2.16 Wetlands and Other Waters

This section of the document discusses wetlands and other waters and summarizes the *Jurisdictional Delineation Report* (April 2013) and *Natural Environment Study* (NES) (April 2013).

2.16.1 Regulatory Setting

Wetlands and other waters are protected under a number of laws and regulations. At the federal level, the Clean Water Act (CWA) (33 United States Code [USC] 1344 is the primary law regulating wetlands and waters. One purpose of the CWA is to regulate the discharge of dredged or fill material into waters of the U.S., including wetlands. Waters of the United States include navigable waters, interstate waters, territorial seas and other waters that may be used in interstate or foreign commerce. To classify wetlands for the purposes of the CWA, a three-parameter approach is used that includes the presence of hydrophytic (water loving) vegetation, wetland hydrology, and hydric soils (soils subject to saturation/inundation). All three parameters must be present, under normal circumstances, for an area to be designated as a jurisdictional wetland under the CWA.

Section 404 of the CWA establishes a regulatory program that provides that no discharge of dredged or fill material can be permitted if a practicable alternative exists that is less damaging to the aquatic environment or if the nation's waters would be significantly degraded. The Section 404 permit program is run by the Army Corps of Engineers (USACE) with oversight by the Environmental Protection Agency (USEPA).

USACE issues two types of 404 permits: Standard and General permits. There are two types of General permits, Regional permits and Nationwide permits. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to authorize a variety of minor project activities with no more than minimal effects.

There are two types of Standard permits: Individual permits and Letters of Permission. Ordinarily, projects that do not meet the criteria for a General permit may be permitted under one of USACE's Standard permits. For Standard permits, the USACE decision to approve is based on compliance with U.S. EPA's Section 404(b)(1) Guidelines (U.S. EPA 40 Code of Federal Regulations [CFR] Part 230), and whether permit approval is in the public interest. The Section 404 (b)(1)

Guidelines were developed by the U.S. EPA in conjunction with USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S., and not have any other significant adverse environmental consequences.

The Executive Order for the Protection of Wetlands (EO 11990) also regulates the activities of federal agencies with regard to wetlands. Essentially, this EO states that a federal agency, such as the FHWA, cannot undertake or provide assistance for new construction located in wetlands unless the head of the agency finds: 1) that there is no practicable alternative to the construction and 2) the proposed project includes all practicable measures to minimize harm.

At the state level, wetlands and waters are regulated primarily by the California Department of Fish and Wildlife (CDFW), the State Water Resources Control Board (SWRCB) and the Regional Water Quality Control Boards (RWQCB). In certain circumstances, the California Coastal Commission may also be involved. Sections 1600-1607 of the California Fish and Game Code require any agency that proposes a project that will substantially divert or obstruct the natural flow of or substantially change the bed or bank of a river, stream, or lake to notify CDFW before beginning construction. If CDFW determines that the project may substantially and adversely affect fish or wildlife resources, a Lake or Streambed Alteration Agreement will be required. CDFW jurisdictional limits are usually defined by the tops of the stream or lake banks, or the outer edge of riparian vegetation, whichever is wider. Wetlands under jurisdiction of the USACE may or may not be included in the area covered by a Streambed Alteration Agreement obtained from the CDFW.

The RWQCBs were established under the Porter-Cologne Water Quality Control Act to oversee water quality. The RWQCB also issues water quality certifications in compliance with Section 401 of the CWA. Please see the Water Quality section for additional details.

2.16.2 San Juan Creek/Western San Mateo Creek Watershed Special Area Management Plan (San Juan Creek SAMP)

In addition to the usual regulations that apply throughout the country, the USACE has the authority to develop Special Area Management Plans (SAMPs) for certain areas

designated by the USACE. With a SAMP, the USACE undertakes a comprehensive review of aquatic resources in an entire watershed. The goal is to analyze potential effects at the watershed scale in order to identify priority areas for preservation, identify potential restoration areas, determine the least environmentally damaging locations for proposed projects, and establish alternative permitting processes appropriate for the SAMP areas. The alternative permitting process facilitates reasonable economic development and infrastructure while also providing for aquatic resource protection. SAMPs are designed to be conducted in geographic areas of special sensitivity under development pressure. These comprehensive and complex efforts require the participation of multiple local, State, and federal agencies. In addition, the USACE considers public and stakeholder involvement an essential part of a successful SAMP. A SAMP for San Juan Creek watershed has been developed and approved by the USACE in cooperation with the County of Orange (County) and Rancho Mission Viejo (RMV).

The San Juan Creek Watershed SAMP implementation was completed in March 2012. It was developed and approved by the USACE in cooperation with the County and RMV. The San Juan Creek Watershed is approximately 113,000 acres (ac), which includes approximately 8,730 ac of riparian habitat. Of that riparian habitat total, approximately 7,850 ac would be preserved under the San Juan Creek SAMP. Within the RMV Planning Area, there are approximately 2,174 ac of riparian habitat, of which 1,693 ac would be conserved. This includes the preservation of such main stem creeks as San Juan Creek, Chiquita Creek, Gobernadora Creek, Cristianitos Creek, La Paz Creek, Gabino Creek, and Talega Creek. The effects of authorized development and associated infrastructure would be offset by the preservation and adaptive management of certain aquatic resource conservation areas.

2.16.3 Affected Environment

Based on previous biological surveys conducted in the Biological Study Area (BSA) and based on examination of recent aerial photography, portions of two main stream systems occurring in the BSA were identified (i.e., Aliso Creek and Oso Creek). A segment of Aliso Creek extends under Interstate 5 (I-5) just north of Alicia Parkway in the northern half of the BSA; the other stream system, Oso Creek, extends under the I-5 just south of Oso Parkway in the southern half of the BSA. The bulk of the delineation fieldwork was associated with these drainage courses and an unnamed tributary to Oso Creek. The fieldwork for this jurisdictional delineation was conducted on August 2, 3, 6, and 29, 2012. The portions of the BSA in and around these drainages were surveyed by foot and with the use of aerial photographs. These

areas were evaluated for federal and State jurisdiction. Where access was difficult or in some cases unavailable due to existing conditions, the areas were analyzed from the best vantage point, and jurisdiction was conservatively identified to the advantage of the resource. Areas of potential jurisdiction were evaluated according to the USACE and CDFW regulatory criteria.

The *Jurisdictional Delineation Report* identified 13 drainages within the project limits. As described in the *Jurisdictional Delineation Report*, there are nine drainages on site that connect directly or indirectly to the Pacific Ocean.

Within the BSA, nine of the drainages, including Drainages 1 (Aliso Creek), 2, 3 (Oso Creek), 4, 5, 7, 8, 9A, and 9B are subject to USACE jurisdiction pursuant to Section 404 of the CWA. Figure 2.16-1 (located at the end of this section) shows the jurisdictional status of all the drainages in the BSA. Drainages 1 and 3 and most of Drainage 2 are primarily natural, earthen drainages consisting of both wetland and nonwetland waters of the United States. The jurisdictional wetlands occur at or below the ordinary high water mark (OHWM) within each of these three drainages. Figure 2.16-2 (located at the end of this section) shows the wetland and nonwetland waters of the jurisdictional drainages in the BSA. Based on the incised, well-defined banks of the drainages and the elevated topography of the surrounding areas, there are no adjacent wetlands to these drainages. The remaining jurisdictional drainages (i.e., Drainages 4, 5, 7, 8, 9A, and 9B) are all open, concrete-lined drainage features, including trapezoidal or rectangular flood control channels. Although these artificial drainage structures are excavated on dry land and do not appear to have displaced a previously existing drainage, these drainages nevertheless do appear to convey substantial water runoff throughout the year and are, therefore, considered nonwetland waters of the United States. The BSA contains a total of 3.16 ac of nonwetland waters and 4.62 ac of wetlands for a total of 7.78 ac of USACE jurisdiction.

Drainages 2 (Aliso Creek), 3, 4, 5, 7, and 8 are part of the San Juan Creek Watershed and are therefore covered under the San Juan Creek SAMP. A total of 2.74 ac of nonwetland waters and 4.06 ac of wetland waters in the BSA are part of the San Juan Creek SAMP.

CDFW jurisdiction is associated with all of the designated drainages in the BSA with the exception of Drainages 1A, 2A, 3A, and 6. These four drainages are humanmade, concrete- or asphalt-lined storm drain or flood control channels that lack aquatic and

riparian habitat functions and values to support biological resources. These drainage features were constructed for the purpose of conveying storm water runoff into the storm drain system to prevent or control flooding of I-5 and surrounding uses and are essentially devoid of vegetation. Also, these drainage features do not appear to displace any previously existing streams or other natural drainages but rather were excavated on dry land. Consequently, these drainage features would not be considered subject to either USACE or CDFW jurisdiction within the BSA. There are 19.63 ac of CDFW jurisdiction within the BSA.

All of the areas satisfying the USACE jurisdiction for waters of the United States, as described above, are also subject to CDFW jurisdiction. In addition, in some locations along the drainages, CDFW jurisdiction (in the form of riparian habitat) extends beyond the banks of the stream.

The project is within the jurisdiction of the Santa Ana (Region 8) and San Diego (Region 9) RWQCB, which is responsible for the administration of Section 401 of the CWA. Typically, the areas subject to RWQCB jurisdiction coincide with those of the USACE (i.e., waters of the United States, including wetlands). The RWQCB also asserts authority over waters of the State under waste discharge requirements pursuant to the Porter-Cologne Water Quality Control Act (Porter-Cologne). Since there is no current public guidance on determining RWQCB jurisdictional areas, jurisdiction was determined based on the federal definition of wetlands (three-parameter) and other waters of the United States (OHWM) as recommended by the September 2004 Workplan. RWQCB jurisdiction was considered coincident with USACE jurisdiction for purposes of Section 401 certification.

2.16.4 Environmental Consequences

2.16.4.1 Temporary Impacts

No Build Alternative – Alternative 1

The No Build Alternative does not propose any construction or other disturbance in the BSA. Therefore, the No Build Alternative would not result in temporary effects related to jurisdictional wetlands or other waters.

Build Alternatives – Alternative 2 (Preferred Alternative) and Alternative 3

Table 2.16-1 shows the amount of USACE jurisdictional and nonjurisdictional areas that would be temporarily affected by construction of the Build Alternatives. Alternative 2 is not expected to temporarily affect any wetland waters during construction. However, Alternative 2 is expected to temporarily affect 0.05 ac of nonwetland waters during construction. Alternative 3 is expected to temporarily affect 0.62 ac of wetland waters and 0.21 ac of nonwetland waters during construction, for a total effect to 0.83 ac of USACE jurisdictional waters. In addition, temporary impacts may occur prior to construction for preliminary borings for geotechnical analysis and utility location identification; specifically, in Oso and Aliso Creeks. These borings will all be located within the impact footprint for the Build Alternatives.

Table 2.16-1 Temporary Effects by Alternative to USACE Wetland and Nonwetland Waters

Drainage ID	Nonwetland Waters (acres)		Wetlands (acres)		Total USACE Jurisdiction (acres)		Nonjurisdictional Drainage Features (acres)	
	Alt 2 (Preferred Alternative)	Alt 3	Alt 2 (Preferred Alternative)	Alt 3	Alt 2 (Preferred Alternative)	Alt 3	Alt 2 (Preferred Alternative)	Alt 3
1 (Aliso Creek)	-	-	-	-	-	-	-	-
1A	-	-	-	-	-	-	-	-
2	-	0.128	-	0.621	-	0.749	-	-
2A	-	-	-	-	-	-	-	0.001
3 (Oso Creek)	0.046	0.084	-	-	0.046	0.084	-	-
3A	-	-	-	-	-	-	-	-
4	-	-	-	-	-	-	-	-
5	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-
7	-	-	-	-	-	-	-	-
8	-	-	-	-	-	-	-	-
9A	-	-	-	-	-	-	-	-
9B	-	-	-	-	-	-	-	-
Total	**0.046**	**0.212**	**-**	**0.621**	**0.046**	**0.833**	**-**	**0.001**

Source: LSA Associates, Inc., *Natural Environment Study* (April 2013).
Alt = Alternative
USACE = United States Army Corps of Engineers

Table 2.16-2 shows the project impacts to each drainage expected by each Build Alternative to CDFW jurisdictional areas. Alternative 2 is expected to temporarily impact 0.79 ac of areas under CDFW jurisdiction. Alternative 3 is expected to temporarily impact 2.23 ac of areas under CDFW jurisdiction.

Table 2.16-2 Project Effects by Alternative to CDFW Jurisdictional Areas

Drainage ID	Permanent Impacts (acres)		Temporary Impacts (acres)	
	Alt 2 (Preferred Alternative)	Alt 3	Alt 2 (Preferred Alternative)	Alt 3
1 (Aliso Creek)	0.030	0.030	—	—
1A	—	—	—	—
2	—	0.013	—	1.214
2A	—	—	—	—
3 (Oso Creek)	0.190	0.390	0.794	1.015
3A	—	—	—	—
4	—	0.006	—	—
5	—	—	—	—
6	—	—	—	—
7	0.003	0.003	—	—
8	—	—	—	—
9A	0.002	0.002	—	—
9B	0.002	0.002	—	—
Total	**0.227**	**0.446**	**0.794**	**2.229**

Source: LSA Associates, Inc., *Natural Environment Study* (April 2013).
Alt = Alternative
CDFW = California Department of Fish and Wildlife

The BSA contains areas of USACE and/or CDFW jurisdiction that are included within the San Juan Creek Watershed and the SAMP for the San Juan Creek Watershed (i.e., areas where tributaries of San Juan Creek intersect with the project alignment). Because the I-5 Widening Project is located in an area identified by the SAMP as having a lower value on a watershed basis, project impacts are eligible for the abbreviated Letter of Permission (LOP) alternative permitting process associated with the SAMP.

If the project is found to be consistent with the SAMP by the USACE, an LOP will be issued to authorize the discharge of dredged and/or fill materials into waters of the United States. The I-5 Widening Project is expected to be found consistent with the SAMP and an LOP for the San Juan Creek Watershed portion of the I-5 Widening Project is expected to be issued by the USACE.

If upon review by the USACE, the proposed project is found not to be consistent with the SAMP, an Individual Permit would be required. As part of the SAMP process, selected Nationwide Permits (NWPs) have been revoked. Therefore, an NWP for the San Juan Creek Watershed part of the proposed project cannot be obtained.

2.16.4.2 Permanent Impacts

No Build Alternative – Alternative 1

The No Build Alternative proposes no construction or other disturbance in the BSA. Therefore, the No Build Alternative would not result in permanent effects related to jurisdictional wetlands or other waters.

Build Alternatives – Alternative 2 (Preferred Alternative) and Alternative 3

Table 2.16-3 shows the area potentially subject to (or not subject to) USACE jurisdiction that would result in direct permanent effects by each Build Alternative. Alternative 2 is expected to permanently affect 0.08 ac nonwetland waters and 0.04 ac wetland waters of the United States. Alternative 3 is expected to permanently affect 0.10 ac nonwetland waters and 0.10 ac wetland waters of the United States.

Table 2.16-3 Permanent Effects by Alternative to USACE Wetland and Nonwetland Waters

Drainage ID	Nonwetland Waters (acres)		Wetlands (acres)		Total USACE Jurisdiction (acres)		Nonjurisdictional Drainage Features (acres)	
	Alt 2 (Preferred Alternative)	Alt 3	Alt 2 (Preferred Alternative)	Alt 3	Alt 2 (Preferred Alternative)	Alt 3	Alt 2 (Preferred Alternative)	Alt 3
1 (Aliso Creek)	0.030	0.030	-	-	0.030	0.030	-	-
1A	-	-	-	-	-	-	0.016	0.016
2	-	-	-	-	-	-	-	-
2A	-	-	-	-	-	-	-	-
3 (Oso Creek)	0.047	0.059	0.037	0.096	0.084	0.155	-	-
3A	-	-	-	-	-	-	0.001	0.003
4	-	0.006	-	-	-	0.006	-	-
5	-	-	-	-	-	-	-	-
6	-	-	-	-	-	-	-	-
7	0.003	0.003	-	-	0.003	0.003	-	-
8	-	-	-	-	-	-	-	-
9A	0.002	0.002	-	-	0.002	0.002	-	-
9B	0.002	0.002	-	-	0.002	0.002	-	-
Total	**0.084**	**0.102**	**0.037**	**0.096**	**0.121**	**0.198**	**0.017**	**0.019**

Source: LSA Associates, Inc., *Natural Environment Study* (April 2013).
Alt = Alternative
USACE = United States Army Corps of Engineers

As outlined in Table 2.16-2, Alternative 2 is expected to permanently affect 0.23 ac of areas under CDFW jurisdiction. Alternative 3 is expected to permanently affect 0.45 ac of areas under CDFW jurisdiction.

Because there is no current public guidance on determining RWQCB jurisdictional areas, jurisdiction was determined based on the federal definition of wetlands (three-parameter) and other waters of the United States based on the OHWM, as recommended by the *Preliminary Draft Water Quality Control Policy for Wetland Area Protection and Dredge and Fill Permitting*; SWRCB, 2012). Therefore, the total effects to potential RWQCB jurisdictional areas are the same as those as described above for the USACE.

A federal wetlands avoidance alternative has not been considered as I-5 is an existing facility and the Build Alternatives propose to widen this facility. As the area in which the Build Alternatives would impact wetlands is an existing overcrossing over Oso Creek, there is no alternative to widening at this location. The design of the Build Alternatives minimizes impacts in this area to the extent feasible.

These findings and conclusions are the professional opinion of the consultant biologists and should be considered preliminary until verified by the appropriate agency (USACE, CDFW, and/or RWQCB).

2.16.4.3 Only Practicable Finding

Section 404(b)(1) of the federal CWA requires projects involving federal action to demonstrate that measures have been taken to avoid and minimize impacts to waters of the United States, including wetlands. Furthermore, EO 11990 (Protection of Wetlands) directs federal agencies to "…avoid to the extent possible the long and short term adverse impacts associated with the destruction or modification of wetlands…"

The No Build Alternative (Alternative 1) would avoid impacts to jurisdictional areas; however, it would not meet the purpose and need for the proposed project and was not considered a practicable alternative.

Both Build Alternatives (Alternatives 2 and 3) affected jurisdictional waters as outlined in Table 2.16-3. These impacts result from the linear nature of the existing I-5 freeway which currently crosses both Aliso and Oso Creeks on bridge structures. Alternative 2 has the least effect on jurisdictional waters of the two Build Alternatives (Table 2.16-3). Section 1.8 describes other alternatives evaluated but withdrawn from further consideration. None of these alternatives would avoid effects to jurisdictional waters.

Alternative 2 has been selected as the Preferred Alternative, and has been determined to be practicable as it relates to cost, existing technology, logistics, and purpose and need. It also results in the least impact to wetlands and other waters of the United States.

Additional practicable measures have been included to avoid and minimize harm to wetlands and other waters of the United States as a result of the construction and operation of Alternative 2. These measures are:

- Location of all permanent water quality treatment BMPs outside of jurisdictional areas.
- Refinement of the project design to avoid wetlands and other waters of the United States, to the maximum extent possible, with the exception of areas required to construct road and bridge facilities.
- Elimination of fill slopes near drainages whenever possible.

The measures discussed below in Section 2.16.5 have been identified to avoid and/or minimize direct and indirect impacts to wetlands. Measures BIO-2 and BIO-11 would require coordination with USACE and CDFW as part of the permit process to avoid and/or minimize direct impacts to wetlands. Measures BIO-1, WQ-1, WQ-2, and WQ-3 would avoid and/or minimize temporary wetland impacts during construction. Based on the above considerations, it was determined there is no practicable alternative to the proposed construction in wetlands under Alternative 2, and the proposed project includes all practicable measures to minimize harm to wetlands that may result from such use.

2.16.4.4 Functions and Values

As part of the jurisdictional delineation, qualitative assessment of the functions and values of the drainages in the BSA was conducted. All wetlands and other waters have some degree of functionality, and no single wetland can perform all these functions considered below. There are 13 drainages within the BSA. The following functions are analyzed at low, moderate, or high value levels for each drainage identified in the BSA. All of these values represent the capability of each drainage to perform these functions within the drainage area it services and subsequently, downstream. A low value was given to those drainages with minimal or no qualities required for supporting the specified function. A moderate value was given when a given drainage has some qualities required to support the specified function. A high

value was given to drainages with most or all qualities required for supporting the specified function.

Table 2.16-4 shows the value given to each drainage for the functions evaluated based on the criteria outlined above.

Hydrologic Regime

The storage of water below ground allows for the fluctuation between anaerobic and aerobic conditions that benefit environmental conditions necessary for microbial cycling. The hydrologic regime function is the ability of a wetland or stream to absorb and store water belowground. The degree of this saturation is dependent on the soil composition and is affected by prior flooding events. For example, clay soils possess more pore space than sandy soils. However, the smaller pore size slows the rate at which water is absorbed and released; therefore, clay soil has a lower capacity (i.e., a low value) to store water than sandy soils. Similarly, concrete lining does not allow for water from the wetland or stream to be absorbed and stored belowground. Therefore, concrete-line drainages have a low hydrologic regime value.

Because the majority of the drainages currently have a low hydrologic regime due to concrete lining and/or other factors, the Build Alternatives will not change the existing hydrologic regime of these drainages. Of the drainages shown in Table 2.16-4, only Drainages 1 (Aliso Creek), 2 (Unnamed Tributary to Oso Creek) and 3 (Oso Creek) are listed as having a low to moderate hydrologic regime. Although the Build Alternatives would result in modifications to all three of these drainages, the Build Alternatives will not alter the soil composition substantially enough to alter the value of the hydrologic regime function.

Table 2.16-4 Functions and Values of Drainages within the Study Area

Drainage Number	Hydrologic Regime	Flood Storage and Flood Flow Modification	Sediment Retention	Nutrient Retention and Transformation	Toxicant Trapping	Social Significance	Wildlife Habitat	Aquatic Habitat
1 (Aliso Creek)	Low to Moderate	Moderate to High	Moderate to High	Moderate to High	Moderate to High	High	High	High
1A (Drainage Feature)	Low	Low	Low	Low	Low	Low	Low	Low
2 (Unnamed Tributary to Oso Creek)	Low to Moderate	Moderate	Moderate to High	Moderate to High	Moderate to High	Low	High	High
2A (Drainage Feature)	Low	Low	Low	Low	Low	Low	Low	Low
3 (Oso Creek)	Low to Moderate	Moderate to High	Moderate to High	Moderate to High	Moderate to High	Low	High	High
3A (Drainage Feature)	Low	Low	Low	Low	Low	Low	Low	Low
4 (Drainage Feature)	Low	Low	Low	Low	Low	Low	Low	Low
5 (Drainage Feature)	Low	Low	Low	Low	Low	Low	Low	Low
6 (Drainage Feature)	Low	Low	Low	Low	Low	Low	Low	Low
7 (Drainage Feature)	Low	Low	Low	Low	Low	Low	Low	Low
8 (Drainage Feature)	Low	Low	Low	Low	Low	Low	Low	Low
9A (Drainage Feature)	Low	Low	Low	Low	Low	Low	Low	Low
9B (Drainage Feature)	Low	Low	Low	Low	Low	Low	Low	Low

Flood Storage and Flood Flow Modification

This function is determined based on the ability of a wetland or stream at which the peak flow in a watershed can be attenuated during major storm events and during peak domestic flows to take in surface water that may otherwise cause flooding. This function is dependent on the size of the wetland or stream, the amount of water it can hold, and the location in the watershed. For instance, larger wetlands or streams that have a greater capacity to receive waters have a greater ability to reduce flooding. In addition, areas upstream in the watershed may have more ability to reduce flooding in downstream areas, but areas downstream in the watershed may have greater benefits to a specific area. Vegetation, shape, and the configuration of the wetland or stream may also affect flood storage by dissipating the energy of flows during flood events.

Because the majority of the drainages currently have a low flood storage and flood flow modification value due to concrete lining and/or other factors, the Build Alternatives will not change the existing flood storage and flood flow modification capability of these drainages. Drainages 1 (Aliso Creek), 2 (Unnamed Tributary to Oso Creek) and 3 (Oso Creek) currently have a moderate to high flood storage and flood flow modification value. Although the Build Alternatives would result in modifications to these three drainages, the Build Alternatives will not result in loss of the flood storage and flood flow modification function to any of these drainages. The clearing of blockages and debris during construction may improve the flood storage and flood flow modification capabilities of these three drainages incrementally, but is not expected to change their overall assigned value.

Sediment Retention

Removal of sediment is the process that keeps sediments from migrating downstream. This is accomplished through the natural process of sediment retention and entrapment. This function is dependent on the sediment load being delivered by runoff into the watershed. The vegetation, shape, and configuration of a wetland affects sediment retention. For example, water is detained for longer durations with dense vegetation, a bowl-shaped watershed, or slow-moving water. This function would have a higher value if the turbidity (i.e., suspended sediment) of the incoming water is greater than that of the outgoing water.

Because the majority of the drainages currently have a low sediment retention value due to concrete lining and/or other factors, the Build Alternatives will not change the existing sediment retention capability of these drainages. Of the identified drainages, only Drainages 1 (Aliso Creek), 2 (Unnamed Tributary to Oso Creek) and 3 (Oso

Creek) are listed as having a moderate to high sediment retention capability. Since the permanent effects at Drainage 1 (Aliso Creek) and Drainage 3 (Oso Creek) would result in the removal of a small amount of riparian vegetation (approximately 0.18 ac for both Build Alternatives), there may be a slight loss of the sediment retention function at these two drainages. Although the Build Alternatives would result in modifications to Drainage 2, the Build Alternatives are not expected to remove any vegetation or alter the shape of the drainage. Therefore, the Build Alternatives will not change the sediment retention capability of Drainage 2.

Nutrient Retention and Transformation

Nutrient cycling consists of two variables: uptake of nutrients by plants and detritus turnover, in which nutrients are released for uptake by plants downstream. Wetland systems in general are much more productive with regard to nutrients than upland habitats. The regular availability of water associated with the wetland or stream may cause the growth of plants (nutrient uptake) and associated detritivores and generate nutrients that may be utilized by a variety of aquatic and terrestrial wildlife downstream.

Because the majority of the drainages currently have a low nutrient retention and transformation value due to concrete lining and/or other factors, the Build Alternatives will not change the existing nutrient retention and transformation capability. Of the identified drainages, only Drainages 1 (Aliso Creek), 2 (Unnamed Tributary to Oso Creek), and 3 (Oso Creek) are listed as having a moderate to high nutrient retention and transformation value. Since the permanent effects at Drainage 1 (Aliso Creek) and Drainage 3 (Oso Creek) would result in the removal of a small amount of riparian vegetation (approximately 0.18 ac for both Build Alternatives), there may be a slight loss of the nutrient retention and transformation function at these two drainages. Although the Build Alternatives would result in modifications to Drainage 2, the Build Alternatives are not expected to remove any vegetation or alter the shape of the drainage. Therefore, the Build Alternatives will not change the nutrient retention and transformation capability of Drainage 2.

Toxicant Trapping

The major processes by which wetlands remove nutrients and toxicants are as follows: (1) by trapping sediments rich in nutrients and toxicants, (2) by absorption to soils high in clay content or organic matter, and (3) through nitrification and denitrification in alternating oxic and anoxic conditions (i.e., uptake of toxicants by

plants). Removal of nutrients and toxicants is closely tied to the processes that provide for sediment removal.

Because the majority of the drainages currently have a low toxicant trapping value due to concrete lining and/or other factors, the Build Alternatives will not change the existing toxicant trapping capability of these drainages. Of the identified drainages, only Drainages 1 (Aliso Creek), 2 (Unnamed Tributary to Oso Creek), and 3 (Oso Creek) are listed as having a moderate to high effect on toxicant trapping. Since the permanent effects at Drainage 1 (Aliso Creek) and Drainage 3 (Oso Creek) would result in the removal of a small amount of riparian vegetation (approximately 0.18 ac for both Build Alternatives), there may be a slight loss of the toxicant trapping function at these two drainages. Although the Build Alternatives would result in modifications to Drainage 2, the Build Alternatives are not expected to remove any vegetation or alter the shape of the drainage. Therefore, the Build Alternatives will not change the toxicant trapping capability of Drainage 2.

Social Significance or Standing (Social Standing)

This is a measure of the probability that a wetland or stream would be used by the public because of its natural features, economic value, official status, and/or location. This includes its being used by the public for recreational uses, such as boating, fishing, birding, walking, and other passive recreational activities. A wetland or stream that is used as an outdoor classroom, is a location for scientific study, or is near a nature center would have a higher social standing.

Because all of the drainages, except Drainage 1 (Aliso Creek), currently have a low social standing value due to concrete lining and/or other factors, the Build Alternatives will not change the existing social standing value at any of these drainages. Of the identified drainages, only Drainage 1 (Aliso Creek) is listed as having a high social standing value. Since the permanent effects at Drainage 1 (Aliso Creek) would result in the removal of a small amount of riparian vegetation (approximately 0.03 ac for both Build Alternatives), there may be a slight loss of the social standing value at this drainage.

Wildlife Habitat

General habitat suitability is the ability of a wetland to provide habitat for a wide range of wildlife. Vegetation is a large component of wildlife habitat. As plant community diversity increases along with connectivity with other habitats, so does

potential wildlife diversity. In addition, a variety of open water, intermittent ponding, and perennial ponding is also an important habitat element for wildlife.

Because the majority of the drainages currently have a low wildlife habitat value due to concrete lining and/or other factors, the Build Alternatives will not change the existing wildlife habitat value of these drainages. Of the identified drainages, only Drainages 1 (Aliso Creek), 2 (Unnamed Tributary to Oso Creek), and 3 (Oso Creek) are listed as having a high wildlife habitat value. Since the permanent effects at Drainage 1 (Aliso Creek) and Drainage 3 (Oso Creek) would result in the removal of a small amount of riparian vegetation (approximately 0.18 ac for both Build Alternatives), there may be a slight loss of the wildlife habitat function at these two drainages. Although the Build Alternatives would result in modifications to Drainage 2, the Build Alternatives are not expected to remove any vegetation or alter the shape of the drainage. Therefore, the Build Alternatives will not change the wildlife habitat value of Drainage 2.

Aquatic Habitat

The ability of a wetland or stream to support aquatic species requires that there be ample food supply, pool and riffle complexes, and sufficient soil substrate. Food supply is typically in the form of aquatic invertebrates and detrital matter from nearby vegetation. Pool and riffle complexes provide a variety of habitats for species diversity as well as habitat for breeding and rearing activities. Species diversity is directly related to the complexity of the habitat structure.

Because the majority of the drainages currently have a low aquatic habitat value due to concrete lining and/or other factors, the Build Alternatives will not change the existing aquatic habitat value of these drainages. Of the identified drainages, only Drainages 1 (Aliso Creek), 2 (Unnamed Tributary to Oso Creek), and 3 (Oso Creek) are listed as having a high aquatic habitat value. Since the permanent effects at Drainage 1 (Aliso Creek) and Drainage 3 (Oso Creek) would result in the removal of a small amount of riparian vegetation (approximately 0.18 ac for both Build Alternatives), there may be a slight loss of the aquatic habitat function at these two drainages. Although the Build Alternatives would result in modifications to Drainage 2, the Build Alternatives are not expected to remove any vegetation or alter the pool and riffle complexes of the drainage. Therefore, the Build Alternatives will not change the wildlife habitat value of Drainage 2.

2.16.5 Avoidance, Minimization, and/or Mitigation Measures

The proposed project is required by law to comply with all environmental permit conditions, such as those that would likely be issued by the CDFW, RWQCB, and USACE. The permit conditions would likely require measures that would offset project effects. Specific compensation measures are identified below.

Implementation of Measures BIO-1, through BIO-9 (in Section 2.15), and WQ-1, WQ-2, and WQ-3 (in Section 2.9) would avoid and/or minimize effects to jurisdictional wetlands and waters. Additionally, the following would compensate for the effects to jurisdictional wetlands and waters.

Separate permissions/authorizations from the USACE, CDFW, and RWQCB will be obtained for the preliminary geotechnical and utility location borings.

BIO-10 Prior to clearing or construction (including any ground-disturbing activities), the California Department of Fish and Wildlife (CDFW) and United States Army Corps of Engineers (USACE) will be consulted and, if required, a Lake or Streambed Alteration Agreement with the CDFW, a Section 404 permit and/or Letter of Permission (LOP) from the USACE, and a Section 401 certification from the Regional Water Quality Control Board (RWQCB) will be obtained.

BIO-11 If required, compensatory mitigation will be provided through the Measure M2 Freeway Transportation Mitigation Program, which allocates funds to acquire land and fund habitat restoration by acquiring properties and permanently preserving them as open space. Restoration projects restore open space lands to their native habitat and include the removal of invasive plant species. Use of the program will be consistent with the United States Army Corps of Engineers (USACE) and California Department of Fish and Wildlife (CDFW) policies for no net loss of riparian/riverine habitat (e.g., wetlands) standards.

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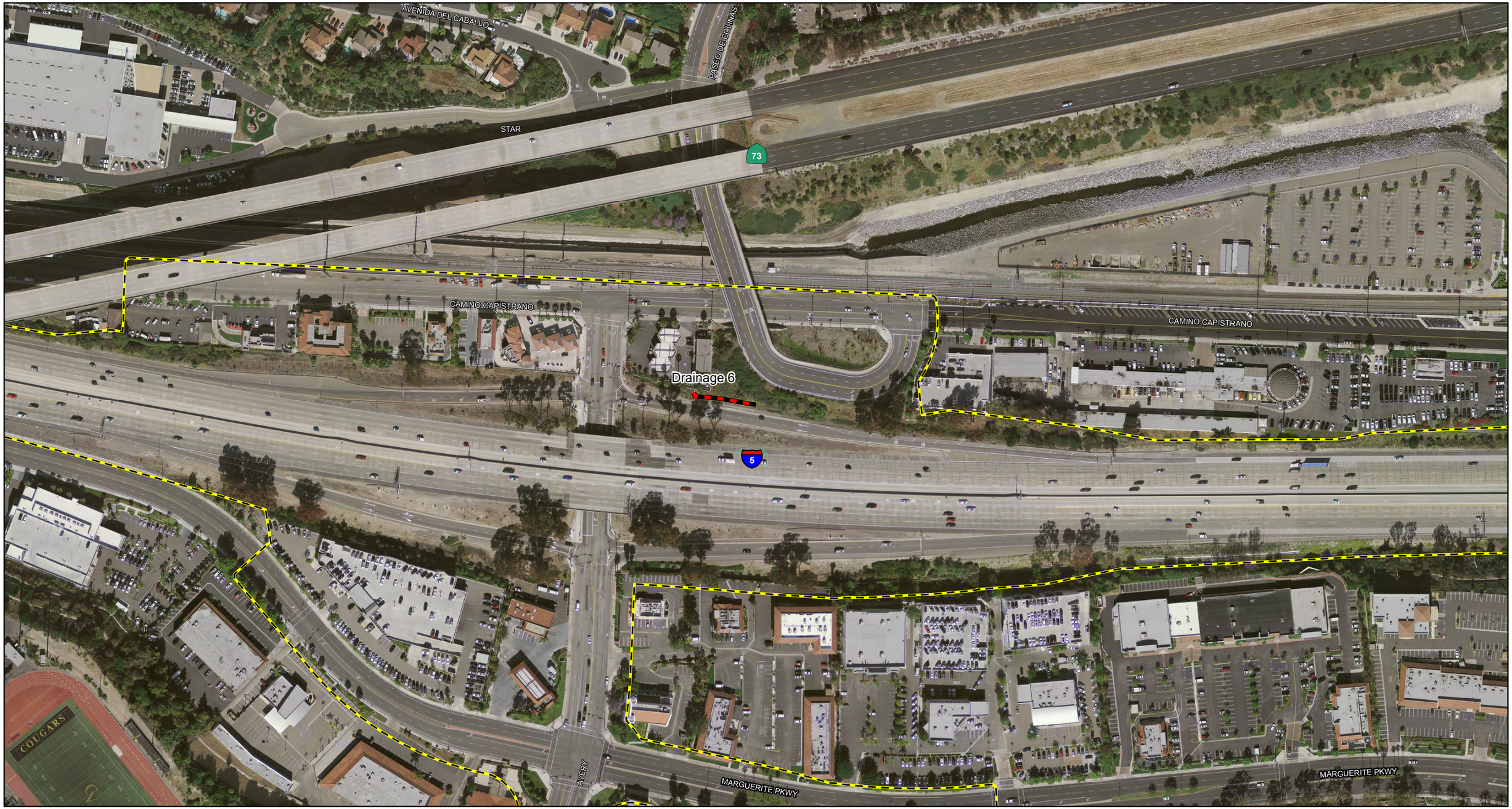

LEGEND

- Biological Study Area
- Jurisdictional Drainage (with ID)
- Non-Jurisdictional Drainage (with ID)

0 100 200
FEET

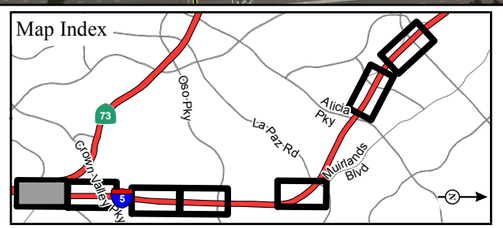

FIGURE 2.16-1
Sheet 1 of 7

I-5 Widening from SR-73 to El Toro Road

Location of Jurisdictional and Non-Jurisdictional Areas

SOURCE: Eagle Aerial (2011); LSA (11/2011); TransSystem (3/13/2012)

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FORBES
CAPE
GETTY
CAMINO CAPISTRANO
Drainage 4
Drainage 5
5
Drainage 7
MARGUERITE PKWY
CROWN VALLEY PKWY

LEGEND

- Biological Study Area
- Jurisdictional Drainage (with ID)
- Non-Jurisdictional Drainage (with ID)

0 100 200
FEET

SOURCE: Eagle Aerial (2011); LSA (11/2011); TransSystem (3/13/2012)

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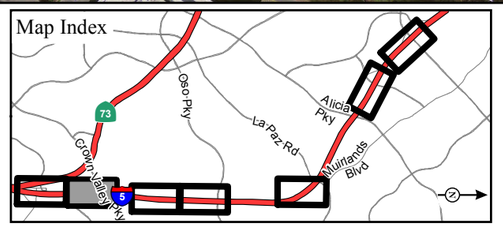

FIGURE 2.16-1
Sheet 2 of 7

I-5 Widening from SR-73 to El Toro Road

Location of Jurisdictional and Non-Jurisdictional Areas

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CABOT
VISTA VIEJO
CAMINO CAPISTRANO
Drainage 3
Drainage 3a
Drainage 3
5
PUERTA REAL
VIA GRANDE
MALLORCA
VIA DEL SOL
LAS RAMBLAS

LEGEND

- Biological Study Area
- Jurisdictional Drainage (with ID)
- Non-Jurisdictional Drainage (with ID)

0 100 200
FEET

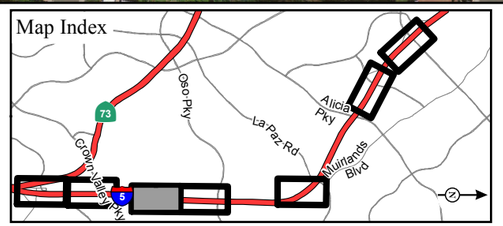

FIGURE 2.16-1
Sheet 3 of 7

I-5 Widening from SR-73 to El Toro Road

Location of Jurisdictional and Non-Jurisdictional Areas

SOURCE: Eagle Aerial (2011); LSA (11/2011); TransSystem (3/13/2012)

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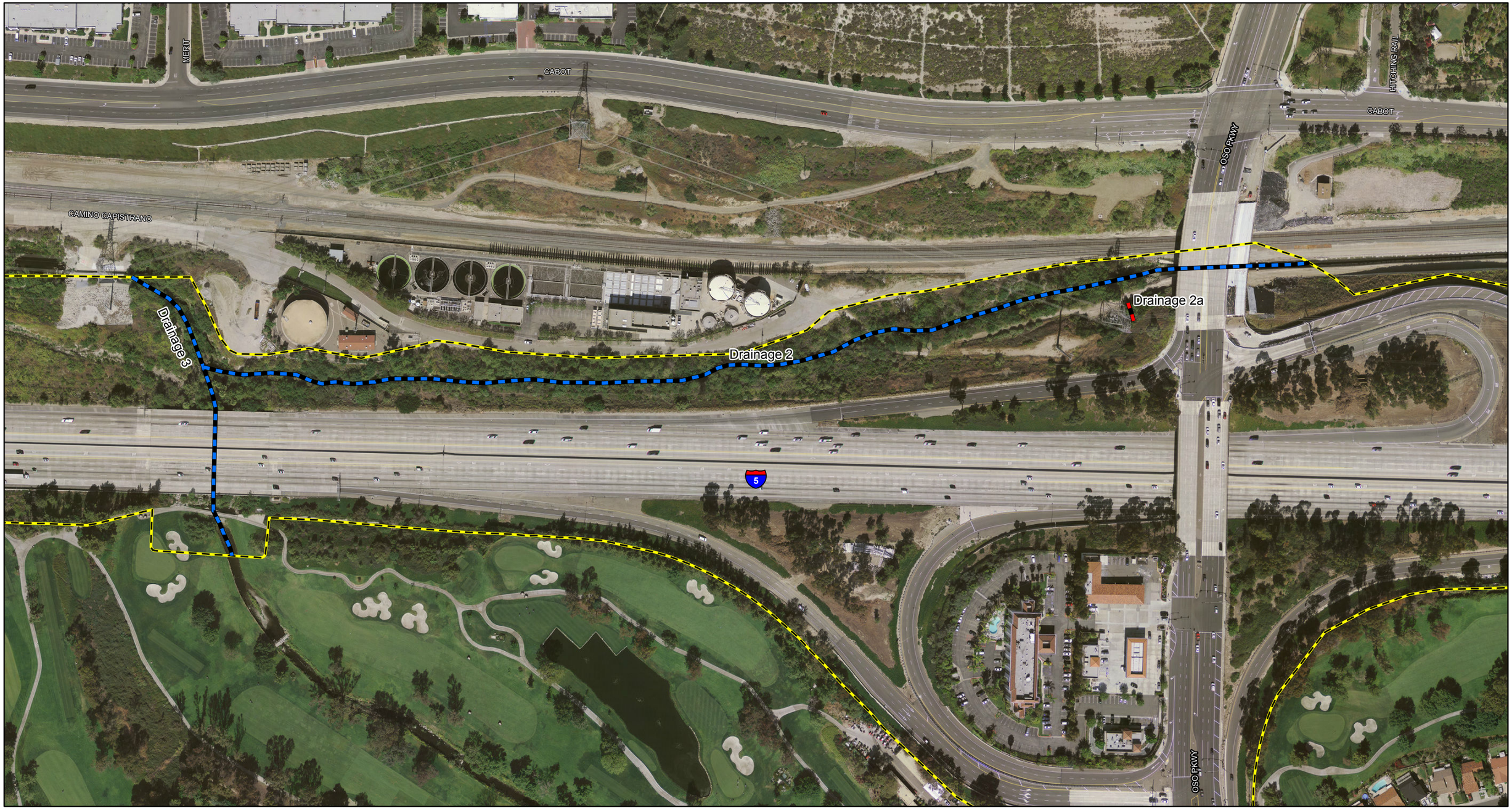

LEGEND

- Biological Study Area
- Jurisdictional Drainage (with ID)
- Non-Jurisdictional Drainage (with ID)

0 100 200
FEET

SOURCE: Eagle Aerial (2011); LSA (11/2011); TransSystem (3/13/2012)

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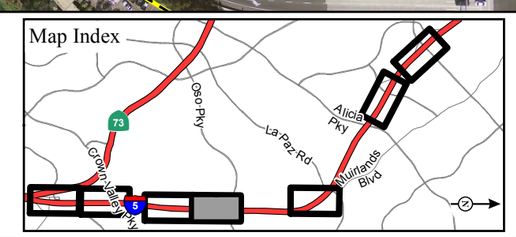

FIGURE 2.16-1
Sheet 4 of 7

I-5 Widening from SR-73 to El Toro Road

Location of Jurisdictional and Non-Jurisdictional Areas

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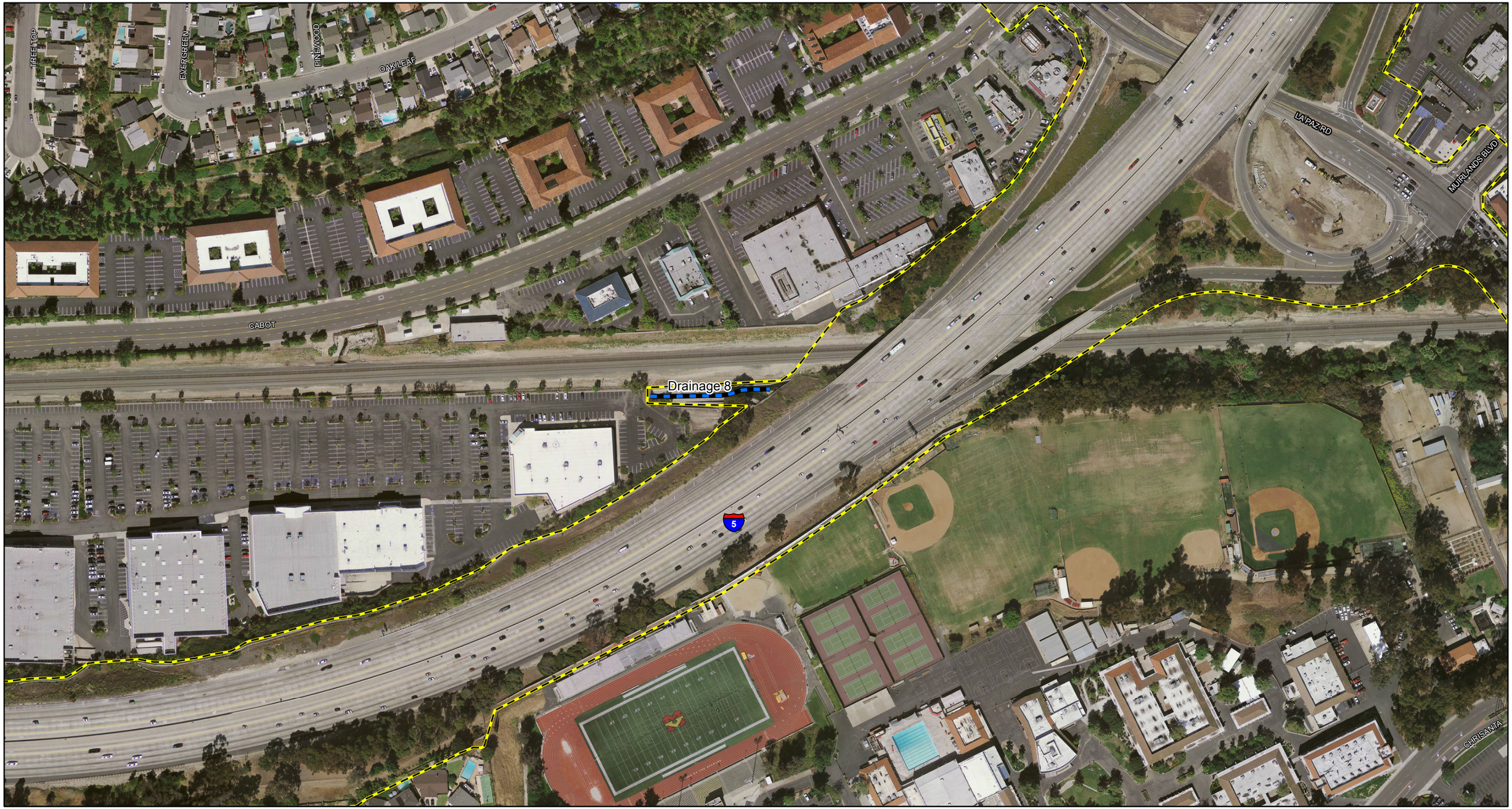

LEGEND

Biological Study Area

Jurisdictional Drainage (with ID)

Non-Jurisdictional Drainage (with ID)

0 100 200
FEET

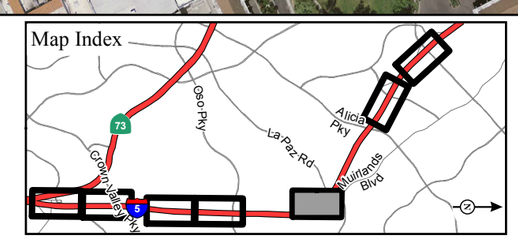

FIGURE 2.16-1
Sheet 5 of 7

I-5 Widening from SR-73 to El Toro Road

Location of Jurisdictional and Non-Jurisdictional Areas

SOURCE: Eagle Aerial (2011); LSA (11/2011); TransSystem (3/13/2012)

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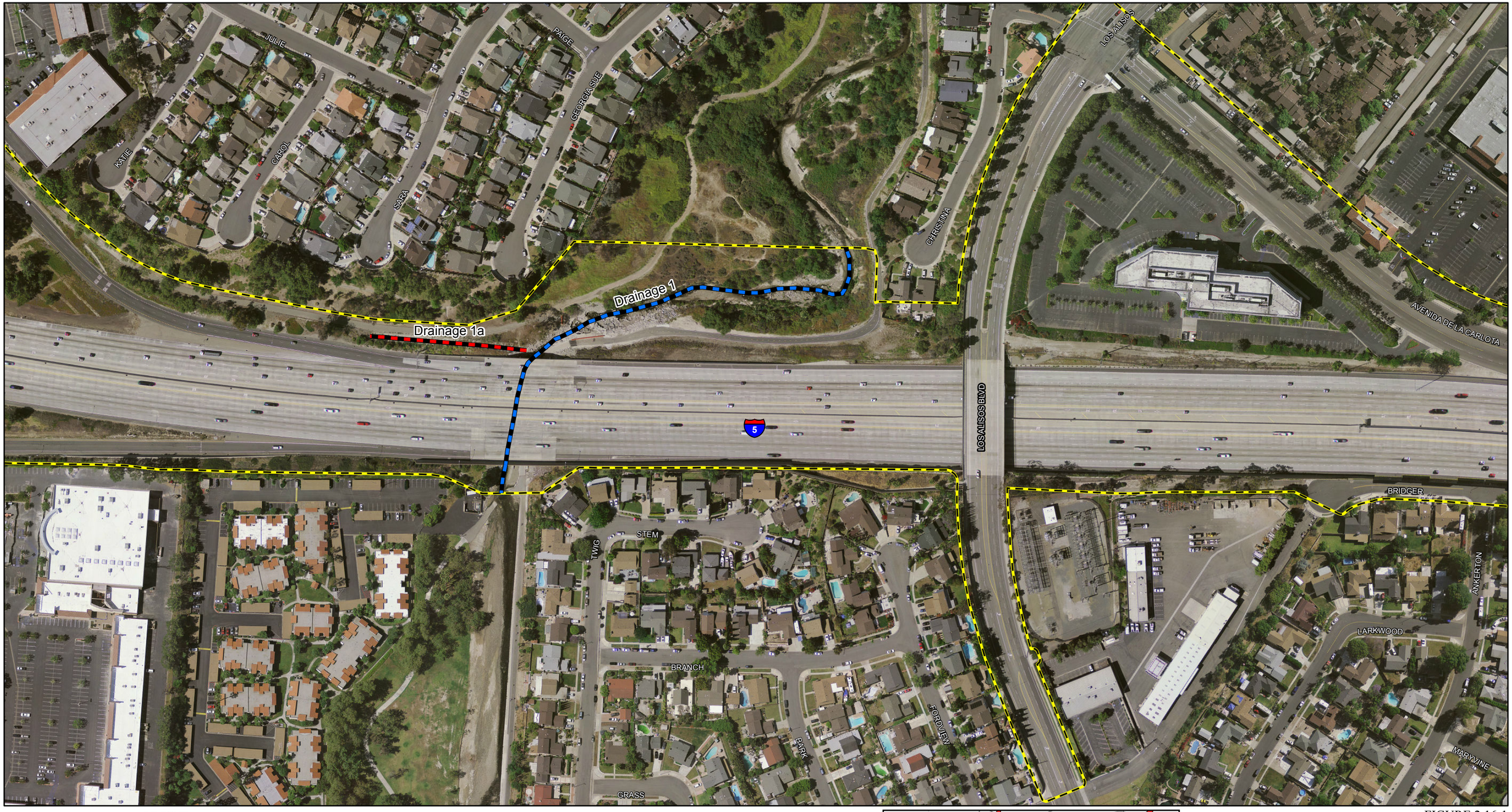

LEGEND

Biological Study Area

Jurisdictional Drainage (with ID)

Non-Jurisdictional Drainage (with ID)

0 100 200
FEET

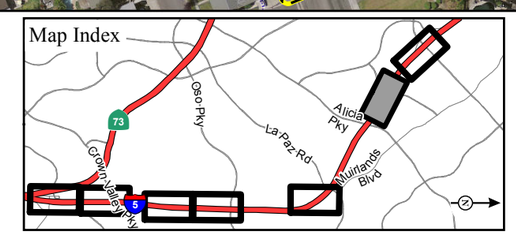

FIGURE 2.16-1
Sheet 6 of 7

I-5 Widening from SR-73 to El Toro Road

Location of Jurisdictional and Non-Jurisdictional Areas

SOURCE: Eagle Aerial (2011); LSA (11/2011); TransSystem (3/13/2012)

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LEGEND

- Biological Study Area
- Jurisdictional Drainage (with ID)
- Non-Jurisdictional Drainage (with ID)

0 100 200
FEET

SOURCE: Eagle Aerial (2011); LSA (11/2011); TransSystem (3/13/2012)

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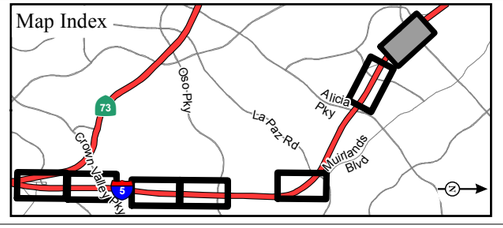

FIGURE 2.16-1
Sheet 7 of 7

I-5 Widening from SR-73 to El Toro Road

Location of Jurisdictional and Non-Jurisdictional Areas

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Drainage 5

CAMINO CAPISTRANO

Drainage 5

Drainage 4

5

Drainage 7

CAPE

GETTY

MARGUERITE PKWY

CROWN VALLEY PKWY

LEGEND

Biological Study Area

Sample Pit

CDFG Jurisdiction

Corps Jurisdiction

Wetland Waters of the U.S.

Nonwetland Waters of the U.S.

0 100 200

FEET

SOURCE: Eagle Aerial (2011); LSA (11/2011); TransSystem (3/13/2012)

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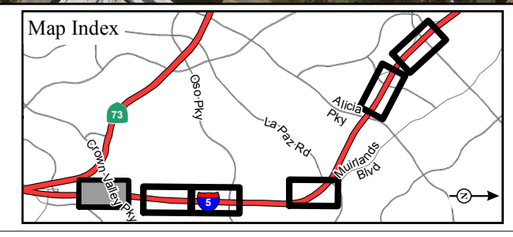

FIGURE 2.16-2

Sheet 1 of 6

I-5 Widening from SR-73 to El Toro Road

Jurisdictional Areas

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CABOT
VISTA VIEJO
CAMINO CAPISTRANO
SP 2
SP 1
Drainage 3
5
PUERTA REAL
VIA GRANDE
MALLORCA
VIA DEL SOL
LAS RAMBLAS

LEGEND

Biological Study Area
Sample Pit
CDFG Jurisdiction

Corps Jurisdiction
Wetland Waters of the U.S.
Nonwetland Waters of the U.S.

0 100 200
FEET

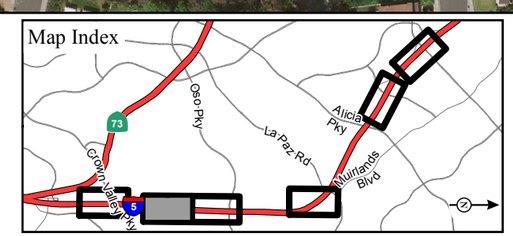

FIGURE 2.16-2
Sheet 2 of 6

I-5 Widening from SR-73 to El Toro Road
Jurisdictional Areas

SOURCE: Eagle Aerial (2011); LSA (11/2011); TransSystem (3/13/2012)
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LEGEND

- Biological Study Area
- Sample Pit
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters of the U.S.
- Nonwetland Waters of the U.S.

0 100 200
FEET

SOURCE: Eagle Aerial (2011); LSA (11/2011); TransSystem (3/13/2012)

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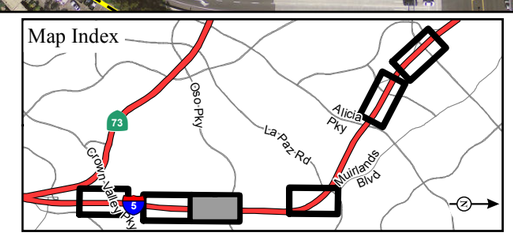

FIGURE 2.16-2
Sheet 3 of 6

I-5 Widening from SR-73 to El Toro Road

Jurisdictional Areas

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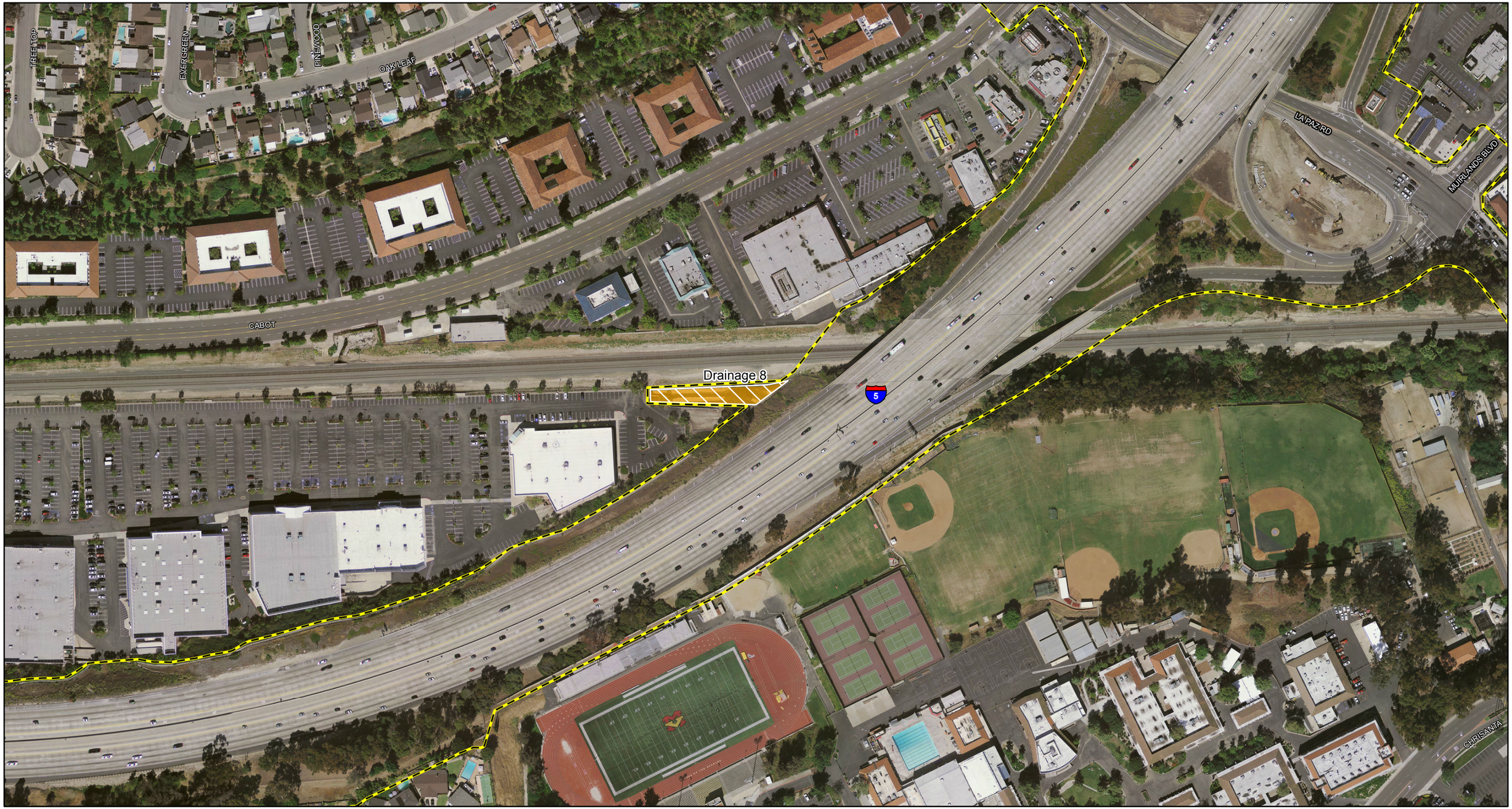

LEGEND

Biological Study Area

Sample Pit

CDFG Jurisdiction

Corps Jurisdiction

Wetland Waters of the U.S.

Nonwetland Waters of the U.S.

0 100 200
FEET

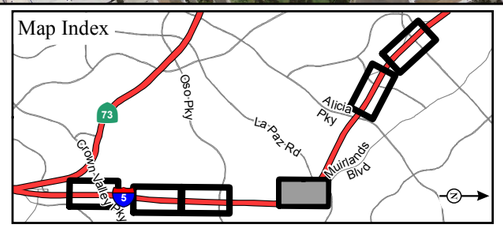

FIGURE 2.16-2
Sheet 4 of 6

SOURCE: Eagle Aerial (2011); LSA (11/2011); TransSystem (3/13/2012)

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I-5 Widening from SR-73 to El Toro Road

Jurisdictional Areas

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Drainage 1

LEGEND

Biological Study Area

Sample Pit

CDFG Jurisdiction

Corps Jurisdiction

Wetland Waters of the U.S.

Nonwetland Waters of the U.S.

0 100 200
FEET

SOURCE: Eagle Aerial (2011); LSA (11/2011); TransSystem (3/13/2012)

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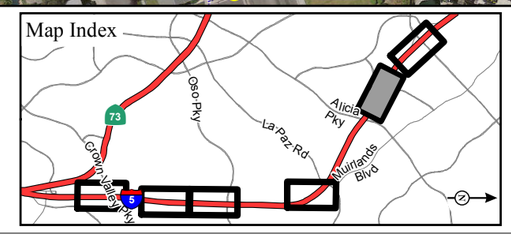

FIGURE 2.16-2
Sheet 5 of 6

I-5 Widening from SR-73 to El Toro Road

Jurisdictional Areas

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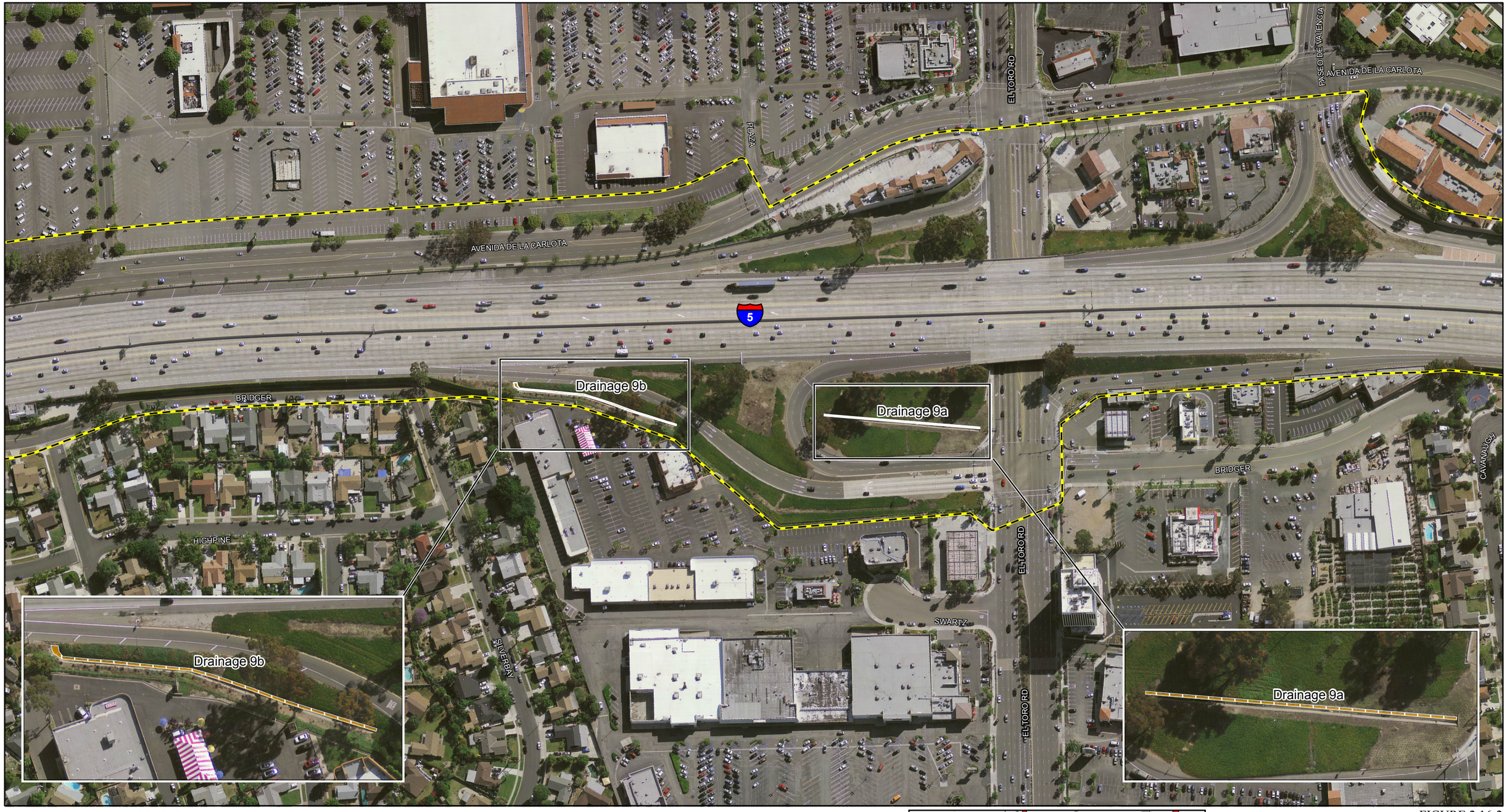

LEGEND

- Biological Study Area
- Sample Pit
- CDFG Jurisdiction

Corps Jurisdiction

- Wetland Waters of the U.S.
- Nonwetland Waters of the U.S.

0 100 200
FEET

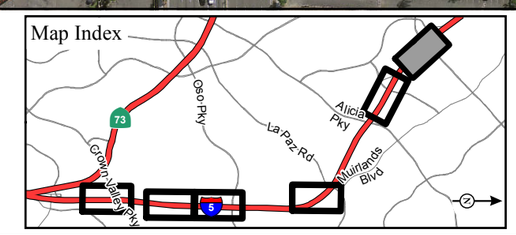

FIGURE 2.16-2
Sheet 6 of 6

I-5 Widening from SR-73 to El Toro Road

Jurisdictional Areas

SOURCE: Eagle Aerial (2011); LSA (11/2011); TransSystem (3/13/2012)

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