2.3 Biological Environment

2.3.1 Natural Communities

This section of the document discusses natural communities of concern. The focus of this section is on biological communities, not individual plant or animal species. This section also includes information on wildlife corridors and habitat fragmentation. Wildlife corridors are areas of habitat used by wildlife for seasonal or daily migration. Habitat fragmentation involves the potential for dividing sensitive habitat and thereby lessening its biological value.

Habitat areas that have been designated as critical habitat under the Federal Endangered Species Act (FESA) are discussed below in Section 2.3.5, Threatened and Endangered Species. Wetlands and other waters are also discussed below in Section 2.3.2, Wetlands and Other Waters.

2.3.1.1 Affected Environment

This section has been prepared based on the analysis and findings presented in the *Natural Environment Study* (June 2016) and *Errata* (June 2018).

Biological Study Area

The Biological Study Area (BSA) for the project includes I-405 plus a 50-foot buffer from the edge of the ROW (or the outer limits of the work area) and a 500-foot buffer upstream and downstream of I-405 at both crossings of San Diego Creek (North and South). Most of the BSA is surrounded by urbanization, which constrains wildlife movement opportunities to the open space along San Diego Creek – North, San Diego Creek – South, and along the adjacent Quail Hill Open Space.

The BSA is predominantly flat, with an overall elevation range from approximately 27 to 240 feet above mean sea level (msl). San Diego Creek, a blueline stream, crosses I-405 between the Jamboree Road and Culver Drive exits (hereinafter referred to as "San Diego Creek – North") and south of SR-133 (hereinafter referred to as "San Diego Creek – South"). Several smaller drainages occur in the BSA, but they are either riprap-lined earth-bottom channels or concrete channels that cross under I-405 and its associated roadways in concrete channels or culverts.

Habitats that may be affected by the project that are not listed as critical habitat under the FESA or not discussed in Section 2.3.2, Wetlands and Other Waters, are included here and include all riparian habitats.

Vegetation Communities

Table 2.3.1-1 and Figure 2.3.1-1 present the 15 vegetation communities and other areas that occur in the BSA.

Table 2.3.1-1. Vegetation Communities in the BSA

Vegetation Communities	Existing in Biological Study Area (acres)
Scrub Habitats	
Sagebrush Scrub (2.3.6)	1.41
Grassland Habitats	
Annual Grassland (4.1)	72.48
Ruderal (4.6)	9.39
Marsh Habitats	
Coastal Freshwater Marsh (6.4)	1.68
Riparian Habitats	
Riparian Herb (7.1)	1.57
Southern Willow Scrub (7.2)	0.84
Mule Fat Scrub (7.3)	2.35
Southern Black Willow Forest (7.7)	7.25
Watercourses	
Perennial Rivers and Streams (13.1)	2.57
Flood Control Channel (13.4)	15.04
Developed	
Urban (15.1)/ Transportation (15.4)	345.59
Parks and Ornamental Plantings (15.5)	110.90
Sycamore Plantings (15.5)	0.32
Oak Plantings (15.5)	0.15
Disturbed	
Cleared or Graded (16.1)	3.24
Total	**574.79**
Note: Numbers following vegetation names correspond to numbering in Gray and Bramlet (1992).	

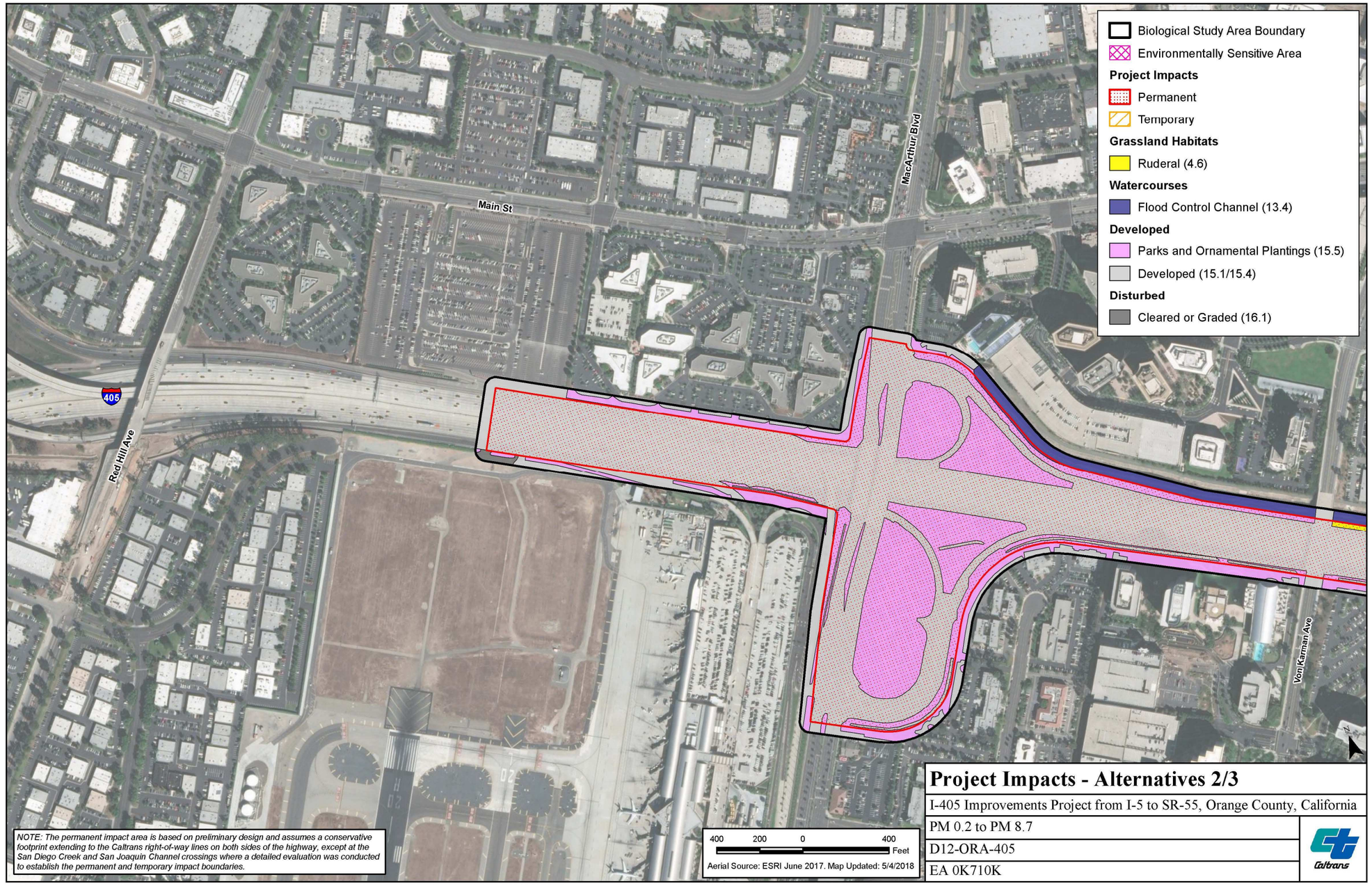

Figure 2.3.1-1. Biological Resources (Sheet 1 of 8)

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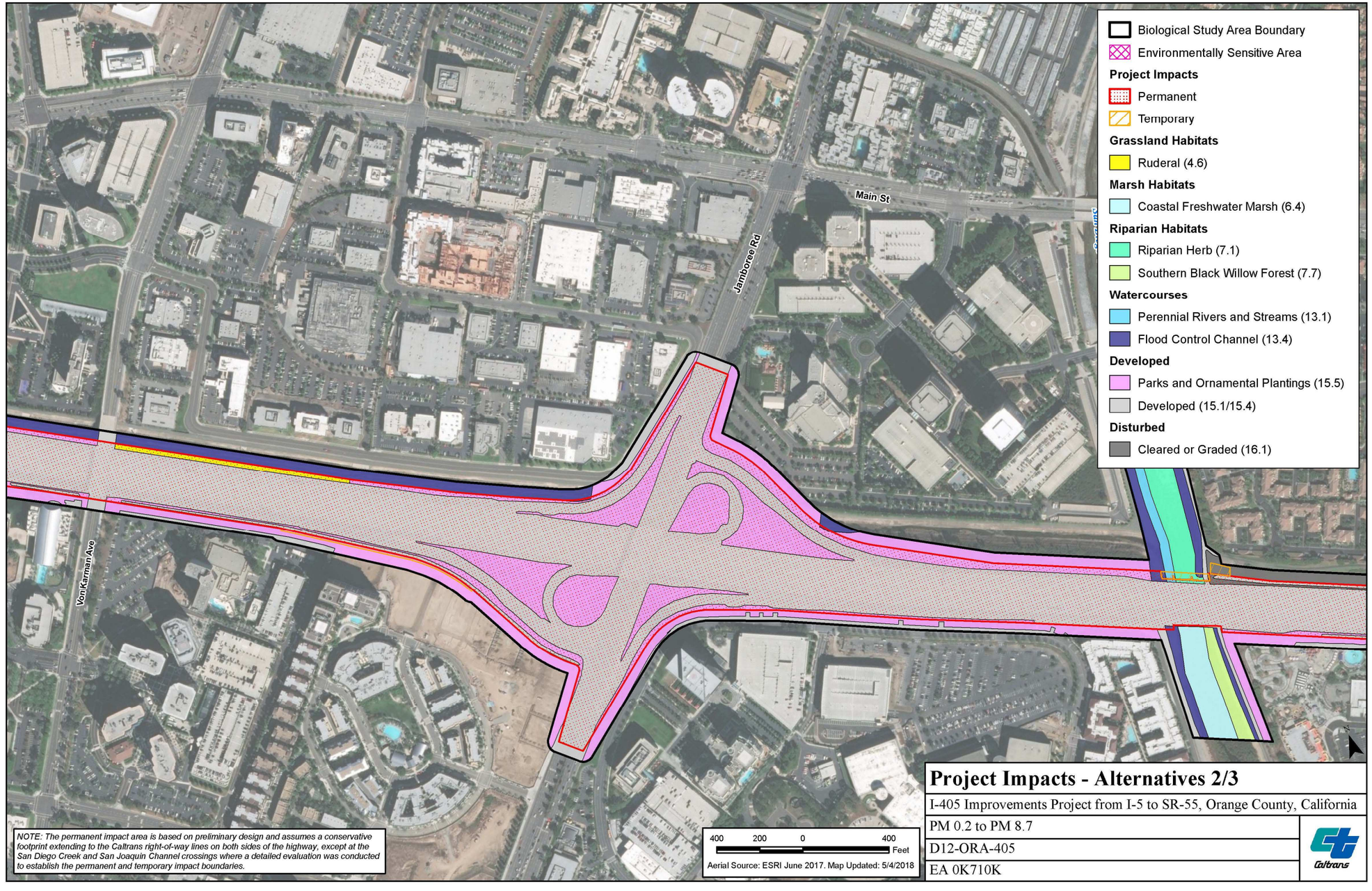

Figure 2.3.1-1. Biological Resources (Sheet 2 of 8)

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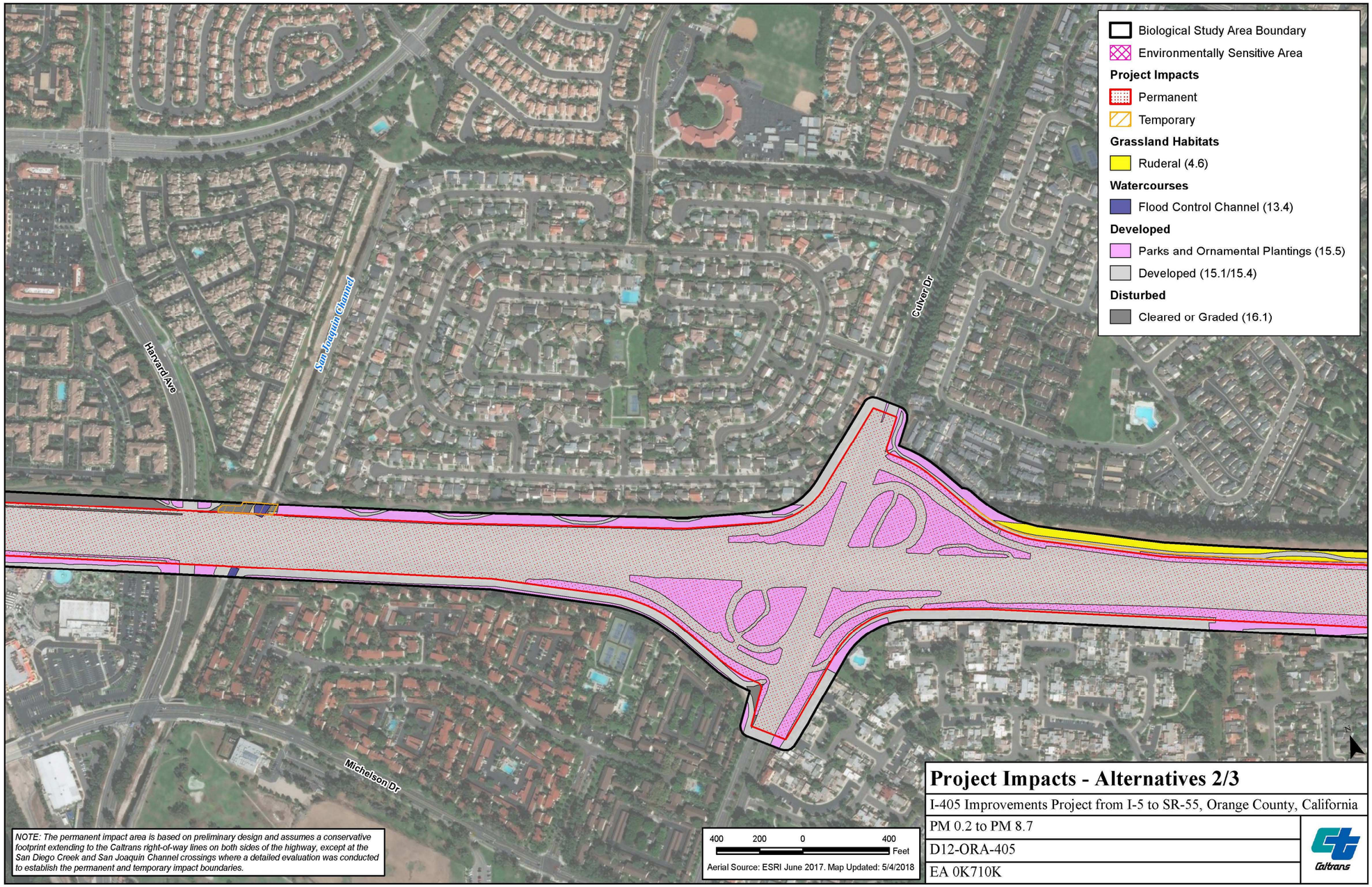

Figure 2.3.1-1. Biological Resources (Sheet 3 of 8)

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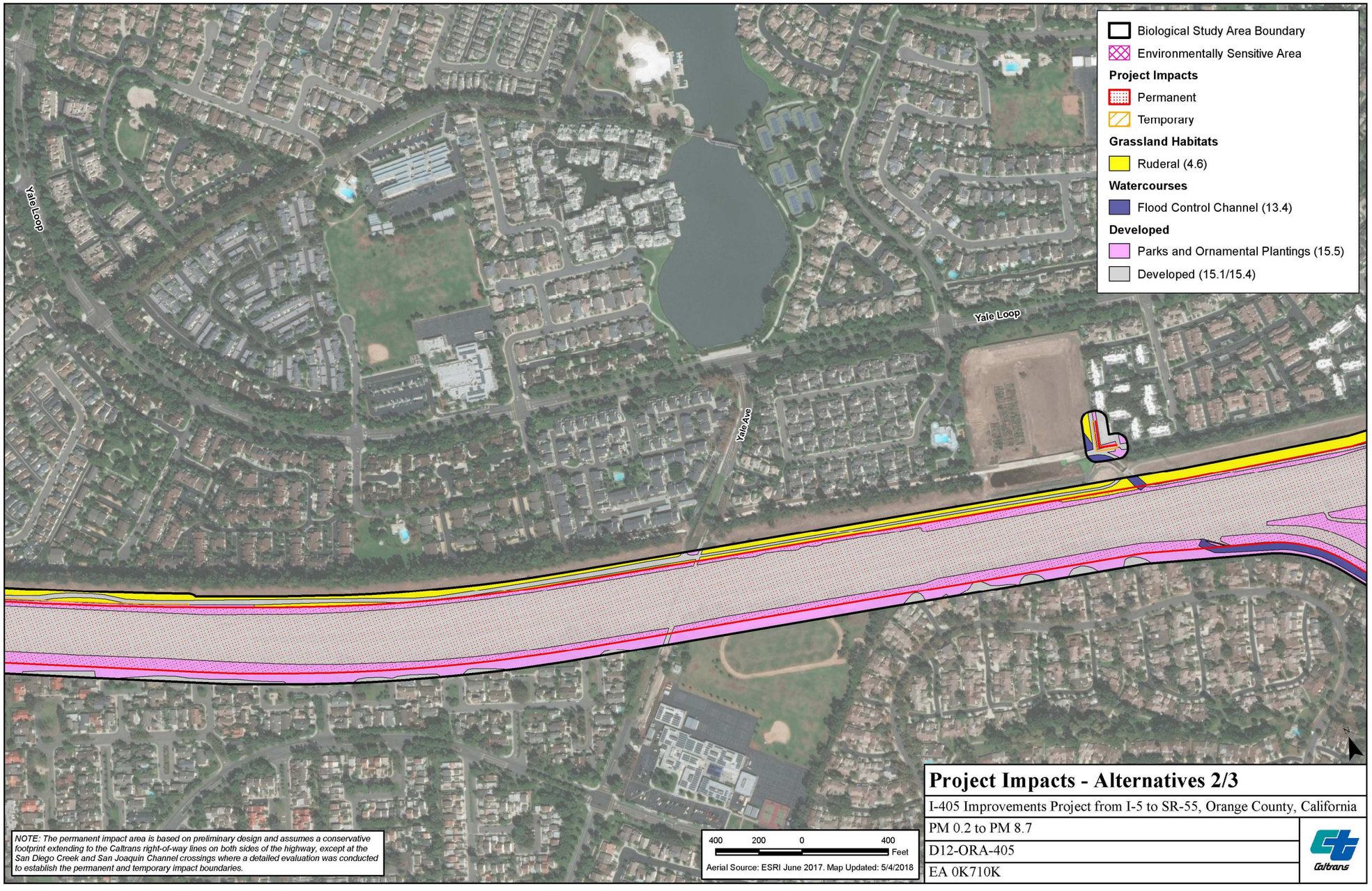

Figure 2.3.1-1. Biological Resources (Sheet 4 of 8)

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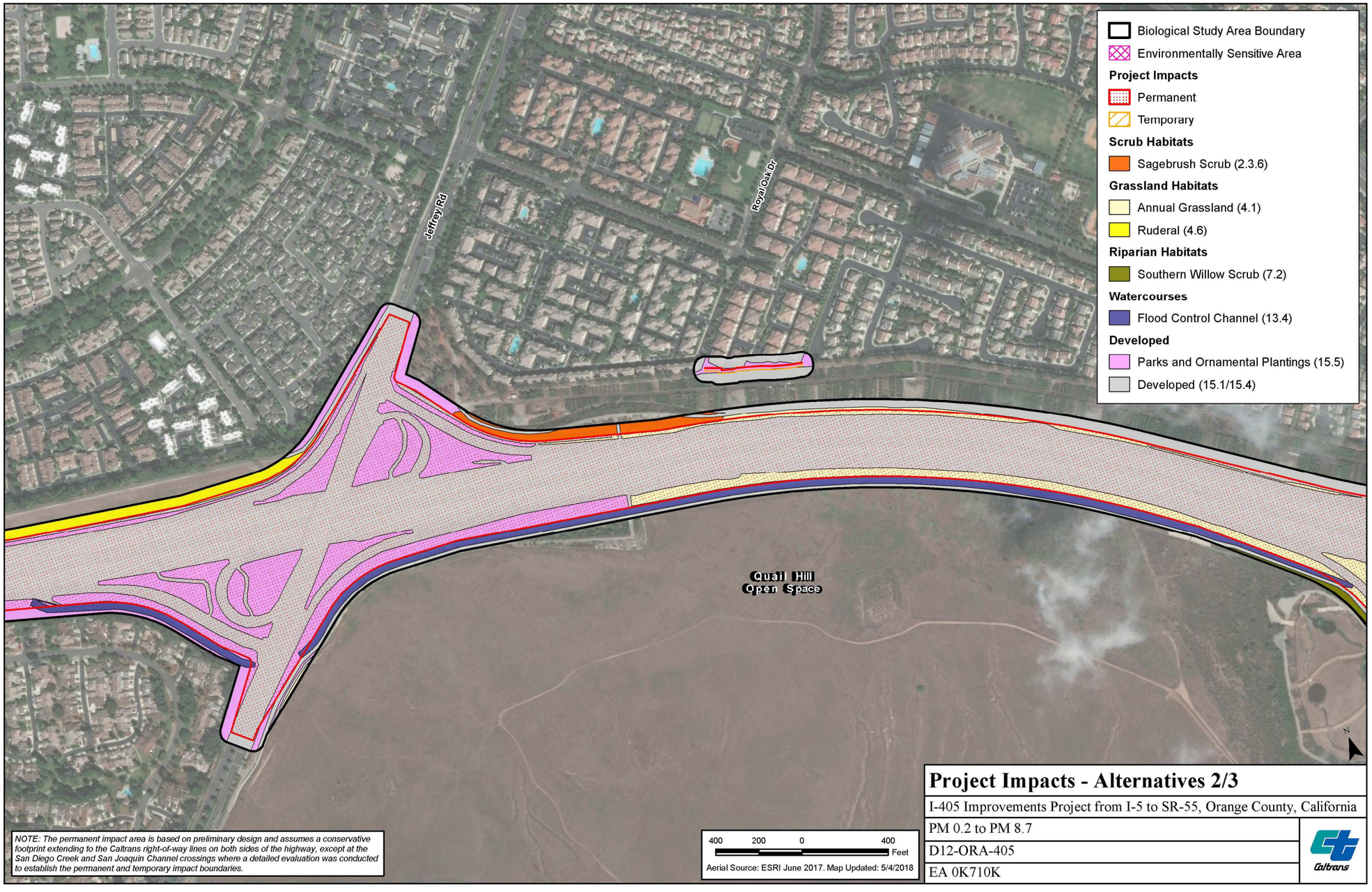

Figure 2.3.1-1. Biological Resources (Sheet 5 of 8)

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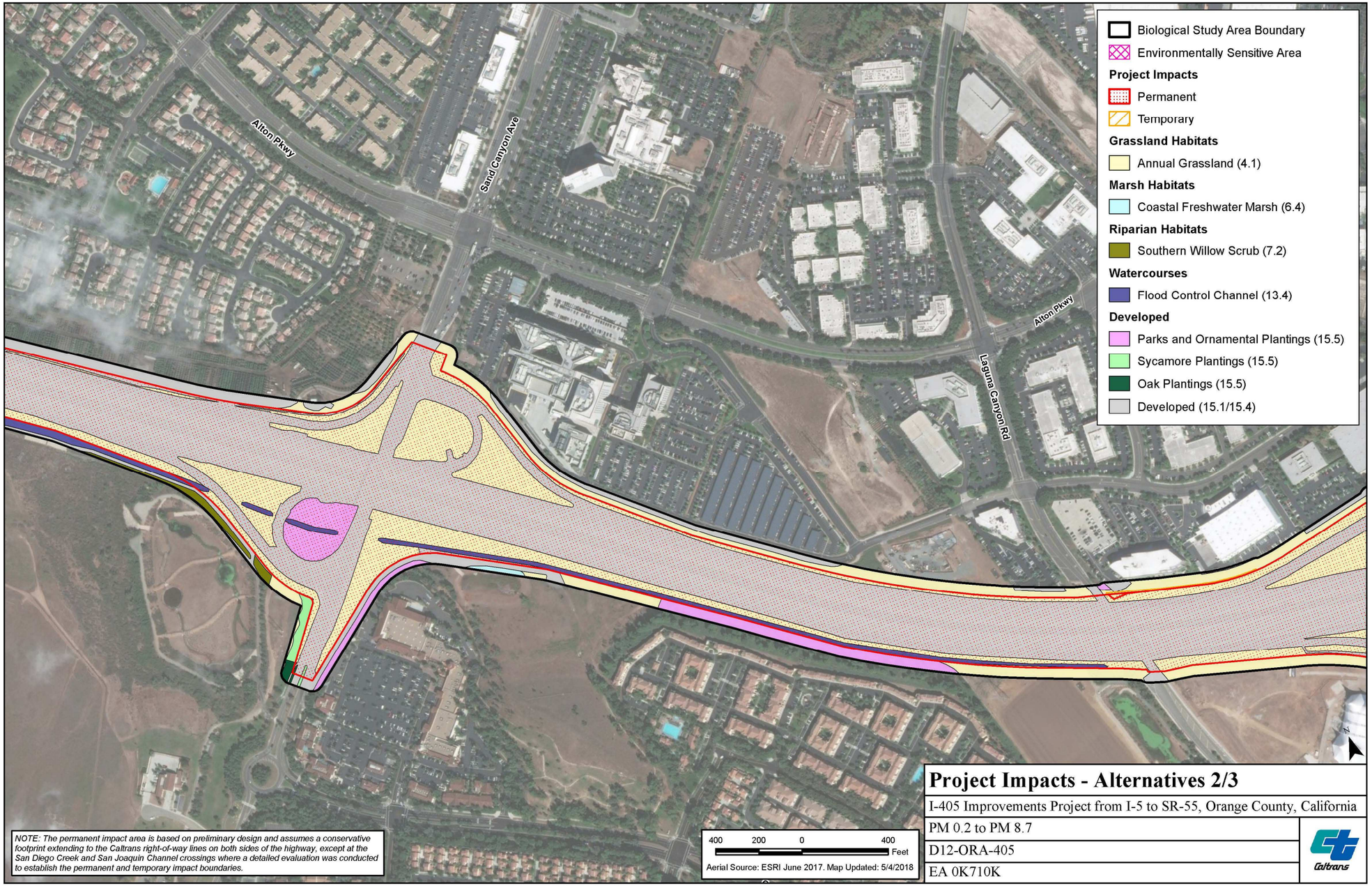

Figure 2.3.1-1. Biological Resources (Sheet 6 of 8)

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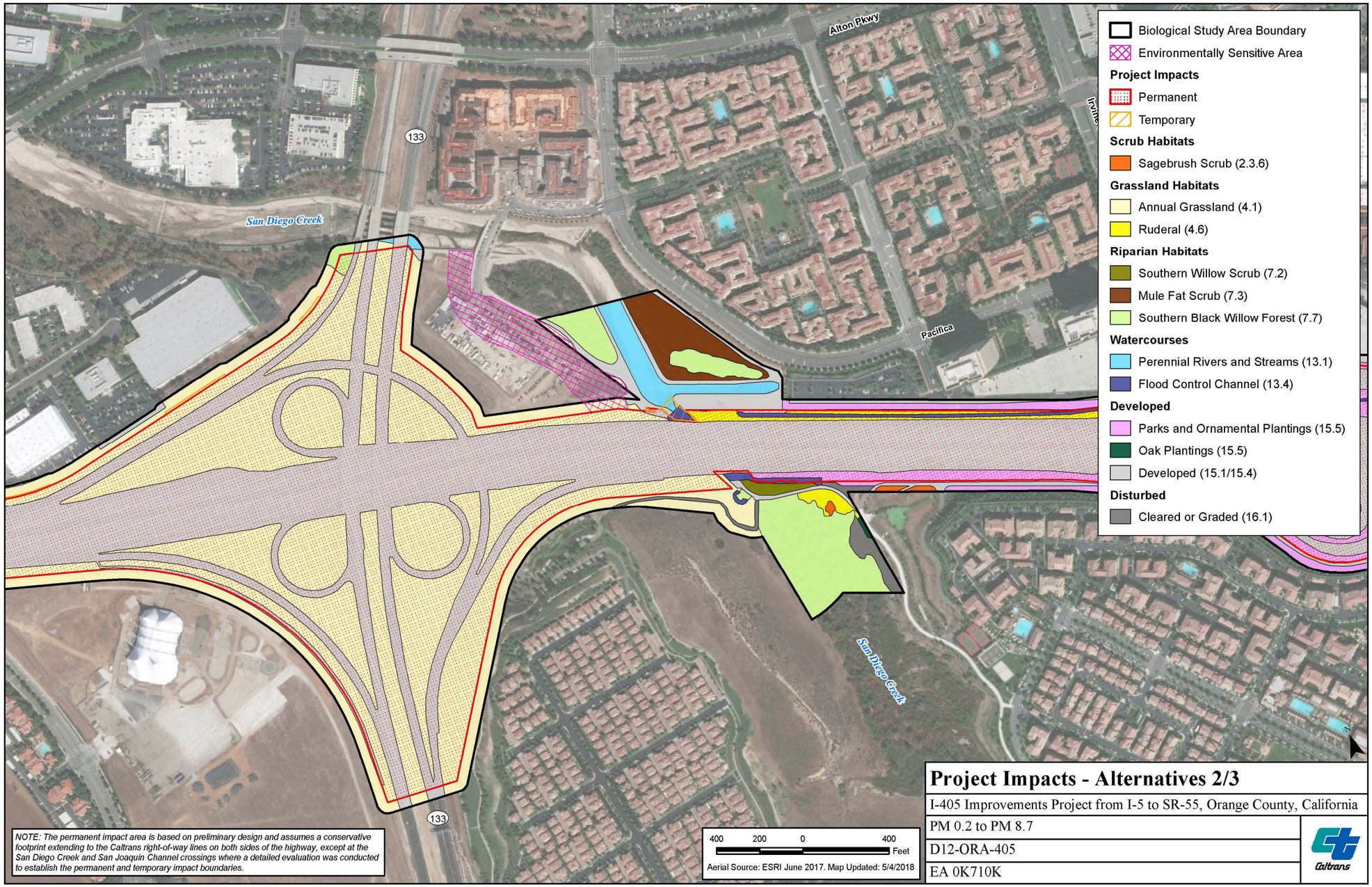

Figure 2.3.1-1. Biological Resources (Sheet 7 of 8)

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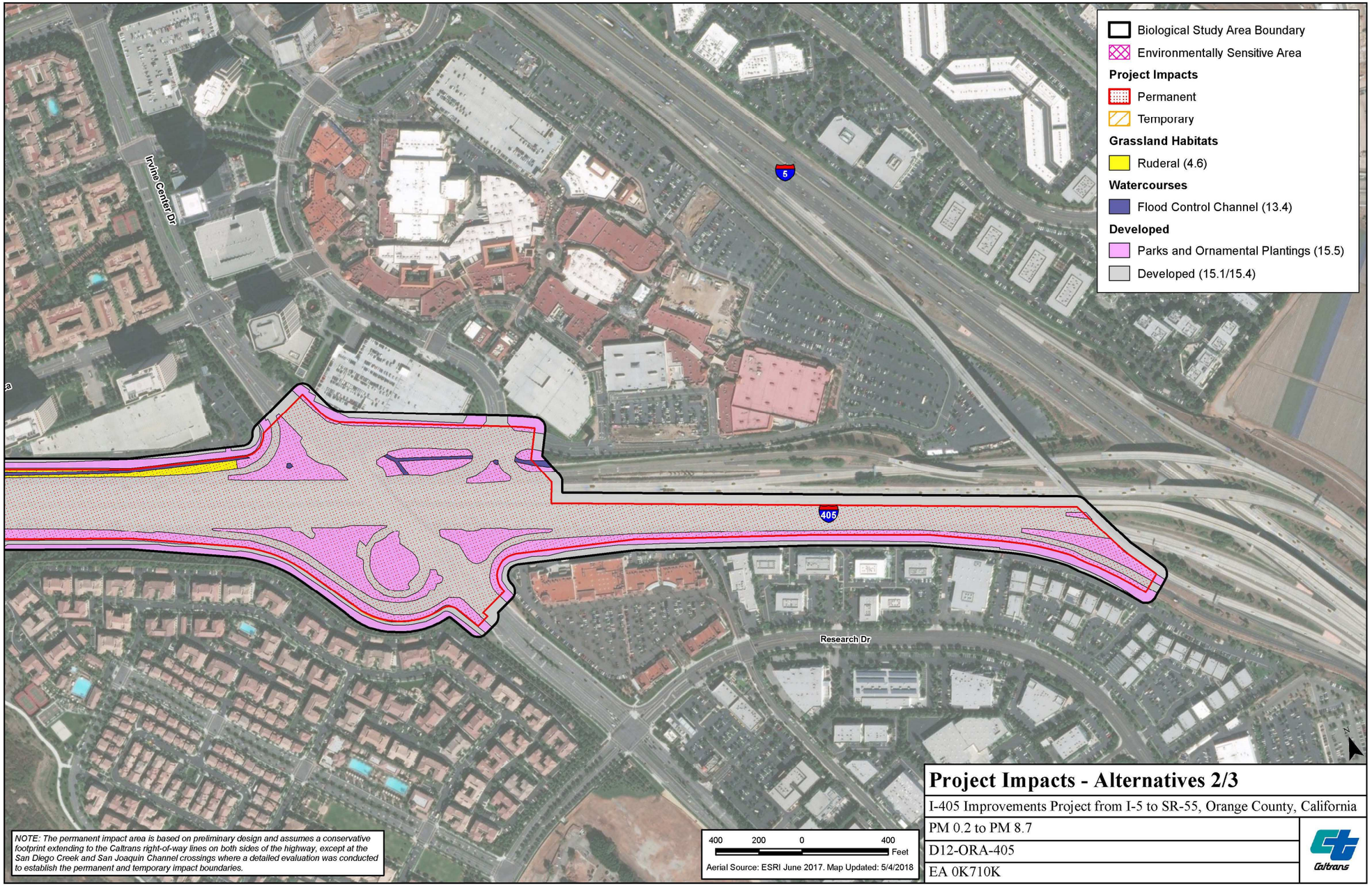

Figure 2.3.1-1. Biological Resources (Sheet 8 of 8)

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Scrub Habitats

Scrub habitats in the BSA are small scattered patches; there are no large areas of scrub.

Sagebrush Scrub (2.3.6)

A small patch of California sagebrush *(Artemisia californica)* that would be classified as sagebrush scrub (2.3.6) is present along San Diego Creek – South.

Revegetation Scrub (no corresponding code)

South of Jeffrey Road, a slope within the ROW has been seeded with a mix of scrub species dominated by California buckwheat *(Eriogonum fasciculatum)* and toyon *(Heteromeles arbutifolia)* that can be classified as revegetation scrub (no corresponding code in Gray and Bramlet, 1992).

North of the Irvine Center Drive exit, there is a basin south of I-405 and east of San Diego Creek – South that has been planted with California native plants and is described as revegetation scrub (no corresponding code in Gray and Bramlet 1992).

The scrub is open with bare ground between planted shrubs. Shrubs are dominated by goldenbush *(Isocoma menziesii)* with scattered California sagebrush and coyote brush *(Baccharis pilularis)* with great marsh evening primrose *(Oenethera elata* ssp. *hirsutissima)* and mugwort *(Artemisia douglasiana)*. Planted sapling western sycamore *(Platanus racemosa),* coast live oak *(Quercus agrifolia),* and Fremont's cottonwood *(Populus fremontii)* are also present along the banks of the basin.

Grassland Habitats

Grassland habitats occur in the I-405 ROW and in adjacent areas outside the ROW.

Annual Grassland (4.1)

Annual grassland areas in the BSA are disturbed or regularly mowed. The largest areas occur around the Sand Canyon Avenue exit and SR-133 interchange. These areas consist of an herbaceous cover of non-native grasses including wild oat *(Avena* sp.), red brome *(Bromus madritensis* ssp. *rubens),* ripgut grass *(Bromus diandrus),* barleys *(Hordeum* spp.), rattail fescue *(Festuca [Vulpia] myuros),* and Mediterranean schismus *(Schismus barbatus).* It should be noted that a large portion of the grassland in the northeastern quadrant of the I-405/SR-133 interchange has been disturbed since the vegetation mapping was completed and is now fenced and being used for construction staging and vehicle storage.

Ruderal (4.6)

Areas that have been previously disturbed and now consist primarily of non-native weedy vegetation are mapped as ruderal. There are strips of ruderal vegetation along NB I-405 north of Jeffrey Road and some additional areas located near the Irvine Center Drive exit. Species present in these areas include Russian thistle *(Salsola tragus),* castor bean *(Ricinus communis),* black mustard *(Brassica nigra),* and shortpod mustard *(Hirshfeldia incana).*

Marsh Habitats

Marsh habitats occur in areas that are frequently inundated, such as areas along San Diego Creek and in basins.

Coastal Freshwater Marsh (6.4)

Coastal freshwater marsh is present along San Diego Creek – North and in a basin southeast of the Sand Canyon Avenue exit. These areas receive runoff from the surrounding developed areas. This vegetation type is dominated by cattails *(Typha* sp.), bulrush *(Schoenoplectus* sp.), and/or mulefat *(Baccharis salicifolia)* with cocklebur *(Xanthium strumarium),* Goodding's black willow *(Salix gooddingii),* and arroyo willow *(Salix lasiolepis)* saplings.

Riparian Habitats

Riparian habitats occur along streams and watercourses, such as the two areas where San Diego Creek crosses the BSA.

Riparian Herb (7.1)

Riparian herb occurs along San Diego Creek – North. This area is composed of herbaceous species and is an early successional stage of riparian habitats. This area is cleared routinely for flood control purposes. Dominant plants in the area include sweet clover *(Melilotus* sp.) and Mexican sprangletop *(Leptochloa uninervia).* Additional species included cattails, knotweed *(Polygonum lapthifolium),* and umbrella sedge *(Cyperus* sp.).

Southern Willow Scrub (7.2)

Southern willow scrub is dominated by riparian trees of various sizes that are generally smaller in stature and less extensive than areas of riparian forest. Southern willow scrub in the BSA occurs along San Diego Creek – North, San Diego Creek – South, and southwest of the Sand Canyon Avenue exit. These areas are dominated by arroyo willow with Goodding's black

willow, Fremont's cottonwood, western sycamore saplings, mulefat, and blue elderberry *(Sambucus nigra)*.

Mulefat Scrub (7.3)

Mulefat scrub also occurs along San Diego Creek – South. These areas are dominated by dense stands of mulefat.

Southern Black Willow Forest (7.7)

Southern black willow forest occurs along San Diego Creek – North and San Diego Creek – South. These areas are dominated by a dense cover of mature Goodding's black willow, with arroyo willow, Fremont's cottonwood, western sycamore saplings, mulefat, and blue elderberry. The understory is composed of poison hemlock *(Conium maculatum),* California dodder *(Cuscuta californica),* and short-pod mustard. Gum trees *(Eucalyptus* sp.) also occur within this vegetation community in the area adjacent to SR-133.

Watercourses

Watercourses are not considered vegetation communities, but they are delineated as mapping units on the vegetation maps.

Perennial Rivers and Streams (13.1)

Perennial rivers and streams consist of the fresh water in San Diego Creek – North and San Diego Creek – South. These areas may contain scattered individual arroyo willows, cattails, or riparian herb species.

Flood Control Channel (13.4)

Flood control channels consist of riprap-lined earth-bottom channels and concrete channels. Flood control channels generally lack vegetation, typically because they are routinely cleared for flood control.

Developed Areas

Developed areas are not considered vegetation communities, but they are delineated as mapping units on the vegetation maps.

Urban (15.1)/Transportation (15.4)

Developed areas include urban areas *(man-made structures)* and associated roadways *(transportation)*. They generally contain no vegetation, although they may contain limited ornamental vegetation or scattered ruderal individuals. V-ditches are also included in this mapping unit.

Parks and Ornamental Plantings (15.5)

Ornamental landscaping consists of introduced trees and shrubs planted for aesthetic purposes. Ornamental landscaping occurs throughout the BSA along I-405 adjacent to the existing roads and structures. Species present include gum trees, Brazilian pepper trees *(Schinus terebinthifolius),* acacia *(Acacia* sp.), cape leadwort *(Plumbago auriculata),* and fountain grass *(Pennisetum setaceum).*

Sycamore Plantings (15.5)

Sycamore plantings are located in an area along Sand Canyon Avenue south of I-405. This area is composed of planted sycamore trees with an herbaceous understory of grasses, including needlegrass *(Stipa* sp.) and ryegrass *(Lolium* sp.). These areas function as ornamental vegetation along Sand Canyon Avenue.

Oak Plantings (15.5)

Oak plantings are located in an area of revegetation along San Diego Creek – South, south of I-405. Oak plantings are also located in an area along Sand Canyon Avenue south of I-405. These areas are composed of planted young coast live oak trees with an herbaceous understory of grasses, including needlegrass and ryegrass. These areas function as ornamental vegetation along Sand Canyon Avenue.

Disturbed

Cleared or Graded (16.1)

Cleared or graded areas are dirt roads, cleared areas, and some areas of ungrouted riprap. These areas contain little to no vegetation.

Natural Communities of Special Concern

A literature review was conducted prior to the initiation of the general survey to determine the potential for special-status species known to occur in the project region. The results revealed 24 special-status plant species that were considered for potential to occur in the project region,

but only 1 special-status plant species (i.e., southern tarplant) had potential to occur in the BSA. Southern tarplant was not observed during 2015 focused surveys; therefore, no mitigation will be required.

The only habitat and natural community of special concern in the BSA is riparian. Several types of riparian habitat are present in the BSA: riparian herb, southern willow scrub, mulefat scrub, and southern black willow forest (Figure 2.3.1-1). Riparian vegetation communities, along with coastal freshwater marsh and unvegetated areas mapped as perennial rivers and streams and flood control channels, are typically within the jurisdiction of USACE, CDFW, and the RWQCB (discussed in more detail in Section 5.4 and Appendix E of the *Natural Environment Study)*. Riparian vegetation is also used by several special-status wildlife species, including the federally and State-listed endangered least Bell's vireo.

A total of 12.01 acres of riparian habitats occur in the BSA, including 1.57 acres of riparian herb, 0.84 acre of southern willow scrub, 2.35 acres of mulefat scrub, and 7.25 acres of southern black willow forest. Riparian herb occurs along San Diego Creek – North; southern willow scrub and mulefat scrub are located along San Diego Creek – South; and southern black willow forest occurs along San Diego Creek – North and San Diego Creek – South.

Habitat Connectivity

Habitat connectivity is established when there is a wildlife movement corridor that connects two blocks of native habitat. A wildlife corridor between such habitats functions to allow genetic interchange between populations. Movement corridors allow dispersal of young and allow animals to flee one patch of habitat in the event of a fire or other large-scale disturbance. Viable connections between habitat areas act as a linkage between those habitats contained in each connected habitat, effectively expanding the usable areas for wildlife that use the habitats and the corridors connecting them. Wildlife movement connections between these features are generally limited by urbanization.

There are some wildlife species that are well adapted to urban environments and will thrive among residential and commercial developments. Most of the species that are commonly observed in urban environments do not have specific movement corridor requirements, instead using nonspecific movement patterns across these urban areas.

Based on the results of a USGS study, bobcats *(Lynx rufus)* and coyotes *(Canis latrans)* are known to cross under the I-405 and SR-133 bridges over San Diego Creek – South. They are also expected to cross under the I-405 bridge over San Diego Creek – North (this area was not included in the USGS study). Mountain lion *(Puma concolor)* could occur in the open space

west of San Diego Creek–South, but it is not expected to occur in the BSA due to lack of nearby detections. Implementation of the project is not expected to decrease the functionality of any of these bridge undercrossings. Therefore, there would be no project-specific mitigation required for wildlife movement.

2.3.1.2 Environmental Consequences

An evaluation of potential impacts to natural communities associated with each alternative is presented below.

Alternative 1 (No Build)

The No Build Alternative does not propose any construction or other disturbance in the BSA; therefore, this alternative would not result in permanent or temporary impacts to natural communities.

Build Alternative 2 (Preferred Alternative) and Build Alternative 3

The build alternatives would affect one natural community of special concern – riparian. Approximately 0.35 acre of riparian resources would be permanently impacted. Table 2.3.1-2 displays the impacts to riparian resources from the proposed build alternatives.

Table 2.3.1-2. Permanent Impacts on Riparian Resources

Riparian Resources	Permanent Impact (acres)
Riparian Herb (7.1)	0.05
Southern Willow Scrub (7.2)	0.00
Mulefat Scrub (7.3)	0.00
Southern Black Willow Forest (7.7)	0.12
Total*	**0.17**
Note: Numbers following vegetation names correspond to numbering in Gray and Bramlet (1992). *Sum difference due to rounding	

Alternatives 2 and 3 would impact 0.17 acre of riparian habitats; all impacts would be permanent. Riparian habitat outside grading limits could also be indirectly impacted from dust; changes in hydrology; erosion, siltation, and increased runoff; and invasion by nonnative species introduction. The project proposes the widening of an existing highway facility and the

OCTA NCCP/HCP recognizes the need for protection of natural habitat and wildlife along the freeway edges.

Construction (Short-Term) Impacts

All construction activities, including borrow, disposal, staging, and access areas, are assumed to be contained within the permanent or temporary impact areas or within existing roadways. Although the area within the ROW will be configured differently (e.g., different lane striping) for these two alternatives, Alternatives 2 and 3 have the same impact footprint with regard to biological resources.

Construction of the project would include use of heavy equipment to clear vegetation and grade the project site. This activity would create noise, dust, and vibration that could adversely affect the riparian habitat. Silt runoff from the project site or improper disposal of petroleum and chemical products from construction equipment could adversely affect water quality during construction. Adverse effects on water quality could affect plants, animals, and habitats downstream of construction areas, including areas along the San Diego Creek. If construction limits are not clearly marked, construction operators could inadvertently remove habitat that should not be removed.

2.3.1.3 Avoidance, Minimization, and/or Mitigation Measures

With incorporation of avoidance and minimization measures provided below, the project effects are considered less than substantial because the project would result in a minimal loss of suitable habitat relative to the amount available in the project region. The following measures are proposed to avoid and minimize impacts on environmentally sensitive areas (ESAs) (e.g., riparian vegetation). Standardized measures which are employed on most, if not all, Caltrans projects are indicated in bold.

BIO-1: Delineation of ESAs. Prior to clearing or construction, highly visible barriers (e.g., orange construction fencing) will be installed around areas adjacent to the project footprint to designate ESAs to be protected/avoided. Silt fence barriers will be installed at the ESA boundary to prevent accidental deposition of fill material in areas where vegetation is immediately adjacent to planned grading activities. Silt fencing will be installed to exclude western pond turtles.

BIO-2: Onsite Training. When in or near natural habitat areas, all personnel will be required to participate in a preconstruction environmental training program that will describe sensitive habitats, sensitive species, and avoidance and minimization measures

associated with the resources in the immediate work area. The training will be conducted by a qualified biologist that has experience in construction monitoring and the biological resources present in the immediate work area. The training will be repeated as needed (e.g., weekly) so that all construction personnel are trained within 1 week of working on the project.

BIO-3: Avoidance of Breeding Season. Initial vegetation clearing in riparian habitats must occur between October 1 and January 31, which is during the nonbreeding season for birds/raptors. Work in riparian habitats may occur during the breeding season between February 1 and September 30 if preconstruction bird surveys indicate the absence of any nesting birds within a 50-foot radius and the absence of any nesting special-status species/nesting raptors within a 500-foot radius. A smaller protective buffer may be requested depending on the sensitivity of the species, location of the nest, and existing site conditions (e.g., existing high levels of human activity and/or noise in the vicinity of the nest).

BIO-4: Biological Monitoring. The Biological Monitor will be present onsite during all grubbing and clearing of vegetation near ESAs to ensure that these activities remain within the project footprint and that the flagging/stakes/fencing is being maintained. The Biological Monitor will send weekly monitoring reports to Caltrans and the OCTA Natural Community Conservation Plan (NCCP) Administrator during the grubbing and clearing of vegetation near ESAs.

BIO-21: Noise Levels during Construction. If project construction that generates intensive noise (e.g., pile driving) cannot be completed during the nonbreeding season for birds/raptors (i.e., October 1 to January 31), noise levels at the nest location of federally or State-listed birds and nesting raptors will be kept at or below a 1-hour average ($L_{eq}(1)$) of 60 dBA or will not increase noise levels more than 3 dBA above ambient noise levels, whichever is greater, during the breeding season (i.e., February 1 to September 30). The use of noise-generating equipment (e.g., generators) will be avoided within 500 feet of federally or State-listed birds and nesting raptors.

BIO-23: Use of Best Management Practices during Construction. Caltrans/OCTA will identify structural and nonstructural BMPs to control sediment and non-stormwater discharges from the project site to protect water quality. Actions to prevent sediment from entering watercourses during and after construction may include, but are not limited to, the following BMPs: silt fencing, fiber rolls, gravel bag berms, sand bag barriers, tracking controls, stockpile management, dry season scheduling, proper

material delivery and storage, solid waste management, concrete waste management, preservation of existing vegetation, temporary soil stabilization, dust and erosion control, soil binders, and straw mulch. No site personnel will discard solid or liquid materials into jurisdictional water features or any ESA lands. Temporary construction-related BMPs may include, but will not be limited to, the following:

- Silt Fence. A silt fence is made of a filter fabric that has been entrenched, attached to supporting poles, and sometimes backed by a plastic or wire mesh for support. The silt fence detains sediment-laden water, promoting sedimentation behind the fence.
- Fiber Rolls. A fiber roll consists of straw, coir, or other biodegradable materials bound into a tight tubular roll and wrapped by netting, which can be photodegradable or natural. Fiber rolls with plastic netting that poses a wildlife entanglement hazard will not be used. Fiber rolls used for erosion control will be certified as free of noxious weed seed. When fiber rolls are placed at the toe and on the face of slopes along contours, they intercept runoff; reduce its flow velocity; release the runoff as sheet flow; and provide removal of sediment from the runoff. By interrupting the length of a slope, fiber rolls can also reduce sheet and rill erosion until vegetation is established.
- Gravel Bag Berms. A series of gravel-filled bags are placed on a level contour to intercept sheet flows. Gravel bags pond sheet flow runoff, allowing sediment to settle out and release runoff slowly as sheet flow, preventing erosion.
- Preservation of Existing Vegetation. Careful planned preservation of existing vegetation minimizes the potential removal or injury to existing trees, vines, shrubs, and grasses that protect soil from erosion.
- Stockpile Management. Stockpile management procedures and practices are designed to reduce or eliminate air and stormwater pollution from stockpiles of soil, paving materials (e.g., Portland cement concrete rubble, asphalt concrete, asphalt concrete rubble, aggregate base, aggregate subbase, or pre-mixed aggregate), asphalt minder (so-called “cold mix” asphalt), and pressure-treated wood.
- Vehicle and Equipment Maintenance. Contamination of stormwater resulting from vehicle and equipment maintenance can be prevented or reduced by running a “dry and clean site.” The best option would be to perform maintenance

activities at an offsite facility. If this option is not available, then work should be performed in designated areas only, while providing cover for materials stored outside, checking for leaks and spills, and containing and cleaning up spills immediately. Employees and subcontractors must be trained in proper procedures.

BIO-25: Dewatering. Construction activities in special aquatic resources will be restricted to the dry season (June 1 through October 15) when possible; however, open or flowing water may be present during construction. If construction occurs where there is open or flowing water, a strategy that is approved by the resource agencies (e.g., USACE, CDFW's Lake and Streambed Alteration Program, and RWQCB), such as the creation of cofferdams, will be used to dewater or divert water from the work area. If cofferdams are constructed, implementation of the following cofferdam or water diversion measures is recommended to avoid and lessen aquatic resources impacts during construction:

- The cofferdams, filter fabric, and corrugated steel pipe are to be removed from the creek bed after completion of the project. The creek bed will be returned to preconstruction topographic contours.
- The timing of work within all channelized waters is to be coordinated with the regulatory agencies.
- The cofferdam is to be placed upstream of the work area to direct base flows through an appropriately sized diversion pipe. The diversion pipe will extend through the contractor's work area, where possible, and outlet through a sandbag dam at the downstream end.
- Sediment catch basins immediately below the construction site are to be constructed when performing in-channel construction to prevent silt- and sediment-laden water from entering the mainstream flow. Accumulated sediments will be periodically removed from the catch basins.

BIO-26: Restoration of Temporary Impacts. Areas of natural habitat that are temporarily affected by construction activities will be restored to a natural condition. The restoration effort will emulate surrounding vegetation characteristics and/or return to previous conditions. For freeway construction projects, revegetation plans will be part of the project design following Caltrans' landscape architecture guidelines and

requirements. Restoration plans will be reviewed and approved by the Wildlife Agencies.

Compensatory Mitigation

It is anticipated that Caltrans/OCTA will follow the Letter of Permission (LOP) procedures established for OCTA's M2 freeway projects, including compensatory mitigation activities to offset unavoidable impacts to riparian habitats (i.e., waters under jurisdiction of USACE, CDFW, and the RWQCB).

Upon project completion, Caltrans/OCTA will hydroseed and revegetate the disturbed portions of the earthen stream banks and floodplain, as appropriate, with native, noninvasive species. Woody riparian vegetation will be revegetated with container plantings unless other methods are coordinated and approved by USACE. Caltrans/OCTA will ensure the planted/ hydroseeded areas are maintained and monitored for a period of 2 years.

It should be noted that OCTA's M2 programmatic permit process has been approved and finalized. The permit was received and processed in December 2017. Once the OCTA NCCP/HCP Environmental Impact Report (EIR)/Environmental Impact Statement (EIS) and SWRCB 401/USACE 404 Programmatic Permits are issued, Caltrans/OCTA will follow those established guidelines for permit processing. This includes utilizing approved compensatory mitigation based on set mitigation ratios. If, for any reason, Caltrans/OCTA's M2 programmatic permits are not issued, Caltrans/OCTA will obtain the standard USACE 404 permit (San Diego Creek Special Area Management Plan [SAMP] LOP), CDFW 1602 Streambed Alteration Agreement, and RWQCB 401 certifications prior to work in jurisdictional areas.

As mitigation, OCTA has approved funding for four restoration projects in areas highly important for habitat connectivity and wildlife movement. These restoration projects include North Coal Canyon (located in the Coal Canyon), Big Bend (essential connection between Aliso and Wood Canyons Wilderness Park to the Laguna Coast Wilderness Park), Aliso Creek (riparian corridor linking several open space preserves), and the City Parcel (located in the Trabuco and San Juan Creeks Linkage.

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