Murrieta Creek Multi-Use Trail Project

Western Riverside County Multiple Species Habitat Conservation Plan Consistency Analysis

Prepared for:

CR Associates
3900 Fifth Avenue, Suite 310
San Diego, CA 92103

Prepared by:

HELIX Environmental Planning, Inc.
7578 El Cajon Boulevard
La Mesa, CA 91942

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TABLE OF CONTENTS

Section **Page**

TABLE OF CONTENTS (cont.)

LIST OF APPENDICES

LIST OF FIGURES

LIST OF TABLES

1.0 EXECUTIVE SUMMARY

The City of Lake Elsinore (City) is receiving State financial assistance funding to construct a section of the Murrieta Creek Multi-Use Trail, which is identified as a Planned Regional Trail and covered activity in the Multiple Species Habitat Conservation Plan (MSHCP). The trail is located in the Lake Elsinore Back Basin and Elsinore Plan Area, specifically within Criteria Cells 5033, 5137, 5140, and 5240. The trail will generally consist of an 10-foot-wide paved trail with 2-foot-wide recover zones (shoulders) comprising a total width of 14 feet bounded by split-rail or similar fencing. The total impact area of the project will be 6.12 acres, including 3.20 acres of permanent impacts and 2.92 acres of temporary impacts. Biological surveys conducted in 2020 and 2021 confirmed the project could impact MSHCP Section 6.1.2 riparian/riverine areas and associated species, including habitat occupied by smooth tarplant (*Centromadia pungens* spp. *laevis*) and least Bell's vireo (*Vireo bellii pusillus*). Mitigation is proposed to compensate the impacts on riparian/riverine areas. Additional measures are proposed for the restoration and revegetation of temporary impact areas, construction avoidance of the least Bell's vireo breeding season, 30-day pre-construction surveys for burrowing owl (*Athene cunicularia*) and fencing and signage plans. With the implementation of these measures, the project would be consistent with the MSHCP.

2.0 INTRODUCTION

The purpose of this report is to summarize project consistency with the goals and objectives of the adopted Western Riverside County MSHCP (Dudek 2003). The project is an Adopted Planned Regional Trail as depicted on Figure 7-4 and defined by Section 7.4.2 of the MSHCP. The proposed project generally consists of a 10-foot-wide, paved, pedestrian and bicycle trail with fencing on either side. The permanent impact width is 20 feet. The trail will connect existing trails located on either end, including the Back Basin Levee Trail on the north and the Palomar trail on the south. The trail will also connect to Stoneman Street in the center.

2.1 PROJECT AREA

The 32.3-acre study area is generally located in the southern portions of the City of Lake Elsinore, south and east of the Lake Elsinore water body and west of Interstate 15, in western Riverside County, California (Figure 1, *Regional Location*). More specifically, the study area is located northeast of Grand Avenue and northeast of Corydon Road (Figure 2, *Project Vicinity*). The study area is depicted within unsectioned lands of Township 6 South, Range 4 West of the Lake Elsinore, California U.S. Geological Survey (USGS) topographic survey quadrangle (*Figure 3*, USGS Topography). The study area occurs within Assessor Parcel Numbers (APNs) 371-100-020, 371-100-003, 370-120-001, and 370-120-063. The study area is located within the Elsinore Plan Area within and adjacent to Criteria Cells 5033, 5036, 5137, 5140, and 5240. (Figure 4, *MSHCP*).

There will be a total of 3.20 acres of permanent impacts within a 20-foot-wide corridor for the trail alignment. An additional 2.92 acres of temporary impacts will occur, generally within 10 feet on either side of the trail, as a result of temporary construction access and staging.

2.2 PROJECT DESCRIPTION

The proposed Murrieta Creek Multi-Use Trail Project is envisioned as a non-motorized, regional multi-use trail within the Lake Elsinore Back Basin. The proposed multi-use trail would be an 10-foot-wide paved trail and would include safety improvements for non-motorists, safety fences, pedestrian lights, and a lake and mountain viewpoints along the trail (Figure 5, *Site Plan*).

The trail has been specifically sited within an existing disturbed and developed land to the maximum extent to avoid sensitive biological resource. The trail will be accessible via the Levee Trail, Stoneman Street, and Skylark Drive. The surface of the trail will consist of asphalt over Class Two aggregate base. Split rail fencing will be mounted on either side of the trail with a 2-foot-wide DG or native landscape recovery zone between the fence and the asphalt path, for a total permanent impact width of 20 feet.

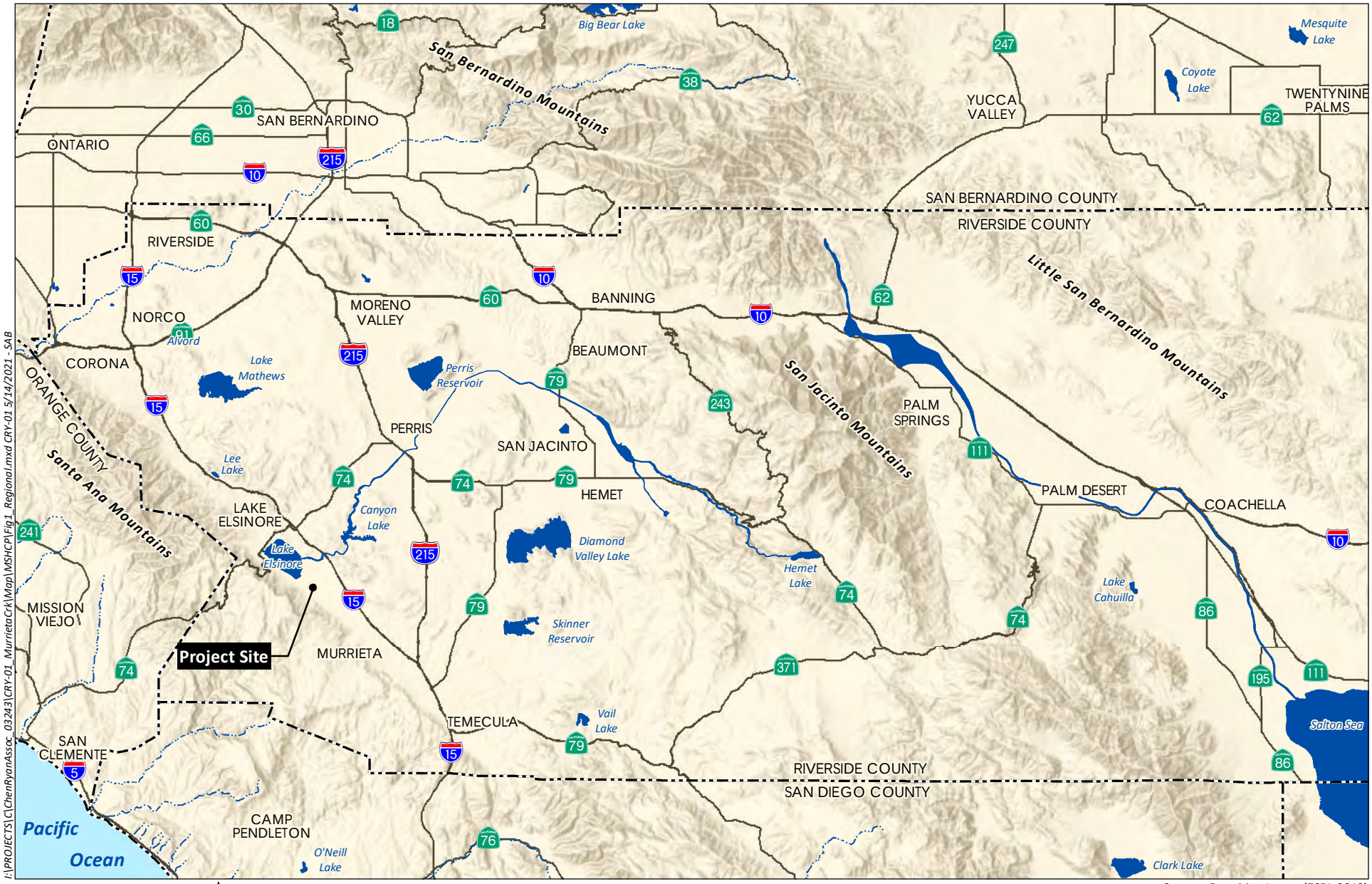
A single Arizona crossing, span bridge, and pipe culvert replacement and extension are proposed to cross three existing ephemeral drainage features that intercept the trail. The span bridge is located at the terminus of Ontario Way and will be constructed either as cast-in-place concrete abutments spanned by hollow-core precast concrete planks, or an alternate clear span design such as open bottom arch culverts. Whatever final design is selected, it will completely span the ephemeral feature, with no footings or other material placed within the feature. It is anticipated that the crossings will require the use of a backhoe and/or mini excavator for the cast-in-place concrete abutments, and an articulated lift to hoist the hollow-core precast concrete planks into position. Impacts from installation of the crossings will be confined to the permanent and temporary impact footprint. Temporary steel plate bridges and/or other temporary clear span means required of the contractor would be implemented during construction should any of the avoided features need to be temporarily crossed during construction. The Arizona crossing is located at the northernmost corner of Como Street and Stoneman Street and will consist of a concrete apron and rock splash pad within the planned permanent impact area to allow water to pass while establishing a defined trail and eliminating long-term maintenance needs. The existing culvert located at the eastern end of the trail will be replaced and extended to accommodate the trail width.

In addition to the trail, bollards, signage, and trash receptacles are conceptually planned within the permanent impact footprint at the planned public access points located at the Levee Trail connection, Stoneman Street, and Skylark Drive. If implemented, the bollards would deter vehicle access and the signs would be posted requiring users to stay on the trail, prohibiting littering, asking people to report littering, prohibiting feeding of all wildlife, and requiring that pets be on leash. The receptables would include covered trash and recycling bins kept at planned public access points.

For the safety of trail users and the surrounding community, solar powered pedestrian lighting and access gates are anticipated to be required at selected locations along trail alignment. Any lighting required would be shielded and directed downward and away from adjacent habitat, as required. Access gates would be provided at locations to allow emergency and maintenance vehicles safe access to the trail. The access would be restricted only to emergency and maintenance activities and the gates would be locked at all other times.

Temporary construction access will be provided via existing paved roadways, the Levee Trail, and within the temporary impact area. Temporary construction staging areas will also be located on-site within the mapped temporary impact area or off-site within existing disturbed and developed areas. Temporary

Murrieta Creek Trail



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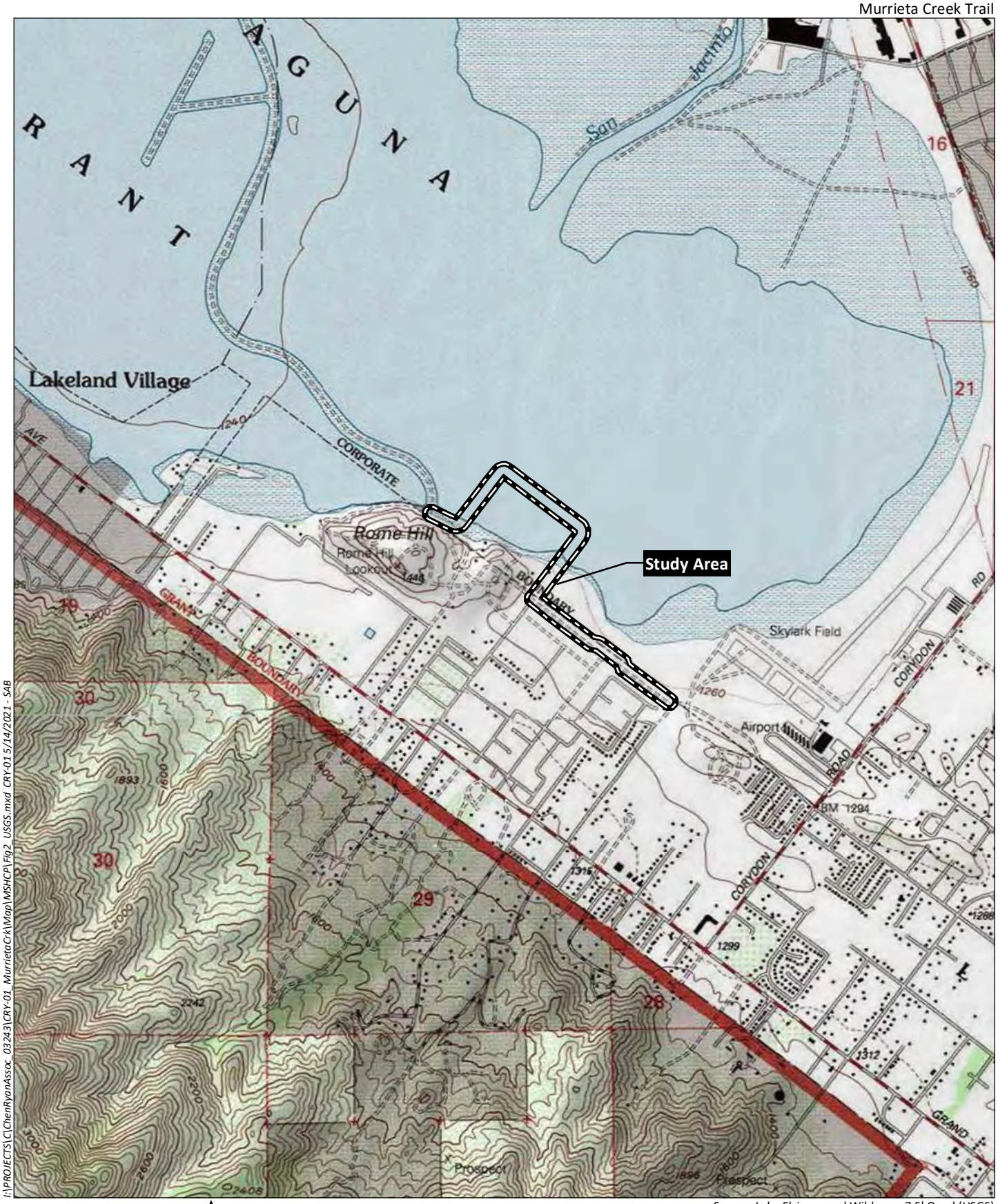
Source: Base Map Layers (ESRI, 2013)

HELIX Environmental Planning

Regional Location

Figure 1



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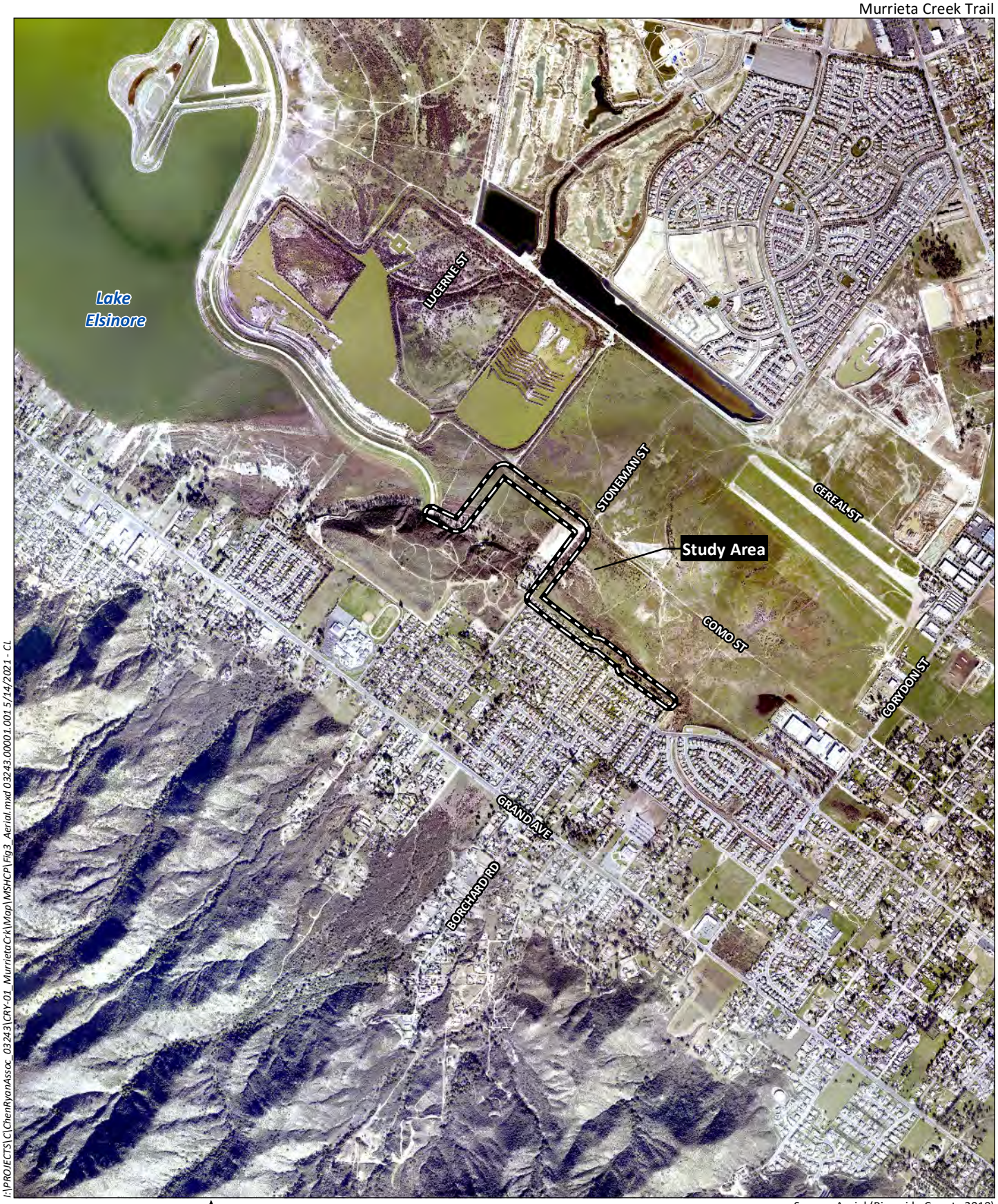
Source: Lake Elsinore and Wildomar 7.5' Quad (USGS)

HELIX Environmental Planning

USGS Topography

Figure 2



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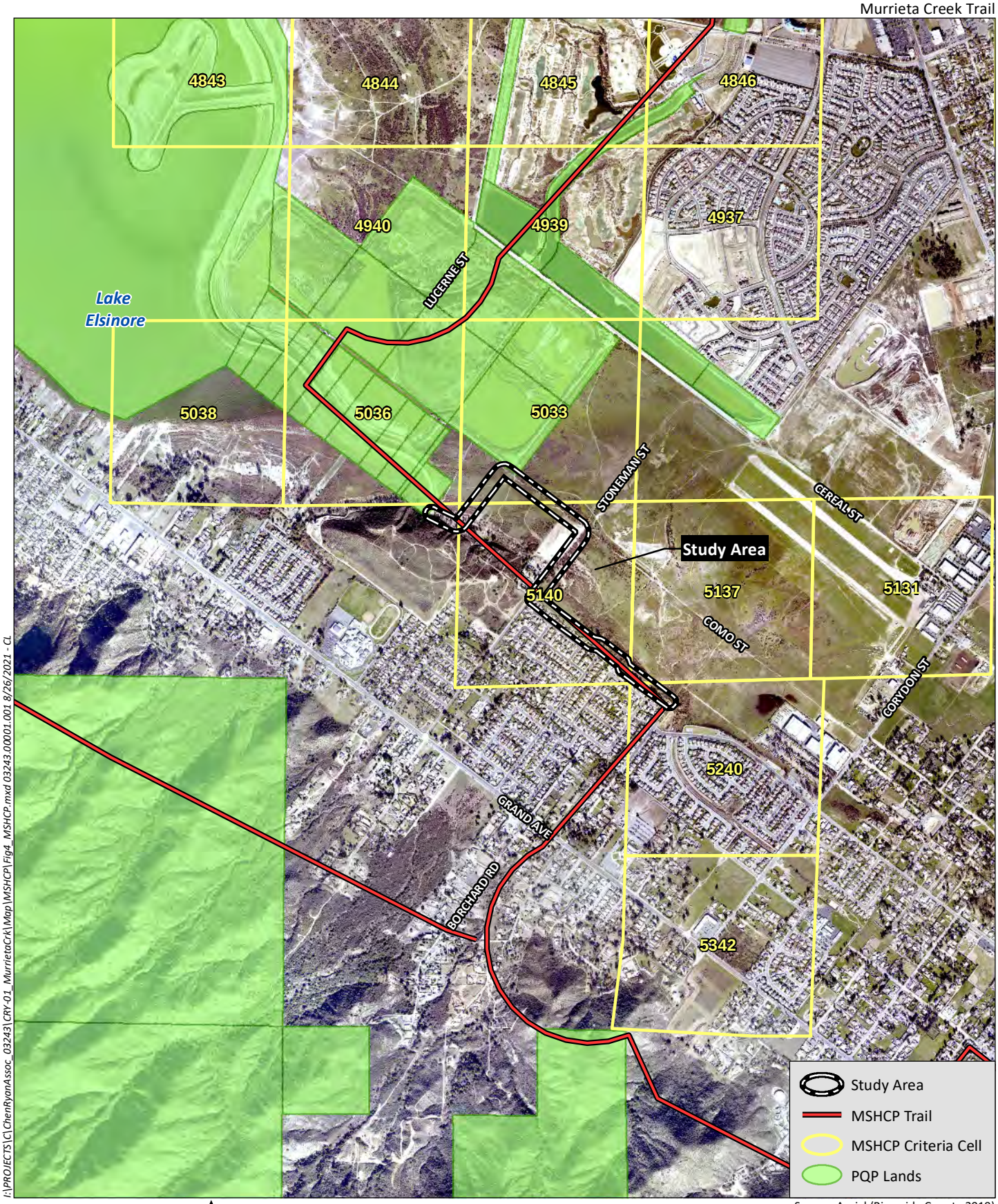
Source: Aerial (Riverside County 2019)

HELIX Environmental Planning

Aerial Photograph

Figure 3

Murrieta Creek Trail



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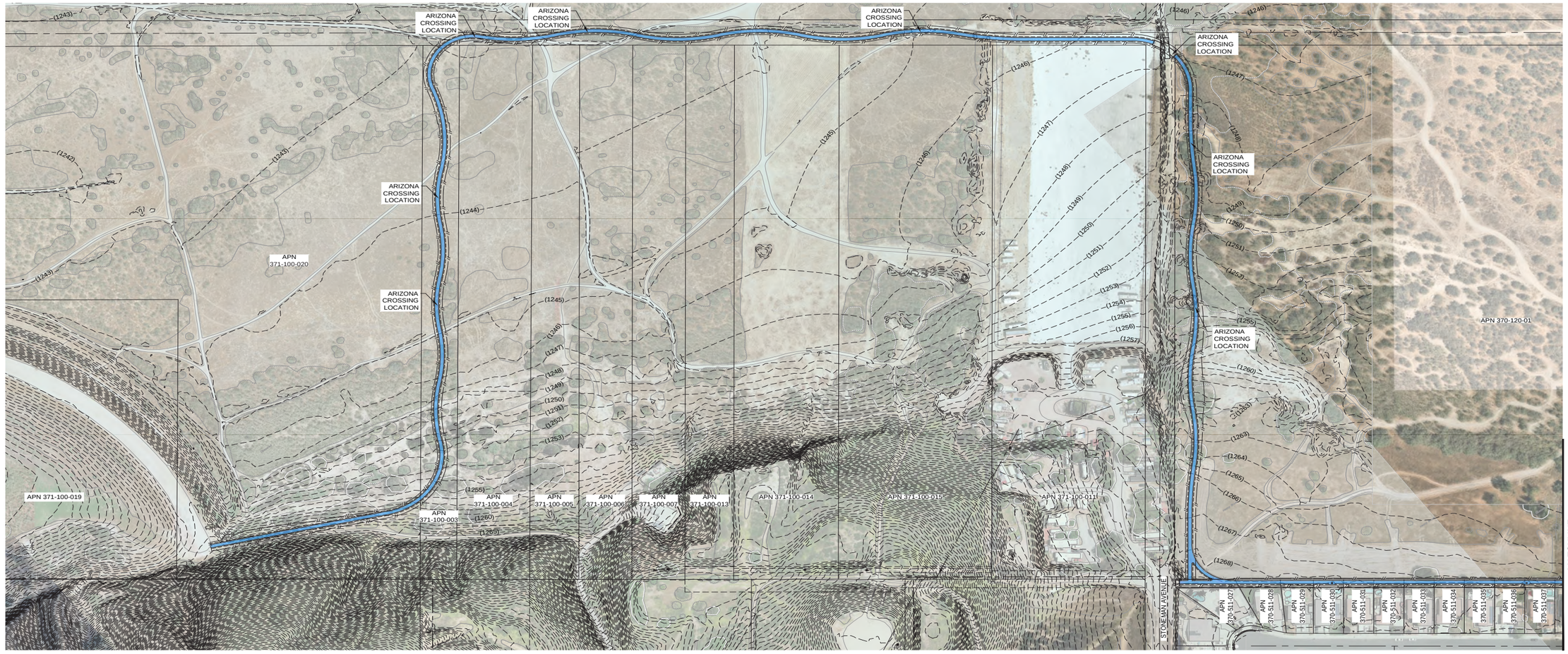
Source: Aerial (Riverside County 2019)

HELIX Environmental Planning

MSCHP Criteria

Figure 4



TYPICAL TRAIL SECTION BETWEEN LEVEE TRAIL AND STONEMAN AVE
NO SCALE

Source: Chen Ryan 2021

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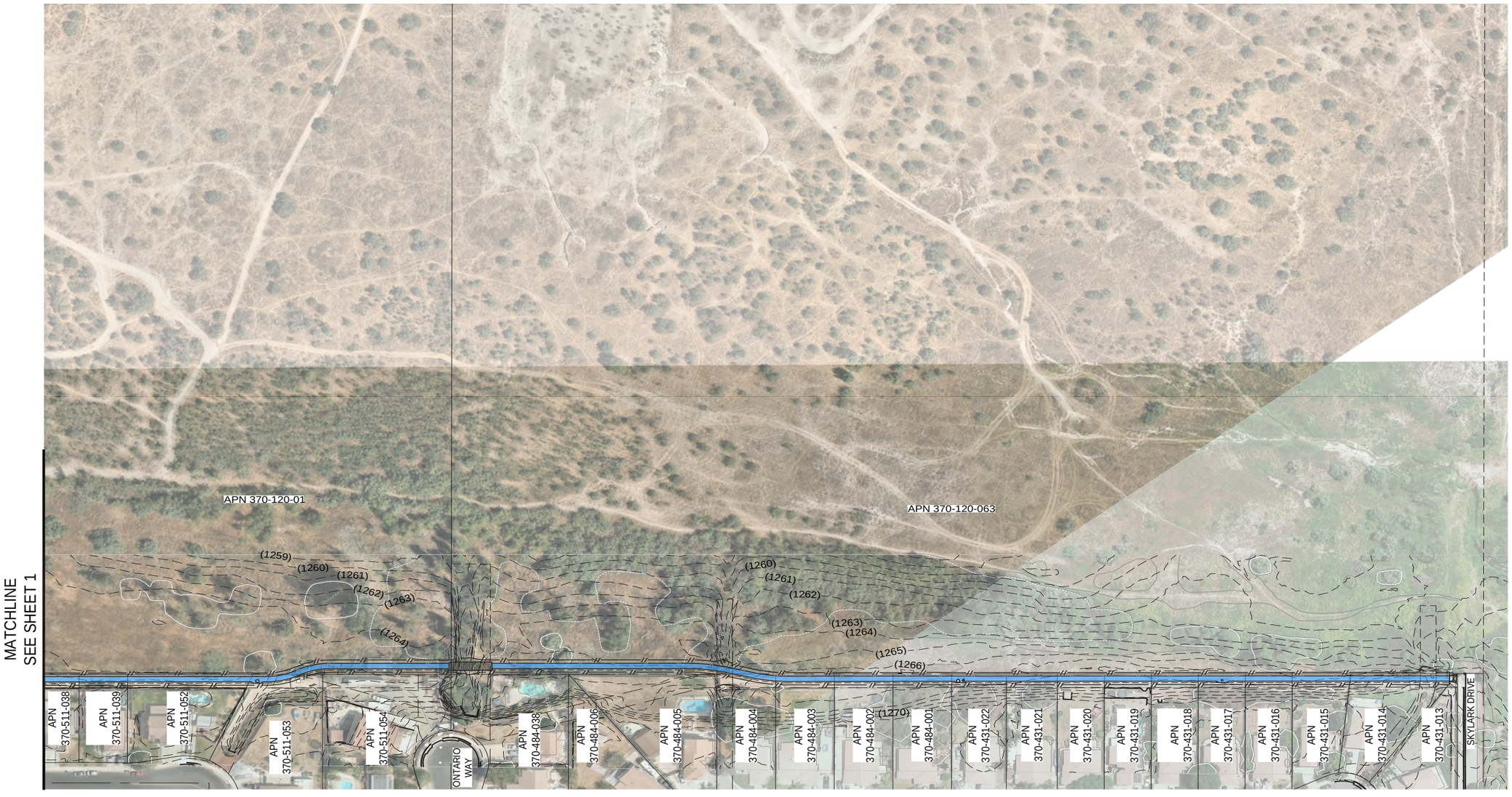
HELIX Environmental Planning

Site Plan

Figure 5a



Source: Chen Ryan 2021

impact areas will be returned to pre-construction contours and revegetated with native herbaceous and shrub species.

2.3 COVERED ROADS

The proposed project does not include the construction of a covered road, therefore this section of the MSHCP does not apply.

2.4 COVERED PUBLIC ACCESS ACTIVITIES

The covered public access uses within MSHCP Conservation Areas include trails, facilities, and passive recreational activities. The proposed trail is an adopted planned regional trail on Figure 7-4 of the MSHCP (Dudek 2003).

The following guidelines (Section 7.4.2) address ways to avoid and minimize impacts from the placement and design of trails on the MSHCP Conservation Area's natural resources (Dudek 2003). Discussion on how the project adheres to these guidelines follows each guideline.

Guidelines for the Siting and Design of Trails and Facilities

1. Trails and facilities will be sited and designed to be compatible with resource protection and in a manner that minimizes impacts to sensitive resources and habitat types covered by the MSHCP. All decisions relating to public access will be made in a manner that is most protective of biological resources.

The proposed trails will be built primarily within existing informal dirt paths, disturbed ruderal (weedy) herbaceous habitat, and limited areas of non-native tamarisk stands. All vernal pools and fairy shrimp habitat will be avoided. The permanent and temporary impact areas will further avoid the contributing watershed areas that feed into the vernal pools and fairy shrimp habitat. The eastern section of the trail has been re-routed to avoid vernal pools and other seasonal wetland resources. A concentration of smooth tarplant will be avoided in the central portion of the trail. Where the trail occurs in proximity to existing riparian habitat, encroachment is limited to the periphery canopy, with minimal impacts to riparian tree or shrub trunks, and areas of substantial roots. Impacts to potential burrowing owl habitat are limited to areas where it has been demonstrated that no burrowing owl occur, no potential burrows occur, and no highly suitable burrowing foraging habitat occurs. Therefore, the use of the proposed trail location allows the project to avoid sensitive resources in the project vicinity to the maximum extent practicable.

2. Trails and facilities will be in the least sensitive areas of the MSHCP Conservation Area so that they avoid Habitat occupied by species covered by the MSHCP.

No portions of the project occur within the MSHCP Conservation Area. The project has been sited to avoid habitat occupied by species covered by the MSHCP.

3. Prior to design and construction of public access facilities, biological surveys will be conducted within the study area for the facility including vegetation mapping and species surveys and/or wetland delineations based on field conditions as recommended by the project biologists. The results of the biological resources investigation will be mapped and documented. The documentation will include

preliminary conclusions and recommendations regarding potential effects of facility construction on MSHCP Conservation Area resources and methods to avoid and minimize impacts to MSHCP Conservation Area resources in conjunction with project siting, design, construction, and operation. The project biologist will work with facility designers during the design and construction phase to ensure implementation of Feasible recommendations.

Biological surveys for the project were completed in 2020 and 2021 and were used to guide the design of the trail. Additional data from surveys completed by others in the Back Basin were incorporated into the project effort. The results of the surveys have been mapped and documented, including conclusions and recommendations on effects of construction on MSHCP Conservation Area resources and methods to avoid and minimize the impacts in conjunction with project siting, design, construction and operation. For example, vernal pool resources, smooth tarplant, and riparian and riverine areas were surveyed for and the mapping of such resources were used to inform the project design. HELIX has been involved during the design phase to help ensure that feasible recommendations are implemented and carried into the project conditions of approval and construction phase.

4. Recreational activities and the construction of trails and facilities on highly erosive soils will be avoided.

Soil types mapped within the study area include Domino silt loam, Grangeville sandy loam, Greenfield sandy loam, Pachappa fine sandy loam, Terrace escarpments, Traver loamy fine sand, and Waukena loamy fine sand, which are not observed to be highly erosive soils (Figure 6, *Soils*). The trail will be constructed using asphalt, decomposed granite, and aggregate. Given these materials, the built condition is not expected to be erosive. Several concrete or gravel drainage crossings are also planned to be incorporated at existing low spots along the trail that will facilitate any unusually high sheet flow flooding and mitigate long-term potential erosion at susceptible locations. Temporary construction work areas will be required to implement Best Management Practices (BMPs) and other measures to protect and stabilize the work areas from erosion. Temporary impact areas will also be restored to pre-construction contours and revegetated to prevent post-construction erosion.

5. Trails and facilities will be designed to discourage and prevent intrusion into adjacent environmentally sensitive areas.

Fencing will be installed on either side of the trail to restrict access into adjacent areas, including adjacent environmentally sensitive areas. The fence will be split rail, or similar, to restrict access while allowing for wildlife movement functions. The City will prepare and submit fencing plans to the RCA and Wildlife Agencies for approval prior to initiating ground disturbance. Signage will also be installed intermittently along the trail to notify trail users of environmentally sensitive areas and direct them to stay on the trail at all times.

6. New trails and facilities will avoid using wildlife crossing points.

No known linkages or other potential wildlife movement corridors or travel routes occur within the study area; evidence of such areas were not observed during 2020 or 2021 biological surveys. Wildlife movement within the Back Basin is expected to be sprawling and not concentrated along specific linear routes. This is because of the flat terrain and general scattered arrangement of habitat stands as opposed to linear. Nevertheless, wildlife are expected to cross the trail alignment to get to and from potential use areas in the Back Basin. To conserve wildlife movement functions, the trail fencing will

Murrieta Creek Trail

Study Area

Murrieta Creek Trail

Soils

- Domino silt loam, strongly saline-alkali
- Grangeville fine sandy loam, drained, 0 to 2 percent sl opes
- Grangeville sandy loam, sandy substratum, drained, sali ne-alkali , 0 to 5 percent slopes
- Greenfield sandy loam, 2 to 8 percent slopes, eroded
- Greenfield sandy loam, 8 to 15 percent slopes, eroded
- Pachappa fine sandy loam, 2 to 8 percent slopes, eroded
- Terrace escarpments
- Traver loamy fine sand, eroded
- Traver loamy fine sand, saline-alkali, eroded
- Water
- Waukena loamy fine sand, saline-alkali

Study Area

COMO ST

STONEMAN ST

OAKVIEW WAY

APPLEWOOD CT

APPLEWOOD WAY

ONTARIO WAY

STONEWOOD WAY

SAMUEL DR

OLIVE TREE CT

OAKKNOLL LN

OAKVIEW LN

APPLEWOOD CT

BEECHWOOD LN

STONEWOOD LN

SKYLARK DR

PALOMAR ST

OLD COACH RD

SANTA CRUZ

RCIT, Pictometry

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0 350 Feet

Source: Aerial (Riversdie County 2019)

HELIX Environmental Planning

Soils

Figure 6

incorporate an open split rail or similar design to allow for wildlife to move freely through the trail corridor and to prevent inadvertent entrapment.

7. New trails and facilities will be accessible from existing and planned public roads.

The trail has been specifically designed to be accessible from existing roads, including Skylark Drive, Stoneman Street, and Como Street (planned).

8. New facilities will minimize impacts from lighting.

Solar powered pedestrian lighting is proposed along the trail. Lighting will be shielded and directed downward and away from adjacent habitat.

9. Environmentally sensitive grading techniques, drainage management and vegetation buffers will be used for trail and facility runoff absorption and filtration.
The project has been specifically sited within flat grades and designed with drainage management and vegetation buffers to minimize alteration of the existing landscape and conserve existing drainage patterns. Grading will be limited during construction and will involve relatively minimal soil disturbance. Temporary construction work areas will be protected and stabilized with BMPs to manage stormwater runoff. Temporary impact areas will also be restored to pre-construction contours and revegetated to prevent post-construction erosion. The trail will be constructed using asphalt, aggregate base, and decomposed granite recovery zones (shoulders), which are expected to prevent against erosion while allowing for absorption and filtration.

10. When landscaping is required, only native species will be used. The use of nonnative invasive plant species will be prohibited.

Only native plant species will be used in revegetating temporary impact areas and in project landscaping.

11. Whenever possible, trail alignments in the MSHCP Conservation Area will use existing dirt roads.

The trail has been sited within an existing informal dirt path to the greatest extent possible.

12. Trails will be kept along the edges of large sensitive areas of habitat such as meadows and riparian areas.

The proposed trail has been setback and routed along the edges of riparian and other sensitive habitat.

13. The type, width, and intensity of trail uses will be consistent with protection of the resources being traversed.

The 10-foot-wide pedestrian and bicycle public use trail is consistent with the restricted recreational uses in the Lake Elsinore Back Basin area and the associated resources being traversed.

14. When determined to be appropriate, trails will be constructed to any prominent features or viewpoints that are likely to attract hikers in order to prevent off-trail access and extensive trampling of adjacent Habitat by hikers.

The proposed trail provides a less-intrusive path from existing residential areas to the Levee Trail in the Back Basin, which is a prominent feature in the local area. The trail will help to minimize and eliminate existing off-trail activities by pedestrians and cyclists navigating overland to gain access to the Levee Trail from developed areas to the south and southeast.

15. Water breaks will be installed on steep trails to prevent accelerated runoff and erosion.

The trail will be installed on a relatively flat terrain; therefore, no water breaks are required.

16. Dog-friendly trails will be located in areas of relatively low habitat value or edges.

The trail will be dog-friendly, which is appropriate given the habitat value of the resources in the Back Basin.

Interpretive Centers

17. *Interpretive centers will be constructed to display and interpret the natural resources. Exhibits will emphasize the need to conserve natural resources in MSHCP Conservation Area.*

The project is not an interpretive center and kiosks are not planned at this time. If kiosks become an option in the future, as funding allows, kiosk opportunities occur at the Stoneman Street and Skylark Drive entrances. The kiosks would inform the public about the Back Basin, trail rules, and facts about native flora and fauna. The kiosks would emphasize the need to conserve natural resources in MSHCP Conservation Areas, to encourage environmental stewardship and responsible trail use.

18. *Interpretive centers will not be separated from the resource area since its purpose is directly related to explaining the values of the resource. In sensitive Habitat, minimization methods such as buffers will be used.*

Interpretive kiosks, if included, would be located at the Stoneman Street and Skylark Drive entrances, which is on the edge of the resource area. Placing the kiosks on the developed side of the trail will provide a buffer to sensitive habitat.

Trailheads

19. *Trail access points to the MSHCP Conservation Area (e.g., parking lots and staging areas) that are consistent with resource protection goals will be identified.*

Trail access is provided directly from existing paved roads on in the neighborhoods near Stoneman Street and Skylark Drive to keep trail users and their cars out of the MSHCP Conservation Areas.

20. *Entry controls and signage at trailhead sites will be used to convey proper resource usage.*

Bollards would be used to preclude vehicle entry and signage would be provided at the public access points located at the Levee Trail, Stoneman Street, and Skylark Drive trailheads to convey proper trail usage.

21. *In most cases, trailheads will be sited at the edge of the resource area.*

The trailhead will be sited at the edge of the resource area at the Levee Trail, Stoneman Street, and Skylark Drive.

Guidelines for Operations and Maintenance

1. *Passive recreation uses may include:*

- *bird watching*
- *boating*
- *fishing*
- *hiking, equestrian, and mountain bike uses on designated trails*
- *photography*
- *picnicking in designated areas*
- *scientific research*
- *sun bathing*
- *swimming*

The proposed trails are designated for pedestrian and bicycle use, which are allowed passive uses.

2. *The following recreational uses and activities will be prohibited within the MSHCP Conservation Area:*

- *camping*
- *off-road vehicle use*
- *recreational activities that require construction of new facilities and roads other than those described above*

The project does not include camping, off-road vehicle use, or recreational activities that require construction of new facilities and roads other than those described herein.

3. *Effects of passive recreational uses shall be addressed in Reserve Management Plans described in Section 5.2.2.*

Because this is a planned covered trail, passive recreational uses in this area were anticipated and should be addressed in any applicable Reserve Management Plan(s).

4. *Motorized vehicular access by the public to the MSHCP Conservation Area will be prohibited except as necessary by emergency personnel or for operations and maintenance activities.*

Motorized vehicular access by the public to the MSHCP Conservation Areas is not proposed with this project.

5. *Appropriate daily and seasonal limits on trail use will be established. When necessary, trails will be closed on a temporary basis to minimize disruption of nesting and other wildlife functions for species covered by the MSHCP, or if public access has resulted in, or is expected to result in, significant negative impacts to sensitive species. Passive recreational uses will be limited or restricted in critical wildlife areas during breeding season, as determined appropriate.*

Solar powered pedestrian lighting is proposed along the trail. Lighting will be shielded and directed downward and away from adjacent habitat. Public access is not expected to result in significant negative impacts to sensitive species such that seasonal closure would be needed; however, temporary closure could be implemented in the future if necessary.

6. *Public access may be restricted within and adjacent to wetlands, vernal pools, restoration areas, and sensitive wildlife Habitat (e.g., during the breeding season) at the discretion of the Reserve Manager.*

The trails were designed to avoid and minimize impacts to wetlands, vernal pools, and sensitive wildlife habitat and restrict public access to such areas.

7. *In the event that public access policies and other policies conflict, the conflict will be resolved in a manner that's most protective of the biological resources within the MSHCP Conservation Area.*

The City understands this requirement.

8. *Access to the MSHCP Conservation Area will be controlled through properly maintained fencing and signs.*

Fencing and signs will be properly maintained by the City to control access to MSHCP Conservation Areas.

9. *Fencing or other barriers will be used to restrict access to basically sensitive areas when protection of biologically sensitive resources is required.*

Split rail or similar fencing to the satisfaction of the RCA and Wildlife Agencies, will be used to restrict access and keep trails users on the trail.

10. *Public access information packets and guides will be developed for users of the MSHCP Conservation Area.*

Public access information would be provided on the Stoneman Street and Skylark Drive kiosks, signs, and on the City's website, as appropriate.

11. *Education and outreach will be used to increase public awareness and appreciation for Habitat and wildlife values.*

The educational materials on the Stoneman Street and Skylark Drive kiosks will be used along with the City's other education and outreach activities to increase public awareness and appreciation for habitat and wildlife values.

12. *The MSHCP Conservation Area will be patrolled on a regular basis in order to ensure that visitors to the MSHCP Conservation Area stay on trails and observe all other rules and guidelines established to protect the natural resources on site.*

The proposed trails do not conflict with existing or planned patrols of the MSHCP Conservation Area.

13. *Feeding of all wildlife will be prohibited.*

The Stoneman Street and Skylark Drive kiosks and/or signs will state that feeding of all wildlife is prohibited.

14. *Firearms will be prohibited from patrol and maintenance sites, except for those used by authorized law enforcement and security personnel.*

The proposed trails do not conflict with existing restrictions on firearms.

Maintenance

15. *The trails and other facilities within the MSHCP Conservation Area require proper maintenance to ensure the protection of biological resources. Trails, facilities, signs and barriers will be maintained to appropriate conditions to discourage and prevent intrusion into adjacent environmentally sensitive areas.*

The City will maintain trails, facilities, signs, and barriers in appropriate condition to discourage and prevent intrusion into adjacent environmentally sensitive areas.

Hiking

16. *Hikers must always stay on designated trails and must not stray into adjacent areas to prevent trampling of vegetation and erosion.*

The proposed fencing and signage will require hikers to stay on designated trails and not stray into adjacent areas.

Equestrian Use

17. *Equestrian use will be limited to designated trails.*

Equestrian use is not proposed with this project.

18. *Following heavy rains, the use of equestrian trails will be prohibited for appropriate periods to avoid trail damage and impacts to adjacent Habitat.*

Equestrian use is not proposed with this project.

Mountain Biking

19. *Mountain bike trails will be limited to areas with low susceptibility to erosion and out of wetlands and other sensitive areas.*

The proposed bike path will be paved and located outside of wetlands and other sensitive areas to the greatest extent possible.

20. *If use becomes heavy and problematic, an access control system will be developed and permits may be required.*

Use is not expected to be problematic because the proposed bike path will be paved and located outside of wetlands and other sensitive areas to the greatest extent possible.

21. *Mountain bike trails will be constructed wider than foot trails to prevent trail edge disturbance and on grades no greater than 25 percent.*

The proposed bicycle path will be constructed ten feet wide and on grades significantly less than 25 percent.

Litter and Trash Control Measures

22. *Litter control measures will be implemented within the MSHCP Conservation Area.*

The interpretive kiosk and/or signage would inform trail users not to litter.

23. *Closed garbage cans and recycling bins will be provided at trailheads and access points.*

Closed garbage cans and recycling bins will be provided at trailheads.

24. *Litter and trash will be collected and removed on a regular basis. Garbage cans and recycling bins will be maintained appropriately.*

Litter and trash removal and maintenance will be conducted by the City to City standards.

25. *Penalties will be imposed for littering and dumping within the MSHCP Conservation Area.*

Existing regulations on littering and dumping will remain in effect with the proposed project.

26. *Permanent storage of materials (e.g., hazardous and toxic materials) outside of maintenance facilities within the MSHCP Conservation Area will be prohibited.*

No permanent storage of materials outside of maintenance facilities within the MSHCP Conservation Area is proposed.

27. *Wildlife Corridor undercrossings will be kept free of all debris, trash, and other obstructions.*

No wildlife corridor undercrossings are proposed as part of the project.

28. *Signs will be posted to prevent and report littering.*

Signs will include language asking trail users to prevent and report littering.

Pets

29. *Pets will be restrained by leashes at all times.*

Signs will include language requiring pets to be on leash.

Signage

30. *An adequate number of signs will be provided at appropriate locations to clearly identify public access to and within the MSHCP Conservation Area.*

The number and location of signs will be to the satisfaction of the RCA and Wildlife Agencies.

31. *Interpretive signs will be provided to explain the value of the MSHCP Conservation Area's natural resources.*

Any future interpretive kiosk / signs would explain the value of the MSHCP Conservation Area's natural resources.

2.5 GENERAL SETTING

The eastern half of the proposed trail is located immediately north of a residential development constructed as recently as 2002. To the northwest of the trails is Lake Elsinore. The trail is generally proposed along an existing informal dirt path to the maximum extent possible. Vegetation communities to the north of the trail consist mainly of disturbed habitat, Tamarisk scrub, and non-native grassland dominated by weedy, broadleaved, non-native species.

3.0 RESERVE ASSEMBLY ANALYSIS

Reserve area assembly goals, including meeting acreage requirements and function, are achievable with the development of the proposed trail. A summary analysis is provided below demonstrating how the trail is consistent with the conservation goals and objectives for reserve assembly.

Criteria Cell 5033

Conservation within Cell 5033 will contribute to assembly of Proposed Extension of Existing Core 3. Conservation within this Cell will focus on grassland habitat. Areas conserved within this Cell will be connected to grassland habitat proposed for conservation in Cell 4939 to the north, 5036 to the west and 5140 to the south. Conservation within this Cell will range from 5%-15% of the Cell focusing in the southern and northeastern portions of the Cell.

Trail development within Cell 5033 would still allow for assembly of Proposed Extension of Existing Core 3 and conservation of grassland habitat in the local area. Biological surveys from 2020 and 2021 confirmed the absence of traditional (annual) grassland habitat in the area, but instead found like-functioning herbaceous habitat dominated by non-native broadleaf forbs, with a lower percentage of non-native grasses and bare ground. Regardless, the project would largely avoid the expansive patches

of this habitat in the southern portion of the cell and would completely avoid the habitat in the northeastern portions of the cell. Open space supporting grassland and like-functioning habitat in this cell will remain undeveloped and connected with Cells 4939, 5036, and 5140 (Figure 4). The connectivity remains unimpeded by the trail with respect to connectivity with Cells 4939 to the north and Cell 5036 to the west. The trail incorporates split rail or equivalent fencing to allow for conservation of wildlife movement functions south to Cell 5140. The trail would strictly adhere to no more than 20-feet-wide and has been sited and designed to minimize impacts to grassland and like-functioning habitat. The trail would minimize impacts by following an existing informal dirt path in its southeast-northwest configuration to the maximum extent possible. It was not possible to follow other existing dirt roads in its northeast-southwest configuration due to private property restrictions. Given these reasons, the trail would not conflict with conservation in Cell 5033 or conservation of connectivity with Cells 4939, 5036, and 5140.

Criteria Cell 5137

Conservation within Cell 5137 will contribute to assembly of Proposed Extension of Existing Core 3. Conservation within this Cell will focus on grassland habitat. Areas conserved within this Cell will be connected to grassland habitat proposed for conservation in Cell 5140 to the west, 5240 to the south and 5131 to the east. Conservation within this Cell will range from 65%-75% of the Cell focusing in the southern portion of the Cell.

The trail is situated in the extreme southwest corner of Cell 5137 and has been specifically sited within an existing sewer easement and associated dirt access road in this area. As such, the trail would not conflict with conservation objectives of assembling Proposed Extension of Existing Core 3 or connectivity of grassland habitat.

Criteria Cell 5140

Conservation within Cell 5140 will contribute to assembly of Proposed Extension of Existing Core 3. Conservation within this Cell will focus on grassland and chaparral habitat. Areas conserved within this Cell will be connected to grassland habitat proposed for conservation in Cell 5033 to the north and 5137 to the east. Conservation within this Cell will range from 40%-50% of the Cell focusing in the northeastern portion of the Cell.

The largest portion of the trail occurs within Cell 5140, but the trail has been designed to follow the edge of existing developments and also follow existing sewer easement (and associated dirt roads) and in association with future planned road right-of-way areas (associated with Stoneman Street and Como Street). Trail development within Cell 5140 would still allow for assembly of Proposed Extension of Existing Core 3 and conservation of grassland (and like-functioning) habitat in the local area. The trail would present no conflict on conserving chaparral habitat in the local area. Connectivity of grassland habitat with Cell 5137 to the east would be conserved with no impediments. Connectivity with Cell 5033 to the north would be conserved, with some trail impediment near the center of the northern boundary of Cell 5140; however, as mentioned previously, the trail incorporates a split rail or similar design to accommodate wildlife movement functions across and within the trail alignment. Wildlife access from Cell 5140 to Cell 5033 would still be conserved. More importantly, the trail would establish physical barriers to unauthorized vehicle and pedestrian access in the local area, for which there are no restrictions or barriers under the existing condition. As such, although the trail would present a new development, it would not impede wildlife movement functions, would place much-needed restrictions

on public access, and would maintain connectivity and conservation of grassland (and like-functioning) habitat in the local area.

Criteria Cell 5240

Conservation within Cell 5240 will contribute to assembly of Proposed Extension of Existing Core 3. Conservation within this Cell will focus on grassland and coastal sage scrub habitat. Areas conserved within this Cell will be connected to grassland habitat proposed for conservation in Cell 5137 to the north and to coastal sage scrub habitat proposed for conservation in Cell 5342 to the south. Conservation within this Cell will range from 45%-55% of the Cell focusing in the northern and central portions of the Cell.

The trail is situated in the extreme northwest corner of Cell 5240 and has been specifically sited within an existing sewer easement and associated dirt access road in this area. As such, the trail would not conflict with conservation objectives of assembling Proposed Extension of Existing Core 3 or connectivity of grassland and coastal sage scrub habitat.

Rough Step

The County's 1994 vegetation mapping data was referenced to evaluate how the project might affect conservation of habitat as part of the rough step analysis. The 1994 mapping indicates that the current proposed trail occurs entirely within non-native grassland. Of the total approximately 32.0 acres of non-native grassland mapped within the project study area from the 1994 mapping, approximately 9.0 acres have since been developed. The remaining 23.0 acres are undeveloped.

The 1994 mapping further indicates that the planned regional trail for which the proposed trail replaces also occurs within non-native grassland, in addition to chaparral and Riversidean sage scrub. Based on the 1994 mapping, the planned regional trail for which the proposed trail replaces has an estimated impact on non-native grassland amounting to approximately 2.0 acres.

The actual impact of the project on non-native grassland habitat was found to be zero. The project's contribution to non-native grassland in the Back Basin is zero. However, the project would impact like-functioning habitat (disturbed/ruderal) amounting to approximately 3.1 acres. Grassland and other like-functioning habitat have been mapped by others throughout the Back Basin, including extensive stands of habitat within existing conserved lands. The project's development footprint is narrow and the avoided open space supporting grassland and like-functioning habitat in the Criteria Cells that overlap the project will remain undeveloped and connected with habitat in neighboring cells. Given the amount of grassland that will be avoided and remain undeveloped in the Back Basin, project implementation would not jeopardize the MSHCP conservation goals for non-native grassland in the local area.

3.1 PUBLIC QUASI-PUBLIC LANDS

3.1.1 Public Quasi-Public Lands in Reserve Assembly Analysis

The trail has been specifically sited to occur outside of Public Quasi-Public (PQP) lands in the Back Basin. The closest PQP lands occur at the trail northern terminus where it connects with the existing Levee Trail. There are no biological resources in this immediate area that could be indirectly and adversely

affected by the trail. Therefore, the trail would not conflict with PQP lands contribution to the reserve assembly.

3.1.2 Project Impacts to Public Quasi-Public Lands

No direct or indirect impacts to PQP lands are anticipated.

4.0 VEGETATION MAPPING

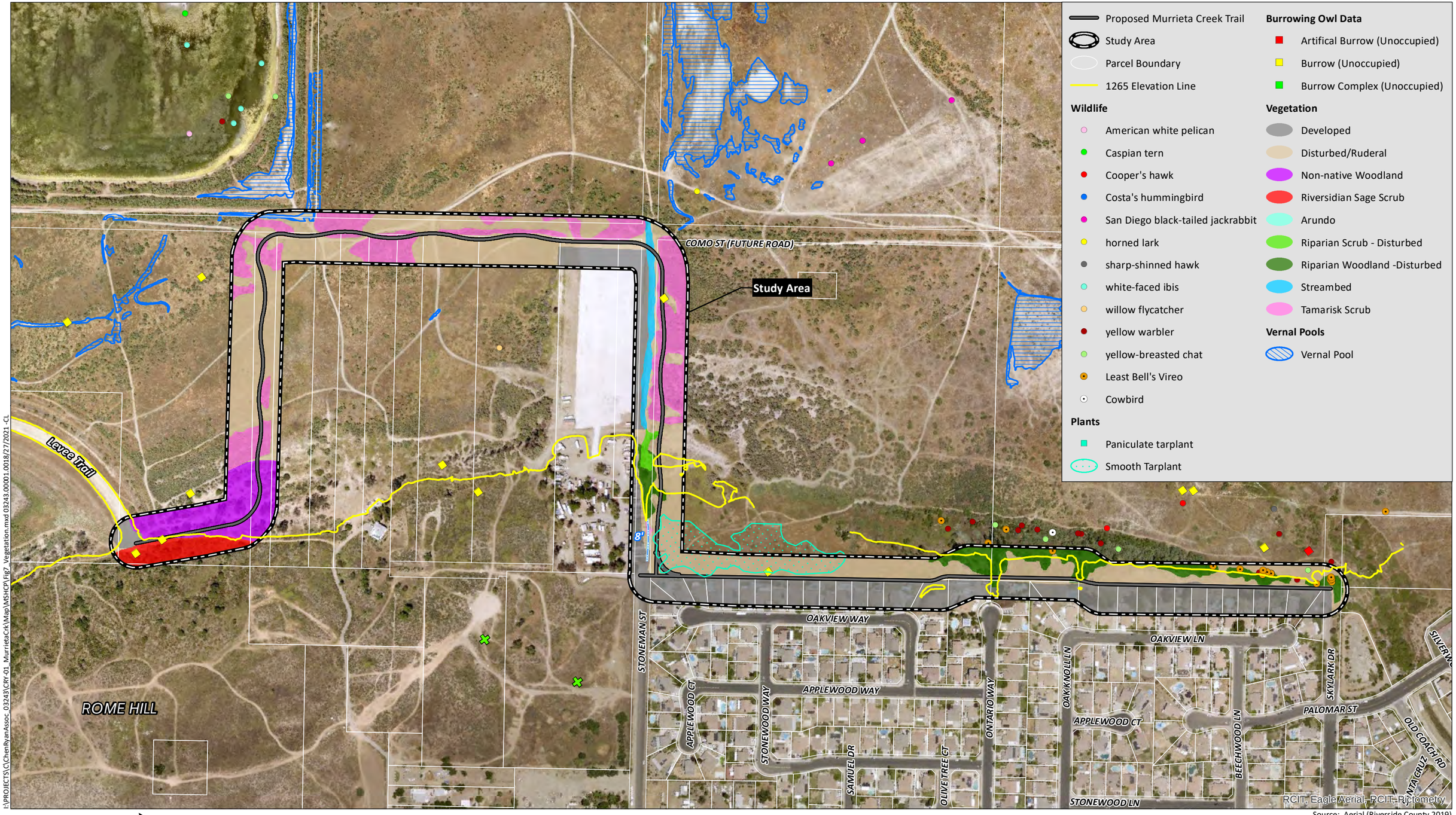
The vegetation communities within the study area were mapped in accordance with the MSHCP and further guidance provided in Holland, Oberbauer, and a Manual of California Vegetation. Vegetation mapping in this report references the mapping conducted by HELIX in 2020 and 2021, as well as mapping provided by others as part of a larger effort in the Back Basin.

Vegetation mapping was completed on an aerial photograph (1-inch = 200-foot scale) map with an overlay of the proposed project. Mapping unit size was approximately 0.1 acre for upland communities and approximately 0.01 acre for riparian communities (Table 1, *Existing Vegetation Communities*; Figure 7, *Vegetation*).

Table 1
EXISTING VEGETATION COMMUNITIES

Community	Acres
Riparian/Riverine	
Arundo	0.01
Riparian Scrub (Disturbed)	0.13
Riparian Woodland (Disturbed)	1.92
Streambed	0.46
Tamarisk Scrub	4.90
Non-native Woodland (below 1,265 feet)	2.14
Disturbed/Ruderal (below 1,265 feet)	8.56
Riparian/Riverine Subtotal	18.12
Upland	
Non-Native Woodland	0.1
Riversidean Sage Scrub	0.9
Disturbed Habitat	4.8
Developed	8.4
Upland Subtotal	14.1
Total	**32.28**

Murrieta Creek Trail



Proposed Murrieta Creek Trail
Study Area
Parcel Boundary
1265 Elevation Line

Wildlife
- American white pelican
- Caspian tern
- Cooper's hawk
- Costa's hummingbird
- San Diego black-tailed jackrabbit
- horned lark
- sharp-shinned hawk
- white-faced ibis
- willow flycatcher
- yellow warbler
- yellow-breasted chat
- Least Bell's Vireo
- Cowbird

Plants
- Paniculate tarplant
- Smooth Tarplant

Burrowing Owl Data
- Artifical Burrow (Unoccupied)
- Burrow (Unoccupied)
- Burrow Complex (Unoccupied)

Vegetation
- Developed
- Disturbed/Ruderal
- Non-native Woodland
- Riversidian Sage Scrub
- Arundo
- Riparian Scrub - Disturbed
- Riparian Woodland -Disturbed
- Streambed
- Tamarisk Scrub

Vernal Pools
- Vernal Pool

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0 350 Feet

Source: Aerial (Riverside County 2019)

HELIX Environmental Planning

Vegetation & Sensitive Resources

Figure 8

4.1 IMPACT MITIGATION

Table 2 provides a summary of the permanent and temporary impacts on vegetation communities (Figure 8, *Vegetation Impacts*).

Table 2
IMPACTS TO VEGETATION COMMUNITIES

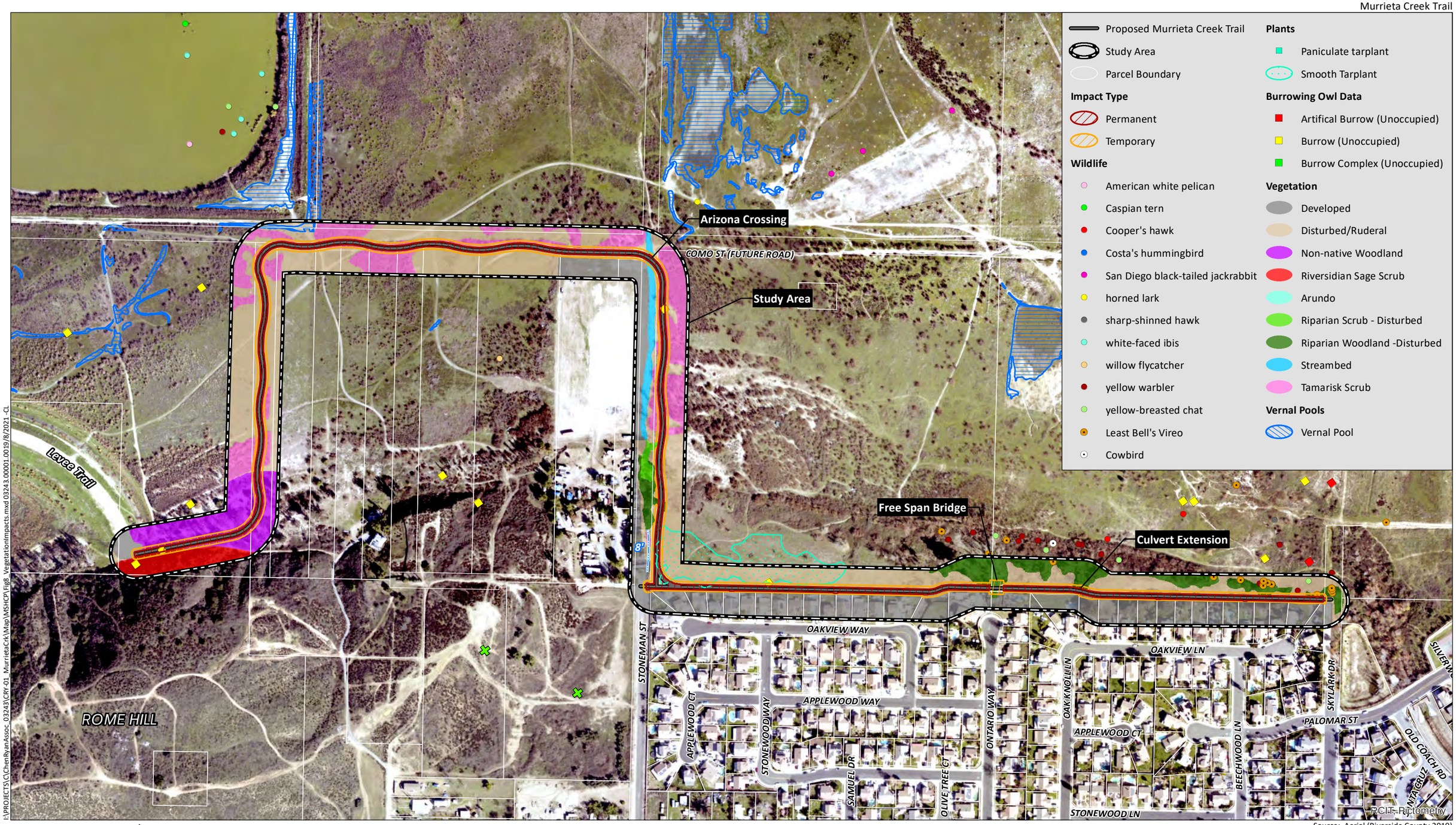
Habitat	Impacts (acres)*		
	Temporary	Permanent	Total
Riparian/Riverine			
Riparian Scrub	--	--	--
Riparian Woodland	0.10	0.05	0.15
Streambed	0.02	0.02	0.04
Arundo (below 1,265 feet)	--	--	--
Tamarisk Scrub (below 1,265 feet)	0.63	0.62	1.25
Non-native Woodland (below 1,265 feet)	0.25	0.25	0.50
Disturbed/Ruderal (below 1,265 feet)	0.84	0.87	1.71
Riparian/Riverine Subtotal	**1.84**	**1.80**	**3.64**
Upland			
Riversidean Sage Scrub	<0.1	<0.1	0.1
Non-native Woodland	<0.1	<0.1	0.1
Disturbed/Ruderal	0.7	0.7	1.4
Developed	0.3	0.6	0.9
Upland Subtotal	**1.1**	**1.4**	**2.5**
Total	***2.92***	***3.20***	***6.12***

* Totals reflect rounding.

4.1.1 Permanent Impact Mitigation

Permanent impact areas have been restricted to non-native habitat types and disturbed and developed areas to the maximum extent practicable to safely construct the project. Unavoidable permanent impacts will occur to 0.05 acre of riparian woodland in the southern portions of the trail as a result of placement of the free span bridge structure and storm drain culvert extension. In addition, less than 0.1 acre of permanent impact would occur to Riversidean sage scrub The remaining permanent impacts would occur to non-native habitat types (dominated by tamarisk, non-native broadleaf forbs, and bare earth) above and below the 1,265-foot elevation limit (1,263.4-foot elevation), as well as to developed land.

Permanent impacts to riparian/riverine and like-functioning grassland habitat below the 1,265-foot elevation limit would be considered significant and would require compensatory mitigation to demonstrate consistency with the MSHCP.



Proposed Murrieta Creek Trail
Study Area
Parcel Boundary

Impact Type
Permanent
Temporary

Wildlife
American white pelican
Caspian tern
Cooper's hawk
Costa's hummingbird
San Diego black-tailed jackrabbit
horned lark
sharp-shinned hawk
white-faced ibis
willow flycatcher
yellow warbler
yellow-breasted chat
Least Bell's Vireo
Cowbird

Plants
Paniculate tarplant
Smooth Tarplant

Burrowing Owl Data
Artifical Burrow (Unoccupied)
Burrow (Unoccupied)
Burrow Complex (Unoccupied)

Vegetation
Developed
Disturbed/Ruderal
Non-native Woodland
Riversidian Sage Scrub
Arundo
Riparian Scrub - Disturbed
Riparian Woodland -Disturbed
Streambed
Tamarisk Scrub

Vernal Pools
Vernal Pool

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0 350 Feet

Source: Aerial (Riverside County 2019)

HELIX Environmental Planning

Vegetation & Sensitive Resource/Impacts

Figure 8

These impacts would be mitigated in accordance with mitigation measure **BIO-1** below, which provides for in-kind compensation at on- and/or off-site locations in accordance with mitigation ratios approved by the RCA and Wildlife Agencies.

BIO-1 **Permanent Impact Compensatory Mitigation**. Prior to the issuance of a grading permit, the City shall mitigate for permanent impacts to habitat below the 1,265-foot elevation limit, including riparian/riverine and like-functioning grassland habitat, in accordance with the ratios and acreages specified below and through one or a combination of the following options:

Habitat	Permanent Impacts (Acres)	Mitigation Ratio	Total Mitigation Required
Riparian Woodland	0.05	3:1	0.15
Streambed	0.02	2:1	0.04
Tamarisk Scrub	0.62	2:1	1.24
Non-native Woodland	0.25	2:1	0.5
Disturbed/Ruderal	0.87	2:1	1.74

Purchase of off-site re-establishment and/or rehabilitation credits from the Riverpark Mitigation Bank or alternative mitigation bank approved by the RCA and Wildlife Agencies;

and/or,

Preservation of land in perpetuity within the Lake Elsinore Back Basin or alternative location approved by the RCA and Wildlife Agencies.

With the successful implementation of mitigation measure **BIO-1**, permanent impacts on habitat below the 1,265-foot elevation limit, including riparian/riverine and like-functioning grassland habitat, would be mitigated to less than significant levels and the project would be consistent with the MSHCP.

4.1.2 Temporary Impact Mitigation

Temporary impact areas have also been restricted to non-native habitat types and disturbed and developed areas immediately adjacent to the permanent impact areas. The temporary impact areas have been reduced to the maximum extent practicable to safely construct the project. Unavoidable temporary impacts will occur to 0.10 acre of riparian woodland in the southern portions of the trail as a result of placement of the free span bridge structure and storm drain culvert extension. Additional temporary impacts would occur to less than 0.1 acre of Riversidean sage scrub. The remaining permanent impacts would occur to non-native habitat types (dominated by tamarisk, eucalyptus, non-native broadleaf forbs, and bare earth) above and below the 1,265-foot elevation limit, as well as to unvegetated streambed and developed land.

Temporary impacts to riparian/riverine and like-functioning grassland habitat below the 1,265-foot elevation limit would be considered significant and would require compensatory mitigation to demonstrate consistency with the MSHCP.

These impacts would be mitigated in accordance with mitigation measure **BIO-2** below, which provides for in-kind compensation at on- and/or off-site locations in accordance with mitigation ratios approved by the RCA and Wildlife Agencies.

BIO-2 **Temporary Impact Revegetation**. Upon completion of construction activities, the City shall restore and revegetate temporary impact areas to conditions that are equivalent or superior to pre-activity conditions resulting in a functional uplift through implementation of the following:

- Removal of any remaining rooted non-native vegetation, debris, and any foreign aggregate (asphalt, concrete, etc.)
- Decompaction of the upper 4-6 inches of soil
- Pre-seeding wetting of the soil surface with a water truck
- Hydroseeding with native seed palette (to include native paniculate and smooth tarplant seed, if available), mycorrhizae, and carbon/fiber mulch mix.
- Post-seeding wetting with water truck.
- Monitoring and maintenance by biologist during 45-day plant establishment period.
- As-built report by biologist sent to the RCA and Wildlife Agencies.

With the successful implementation of mitigation measure **BIO-2**, temporary impacts would be mitigated to less than significant levels and the project would be consistent with the MSHCP.

5.0 PROTECTION OF SPECIES ASSOCIATED WITH RIPARIAN/RIVERINE AREAS AND VERNAL POOLS (SECTION 6.1.2)

The study area was assessed for Section 6.1.2 resources, including riparian/riverine resources, vernal pools (including fairy shrimp), and riparian birds. Section 6.1.2 of the MSHCP provides the following definitions of these resources:

> "**Riparian/Riverine Areas** are lands which contain Habitat dominated by trees, shrubs, persistent emergents, or emergent mosses and lichens, which occur close to or which depend upon soil moisture from a nearby fresh water source; or areas with fresh water flow during all or a portion of the year."
>
> "**Vernal pools** are seasonal wetlands that occur in depression areas that have wetlands indicators of all three parameters (soils, vegetation and hydrology) during the wetter portion of the growing season but normally lack wetlands indicators of hydrology and/or vegetation during the drier portion of the growing season. Obligate hydrophytes and facultative wetlands plant species are normally dominant during the wetter portion of the growing season, while upland species (annuals) may be dominant during the drier portion of the growing season. The determination that an area exhibits vernal pool characteristics, and the definition of the watershed supporting vernal pool hydrology, must be made on a case-by-case basis. Such determinations should consider the length of the time the area exhibits upland and wetland characteristics and the manner in which the area fits into the overall ecological system as a wetland. Evidence concerning the persistence of an area's wetness can be obtained from its

history, vegetation, soils, and drainage characteristics, uses to which it has been subjected, and weather and hydrologic records."

"**Fairy Shrimp**. For Riverside, vernal pool and Santa Rosa fairy shrimp, mapping of stock ponds, ephemeral pools and other features shall also be undertaken as determined appropriate by a qualified biologist.

"With the exception of wetlands created for the purpose of providing wetlands Habitat or resulting from human actions to create open waters or from the alteration of natural stream courses, areas demonstrating characteristics as described above which are artificially created are not included in these definitions."

5.1 RIPARIAN/RIVERINE

5.1.1 Methods

Riparian resources were observed in the field during the biological surveys completed in 2020 and 2021. The riparian areas were mapped based on observations made in the field, recent aerial imagery, and topographic mapping. There are generally two types of riparian/riverine areas in the Back Basin: (1) traditional riparian/riverine habitat, such as stands of riparian trees/shrubs and unvegetated drainage features/streambed; and (2) other habitat types below the 1,265-foot elevation limit, which represents the upper elevation extent of CDFW jurisdiction. The study area supports both of these types. The MSHCP has also traditionally used the 1,255-foot elevation limit in the Back Basin as the upper elevation extent of riparian/riverine areas. For the purposes of this study and to simplify the correlation with CDFW jurisdiction, riparian/riverine areas are described in this report as resources below the 1,265-foot elevation limit.

5.1.2 Existing Conditions and Results

Riparian areas within the study area consist primarily of native riparian woodland habitat comprising tamarisk (*Tamarix ramosissima*) and black willow (*Salix gooddingii*) trees adjacent to the Pepper tree mobile home park and along the sewer easement north of Oakview Lane in the southern portions of the trail adjacent to the existing residential neighborhood. A small stand of riparian scrub was also mapped in the central portion of the trail consisting of tamarisk and mulefat (*Baccharis salicifolia*) adjacent to the mobile home park on Stoneman Street. These stands are fed by existing ephemeral drainage features that generally run south-north, draining the existing developed lands near Stoneman Street, Ontario Way, and Oak Knoll Lane.

Riverine areas within the study area consist of a single unnamed ephemeral drainage feature that is mapped as streambed habitat in the central portion of the trail near Como Street. This feature is essentially functioning as an existing roadway as evidenced by extensive and regular off-highway vehicle (OHV) use. Width of the feature was based on the width of the natural bed and bank and evidence of flow observed in the field. Field indicators referenced include surface hydrology sign (e.g., saturation, destruction of terrestrial vegetation). An Arizona crossing using concrete and rock will be installed to span the width of the drainage feature.

Although not observed in association with drainage features or traditional riparian landscape positions, tamarisk was also observed scattered throughout the alignment as both isolated individuals and

groupings. The tamarisk stands that were mapped below the 1,265-foot elevation limit are considered to be riparian/riverine areas for the purposes of this assessment.

Also considered to be riparian/riverine areas purely based on their landscape position below the 1,265-foot elevation limit were areas supporting stands of Arundo, non-native woodland, and disturbed/ruderal.

Both riparian (vegetated) and riverine (unvegetated) areas were present within the study area (Table 3, *Existing Riparian/Riverine Areas*). A total of 17.63 acres of riparian and 0.46 acre of riverine were mapped within the study area (Figure 9).

Table 3
EXISTING RIPARIAN/RIVERINE AREAS

Riparian/Riverine Areas	Existing Acres
Riparian	
Riparian Scrub	0.13
Riparian Woodland	1.92
Tamarisk Scrub (below 1,265 feet)	4.88
Non-native Woodland (below 1,265 feet)	2.14
Disturbed/Ruderal (below 1,265 feet)	8.56
Riparian Subtotal	**17.63**
Riverine	
Streambed	0.46
Riverine Subtotal	**0.46**
Total	***18.09***

The functions and values of the riparian/riverine areas in the study area are limited, primarily due to poor to moderate structure and species composition (i.e., small isolated stands or open sparse stands with relatively high percent coverage by non-native vegetation). Nevertheless, the areas do provide for wildlife functions, primarily low quality breeding/nesting functions for common and sensitive riparian birds and moderate quality foraging/hunting/perch opportunities situated amongst open herbaceous areas for foraging. Riparian scrub was mapped as 0.13 acre comprising of a single relatively small stand adjacent to the existing Pepper Tree mobile home park. In addition, approximately 1.92 acres of riparian woodland was mapped adjacent to the southern portions of the trail. This larger stand of riparian woodland was found to support least Bell's vireo during 2020 and 2021 biological surveys. The riparian woodland is no suitable to support breeding southwestern willow flycatcher, although the species could temporarily stop over the area and use the stand for resting and foraging. The riparian woodland is not suitable for western yellow-billed cuckoo due to its composition and structure being too sparse and open to support the species.

The functions and values of the riverine area on-site are limited as well. The streambed that was mapped essentially serves as an OHV dirt access road that is regularly used by local traffic. It occurs within the footprint of the future (conceptual) Stoneman Street extension. The OHV activity over time has made the feature more pronounces such that it serves as the linear low spot in the area where storm water collects and drains. The streambed runs generally south-north and abates as a sheet flow zone further to the north of the study area. The feature contains and is surrounded by trash and various forms of human disturbance and contains no riparian or wetland vegetation. A small patch of Arundo,

disturbed riparian scrub, and riparian woodland occur adjacent to the feature. The feature offers limited functions and values for wildlife, though nuisance water during drier months may offer foraging opportunities for wildlife. The feature provides hydrologic function and value in that it serves to convey surface water flows north toward the core of the Back Basin, ultimately contributing to groundwater recharge and flood processes that are important to the Back Basin biology.

The functions and values of the other habitat types below the 1,265-foot elevation limits are even more limited primarily due to the strong dominance of non-native vegetation and lack of structural complexity. The habitat types include Arundo, non-native woodland (dominated by eucalyptus), and disturbed/ruderal land (dominated by non-native broadleaf forbs and weeds). The Arundo provides some wildlife cover and breeding/nesting habitat, but not for any sensitive or MSHCP covered species. It is further an invasive species that threatens the native flora of the Back Basin. The non-native woodland provides wildlife function in the form of nesting habitat for common (e.g., oriole) and sensitive (e.g., Cooper's hawk) birds, in addition to hunting and perching habitat for raptors. However, it is heavily dominated by eucalyptus, which is also an invasive species that offers little understory function and threatens the riparian habitat in the Back Basin. Last, the disturbed/ruderal land provides good quality wildlife foraging functions in the Back Basin and functions similarly to a grassland. However, the predominance of non-native weeds that are invasive also threaten the recruitment and sustainability of native flora, including narrow endemic, criteria area, and MSHCP covered plants that are important to the recovery of the Back Basin.

5.1.3 Impacts

Direct impacts to riparian/riverine areas have been minimized through iterations of the project design (Figure 10, *Riparian/Riverine Impacts*). The trail design has been re-routed in multiple areas to avoid riparian/riverine areas, and where re-routing is not possible, the trail implements free-span bridges to avoid the features. Nevertheless, limited unavoidable permanent and temporary impacts are required in order to safely construct the trail. The impacts are summarized below within Table 4.

Table 4
IMPACTS TO RIPARIAN/RIVERINE AREAS

Habitat	Impacts (acres)*		
	Temporary	Permanent	Total
Riparian			
Riparian Scrub	--	--	--
Riparian Woodland	0.04	0.01	0.05
Tamarisk Scrub (below 1,265 feet)	0.6	0.6	1.2
Non-native Woodland (below 1,265 feet)	0.2	0.3	0.50
Disturbed/Ruderal (below 1,265 feet)	0.8	0.9	1.7
Riparian Subtotal	**1.76**	**1.75**	**3.51**
Riverine			
Streambed	0.02	0.02	0.04
Riverine Subtotal	**0.02**	**0.02**	**0.04**
Total	***1.78***	***1.77***	***3.54***

* Totals reflect rounding.

Indirect impacts to riparian/riverine areas will be avoided through the implementation of BMPs and other standard construction practices outlined in Section 10 of this report.

Murrieta Creek Trail

Study Area
Proposed Murrieta Creek Trail
1265 Elevation Line
Least Bell's Vireo
Paniculate tarplant
Smooth Tarplant

Riparian/Riverine Areas

Developed
Disturbed/Ruderal
Non-native Woodland
Riversidian Sage Scrub
Riparian Scrub Disturbed
Riparian Woodland Disturbed
Streambed
Tamarisk Scrub

Vernal Pools

Vernal Pool

COMO ST (FUTURE ROAD)
Study Area
Levee Trail
8'
ROME HILL
STONEMAN ST
OAKVIEW WAY
OAKVIEW LN
APPLEWOOD WAY
APPLEWOOD CT
STONEWOOD WAY
SAMUEL DR
OLIVE TREE CT
ONTARIO WAY
OAK KNOLL LN
BEECHWOOD LN
SKYLARK DR
PALOMAR ST
OLD COACH RD
STONEWOOD LN
RCIT, Eagle Aerial, RCIT, Pictometry

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0 350 Feet

Source: Aerial (Riverside County 2019)

HELIX Environmental Planning

Riparian/Riverine Areas and Vernal Pools

Figure 9

Murrieta Creek Trail

Study Area
Proposed Murrieta Creek Trail
1265 Elevation Line
Least Bell's Vireo
Paniculate tarplant
Smooth Tarplant

Impact Type

Permanent
Temporary

Riparian/Riverine Areas

Developed
Disturbed/Ruderal
Non-native Woodland
Riversidian Sage Scrub
Riparian Scrub Disturbed
Riparian Woodland Disturbed
Streambed
Tamarisk Scrub

Vernal Pools

Vernal Pool

Arizona Crossing
COMO ST (FUTURE ROAD)
Study Area
Free Span Bridge
Culvert Extension
Levee Trail
ROME HILL
STONEMAN ST
OAKVIEW WAY
OAKVIEW LN
APPLEWOOD CT
APPLEWOOD WAY
STONEWOOD WAY
SAMUEL DR
OLIVE TREE CT
ONTARIO WAY
OAKKNOLL LN
APPLEWOOD CT
BEECHWOOD LN
SKYLARK DR
PALOMAR ST
OLD COACH RD
SANTA CRUZ
STONEWOOD LN
RCIT, Eagle

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0 350 Feet

Source: Aerial (Riverside County 2019)

HELIX Environmental Planning

Riparian/Riverine Areas and Vernal Pools/Impacts

Figure 10

5.1.4 Mitigation

Mitigation for permanent and temporary impacts to riparian/riverine areas are addressed within mitigation measures **BIO-1** and **BIO-2**.

5.2 VERNAL POOLS

5.2.1 Methods

Vernal pools have been mapped throughout the Back Basin as part of a separate larger survey effort completed by others in coordination with the City. The mapping was confirmed during wet season surveys and mapping completed by HELIX over the 2020/2021 wet season. The vernal pools were mapped based on observations in the field, aerial imagery, and topographic mapping. Focused surveys were conducted concurrent with the wet season mapping effort from December 2020 through April 2021 to determine the presence or absence of fairy shrimp, sensitive plants, and vernal pool indicator plant species (HELIX 2021a and 2021b). The average and maximum water depth, air and water temperature, basin length and width, habitat condition of water-holding basins were recorded throughout wet season fairy shrimp surveys (HELIX 2021b).

A hydrology and drainage study was also completed for the project to evaluate the existing flow regime and estimate vernal pool watershed areas within the study area and immediate vicinity. USDA web soil survey was also used to confirm mapped soil types (USDA 2019). Finally, vegetation sampling was also completed during the general biological survey and during wet season fairy shrimp surveys to obtain information on seasonal flora composition.

5.2.2 Existing Conditions and Results

A total of 11 vernal pools consisting of basins, depression, and tire ruts were mapped during the 2020 and 2021 surveys for the project and larger Back Basin survey effort. The survey covered the study area and immediate vicinity. Vernal pool associated soil types mapped within the study area include those from the Domino and Traver series (Figure 6, *Soils*). Evidence of OHV disturbance was observed within the pools that were sampled. Vernal pool indicator plant species were not detected within or surrounding any of the 11 sampled pools. Year 2020/2021 wet season fairy shrimp sampling conducted by HELIX confirmed ponding conditions in Pools 4, 5, 6, 8, 9, 10, and 11. The common (non-sensitive) versatile fairy shrimp was observed in two of the sampled pools: Pools 9 and 10. Dry season fairy shrimp sampling was also completed in 2021 that confirmed versatile fairy shrimp cysts within seven of the 11 pools sampled.

5.2.3 Impacts

The project has been specifically sited and designed to avoid all impacts to vernal pools and their contributing watershed areas. This was accomplished by re-routing the trail alignment and substantially minimizing the amount of ground disturbance and grade changes. Re-routing of the trail resulted in complete avoidance with setbacks from the vernal pools and their watershed areas. Keeping the trail flat and utilizing the existing grades with minimal grading resulted in avoidance of disrupting the existing flow regime of the local area, including avoiding disruption of flows into contributing vernal pool watershed areas.

Potential indirect impacts to vernal pools during construction would be avoided through the implementation of the BMPs and other standard construction practices addressed in Section 10 of this report. Potential indirect impacts during operation would be avoided through the use of concrete or aggregate dip structures at low spot elevations where unusually high flood flows could overland across the trail. In addition, aggregate base, and decomposed granite recovery zones (shoulders) would be used to prevent erosion and promote infiltration processes. Last, fencing will be installed on either side of the trail to prevent intrusion into restricted areas containing vernal pools and their watersheds.

5.2.4 Mitigation

No mitigation is required because no impacts would occur.

5.3 FAIRY SHRIMP

5.3.1 Methods

The methodology for mapping fairy shrimp habitat is described above for vernal pools. Dry season sampled was completed on December 23, 2020 from 11 basins within the project vicinity. Following soil collection, samples were prepared and cysts were identified to genus level based on surface characteristics. Wet season surveys were conducted between December 30, 2020 and April 14, 2021. Each basin was sampled at approximately seven-day intervals until dry, and sampling was reinitiated within seven days of the basin becoming re-inundated. All basins were dry on April 14, 2021. The water-holding basins were sampled using a hand-held fine mesh aquarium net swept through the water and examined for invertebrates. If fairy shrimp were present, an attempt to identify netted fairy shrimp to species occurred in the field. Following identification, individuals identified in the field were immediately returned to their basin of origin. Average and maximum water depth, air and water temperature, basin length and width, habitat condition, a population estimate of any fairy shrimp present, and observations of any other basin-dwelling species were recorded (HELIX 2021b).

5.3.2 Existing Conditions and Results

Branchinecta cysts were observed in seven of the 11 pools sampled. *Streptocephalus* sp. cysts were not observed in any of the 11 pools. Year 2020/2021 wet season fairy shrimp sampling conducted by HELIX confirmed ponding conditions in Basins 4, 5, 6, 8, 9, 10, and 11, with *Branchinecta lindahli* and immature *Branchinecta* sp. confirmed in Basins 9 and 10. No federally listed *Streptacephalus* sp. fairy shrimp were identified within the 11 sampled pools during the 2020-2021 wet season surveys. Federally listed fairy shrimp are presumed to be absent from the project site based on the absence of the species during the 2020-2021 wet season surveys. Based on the wet and dry season sampling efforts, *Streptacephalus* sp. is presumed absent and the *Branchinecta* sp. sampled are presumed to be *Branchinecta lindahli*.

5.3.3 Impacts

As addressed for vernal pools above, the project has been specifically sited and designed to avoid all impacts to fairy shrimp habitat and their contributing watershed areas. No direct impacts would occur. Potential indirect impacts during construction would be avoided through the implementation of the BMPs and other standard construction practices addressed in Section 10 of this report. Potential indirect impacts during operation would be avoided through the use of concrete dip structures at low spot elevations where unusually high flood flows could overland across the trail. In addition, aggregate base,

and decomposed granite recovery zones (shoulders) would be used to prevent erosion and promote infiltration processes. Last, fencing will be installed on either side of the trail to prevent intrusion into restricted areas containing shrimp habitat and their watersheds.

5.3.4 Mitigation

No mitigation is required because no impacts would occur.

5.4 RIPARIAN BIRDS

5.4.1 Methods

The study area was assessed for habitat that could support sensitive riparian bird species, such as least Bell's vireo (*Vireo bellii pusillus*), southwestern willow flycatcher (*Empidonax traillii extimus*), and western yellow-billed cuckoo (*Coccyzus americanus occidentalis*). USFWS protocol surveys for least Bell's vireo were conducted within suitable habitat by others in 2020 as part of the larger Back Basin survey effort being completed in coordination with the City. Least Bell's vireo were detected within riparian woodland on the eastern half of the alignment between May 7 and July 29, 20202. Least Bell's vireo was also incidentally detected within the riparian woodland at the east end of the alignment in 2020 by HELIX biologists.

Focused surveys for southwestern willow flycatcher and western yellow-billed cuckoo were not required to be conducted due to lack of suitable habitat within the study area. A willow flycatcher was incidentally detected during project surveys in May 2020. A single willow flycatcher was detected singing in tamarisk scrub by others in May 2020. Willow flycatchers were not detected during subsequent surveys; therefore, it is unlikely this individual is southwestern willow flycatcher. Suitable habitat for western yellow-billed cuckoo does not occur within the study area or project vicinity.

5.4.2 Existing Conditions and Results

Three least Bell's vireo were detected within the riparian woodland along the sewer easement trail alignment by HELIX in 2020. Other incidental observations have been recorded by others in this area. The small, isolated nature of this riparian habitat located adjacent to the project site means it is not expected to support nesting by southwestern willow flycatcher or western yellow-billed cuckoo.

5.4.3 Impacts

Direct impacts to suitable habitat for riparian birds, including least Bell's vireo, are largely being avoided by the project design; however, unavoidable impacts to 0.05 acre (0.01 acre permanent and 0.04 acre temporary) would occur during project construction. The project would further be constructed within 500 feet of suitable vireo nesting habitat, thereby introducing the potential for indirect noise impacts during construction. Direct and indirect impacts on nesting vireo would be consistent and in conflict with the avoidance requirements identified for the species in the MSHCP.

Species Conservation Objective 3 of the MSHCP states that if surveys are positive for least Bell's vireo, then 90 percent of the occupied portions of the property that provide for long-term conservation value for the vireo shall be conserved in a manner consistent with conservation of the vireo. The trail impacts would be limited to 0.05 acre of the larger approximately 5.0-acre stand, which translates to less than

1% (0.6%) impacts and greater than 99% avoidance. The project area adjacent to the riparian habitat is already located within an existing easement that abuts existing developments and there are no opportunities for the trail to further setback from the habitat.

Impacts to least Bell's vireo and other riparian birds will be avoided by implementing mitigation measures **BIO-3** below, which would restrict construction activities within 500 feet of suitable habitat to periods outside of the vireo breeding season (March 15 through September 15). The BMPs and standard construction practices identified in Section 10 of this report would also be implemented to avoid and minimize potential indirect impacts. Loss of habitat would be further mitigation pursuant to mitigation measures **BIO-1** and **BIO-2**.

5.4.4 Mitigation

BIO-3 **Least Bell's Vireo Avoidance**. Construction activities within 500 feet of least Bell's vireo occupied habitat shall be completed outside of the vireo breeding season (March 15 to September 15). If construction cannot avoid the breeding season, construction noise could affect the breeding success. No loud construction noise (exceeding an hourly average of 60 dBA, or 3 dBA above hourly average ambient noise levels at the nesting site, whichever is higher) may take place within 500 feet of active nesting sites during the vireo breeding season (March 15 to September 15).

Noise levels may be mitigated with a noise control barrier. The use of noise control barriers is determined on a case-by-case basis subject to the approval of the Wildlife Agencies. The noise barriers may be 10 feet in height and be located between the facilities' construction operations and adjacent sensitive habitat to the east and west of the project construction site. Noise control barriers would be installed outside of the breeding season.

The barriers shall be solid and may be constructed of masonry, wood, plastic, fiberglass, steel, or a combination of those materials, with no cracks or gaps through or below the wall. Any seams or cracks should be filled or caulked. If wood is used, it can be tongue and groove or close butted seams and be at least ¾-inch thick or have a surface density of at least 3.5 pounds per square-foot. Sheet metal of 18 gauge (minimum) may be used, if it meets the other criteria and is properly supported and stiffened so that it does not rattle or create noise itself from vibration or wind. Noise blankets, hoods, or covers also may be used, provided they are appropriately implemented to provide the required sound attenuation.

A qualified biologist shall monitor the construction operations. The biological monitor shall be present to monitor construction activities that occur adjacent to the undeveloped open space area potentially supporting breeding birds. The monitor shall verify that construction noise levels do not exceed the acceptable levels listed above and shall have the ability to halt construction work, if necessary, and confer with the City, and if applicable, USFWS and CDFW, to ensure no breeding birds are adversely affected and additional protection measures are properly implemented during construction. The biologist shall report any violation to the USFWS and CDFW within 24 hours of its occurrence.

5.5 OTHER SECTION 6.1.2 SPECIES

The purpose of Section 6.1.2 of the MSHCP is to ensure that the biological functions and values of riparian/riverine areas and vernal pools throughout the MSHCP Plan Area are maintained such that habitat values are maintained for all Section 6.1.2 species. Section 6.1.2 species are those associated with riparian/riverine areas and vernal pools. Table 5 below provides a summary of the potential for these species to occur within the study area.

Table 5
SPECIES ASSOCIATED WITH RIPARIAN/RIVERINE AREAS AND VERNAL POOLS WITH POTENTIAL TO OCCUR

Species	Status	Habitat and Distribution	Potential to Occur[1]
Amphibian			
Arroyo toad (*Anaxyrus californicus*)	FE/SSC MSHCP Covered	Found on banks with open-canopy riparian forest characterized by willows, cottonwoods, or sycamores; breeds in areas with shallow, slowly moving streams, but burrows in adjacent uplands during dry months	**None**. No suitable slow moving streams, alluvial habitat, or potential estivation sites are present within the study area. The species is not known from the area.
Mountain yellow-legged frog *(Rana muscosa*)	FE/SSC MSHCP Covered	Mid- to upper-elevation permanent waterways, often with open riparian vegetation	**None.** No suitable aquatic habitat occurs on-site and the study area occurs outside the known range for the species.
California red-legged frog (*Rana aurora draytonii*)	FT/SSC MSHCP Covered	Appropriate habitat is characterized by dense, shrubby riparian vegetation with deep, slow-moving water. Readily displaced by introduced aquatic predators, including bullfrogs (*Rana catesbiana*) or crayfish (*Procambarus* sp).	**None.** No suitable aquatic habitat occurs on-site and the study area occurs outside of the known range for the species.
Birds			
Bald eagle (*Haliaeetus leucocephalus*)	--/SE, FP	Rare but observed annually in winter near lakes in foothills and mountains. Close proximity to lakes or other water bodies	**Low.** No suitable breeding habitat occurs within the study area. Bald eagle could potentially forage over the study area, but is more likely to forage at the lake and ponds outside of the study area.
Least Bell's vireo (*Vireo bellii pusillus*)	FE, BCC/SE	Observed throughout much of San Diego County in the breeding season but in smaller numbers in foothills and mountains. Mature riparian woodland	**Present.** Detected within the study area during 2020 protocol surveys
Peregrine falcon *(Falco peregrinus anatum)*	BCC/SE, FP	Generally, areas with cliffs near water where prey (shorebirds and ducks) is concentrated. Preferred hunting areas are agricultural fields, meadows, marshes, and lakes. Nesting usually occurs on cliff ledges or in a scrape in debris and occasionally in the old nests of other birds.	**None.** No suitable cliff habitat present on-site. The species could forage over the study area but the study area does not provide essential foraging habitat for the species.

Table 5
SPECIES ASSOCIATED WITH RIPARIAN/RIVERINE AREAS AND VERNAL POOLS WITH POTENTIAL TO OCCUR

Species	Status	Habitat and Distribution	Potential to Occur[1]
Southwestern willow flycatcher (*Empidonax traillii extimus*)	FE/SE	Occurs in San Diego County during the breeding season but is rare. Most breeding pairs occur along the upper San Luis Rey River or along the Santa Margarita River in Camp Pendleton, but scattered pairs or unpaired individuals have been observed elsewhere. Breeds within thickets of willows or other riparian understory usually along streams, ponds, lakes, or canyons. Migrants may be found among other shrubs in wetter areas.	**None.** The species is not likely to breed within the study area or Back Basin. No suitable woodland habitat is present on-site. The nearest sighting was over 8 miles from the project site in 2000. The species could temporarily stop over the riparian habitat, but the habitat within the study area is not expected to be essential to the species' migration.
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	FC, BCC/SE	Very rare and sporadic visitor to San Diego County during the breeding season. Likely not nested in the county for decades. Extensive stands of mature riparian woodland	**None.** No suitable mature riparian woodland habitat is present on-site.
Fish			
Santa Ana sucker (*Catostomus santaanae*)	FT/--	Live in permanent streams with a depth of a few centimeters to over a meter deep. Prefer gravel or rocky substrates in cool waters.	**None.** No suitable aquatic habitat is present on-site and the study area occurs outside of this species known range.
Invertebrates			
Riverside fairy shrimp (*Streptocephalus woottonii*)	FE/--	Currently known only from five vernal pools in western Riverside County in the vicinity of Temecula and Rancho California (Eng et al. 1990); two locations in Orange County; 20 to 30 pools on Otay Mesa and at least one pool on Miramar in San Diego County; and one pool at an undisclosed location in northern Baja California, Mexico. Typically deep vernal pools and seasonal wetlands at least 30 centimeters deep (Simovich 1990).	**Presumed Absent.** No vernal pools occur within the study area and this species was not detected during protocol surveys of nearby basins.
Vernal pool fairy shrimp (*Branchinecta lnychi*)	FE/--	Tehama County to north of Santa Barbara with a few disjunct populations in southwestern Riverside County. Most commonly found in swale, earth slump, or basal-flow depression pools in unplowed grasslands.	**Presumed Absent.** No vernal pools occur within the study area and this species was not detected during protocol surveys of nearby basins.

Table 5
SPECIES ASSOCIATED WITH RIPARIAN/RIVERINE AREAS AND VERNAL POOLS WITH POTENTIAL TO OCCUR

Species	Status	Habitat and Distribution	Potential to Occur[1]
Plants			
Brand's phacelia (*Phacelia stellaris*)	FC/-- CRPR 1B.1 MSHCP NEPSSA	Herb. Known from fewer than five occurrences in coastal San Diego County. Also found in Los Angeles County and Baja California, Mexico. Sandy openings in Diegan coastal sage scrub near the coast. Flowering period: March through June.	**Presumed absent.** This species was not observed during rare plant surveys completed for the project.
Orcutt grass (*Orcuttia californica*)	FE/SE CRPR 1B.1 MSHCP NEPSSA	Herb. In or near vernal pools. This species tends to grow in wetter portions of the vernal pool basins, but does not show much growth until the basins become somewhat desiccated. Flowering period: April through August.	**Presumed Absent.** This species was not observed during rare plant surveys completed for the project.
Southern California black walnut (*Juglans californica*)	--/-- CRPR 4.2 CA Endemic	Tree. This tree grows between 20 and 50 feet tall in open savannah, often in habitat best labeled walnut woodland. May be more tolerant of clay soils than most native trees and shrubs. Shows preference for deep alluvial soils with high water-retention capacity and tends to grow in creekbeds, alluvial terraces, and north-facing slopes.	**Presumed Absent.** Suitable woodland and savannah habitat is not present within the study area. Furthermore, this species is conspicuous and would have been observed if present.
Coulter's matilija poppy (*Romneya coulteri*)	--/-- CRPR 4.2 CA Endemic	Herb. Found in eastern south coastal and peninsular ranges in Los Angeles, Orange, Riverside, and San Diego counties. Known from dry washes and canyons in chaparral and coastal sage scrub communities, and areas that have been burned. Open or mildly disturbed terrain is sometimes favored. Mature chaparral or sage scrub limits the expansion of the species. Flowering period: July to September.	**Presumed absent.** This species was not observed during rare plant surveys completed for the project.
Engelmann oak (*Quercus engelmannii*)	--/-- CRPR 4.2	Tree. Oak woodland and southern mixed chaparral. Larger oaks sometimes occurs in vast savannah grasslands. In foothills, may also occur as a shrubby element within the chaparral.	**Presumed Absent.** Suitable woodland and chaparral habitat is not present within the study area. Furthermore, this species is conspicuous and would have been observed if present.

Table 5
SPECIES ASSOCIATED WITH RIPARIAN/RIVERINE AREAS AND VERNAL POOLS WITH POTENTIAL TO OCCUR

Species	Status	Habitat and Distribution	Potential to Occur[1]
Fish's milkwort (*Polygala cornuta* var. *fishiae*)	--/-- CRPR 4.3	Shrub. Occurs in Ventura County south along the coastal area to Baja California, Mexico below 2,950 feet in elevation. Prefers shaded, rocky places in canyons in association with oak woodland or chaparral. Flowering period: May through August.	**Presumed Absent.** This conspicuous shrub would have been observed if present. No suitable habitat occurs on-site.
graceful tarplant (*Holocarpha virgata* ssp. *elongata*)	--/-- CRPR 4.2 CA Endemic	Herb. Found in San Diego, Orange, and Riverside counties. Occurs on coastal mesas and foothills with grassland habitats. Flowering period: May through November.	**Presumed absent.** This species was not observed during rare plant surveys completed for the project. The closest observation of this species to the site is over 15 miles to the west.
lemon lily (*Lilium parryi*)	--/-- CRPR 1B.2	A few known plants in Palomar Mountains of San Diego County. Also, some occurrences in San Bernardino, Los Angeles, and Riverside counties as well as Sonora, Mexico and Arizona. Moist montane meadows.	**None.** No suitable montane meadow habitat occurs on-site.
Mojave tarplant (*Deinandra mohavensis*)	--/SE CRPR 1B.3 CA Endemic	Herb. Known from northern San Diego, Riverside, San Bernardino, and Kern Counties. Grows along drainages at mid-elevations in relatively arid locations of montane chaparral. Flowering period: July through October.	**Presumed absent.** This species was not observed during rare plant surveys completed for the project. The closest observation of this species to the site is over 20 miles to the east.
Mud nama (*Nama stenocarpum*)	--/-- CRPR 2.2	Herb. Muddy lake edges. Flowering period: March through October.	**Presumed absent.** This species was not observed during rare plant surveys completed for the project. Suitable muddy lake shore habitat not present within the study area.
ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*)	--/-- CRPR 4.2 CA Endemic	Herb. Found throughout southern California from approximately 100 to 6,000 feet in elevation. Prefers shaded montane canyons. Flowering period: March through July.	**Presumed absent.** This species was not observed during rare plant surveys completed for the project. The nearest observation is over 10 miles away on the east side of Santiago Peak.
Parish's meadowfoam (*Limnanthes gracilis* var. *parishii*)	--/SE CRPR 1B.2 CA Endemic	Herb. Montane meadows largely devoid of shrubs and with concentrations of annuals and herbaceous perennials (not grasses) is preferred habitat. Flowering period: May through July.	**None.** Suitable montane meadows are not present within the study area
Prostrate navarretia (*Navarretia prostrata*)	--/-- CRPR 1B.1 CA Endemic	Herb. Restricted to vernal pools. Grows at mid levels within the deeper pools to the basin bottoms of the shallower pools. Flowering period: April through July.	**Presumed absent.** This species was not observed during rare plant surveys completed for the project.

Table 5
SPECIES ASSOCIATED WITH RIPARIAN/RIVERINE AREAS AND VERNAL POOLS WITH POTENTIAL TO OCCUR

Species	Status	Habitat and Distribution	Potential to Occur[1]
San Diego button-celery (*Eryngium aristulatum* var. *parishii*)	FE/SE CRPR 1B.1	Herb. Vernal pools or mima mound areas with vernally moist conditions are preferred habitat. Flowering period: April through June.	**Presumed absent.** This species was not observed during rare plant surveys completed for the project.
San Jacinto Valley crownscale (*Atriplex coronata var. notatior*)	FE/-- CRPR 1B.1 CA Endemic	Restricted to highly alkaline and silty-clay soils, which are found in certain alkali sink scrub, alkali playa, vernal pool, and annual alkali grassland habitats. Flowering period: April through August	**Presumed absent.** This species was not observed during rare plant surveys completed for the project.
San Miguel savory (*Satureja chandleri*)	--/-- CRPR 1B.2 MSHCP NEPSSA	Gabbro and metavolcanic soils in interior foothills, chaparral, and oak woodland between approximately 1,640 and 2,460 feet in elevation. Flowering period: March through July	**None.** No suitable habitat is present.
Santa Ana River woolly-star (*Eriastrum densifolium ssp. sanctorum*)	--/-- CRPR 1B.1	Herb. Occurs in alluvial fans within coastal sage scrub and chaparral. Flowering period: May through September.	**Presumed absent.** This species was not observed during rare plant surveys completed for the project. No suitable alluvial fan habitat occurs within the study area.
slender-horned spine flower (*Dodecahema leptoceras*)	--/-- CRPR 1B.1	Herb. Occurs in alluvial fans within coastal sage scrub and chaparral. Flowering period: April through June.	**Presumed absent.** This species was not observed during rare plant surveys completed for the project. No suitable alluvial fan habitat occurs within the study area.
smooth tarplant (*Centromadia pungens ssp. laevis*)	--/-- CRPR 1B.1 CA Endemic	Herb. San Diego, Orange, Riverside, Los Angeles, Kern, and San Bernardino counties below approximately 1,500 feet in elevation. Valley and foothill grasslands, particularly near alkaline locales. Flowering period: April through September.	**Species present.** A concentration of an estimated 1,000s of individuals was confirmed in the southern portion of the study area.
spreading navarretia (*Navarretia fossalis*)	FT/-- CRPR 1B.1 MSHCP NEPSSA	Herb. Vernal pools, vernal swales, or roadside depressions. Population size is strongly correlated with rainfall. Depth of pool appears to be a significant factor as this species is rarely found in shallow pools. Flowering period: April through June	**Presumed absent.** This species was not observed during rare plant surveys completed for the project.
thread-leaved brodiaea (*Brodiaea filifolia*)	FT/SE CRPR 1B.1 CA Endemic	Herb. Clay soils in vernally moist grasslands and vernal pool periphery are typical locales. Flowering period: March through June	**Presumed absent.** This species was not observed during rare plant surveys completed for the project. Clay soils not present within the study area.
vernal barley (*Hordeum intercedens*)	--/-- CRPR 3.2	Herb. Saline flats and depressions in grasslands or in vernal pool basins. Flowering period: March through June	**Presumed absent.** This species was not observed during rare plant surveys completed for the project.

Table 5
SPECIES ASSOCIATED WITH RIPARIAN/RIVERINE AREAS AND VERNAL POOLS WITH POTENTIAL TO OCCUR

Species	Status	Habitat and Distribution	Potential to Occur[1]

[1]**Presumed Absent**-A rare plant survey and botanical inventory conducted during the species' flowering period was negative.
None–No potential to occur. There are no present or historical records of the species occurring on or in the immediate vicinity, (within 3 miles) of the Project Site and the diagnostic habitats strongly associated with the species do not occur on or in the immediate vicinity of the Site, or the Site is above or below the recognized elevation limits for this species.
Low–Low potential to occur. There is a historical record of the species in the vicinity of the Project Site and potentially suitable habitat on Site, but existing conditions, such as density of cover, prevalence of non-native species, evidence of disturbance, limited habitat area, isolation, substantially reduce the possibility that the species may occur.
Moderate–Moderate potential to occur. The diagnostic habitats associated with the species occur on or in the immediate vicinity of the Project Site, but there is not a recorded occurrence of the species within the immediate vicinity (within 3 miles). Some species that contain extremely limited distributions may be considered moderate, even if there is a recorded occurrence in the immediate vicinity.
High–High potential to occur. There is both suitable habitat associated with the species and a historical record of the species on or in the immediate vicinity of the Project Site (within 3 miles).
Present–Species confirmed present during rare plant or other surveys.

As described above, two species associated with riparian/riverine areas and vernal pools were confirmed to be present within the study area: least Bell's vireo and smooth tarplant. Survey methods, results, impacts, and mitigation for these two species are addressed in other sections of this report.

6.0 PROTECTION OF NARROW ENDEMIC PLANT SPECIES (SECTION 6.1.3)

The project is located within a Narrow Endemic Plant Species Survey Area, which requires surveys for Munz's onion (*Allium munzii*), San Diego ambrosia (*Ambrosia pumila*), many-stemmed dudleya (*Dudleya multicaulis*), California Orcutt grass (*Orcuttia californica*), and Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*).

6.1 METHODS

Rare plant surveys were conducted by HELIX in April, May, and June 2020, and May 2021. Additional surveys were completed by others in the Back Basin as part of a larger survey effort coordinated with the City. Meandering transects were conducted throughout the study area, focusing on areas that supported suitable habitat attributes such as affiliated soil types, plant associations, elevation limits, and micro habitats. Reference sites along the San Jacinto River and at Scott Road were utilized to confirm certain target species expression and blooming in the region. Common plant species observed during the field survey were identified by visual characteristics and morphology in the field and recorded in a field notebook. Unusual and less familiar plants were identified in the laboratory using taxonomical guides.

6.2 EXISTING CONDITIONS AND RESULTS

Species with potential to occur on-site are listed in Table 6, *Narrow Endemic Plant Species With Potential To Occur* below.

Table 6
NARROW ENDEMIC PLANT SPECIES WITH POTENTIAL TO OCCUR

Species	Status	Habitat and Distribution	Potential to Occur[1]
Munz's onion (*Allium munzii*)	FE/ST CRPR 1B.1 CA Endemic	Herb. Found on mesic or clay soils in chaparral, foothill woodland, pinyon-Juniper woodland, and valley grassland. Flowering period: March through May. Elevation range: 984-2,952 feet.	**Presumed Absent.** The rare plant survey was negative for this species. The potential for this species to occur within the study area is low.
San Diego ambrosia (*Ambrosia pumila*)	FE/-- CRPR 1B.1	Herb. Found on loam or clay soils along creeks or drainages in chaparral, valley grassland, coastal sage scrub, freshwater wetlands, vernal pools, and disturbed habitat. Flowering period: April through October. Elevation range: 164-1,968 feet.	**Presumed Absent.** Suitable ruderal habitats occur within the study area with vernal pools and alkali playas within the vicinity; however, vernal pools and playas do not occur within the study area. Species not detected during rare plant surveys. The rare plant survey was negative for this species. The potential for this species to occur within the study area is low.
Many-stemmed dudleya (*Dudleya multicaulis*)	--/-- CRPR 2B.2 CA Endemic	Herb. Found on clay soils in chaparral, valley grassland, and coastal sage scrub. Flowering period: April through July. Elevation range: 0-1,968 feet.	**Presumed Absent.** Suitable coastal sage, chaparral, and/or grassland habitat is not present within the Study Area. The rare plant survey was negative for this species. The potential for this species to occur within the study area is low.
California Orcutt grass (*Orcuttia californica*)	FE/SE CRPR 1B.1	Grass. Occurs in valley grassland, freshwater wetlands, wetland-riparian, and vernal pools. Flowering period: April through August. Elevation range: 0-2,296 feet.	**Presumed Absent.** The rare plant survey was negative for this species. The potential for this species to occur within the study area is low.
Wright's trichocoronis (*Trichocoronis wrightii* var. *wrightii*)	--/-- CRPR 2B.1	Herb. Occurs on alkaline soils in freshwater wetlands, wetland-riparian, riparian, meadows, marsh, and vernal pools. Flowering period: May through September. Elevation range: 0-1,640 feet.	**Presumed Absent.** The rare plant survey was negative for this species. The potential for this species to occur within the study area is low.

[1] **Presumed Absent-**A focused survey conducted during the species' flowering period was negative.

None–No potential to occur. There are no present or historical records of the species occurring on or in the immediate vicinity, (within 3 miles) of the Project Site and the diagnostic habitats strongly associated with the species do not occur on or in the immediate vicinity of the Site, or the Site is above or below the recognized elevation limits for this species.

Low–Low potential to occur. There is a historical record of the species in the vicinity of the Project Site and potentially suitable habitat on Site, but existing conditions, such as density of cover, prevalence of non-native species, evidence of disturbance, limited habitat area, isolation, substantially reduce the possibility that the species may occur.

Moderate–Moderate potential to occur. The diagnostic habitats associated with the species occur on or in the immediate vicinity of the Project Site, but there is not a recorded occurrence of the species within the immediate vicinity (within 3

miles). Some species that contain extremely limited distributions may be considered moderate, even if there is a recorded occurrence in the immediate vicinity.

High–High potential to occur. There is both suitable habitat associated with the species and a historical record of the species on or in the immediate vicinity of the Project Site (within 3 miles).

No narrow endemic species are known to occur or have a high potential to occur within the study area due to the disturbed nature of the area, lack of suitable soils, and lack of suitable vegetation associations. HELIX's 2020 and 2021 rare plant surveys did not identify narrow endemic plant species within the study area. The same can be said for the surveys completed by others in the Back Basin.

6.3 IMPACTS

No impacts on Narrow Endemic Plant Species are expected due to the presumed absence of the species based on negative survey results.

6.4 MITIGATION

No mitigation is required because no impacts would occur to Narrow Endemic Plant Species.

7.0 ADDITIONAL SURVEY NEEDS AND PROCEDURES (SECTION 6.3.2)

7.1 CRITERIA AREA PLANT SPECIES

Criteria area plant species for the criteria cells associated with this project include: San Jacinto Valley crownscale (*Atriplex coronata* var. *notatior*), Parish's brittlescale (*Atriplex parishii*), Davidson's saltscale (*Atriplex serenana* var. *davidsonii*), smooth tarplant (*Centromadia pungens* ssp. *laevis*), and little mousetail (*Myosurus minimus* ssp. *apus*). These species are analyzed for their potential to occur below (Table 7, *Criteria Area Plant Species With Potential To Occur*).

Table 7
CRITERIA AREA PLANT SPECIES WITH POTENTIAL TO OCCUR

Species	Status	Habitat and Distribution	Potential to Occur[1]
San Jacinto Valley crownscale *(Atriplex coronata* var. *notatior)*	FE/-- CRPR 1B.1 CA Endemic	Herb. Found in alkali sink, freshwater wetlands, wetland-riparian, playas, and vernal pools. Flowering period: April through August. Elevation range: 1,312 to 1,640 feet.	**Presumed Absent.** The rare plant survey was negative for this species. Portions of the study area support suitable habitat and there is a low potential for the species to occur. The closest observation is over 5.5 miles northwest of the site from 2011.
Parish's brittlescale *(Atriplex parishii)*	--/-- CRPR 1B.1	Herb. Found in highly alkaline silty-clay soils in shadscale scrub, alkali sink, freshwater wetlands, wetland-riparian, playas, and vernal pools. Flowering period: June	**Presumed Absent.** The rare plant survey was negative for this species. Portions of the study area support suitable habitat and there is a low potential for the species to occur. The closest observation of

		through October. Elevation range: 0-1,541 feet.	the species is over 12 miles to the northeast of the site from 1996.
Davidson's saltscale *(Atriplex serenana* var. *davidsonii)*	--/-- CRPR 1B.2	Herb. Found in alkaline lowlands in coastal sage scrub and wetland-riparian. Flowering period: April through October. Elevation range: 0-565 feet.	**Presumed Absent.** The rare plant survey was negative for this species. Portions of the study area support suitable habitat and there is a low potential for the species to occur. The closest observation is over 5.5 miles northwest of the site from 2011. The closest observation of the species is over 15 miles to the northeast from 2015.
Smooth tarplant *(Centromadia pungens* ssp. *laevis)*	--/-- CRPR 1B.1 CA Endemic	Herb. Found on alkaline soils in shadscale scrub, alkali sink, and valley grassland. Flowering period: April through September. Elevation range: 295-1,640 feet.	**Species Present.** This species was observed during the 2020 rare plant survey within the proposed alignment just northeast of the Stoneman Street terminus. 1,000s of individuals were estimated in the concentration observed in 2020.
Little mousetail *(Myosurus minimus* ssp. *apus)*	--/-- CRPR 3.1	Herb. Found in vernal pools, valley grassland, coastal sage scrub, freshwater wetlands, and wetland-riparian. Flowering period: March through June.	**Presumed Absent. Presumed Absent.** The rare plant survey was negative for this species. Portions of the study area support suitable habitat and there is a low potential for the species to occur. The closest observation of the species is over 7 miles to the southeast of the site from 1922.

[1] **Presumed Absent-**A focused survey conducted during the species' flowering period was negative.

None–No potential to occur. There are no present or historical records of the species occurring on or in the immediate vicinity, (within 3 miles) of the Project Site and the diagnostic habitats strongly associated with the species do not occur on or in the immediate vicinity of the Site, or the Site is above or below the recognized elevation limits for this species.

Low–Low potential to occur. There is a historical record of the species in the vicinity of the Project Site and potentially suitable habitat on Site, but existing conditions, such as density of cover, prevalence of non-native species, evidence of disturbance, limited habitat area, isolation, substantially reduce the possibility that the species may occur.

Moderate–Moderate potential to occur. The diagnostic habitats associated with the species occur on or in the immediate vicinity of the Project Site, but there is not a recorded occurrence of the species within the immediate vicinity (within 3 miles). Some species that contain extremely limited distributions may be considered moderate, even if there is a recorded occurrence in the immediate vicinity.

High–High potential to occur. There is both suitable habitat associated with the species and a historical record of the species on or in the immediate vicinity of the Project Site (within 3 miles).

Present–Known to occur within the study area.

As currently designed, the trail is anticipated to result in the permanent loss of approximately 50 individuals of smooth tarplant associated with the on-site concentration estimated to support 1,000s of individuals. The trail was re-routed to avoid the concentration to the maximum extent practicable while maintaining required geometries, but unavoidable impacts would occur at the edge of the concentration where individuals are growing in areas that appear to be routinely disced for fuel modification.

The impact is estimated at less than 5% of the on-site population, with greater than 95% of the on-site population being avoided. This species is known from multiple locations in the Lake Elsinore area and the on-site population does not represent a critical population essential for the species' long-term

survival. As mentioned, the concentration appears to be associated with areas that are routinely disced for fuel modification to protect the residential homes to the south. Project impacts of less than 5% of the on-site population that is growing within a fuel modification zone would be considered less than significant. To further reduce the impact, temporary impact areas would be revegetated using a native seed mix that contains smooth tarplant, as applicable and pursuant to mitigation measure **BIO-2**.

7.2 AMPHIBIANS

The study area is not located within an Amphibian Species Survey Area. Therefore, surveys for sensitive amphibian species are not required and were not conducted. No sensitive amphibian species would be impacted by the project. No mitigation is required.

7.3 BURROWING OWL

The proposed project falls within the Burrowing Owl Survey Area.

7.3.1 Methods

Burrowing owl surveys were completed for the project in accordance with the MSHCP Burrowing Owl Survey Instructions (RCA 2006). An initial habitat assessment survey was completed in April 2020 that confirmed the presence of suitable burrowing owl habitat and the need to conduct focused burrow and burrowing owl surveys. Suitable burrowing owl habitat found to occur within the trail alignment and approximately 150 meters beyond was surveyed from May through August 2020. The survey was conducted in two phases to cover the trail alignment alternatives being considered at the time.

7.3.2 Existing Conditions and Results

Suitable burrowing owl habitat found within the study area included flat terrain characterized by low-growing annual vegetation allowing for long lines of sight and foraging opportunities, in conjunction with friable soils in areas that do not become flooded to allow for burrow production and California ground squirrel activity. These areas were found sporadically within the study area intermittently dispersed amongst stands of tamarisk and riparian habitat.

In total, only two potential burrows capable of supporting burrowing owl were found within the study area during the 2020 burrowing owl surveys. Additional burrows and ground squirrel activity were observed at several locations outside and within 150 meters of the study area.

Despite suitable habitat occurring, the 2020 burrowing owl surveys were negative. No burrowing owls or burrowing owl sign (i.e., feathers, scat, pellets, and beetle carapace debris) were observed or otherwise detected during the survey.

A single unoccupied artificial burrowing owl burrow was found outside and further to the north of the study area on private property. Based on the property ownership, it is unlikely that the artificial burrow occurs on land that is preserved and actively managed.

7.3.3 Impacts

No impacts on burrowing owl are expected and the project will be required to implement standard 30-day pre-construction surveys prior to ground disturbance. If the species is found, additional required avoidance will be implemented in accordance with the MSHCP, MBTA and CFG Code. Mitigation measure **BIO-4** below will mitigate potential impacts to burrowing owl below a level of significance.

7.3.4 Mitigation

The City shall implement mitigation measure **BIO-4** below to confirm that burrowing owl remain absent from the impact area and that appropriate avoidance measures are implemented during the construction phase.

BIO-4: Pre-Construction Burrowing Owl Survey and Avoidance. Within 30 days prior to initiating ground-disturbance activities, the project applicant shall retain a qualified biologist to complete a 30-day pre-construction survey in accordance with the MSHCP. A 30-day pre-construction survey for burrowing owls is required prior to initial ground-disturbing activities (e.g., vegetation clearing, clearing and grubbing, tree removal, equipment staging, grading, site watering) to ensure that no owls have colonized the site in the days or weeks preceding the ground-disturbing activities. If burrowing owls have colonized the project site prior to the initiation of ground-disturbing activities, the project proponent will immediately inform the RCA and the Wildlife Agencies, and as a result, will need to coordinate further with RCA and the Wildlife Agencies, including the possibility of preparing a Burrowing Owl Protection and Relocation Plan, prior to initiating ground disturbance. If the 30-day pre-construction survey is negative and burrowing owls are confirmed to be absent, then ground-disturbing activities shall be allowed to commence. If ground-disturbing activities occur, but the site is left undisturbed for more than 30 days, a pre-construction survey will again be necessary to ensure burrowing owl has not colonized the site since the time it was last disturbed. If burrowing owl is found, the same coordination described above will be necessary.

7.4 MAMMALS

The project is not located within a Mammal Species Survey Area. Therefore, focused surveys for sensitive small mammal species (Aguanga kangaroo rat [*Dipodomys merriami collinus*], Los Angeles pocket mouse [*Perognathus longimembris brevinasus*], and San Bernardino kangaroo rat [*Dipodomys merriami parvus*]) are not required and were not conducted. No impacts are anticipated to occur to these species and no mitigation is required.

8.0 INFORMATION ON OTHER SPECIES

8.1 DELHI SANDS FLOWER LOVING FLY

The proposed project does not fall within an area with Delhi soils mapped within the MSHCP baseline data (Figure 6). No surveys for the Delhi sand flower loving fly are required, as the project site does not contain suitable soils for this species. No impacts to the Delhi sands flower loving fly will occur as a result of the project; therefore, no mitigation is proposed.

8.2 SPECIES NOT ADEQUATELY CONSERVED

None of the MSHCP Table 9-3 species (28 species) have been documented on the site. The potential for each species to occur on-site is analyzed below in Table 8, *Species Not Adequately Conserved with Potential to Occur*. None of the species have moderate or high potential to occur on the proposed project site.

Table 8
SPECIES NOT ADEQUATELY CONSERVED WITH POTENTIAL TO OCCUR

Species	Status	Habitat and Distribution	Potential to Occur[1]
Reptiles			
San Bernardino mountain kingsnake (*Lampropeltis zonata parvirubra*)	--/-- MSHCP Covered	Restricted to the San Gabriel, San Jacinto, and San Bernardino Mountains. Occurs in rocky canyons with chaparral, as well as habitats with big cone spruce, black oak, incense cedar, Jeffrey pine, or ponderosa pine.	**None**. No suitable montane habitat occurs on-site.
San Diego mountain kingsnake *(Lampropeltis zonata pulchra*)	--/SSC MSHCP Covered	Restricted to the mountains of Los Angeles, San Bernardino, Riverside and San Diego Counties. Occur in montane areas with coniferous forest, hardwood forests, riparian areas, or chaparral.	**None.** No suitable montane habitat occurs on-site.
southern rubber boa (*Charina bottae umbratical*)	--/ST	Known from the San Bernardino and San Jacinto mountains. Found in a variety of montane forest habitats.	**None.** No suitable montane forest habitat occurs on-site.
southern sagebrush lizard (*Sceloporus graciosus vandenburgianus*)	--/-- MSHCP Covered	Current range includes the Santa Ana, Santa Rosa, and San Jacinto Mountains. Occurs at elevation in chaparral, hardwood and conifer forests, juniper woodlands, and sage scrub.	**None.** No suitable montane habitat occurs on-site.
Birds			
California spotted owl (*Strix occidentalis occidentalis*)	BCC/SSC	Usually observed in the mountains at elevations between 4,000 and 6,000 feet (Unitt 2004). Shady oak or coniferous woodlands, often where moderate slopes and permanent water are present.	**None.** No suitable mountain habitat present on-site.
grasshopper sparrow (*Ammodramus savannarum*)	--/SSC	Scattered in small numbers throughout the county year-round. Prefers grassland habitat.	**None.** The nearest sighting of this species was over 24 miles from the project site in 2001.

Table 8
SPECIES NOT ADEQUATELY CONSERVED WITH POTENTIAL TO OCCUR

Species	Status	Habitat and Distribution	Potential to Occur[1]
Lincoln's sparrow (breeding) (*Melospiza lincolnii*)	--/--	This species prefers wet meadows dotted with dense patches of willows, alders, and sedges. At lower elevations they use patches of aspens, cottonwoods, and willows as well as shrubby areas near streams. During migration they stop over in fields, forest edges, and thickets. In the winter, they use tropical forests, pine-oak forests, tropical scrub, pastures, and shrubby fields.	**Low**. This species has been observed within 5 miles of the project site. Marginal habitat occurs within the study area.
Williamson's sapsucker (*Sphyrapicus thyroideus*)	--/--	Nests in the coniferous and mixed conifer-deciduous forests of the mountainous west. They inhabit higher elevations, especially drier forests with western larch, Douglas-fir, white fir, grand fir, red fir, Engelmann spruce, ponderosa pine, lodgepole pine, Jeffrey pine, mountain hemlock, water birch, and trembling aspen. They nest in relatively open woodlands and below ridgelines.	**None.** No suitable woodland habitat is present on-site. The nearest sighting was over 8 miles from the project site in 2000.
Mammals			
San Bernardino flying squirrel (*Glaucomys sabrinus californicus*)	--/SSC	Known from black oak or white fir dominated woodlands between 5200 - 8500 ft in the San Bernardino and San Jacinto ranges. May be extirpated from San Jacinto range. Needs cavities in trees/snags for nests and cover. Needs nearby water. Known from broadleaved upland forest and lower montane coniferous forest.	**None.** No suitable woodland habitat is present on-site.
Plants			
beautiful hulsea (*Hulsea vestita* ssp. *callicarpha*)	--/-- CRPR 4.2 CA Endemic	Herb. Known from San Diego, Riverside, and Orange counties. Found on mildly disturbed or rocky locales in chaparral and lower montane coniferous forest. Flowering period: May to October.	**None.** No suitable montane habitat occurs on-site.
California bedstraw (*Galium californicum* ssp. *primum*)	--/-- CRPR 1B.2 CA Endemic	Herb. Found in chaparral and yellow pine forest. Flowering period: May to July.	**None.** Yellow pine forest and chaparral habitat does not occur on site. The closest observations of this species to the project site are over 30 miles away on Mount San Jacinto.

Table 8
SPECIES NOT ADEQUATELY CONSERVED WITH POTENTIAL TO OCCUR

Species	Status	Habitat and Distribution	Potential to Occur[1]
California muhly (*Muhlenbergia californica*)	--/-- CRPR 4.3 CA Endemic	Grass. Occurs usually in wetlands, and occasionally in non-wetlands. Habitat includes riparian, streambanks, seeps, meadows, chaparral, yellow pine forest, coastal sage scrub, and wetland-riparian. Flowering period: July-September.	**None.** The closest observations of this species to the project site are over 30 miles away on Mount San Jacinto.
chickweed oxytheca (*Oxytheca caryophylloides*)	--/-- CRPR 4.3 CA Endemic	Herb. Occurs in yellow pine forest. Flowering period: July-September.	**None.** Yellow pine forest does not occur on site.
Cleveland's bush monkeyflower (*Mimulus clevelandii*)	--/-- CRPR 4.2	Herb. Known from Orange, Riverside, and San Diego counties, and Baja California, Mexico. Found in chaparral and lower montane coniferous forest. Microhabitat includes open locales in xeric chaparral dominated by chamise with exposed rock nearby and shallow soils available. Flowering period: April to July.	**None.** Suitable chaparral or forest habitat does not occur on site. The nearest observation is over ten miles away on the east side of Santiago Peak.
cliff cinquefoil (*Potentilla rimicola*)	--/-- CRPR 2B.3	Herb. Found in lodgepole forest, subalpine forest, and red fir forest. Flowering period: July to September.	**None.** The closest observations of this species to the project site are over 30 miles away on Mount San Jacinto.
Coulter's matilija poppy (*Romneya coulteri*)	--/-- CRPR 4.2 CA Endemic	Herb. Found in eastern south coastal and peninsular ranges in Los Angeles, Orange, Riverside, and San Diego counties. Known from dry washes and canyons in chaparral and coastal sage scrub communities, and areas that have been burned. Open or mildly disturbed terrain is sometimes favored. Mature chaparral or sage scrub limits the expansion of the species. Flowering period: July to September.	**None.** The closest observations of this species to the project site are over 30 miles away on Mount San Jacinto.
Fish's milkwort (*Polygala cornuta* var. *fishiae*)	--/-- CRPR 4.3	Shrub. Occurs in Ventura County south along the coastal area to Baja California, Mexico below 2,950 feet in elevation. Prefers shaded, rocky places in canyons in association with oak woodland or chaparral. Flowering period: May through August.	**None.** This conspicuous shrub would have been observed if present. No suitable habitat occurs on-site.
graceful tarplant (*Holocarpha virgata* ssp. *elongata*)	--/-- CRPR 4.2 CA Endemic	Herb. Found in San Diego, Orange, and Riverside counties. Occurs on coastal mesas and foothills with grassland habitats. Flowering period: May through November.	**None.** The closest observation of this species to the site is over 15 miles to the west.

Table 8
SPECIES NOT ADEQUATELY CONSERVED WITH POTENTIAL TO OCCUR

Species	Status	Habitat and Distribution	Potential to Occur[1]
lemon lily (*Lilium parryi*)	--/-- CRPR 1B.2	A few known plants in Palomar Mountains of San Diego County. Also, some occurrences in San Bernardino, Los Angeles, and Riverside counties as well as Sonora, Mexico and Arizona. Moist montane meadows.	**None.** No suitable montane meadow habitat occurs on-site.
Mojave tarplant (*Deinandra mohavensis*)	--/SE CRPR 1B.3 CA Endemic	Herb. Known from northern San Diego, Riverside, San Bernardino, and Kern Counties. Grows along drainages at mid-elevations in relatively arid locations of montane chaparral. Flowering period: July through October.	**None.** The closest observation of this species to the site is over 20 miles to the east.
ocellated Humboldt lily (*Lilium humboldtii* ssp. *ocellatum*)	--/-- CRPR 4.2 CA Endemic	Herb. Found throughout southern California from approximately 100 to 6,000 feet in elevation. Prefers shaded montane canyons. Flowering period: March through July.	**None.** The nearest observation is over 10 miles away on the east side of Santiago Peak.
Parry's spine flower (*Chorizanthe parryi* var. *parryi*)	--/-- CRPR 3.2 CA Endemic	Herb. Found in Riverside, Los Angeles, and San Bernardino counties. Prefers sandy soil on flats and foothills in mixed grassland, coastal sage scrub, and chaparral communities. Flowering period: April through June.	**Presumed Absent.** Suitable sandy loam soil occurs on site; however, the project does not propose impacts to coastal sage scrub or chaparral communities. The 2020 rare plant survey was negative for this species.
peninsular spine flower (*Chorizanthe leptotheca*)	--/-- CRPR 4.2	Herb. Found in San Bernardino, Riverside, and San Diego counties and Baja California, Mexico. Prefers xeric openings in chamise chaparral. Flowering period: May through August.	**None.** No suitable habitat occurs on-site.
Plummer's mariposa lily (*Calochortus plummerae*)	--/-- CRPR 4.2 CA Endemic	Herb. Found in chaparral, foothill woodland, yellow pine forest, coastal sage scrub, and valley grassland. Flowering period: May through July.	**None.** No suitable habitat on-site.
Rainbow manzanita (*Arctostaphylos rainbowensis*)	--/-- CRPR 1B.1 CA Endemic	Shrub. Occurs in northwestern San Diego and western Riverside counties. Southern mixed chaparral is preferred habitat with a relatively dense canopy from 6 to 8 feet. Flowering period: December through March.	**None.** No suitable habitat on-site. This conspicuous shrub would have been observed if present.
shaggy-haired alumroot (*Heuchera hirsutissima*)	--/-- CRPR 1B.3 CA Endemic	Herb. Occurs in subalpine forest and red fir forest. Flowering period: June and July.	**None.** No suitable montane forest habitat on-site.

Table 8
SPECIES NOT ADEQUATELY CONSERVED WITH POTENTIAL TO OCCUR

Species	Status	Habitat and Distribution	Potential to Occur[1]
small-flowered microseris (*Microseris douglasii* var. *platycarpha*)	--/-- CRPR 4.2	Herb. Known from southwestern California and some islands of the coast between approximately 50 and 3,500 feet in elevation. Prefers clay soils in perennial grasslands, on vernal pools periphery, or in broad openings in sage scrub. Flowering period: March through May.	**Presumed Absent.** Suitable habitat does not occur within the project vicinity; however, suitable clay soils are not present within the study area. No vernal pools or sage scrub impacts are proposed by project implementation. The rare plant survey was negative for this species.
sticky-leaved dudleya (*Dudleya viscida*)	--/-- CRPR 1B.2 CA Endemic	Herb. Found below 1,200 feet in elevation in Orange and Riverside counties. Known from fewer than 20 occurrences within southern California. This conspicuous succulent perennial grows primarily on very steep north-facing slopes. Flowering period: May and June.	**None.** No suitable habitat occurs on-site. Nearest observation is over 8 miles to the southwest in mountainous terrain.

[1]**Presumed Absent-**A focused survey conducted during the species' flowering period was negative.

None–No potential to occur. There are no present or historical records of the species occurring on or in the immediate vicinity, (within 3 miles) of the Project Site and the diagnostic habitats strongly associated with the species do not occur on or in the immediate vicinity of the Site, or the Site is above or below the recognized elevation limits for this species.

Low–Low potential to occur. There is a historical record of the species in the vicinity of the Project Site and potentially suitable habitat on Site, but existing conditions, such as density of cover, prevalence of non-native species, evidence of disturbance, limited habitat area, isolation, substantially reduce the possibility that the species may occur.

Moderate–Moderate potential to occur. The diagnostic habitats associated with the species occur on or in the immediate vicinity of the Project Site, but there is not a recorded occurrence of the species within the immediate vicinity (within 3 miles). Some species that contain extremely limited distributions may be considered moderate, even if there is a recorded occurrence in the immediate vicinity.

High–High potential to occur. There is both suitable habitat associated with the species and a historical record of the species on or in the immediate vicinity of the Project Site (within 3 miles).

8.3 OTHER SENSITIVE SPECIES

Besides smooth tarplant, which is discussed in Section 6 above, no additional sensitive plant or animal species were observed on site or have a moderate to high potential to occur within the study area.

9.0 GUIDELINES PERTAINING TO THE URBAN/WILDLANDS INTERFACE (SECTION 6.1.4)

To preserve the integrity of MSHCP Conservation Areas, the guidelines in Section 6.1.4 Urban Wildlands Interface Guidelines (UWIG) shall be implemented on the project. Section 6.1.4 of the MSHCP addresses potential indirect impacts to MSHCP Conservation Area lands via the UWIG. The study area is adjacent to an MSHCP Conservation Area in that it occurs nearby PQP lands and preserve lands in the Back Basin. The study area is within MSHCP Criteria Cells 5033, 5036, 5137, 5140, and 5240. The MSHCP UWIG

guidelines discussed below demonstrate how the project would prevent and/or reduce potential impacts to off-site Conservation Areas to ensure consistency with Section 6.1.4 of the MSHCP.

Drainage

The project is not within an MSHCP Conservation Area. The project will primarily occur within non-native and disturbed habitats and the installation of a trail will not impact drainage patterns in the area. The project would adhere to the Construction Guidelines in Section 7.5.3 of the MSHCP and would incorporate measures, including general construction Best Management Practices, and measures required by the National Pollutant Discharge Elimination System to ensure that the quantity and quality of runoff discharged off-site is not altered in an adverse way when compared with existing conditions. The project is a non-motorized trail and shall be designed to prevent the release of toxins, chemicals, petroleum products, exotic plant materials, or other elements that might degrade or harm biological resources or ecosystem processes, downstream from the study area.

Toxics

The project does not propose toxic impacts to sensitive species habitats. No land uses that use chemicals or generate bio-products that are potentially toxic or may adversely affect wildlife species, habitat, or water quality are proposed as part of the project.

Lighting

Solar powered pedestrian lighting is proposed along the trail. Lighting will be shielded and directed downward and away from adjacent habitat.

Invasives

The project shall not use invasive plants for erosion control, landscaping, or other purposes. The project will comply with the MSHCP and avoid the use of invasive, non-native plants in accordance with MSHCP Table 6-2.

Barriers

The project design will include signs and fencing to prevent public access into the adjacent quasi-public conservation area. Fencing will be designed to restrict humans and pets, with the expected design to be split-rail fence or similar, with additional preventative material within the lower portion of the fence to restrict access. Fencing will be installed on either side of the trail. Signs documenting the sensitivity of the adjacent habitat and instructing people to stay on the trail will be posted along the fence line.

Mitigation measure **BIO-5** below specifying fencing and signage requirements shall be implemented by the City as a condition of project approval.

BIO-5: Fencing and Signage Plans. Prior to initiating ground disturbance, the City shall prepare and submit to the RCA and Wildlife Agencies for approval plans detailing the trail fencing and signage type, materials, and specifications. At a minimum, the fencing shall be designed to restrict humans and pets, with the expected design to be split-rail fence or similar. Signage will be installed at trailheads to convey proper trail usage, with bollards to preclude vehicular access. Signs will convey proper trail usage, including requiring users to stay on the trail,

prohibiting littering, asking people to report littering, prohibiting feeding of all wildlife, and requiring that pets be on leash. The RCA and Wildlife Agencies shall provide their written approval via e-mail or alternative format prior to the City initiating ground disturbance activities for construction.

Grading/Land Development

The mapped impact area includes areas that will be graded. The trail footprint will be limited to within the 10-foot-wide area, with an additional 2 feet on either side of the trail all being captured within the fenced 20-foot-wide limits. Temporary impact areas are estimated to be restricted to areas within 10 feet on either side of the permanent impact area. The trail has been sited and designed within generally flat areas that significantly minimize the amount of ground disturbance and grading.

10.0 BEST MANAGEMENT PRACTICES (VOLUME I, APPENDIX C)

As required, the City shall commit to the implementation of the BMPs identified in Volume I, Appendix C of the MSHCP (Dudek 2003), as applicable and as follows:

- A qualified biological monitor will conduct a training session for project personnel prior to grading.
- BMPs for water pollution and erosion control will be utilized and maintained for the duration of the project in accordance with RWQCB requirements.
- The footprint of disturbance has been minimized to the maximum extent feasible to keep disturbance within the specified impact limits.
- Silt fence will be used to delineate the limits of project disturbance and prevent sediment from leaving the project site. Temporary construction fencing may be used instead of silt fencing where sediment flow is not a concern.
- Temporary construction fencing will be used to delineate the limits of the proposed haul routes that pass adjacent the MSHCP quasi-public conservation area. This ensures construction personnel have a visual to keep them within the approved limits of disturbance. The portion of the haul route that runs along the flood control access road does not need to be fenced.
- Sandbags and fiber rolls will also be used, as needed, to help secure the site.
- Staging will occur within disturbed areas to avoid placing equipment and personnel in sensitive areas.
- Stream flow diversion is not anticipated to be needed due to the proposed span crossing design and low volume nuisance flows.
- Drip pans will be used under heavy equipment parked at the staging area, which has been located on a paved road to prevent runoff from entering sensitive habitat.
- Shaker plates will be installed at the entrance to the project site.
- Fill and debris will not be deposited into water courses.

- A qualified biological monitor will be retained for the duration of the project to ensure that practicable measures are being employed to avoid incidental disturbance of habitat and species of concern outside the project footprint.
- The biologist will be required to be on-site when project activities have the potential to directly or indirectly impact MSHCP resources.
- The removal of native vegetation has been avoided to the maximum extent practicable by project design, and temporary impacts will be limited to the permanent impact footprint.
- Exotic species within the impact footprint will be removed.
- The project site will be kept as clean of debris as possible during construction, and construction employees will limit their activities to within the impact footprint and staging area.

The City will have the right to access and inspect the project during construction for compliance with project approval conditions and these BMPs.

11.0 REFERENCES

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Appendix A

REPRESENTATIVE PHOTOGRAPHS

Appendix A Representative Photographs
Murrieta Creek Trail

Photo 1. Typical view of tamarisk scrub, non-native woodland, and existing dirt trails in northern portion of the study area near the Levee Trail.

Photo 2. Typical view of tamarisk scrub and existing dirt trail in the central portions of the study area.

Appendix A Representative Photographs
Murrieta Creek Trail

Photo 3. Typical view of existing dirt trail, disturbed/ruderal, and tamarisk scrub in central portions of study area.

Photo 4. Typical view of streambed in central portion of study area.

Appendix A Representative Photographs
Murrieta Creek Trail

Photo 5. Typical view of streambed in central portion of study area.

Photo 6. Typical view of existing dirt trail, disturbed/ruderal, and tamarisk scrub in central portions of study area.

Appendix A Representative Photographs
Murrieta Creek Trail

Photo 7. Typical view of riparian habitat in southern portions of study area.

Photo 8. Typical view of riparian habitat and existing dirt trail adjacent to residential homes in southern portions of study area.