC regarding Centex Homes/Dayton Canyon Radiological Monitoring providing a background of the Dayton Canyon Radiological Monitoring measures, disclosing that extremely

[29] Male, Laura. 30 January 2018. Conversation with Ms. Courtney Fogwell, Legislative Assistant in the office of U.S. Congress Rep. Adam Schiff (D-CA28). Washington, D.C.

[30] National Park Service. Transmitted to Congress February 16, 2016. *Rim of the Valley Corridor Special Resources Study.* Final Study Documents. Selected Alternative Map Available at:
https://parkplanning.nps.gov/document.cfm?parkID=422&projectID=31945&documentID=70887

high concentrations of perchlorate were found in Dayton Creek in 2005 downstream from the SSFL, and expressing concern about public access to the relevant documents on DTSC's website. Please see response to Comment No. D17-2 regarding removal of the Phase II.b area from the Plan.

Response to Comment No. D17 Attachment 4:

The County has reviewed this 11-page attachment, "Comments on Radiological Monitoring of Dayton Canyon," the 2006 comments by Committee to Bridge the Gap arguing that the proposed work should be rejected and a new independent team needs to be brought in to evaluate the Dayton Canyon West area to avoid conflict of interest, conduct new measurements compared to the local background, and conduct new samples. There are no current or archived documents regarding Centex Homes available on DTSC's website.[31] The Centex Homes site, located at Roscoe Boulevard and Valley Circle Boulevard, is currently listed in DTSC's EnviroStor database as a 106-acre voluntary cleanup site for perchlorate (potential contaminant of concern) with "no further action" status as of October 2008.[32] It is understood that the Centex Homes site is located in the City of Los Angeles adjacent to the eastern edge of the Phase II.b area, and that the proposed Dayton Canyon trail corridor would cross through the Centex Homes site to Roscoe Boulevard and Valley Circle Boulevard. The 2008 Preliminary Endangerment Assessment Reports for the voluntary cleanup site note that DTSC will continue to monitor Dayton Creek. If DTSC determines that restrictions on recreation use in an area are warranted to protect public health and safety, Los Angeles County would comply with any relevant recommendations.

Please see Response to Topical Comment A2 regarding the SSFL.

Please see response to Comment No. D17-2 regarding removal of the Phase II.b area from the Plan.

[31] California Department of Toxic Substances Control. Accessed 12 February 2018. *Centex Homes.*Available at: http://www.dtsc.ca.gov/SiteCleanup/Projects/Centex.cfm

[32] California Department of Toxic Substances Control. Accessed 12 February 2018. *Envirostor.* Centex-Sterling Property (70000042). Available at: http://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=70000042

D18.
Teens Against Toxins
Devyn Gortner
Founder
teensagainsttoxins@gmail.com

Response to Comment No. D18-1:

The County appreciates Teens Against Toxins' letter to apprise the County of their concerns in relation to the ongoing investigation and evaluation of SSFL. Please see Response to Topical Comment A1 regarding removal of the proposed Woolsey to Sage Ranch trail corridor from consideration in the Trails Master Plan. Please see Response to Topical Comment A2 regarding the SSFL. On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

Response to Comment No. D18-2:

The County received multiple letters regarding concerns related to ongoing investigation and evaluation of SSFL and has deleted trail connections to SSFL. The DTSC is the responsible agency whose mission includes protection of California's people and environment from harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of chemically safer products. Similarly, the SWRCB develops statewide water quality policies that are enforced by the State's nine RWQCBs. The MND was provided to the Governor's Office of Planning and Research for distribution to DTSC, the SWRCB and the LA-RWQCB. Neither DTSC, SWRCB, nor LA-RWQCB provided comments suggesting that the SSFL represents a risk or hazard to recreation users in the Phase II.a or Phase II.b planning areas. Please see response to Comment No. D18-1 regarding removal of the Phase II.b area from the Plan. The Department of Parks and Recreation will comply with any restrictions to access to public open space for recreation use specified by DTSC, the SWRCB or the LA-RWQCB. Please see Response to Topical Comment A2 regarding the SSFL.

D19.
Denise Duffield
Associate Director
Physicians for Social Responsibility-Los Angeles
dduffield@psr-la.org

Response to Comment No. D19-1:

The County has received several letters regarding concerns related to ongoing investigation and evaluation of SSFL and has deleted trail connections to SSFL. Please see Response to Topical Comment A1 regarding removal of the proposed Woolsey to Sage Ranch trail corridor from consideration in the Trails Master Plan. Please see Response to Topical Comment A2 regarding the SSFL. On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

Response to Comment No. D19-2:

The County has received several letters regarding concerns related to ongoing investigation and evaluation of SSFL and has deleted trail connections to SSFL. Please see Response to Topical Comment A1 regarding removal of the proposed Woolsey to Sage Ranch trail corridor from consideration in the Trails Master Plan. Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D19-3:

The SSFL is being evaluated pursuant to the PEIR. The scope of the characterization and evaluation of SSFL is beyond the scope of the Trails Master Plan. The DTSC serves as the Lead Agency for the SSFL PEIR. Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D19-4:

The SSFL is being evaluated pursuant to the Program EIR. The scope of the characterization and evaluation of SSFL is beyond the scope of the Trails Master Plan. The DTSC serves as the Lead Agency for the SSFL PEIR. Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D19-5:

Section 2.9, *Hazards and Hazardous Materials*, of the MND has been expanded to acknowledge the ongoing characterization and evaluation in the PEIR. Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D19-6:

The County received multiple letters regarding concerns related to ongoing investigation and evaluation of SSFL and has deleted trail connections to SSFL. Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D19-7:

DPR planning efforts remain in conformance with the recommendations of DTSC. On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses. If DTSC determines that restrictions on recreation use in an area are warranted to protect public health and safety, Los Angeles County would comply with any relevant recommendations. Please see Response to Topical Comment A1 regarding removal of the proposed Woolsey to Sage Ranch trail corridor from consideration in the Trails Master Plan. Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D19-8:

Please see Response to Topical Comment A3 regarding trail names. Please see response to Comment No. D19-1 regarding removal of the Phase II.b area from the Plan.

Response to Comment No. D19-9:

The DTSC is the responsible agency whose mission includes protection of California's people and environment from harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of chemically safer products. Similarly, the SWRCB develops statewide water quality policies that are enforced by the State's nine RWQCBs. The MND was provided to the Governor's Office of Planning and Research for distribution to DTSC, SWRCB, and LA-RWQCB. Neither DTSC, SWRCB, nor LA-RWQCB provided comments suggesting that the SSFL represents a risk or hazard to recreation users in the Phase II.a or Phase II.b planning areas. Please see response to Comment No. D19-1 regarding removal of the Phase II.b area from the Plan. DPR will comply with any restrictions to access to public open space for recreation use specified by DTSC, SWRCB, or LA-RWQCB. Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D19 Attachment 1:

The County has reviewed this 69-page attachment, "Analysis of Boeing's Risk Assessments for the Santa Susana Field Laboratory," expressing concern that the SSFL Draft PEIR is grossly deficient due to its inadequate analysis of risks, providing a background of the SSFL site and the Resource Conservation and Recovery Act Corrective Program at SSFL; a review of Boeing's risk assessments; and overviews of Systems Test Lab-IV, the Environmental Effects Laboratory, the Area III Sewage

Treatment Plant, Compound A, Unaffiliated Areas, Happy Valley North, and Building 1359. It is understood that the Physicians for Social Responsibility – Los Angeles have been actively engaged in review of the PEIR. Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D19 Attachment 2:

The County has reviewed this two-page attachment, a September 2017 letter to Secretary Matthew Rodriguez at Cal-EPA and Director Barbara Lee at DTSC from Los Angeles County Supervisor Kuehl, Los Angeles County Supervisor Barger, Ventura County Supervisor Parks, Ventura County Supervisor Zaragoza, and Councilmember Englander regarding SSFL Cleanup Standards and the Boeing Company's "Updated Standardized Risk Assessment Methodology Work Plan," which expresses concern about Boeing's announcement that it is abandoning its commitment to clean its portion of SSFL (at least 85 percent of the site) as well as its commitment to cleaning up the site to a "recreational" rather than "residential" standard; and urging Cal-EPA and DTSC to not allow Boeing to cut costs and responsibilities. Section 2.2.3.5, *Soil Cleanup Requirements*, of the Background section of the SSFL Draft PEIR mentions that although Boeing filed a conservation easement on April 24, 2017, for its portion of SSFL, the PEIR analyzes the environmental impacts of cleanup activities for Suburban Residential use with garden of 25 percent of total diet. Please see response to Comment No. D19-1 regarding removal of the Phase II.b area from the Plan. Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D19 Attachment 3:

The County has reviewed this three-page attachment, an April 2017 letter from the Los Angeles County Board of Supervisors signed by the Chief Executive Officer to Ms. Stephanie Jennings at the U.S. Department of Energy (DOE) regarding review of the Draft Environmental Impact Statement (EIS) for remediation of Area IV and the Northern Buffer Zone of the SSFL proposed by the DOE. It is understood that the letter urges a full and timely cleanup of the SSFL site and expresses concern that radioactive and chemical contaminants from the long-closed SSFL have affected the soil, air, and water in nearby Los Angeles County communities for decades, posing serious health risks such as rare cancers, citing a clear violation of the 2010 Administrative Order on Consent between DTSC and DOE due to (1) the consideration of partial cleanup alternatives, (2) limited transportation routes and methods for the conveyance of contaminated materials that have the potential to impact neighborhoods, (3) inadequate proof for applicability of full exemptions based upon a Biological Opinion rendered by the U.S. Fish and Wildlife Service, and (4) inadequate public review period between the release of the Biological Opinion and the Final EIS.

The County received multiple letters regarding concerns related to ongoing investigation and evaluation of SSFL and has deleted trail connections to SSFL. It is understood that the Draft EIS lists Woolsey Canyon Road as the primary access road because it is the only serviceable road for heavy truck traffic to and from SSFL. S.5, *Future of Area IV and the Northern Buffer Zone*, of the Draft EIS states that although Boeing intends to maintain its portion of SSFL as undeveloped open space and restrict future land use to prevent development for commercial / industrial / agricultural / residential purposes, "Boeing has indicated it is committed to cleanup to a standard that is equivalent to a suburban residential standard that is more protective of human health than that applicable to open space uses." The 290-acre Area IV site is located approximately 2 miles west of the Phase II.b area, and the 182-acre Boeing Northern Buffer Zone is located approximately 1.4 miles west of the Phase II.b area of the Trails Master Plan.

Please see Response to Topical Comment A2 regarding the SSFL. Please see response to Comment No. D19-1 regarding removal of the Phase II.b area from the Plan.

Response to Comment No. D19 Attachment 4:

The County has reviewed this three-page attachment, a December 2015 letter from Los Angeles County Supervisor Kuehl, Councilmember Englander, and Senator Pavley to Barbara Lee at the DTSC expressing concerns regarding Boeing's risk assessments and proposals for no further action pending DTSC review, due to (1) Boeing's submissions proposing cleaning up the site to a less protective standard than the publicly promised suburban residential standard, (2) Boeing's extremely high post-cleanup estimated risk, and (3) Boeing's disclosure that the contamination is far worse than was known before. Please see response to Comment No. D19-1 regarding removal of the Phase II.b area from the Plan.

Please see Response to Topical Comment A2 regarding the SSFL.

D20.
The Southern California Federation of Scientists
scalfedscientists@gmail.com

Response to Comment No. D20-1:

The County received several letters regarding concerns related to ongoing investigation and evaluation of SSFL and has deleted trail connections to SSFL. Please see Response to Topical Comment A2 regarding the SSFL. On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

Response to Comment No. D20-2:

The County appreciates the concerns expressed by the Southern California Federation of Scientists in relationship to land use designations and related clean-up levels. The SSFL is located in Ventura County; therefore, the County of Los Angeles has no authority related to land use designations at SSFL.

Please see Response to Topical Comment A1 regarding removal of the proposed Woolsey to Sage Ranch trail corridor from consideration in the Trails Master Plan. Please see response to Comment No. D20-1 regarding removal of the Phase II.b area from the Plan.

Please see Response to Topical Comment A2 regarding the SSFL.

D21.
Michael Collins
Publisher/reporter
EnviroReporter.com LLC
Santa Monica, California
mlc@enviroreporter.com

Response to Comment No. D21-1:

Your support of the Trails Master Plan shall be taken into consideration during the decision-making process by the County Board of Supervisors.

Please see Response to Topical Comment A1 regarding removal of the proposed Woolsey to Sage Ranch trail corridor from consideration in the Trails Master Plan. On April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

Response to Comment No. D21-2:

The County has reviewed all of the provided information.

Please see response to Comment No. D21-1 regarding removal of the Phase II.b area from the Plan.

Response to Comment No. D21-3:

Please see Response to Topical Comment A2 regarding the SSFL.

The DTSC is the responsible agency whose mission includes protection of California's people and environment from harmful effects of toxic substances by restoring contaminated resources, enforcing hazardous waste laws, reducing hazardous waste generation, and encouraging the manufacture of chemically safer products. Similarly, the SWRCB, develops statewide water quality policies that are enforced by the State's nine RWQCBs. The MND was provided to the Governor's Office of Planning and Research for distribution to DTSC, SWRCB, and LA-RWQCB. Neither DTSC, SWRCB, nor LA-RWQCB provided comments suggesting that the SSFL represents a risk or hazard to recreation users in the Phase II.a or Phase II.b planning areas. Please see response to Comment No. D21-1 regarding removal of the Phase II.b area from the Plan. DPR will comply with any restrictions to access to public open space for recreation use specified by DTSC, SWRCB, or LA-RWQCB.

It is anticipated that the trails will be constructed incrementally over the 2035 planning horizon as a result of a variety of factors: conditions of approval of development projects, particularly residential subdivisions, segments funded by Measure A grant monies, and segments for which private property owners provide easements, or DPR acquires fee-title of an easement to construct. Should the

development of the trails in this plan be pursued, the exact alignment of trails will be subject to adjustment, and no trail development will take place without the explicit consent of current property owners. Similarly, if DTSC determines that restrictions on recreation use in an area are warranted to protect public health and safety, Los Angeles County would comply with any relevant recommendations.

Response to Comment No. D21-4:

Please see Response to Topical Comment A1 regarding removal of the proposed Woolsey to Sage Ranch trail corridor from consideration in the Trails Master Plan. Please see response to Comment No. D21-1 regarding removal of the Phase II.b area from the Plan.

Please see Response to Topical Comment A2 regarding the SSFL.

Response to Comment No. D21-5:

Please see Response to Topical Comment A3 regarding trail names. Please see response to Comment No. D21-1 regarding removal of the Phase II.b area from the Plan.

E. PUBLIC IN-PERSON COMMENTS – NOVEMBER 9, 2017, PUBLIC MEETING

Community Room at Stevenson Ranch Library
25950 The Old Road, Stevenson Ranch, California 91381
Thursday, November 9, 2017, from 6:00 p.m. to 8:00 p.m.

Response to Comment No. E1:

The existing Rice Canyon Trail (managed by MRCA) follows the creek until approximately 1,000 feet from the southern edge of the project study area. Following the creek further south would not provide additional regional connectivity within the scope of this project. Section 3.8, *Opportunities and Constraints*, of the Trails Master Plan noted that a trail continuing along this creek could potentially provide additional connectivity to the planned Rim of the Valley trail corridor.

Response to Comment No. E2:

Connections have been made to the planned Rim of the Valley corridor where feasible, via the proposed Towsley to RIVA and Wiley to RIVA trail corridors, as well as the existing Weldon Canyon Motorway trail (managed by MRCA).

Response to Comment No. E3:

Revisions to the County Trails Manual are outside the scope of the proposed project. Although Section 2.4, *Trail Types*, of the County Trails Manual does not describe slope for each trail type, Section 4.0, *Trail Design*, of the County Trails Manual establishes trail design guidelines regarding trail grade and outslope for each trail classification (please see Table 4.3.1-1, *Trail Classification Guidelines*, of the County Trails Manual).[33]

Response to Comment No. E4:

Your support of the Trails Master Plan shall be taken into consideration during the decision-making process by the County Board of Supervisors.

Response to Comment No. E5:

The proposed The Old Road trail corridor segment ORD6 is intended to remain on the hillside above I-5, and follows an existing service road.

Response to Comment No. E6:

The County is looking for opportunities to reduce trespassing. Although geofencing is beyond the scope of the Trails Master Plan due to a lack of adequate funding to provide this technology on the public side, property owners may wish to install geofencing. The County's website provides maps of

[33] County of Los Angeles Department of Parks and Recreation. Adopted May 17, 2011. Revised June 2013. County of Los Angeles Trails Manual Available at:
https://trails.lacounty.gov/Files/Documents/128/LA%20County%20Trails%20Manual%20%28Revised%2020171031%29.pdf

authorized County trails, and the County has implemented a signage program in the 5th Supervisorial District to providing wayfinding and clarify which trails are authorized.

Safety and security are social issues that the County takes very seriously during the design and development of trails. However, it is not an environmental issue pursuant to CEQA. As reported by multiple parties during the scoping process, unsanctioned recreational use occurs in the Castaic Area. The purpose of the Trails Master Plan is to replace unsanctioned use with a designated trail system that facilitates safe and secure recreational use. Complaints regarding trespassing and theft on both County property and private property would need to be directed to the LASD.

Response to Comment No. E7:

The recommended program for increasing trail accessibility through rental of a metal-detecting hiking cane is beyond the scope of the Trails Master Plan. However, programs for improving accessibility for trails would be better suited for a County Trails Manual update.

Response to Comment No. E8:

Trail corridors proposed within the Trails Master Plan would be developed as multi-use trails, consistent with the County's multi-use trails policy; bicyclists and hikers would therefore be able to access trails directly from trailheads and access points. Wherever feasible, connections have been made to existing and proposed bicycle facilities outside the study area.

Response to Comment No. E9:

Section 5.3, *Trail Acquisition Methods*, of the Trails Master Plan establishes ranking criteria for prioritizing trail development including physical status (is there no existing trail, a partially developed trail, or an existing trail?), potential trail and bikeway connections, destinations, property ownership, the negotiating agency(ies), and public support comments.

Please see Response to Topical Comment A5 regarding private property considerations. The maps in the Trails Master Plan are intended to show the overall routes that the proposed trail system would provide, although land acquisition and design at the project level would be determined on a case-by-case basis based on property rights and site-specific conditions. As stated in Section 5.3, *Trail Access Acquisition Methods*, of the Trails Master Plan, the County can use the following tools and techniques for trail access acquisition and open space conservation: (1) fee simple purchase, (2) purchase and sale with easement, (3) lease or license, (4) land donations, (5) bargain sale, (6) bequest or living trust, (7) purchase option, or (8) right of first refusal. Should the County decide to pursue development in the future, the County will work collaboratively with the property owners to grant a trail easement to the County. Wherever feasible the alignments have been rerouted to minimize encroachment on parcels where the homeowner has expressed opposition to accommodating a trail segment. Trail corridors and related trail facilities proposed within incorporated cities such as the City of Los Angeles indicate recommended regional trail network connections but are located outside DPR's jurisdiction, and would be developed either by the City or the property owner. The County is not proposing to develop without the City's or the property owner's consent.

Response to Comment No. E10:

Mitigation measures, as described in Section 2.3, *Biological Resources*, of the MND, are designed to avoid and/or minimize impacts to wildlife and habitat during the implementation of the plan.

Response to Comment No. E11:

Please see Response to Topical Comment A4 on Safety and Security regarding fire danger.

Response to Comment No. E12:

Please see Response to Topical Comment A4 on Safety and Security regarding increased trash/littering.

Response to Comment No. E13:

The number of people likely to use a particular regional trail depends on factors including population density within a half-mile (i.e., 10-minute) walking distance and 60-minute driving distance from the recreational facilities, popularity of destinations (regional desirability), recreation preferences of the population (e.g., preference for trails, soccer fields, or other types of recreation facilities), and the availability level of recreational resources in the area. As stated in Section 2.16, *Recreation*, of the MND, the 2016 Countywide Park Needs Assessment has determined that the Phase II area (formerly Phase II.a area) has three times the County average of parkland per 1,000 people, and prioritized project #10 is to "add trails at areas between schools and communities." Approximately 21.4 miles of existing trails within the Phase II area (formerly Phase II.a area) provide local provide local recreation opportunities to serve 2,260 persons (see Table 1.8-1, *Existing Trails*, of the MND). Based on this goal and approximately 26.5 miles of existing trails within the project study area, existing trails provide local recreation opportunities to serve 7,594 persons and decrease the local parkland deficit. There are 2.8 miles of existing County multi-use trails, 20.3 miles of existing Conservancy-managed trails, 6.3 miles of existing California State Parks–managed trails, 12.1 miles of existing National Park Service–managed trails, 30.5 miles of existing City-managed trails including a network of existing City of Santa Clarita multi-purpose trails, a network of City of Santa Clarita bicycle paths, and a network of County of Los Angeles Department of Public Works–managed bicycle paths within a 2-mile radius of the project study area.

In 2012, California State Parks conducted a survey on public opinions and attitudes on outdoor recreation in California.[34] Approximately 34.7 percent of 4,437 statewide respondents reported utilizing an unpaved trail for hiking, biking, or horseback riding at least once or twice a month or more during the last 12 months. Approximately 55.2 percent of respondents reported spending 5–10 minutes walking to the place they most often go to recreation; approximately 54.5 percent of respondents reported spending 11–60 minutes driving there.

As stated in Section 1.5 of the County Trails Manual, the National Recreation and Park Association has established a goal of providing 1 mile of trail per 1,000 people (approximately 50 feet of trail per

[34] California State Parks, Natural Resources Agency. January 2014. Survey on Public Opinions and Attitudes on Outdoor Recreation in California 2012. Available at: https://www.parks.ca.gov/pages/1324/files/publicopinionsattitudes2012_spoa.pdf

person) and the assumed rate of 11 percent of the population engaged in the use of trails to anticipate existing and future demand for trails.

With development of the entire approximately 56 miles of new trails considered in the Trails Master Plan, it is anticipated that there would be approximately 55,600 trail users served by the new trails. This estimate would be lower in more rural locations and higher in more urbanized locations.

F. PUBLIC IN-PERSON COMMENTS – NOVEMBER 16, 2017, PUBLIC MEETING

Multi-Purpose Room at Chatsworth Branch Library
21052 Devonshire Street, Chatsworth, California 91311
Thursday, November 16, 2017, from 6:00 p.m. to 8:00 p.m.

F1.
Question and Answer Period Held after Presentation

Response to Comment No. F1-1:

The implementation plan is envisioned to occur between the time of approval and the 2035 planning horizon. The County's ability to implement proposed trails and trail amenities will be influenced by several factors: (1) availability of property, (2) funding, (3) successful Measure A grant applications, (4) subdivisions within the planning area with Quimby dedications, and (5) general fund appropriations. Sources of funding dictate the pace of trail development, in consideration of (1) subdivisions (Quimby Act – trails as parks), (2) Measure A can fund park projects (CEQA process facilitates the ability to match/leverage funds), and (3) the generosity of neighbors (people donating lands/easements).

Response to Comment No. F1-2:

The County website shows all existing official trails and is updated as each new trail segment is approved. The Trails Master Plan prioritizes trails based on several factors and provides a road map for trail development.

Response to Comment No. F1-3:

The cost of development of each trail segment will depend on a number of factors: (1) source of funding, (2) the size of the undertaking (larger projects normally have an economy of scale), and (3) the inherent challenge of the final selected alignment. Since these factors cannot be known until the site-specific project is advanced, cost estimation is most appropriately deferred to the time of implementation. Trail development is a reasonably cost-effective solution for accommodating regional demand for recreation. The Los Angeles County Metropolitan Transportation Authority (Metro) is making backbone transit improvements for that are expected to enhance regional access to the public trail system. Cost is also addressed in general terms in Section 5.6, *Planning-Level Cost Summary*, of the Trails Master Plan.

Response to Comment No. F1-4:

All County trails in the plan have been conceptualized to accommodate multi-use.

Response to Comment No. F1-5:

Paved trails are typically managed by the County of Los Angeles Department of Public Works (not the subject of the plan). While nearly all trails in this plan are natural surface, the trails classified as "Urban Pedestrian Trail" in Table 4-1 of the Trails Master Plan have the option to be paved, as

deemed appropriate at the time of development. These trails may be paved to provide continuity with existing trails or to accommodate high levels of use for short distances.

F2.
Public In-Person Comments

Response to Comment No. F2-1:

The list of workshop attendees has been added to the distribution list for project notifications regarding actions pursuant to CEQA, unless attendees request to be removed from the distribution list. However, as not all workshop attendees may be interested in receiving volunteer sign-up lists, the distribution list will not be used to contact attendees for notifications not directly tied to the proposed project unless specific individuals have requested the notification.

Response to Comment No. F2-2:

Please see Response to Topical Comment A6 regarding development projects. The development of new roads or freeways is beyond the scope and capabilities of the Trails Master Plan.

Response to Comment No. F2-3:

Bike bells are beyond the scope of the Trails Master Plan. This relates to general trail etiquette. Your comment regarding equestrian-cyclist safety will be taken into consideration when updates are made to the County Trails Manual.

Response to Comment No. F2-4:

Yield triangle signs are included in the County's signage program and recommended in Section 4.3 of the County Trails Manual.

Response to Comment No. F2-5:

These design considerations are part of the County Trails Manual and are incorporated into the manual's trail design guidelines.

Response to Comment No. F2-6:

Trail corridors proposed in the Trails Master Plan have been planned as loops wherever feasible.

Response to Comment No. F2-7:

This would need to be incorporated into the County Trails Manual or another countywide policy and is beyond the scope of this Trails Master Plan.

Response to Comment No. F2-8:

This can be a consideration for a future County Trails Manual update.

Response to Comment No. F2-9:

Please see Response to Comment F2-4 regarding safety signage.

Response to Comment No. F2-10:

Thank you for expressing your safety concern. As stated in Table 4-2, *Trail Facility Descriptions*, of the Trails Master Plan and in Table 1.9-3, *Proposed Facilities*, of the MND, trash receptacles and wayfinding signage would be provided at all trailhead, trailhead & staging area, equestrian park, equestrian center, and bike skills area facilities. Wayfinding signage and the County Trails website (https://trails.lacounty.gov/) would alert trail users to potential trail hazards, including steep and rocky areas.

Response to Comment No. F2-11:

Chatsworth Reservoir improvements made by LADWP and safe street crossings within the City of Los Angeles are outside of the scope of this project. Furthermore, on April 23, 2018, DPR updated interested parties of the County's determination to remove the Phase II.b area from the Plan, resulting in the Phase II.a area being renamed Phase II. The County made this change as a result of environmental and health concerns that the County received during the public review period for the Plan and MND, related to the SSFL. The SSFL is located northwest of the Phase II.b area and at the time of preparation of this Final Notice of Intent to adopt this MND, the SSFL continued to be the focus of an active investigation by the DTSC involving consideration of clean-up options and associated allowable post-clean-up land uses.

Response to Comment No. F2-12:

Revising the County's multi-use trails policy is beyond the scope of the proposed project. With the exception of some natural areas which exclude mountain biking, all County regional trails are multi-use, in accordance with the County's multi-use trail policy.

Response to Comment No. F2-13:

Please see Response to Topical Comment A4 regarding safety signage. Please also see Response to Comment F2-10 regarding safety concerns.

Response to Comment No. F2-14:

Your support of additional trails on the west side of the San Fernando Valley shall be taken into consideration during the decision-making process by the County Board of Supervisors.

Please see Response to Comment D15-1 regarding the County's application process for Measure A funds.

Response to Comment No. F2-15:

Bike skills areas are intended to promote safe mountain biking practices and allow riders a place to practice in a controlled environment. They will not, however, replace the County's multi-use trails policy and prevent mountain bikers from using trails.

Response to Comment No. F2-16:

Please see Response to Comment No. D8-1.

Response to Comment No. F2-17:

The current contact to support trail development is Michelle O'Connor. The current contact to support trail maintenance is Brian Reeves.

Response to Comment No. F2-18:

No trails are currently planned within the Chatsworth Nature Preserve, and LADWP has shown reluctance to construct trails or provide recreational access within the preserve.

Please see response to Comment No. F2-11-1 regarding removal of the Phase II.b area from the Plan.

Response to Comment No. F2-19:

Please see Response to Comment No. F2-18.

Response to Comment No. F2-20:

Please see Response to Topical Comment A4 regarding trash in trail areas.

These recommendations can be incorporated into future County wayfinding standards updates, and onto signage at new trailheads.

Response to Comment No. F2-21:

Please see Response to Comment No. F1-1.

Response to Comment No. F2-22:

Please see Response to Topical Comment A4 regarding trespassing concerns.

Clearly marked, well-designed, and well-maintained trails encourage authorized use.

Response to Comment No. F2-23:

Trail design is beyond the scope of the Trails Master Plan, which proposes that trail corridors be developed consistent with the County Trails Manual. Design guidelines provided in the County

Trails Manual have been developed to inform trails that safely accommodate all three trail users.

Response to Comment No. F2-24:

Your comment is beyond the scope of the Trails Master Plan. However, the County is investigating the referenced violations to address conflicts between gated communities and public trail easement users, including review of the trail signage. The County Trails Manual may be updated as a result of the investigation. The public may contact the County Sherriff any time access to a public trail is being blocked, or any obstruction is placed on a County-sanctioned trail.

Response to Comment No. F2-25:

The County regularly works with local conservation corps and CAL FIRE crews on projects at our parks and trails. The Board of Supervisors promote the engagement of these organizations and many local grants require at-risk youth employment. The Department of Parks and Recreation has active contracts with the CCC, LACC, LBCC, and SGVCC.

Response to Comment No. F2-26:

The Trails Master Plan evaluates potential regional trail corridor connections from within the project study area in unincorporated territory of Los Angeles County connects as well as is feasible within its study area and to adjacent facilities. The county cannot plan outside of its jurisdiction. Rim of the Valley connections will connect to larger regional trail systems.

Response to Comment No. F2-27:

Please see Response to Comment No. D7-1.

Response to Comment No. F2-28:

The tribal representatives consulted for the project have expressed an interest in having signs on the trails with information on Native American use of the area. Coordination with the Fernandeño Band of Tataviam Indians regarding the content of the information signs will continue as the individual trail segments are developed.