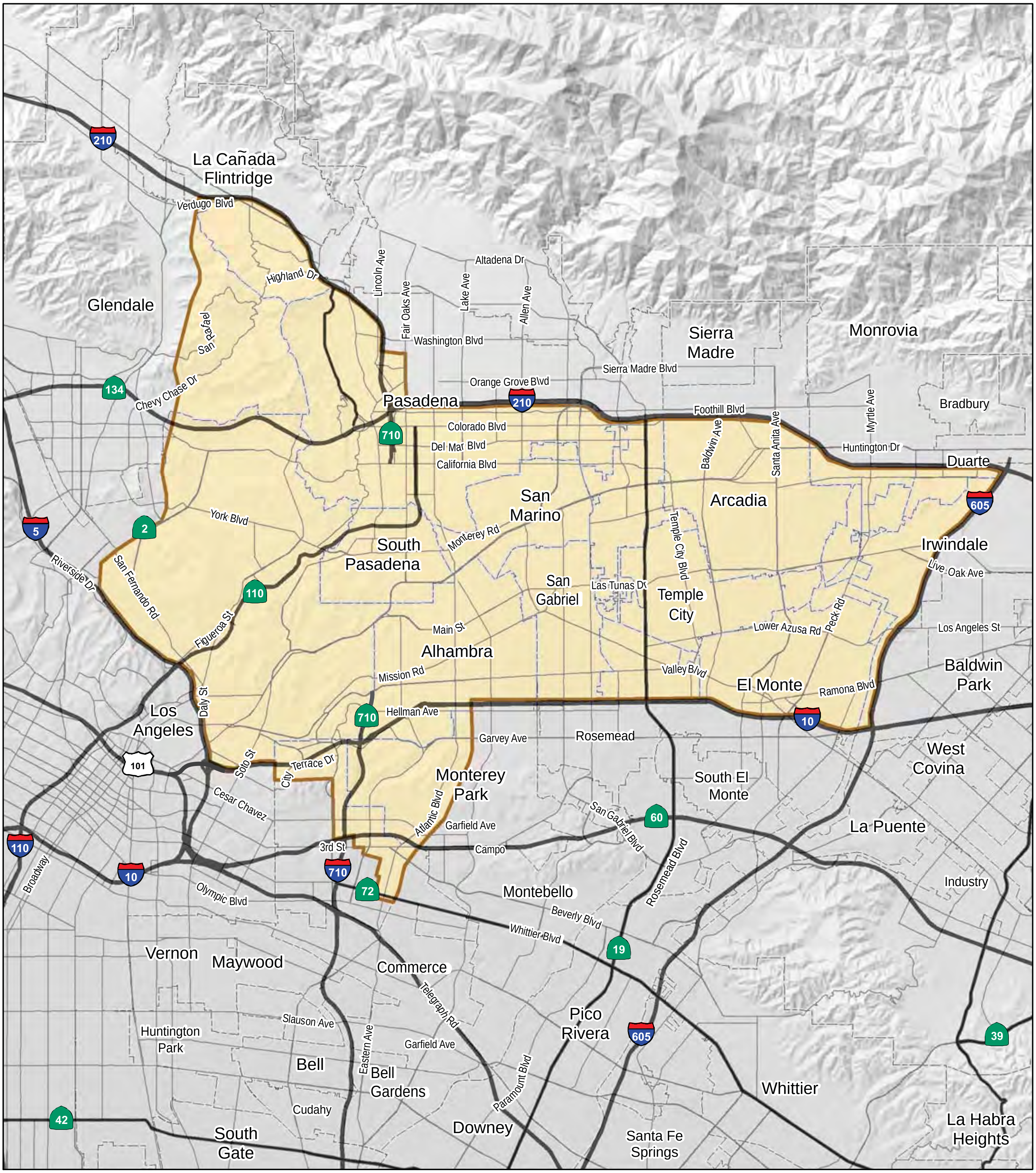
Appendix A NES Figures



LEGEND

SR 710 North Study Area

FIGURE 1

N

0 1.25 2.5

MILES

SOURCE: ESRI (2008); LSA (2013)

SR 710 North Study

Project Location

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

I:\CHM1105\G\P&N\Project Location.cdr (10/27/14)

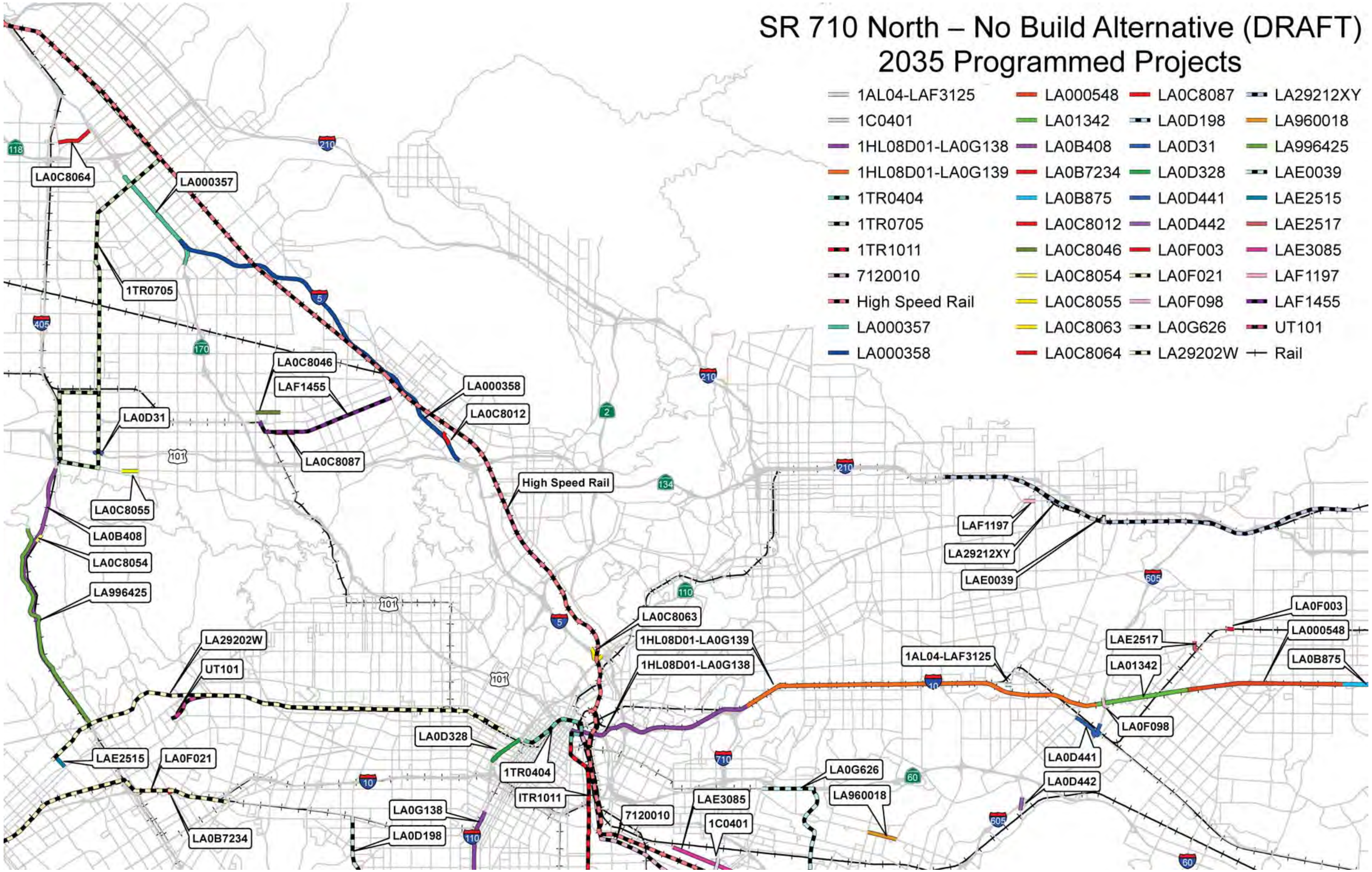


FIGURE 2

NOT TO SCALE

SOURCE: CH2M HILL (2013)

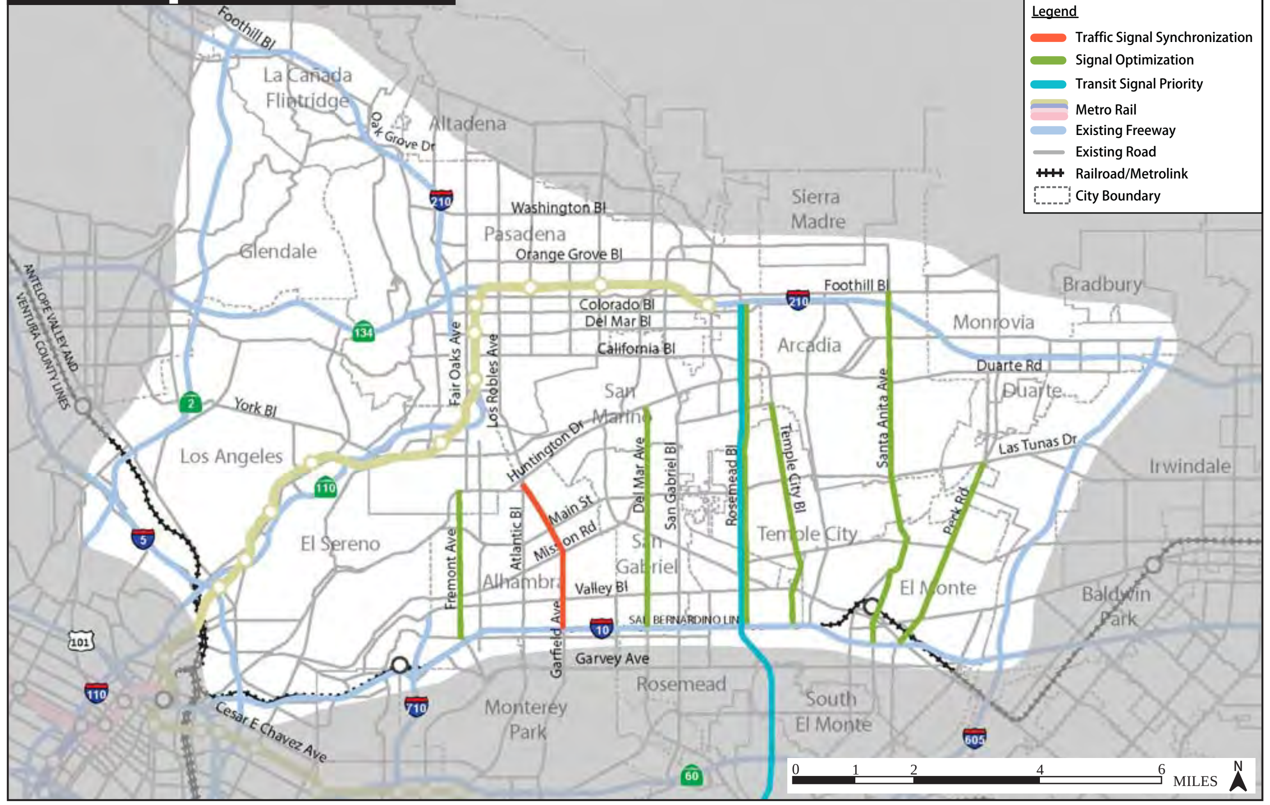
SR 710 North Study

No Build Alternative

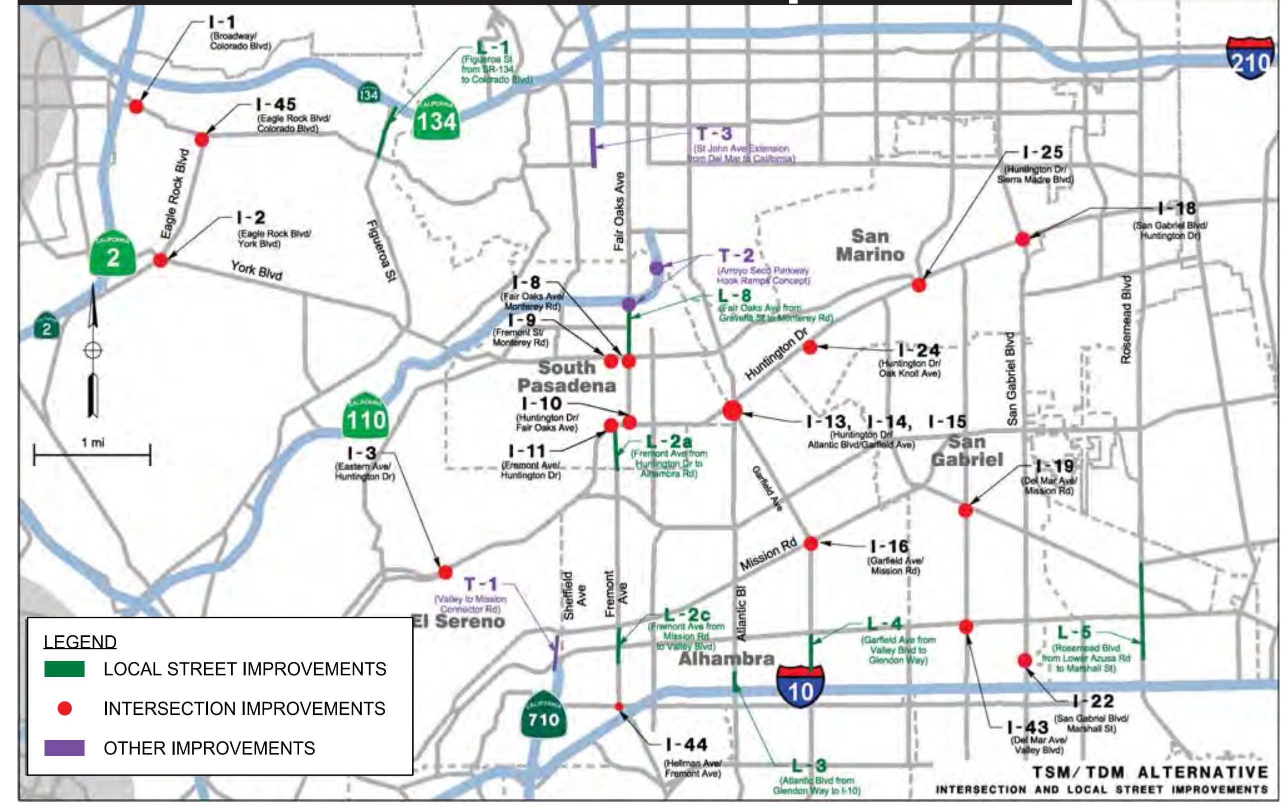
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

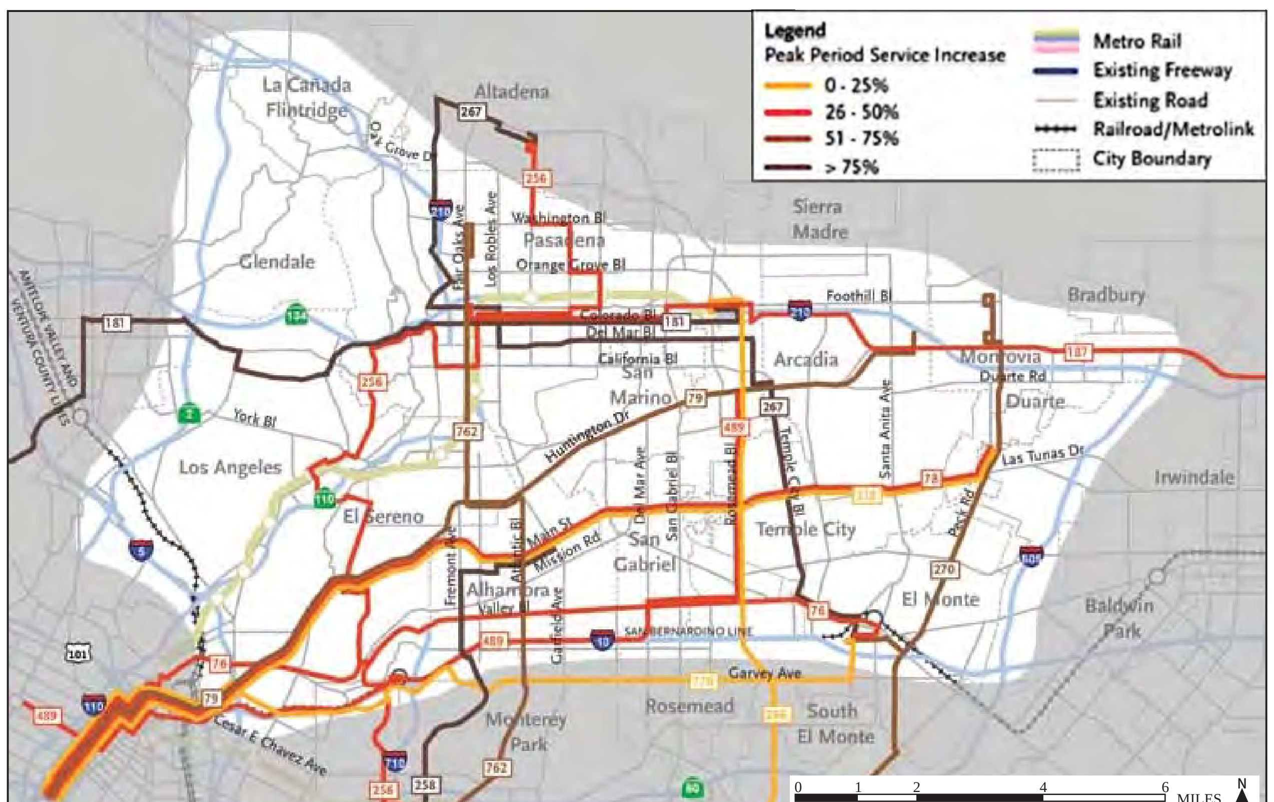
I:\CHM1105\G\No Build Alt.cdr (10/27/14)

ITS Improvements



Local Street and Intersection Improvements





Transit Refinement

Active Transportation

FIGURE 3

SR 710 North Study

TSM/TDM Alternative

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: CH2M HILL (2013)
I:\CHM1105\G\TSM_TDM Alt.cdr (10/27/14)

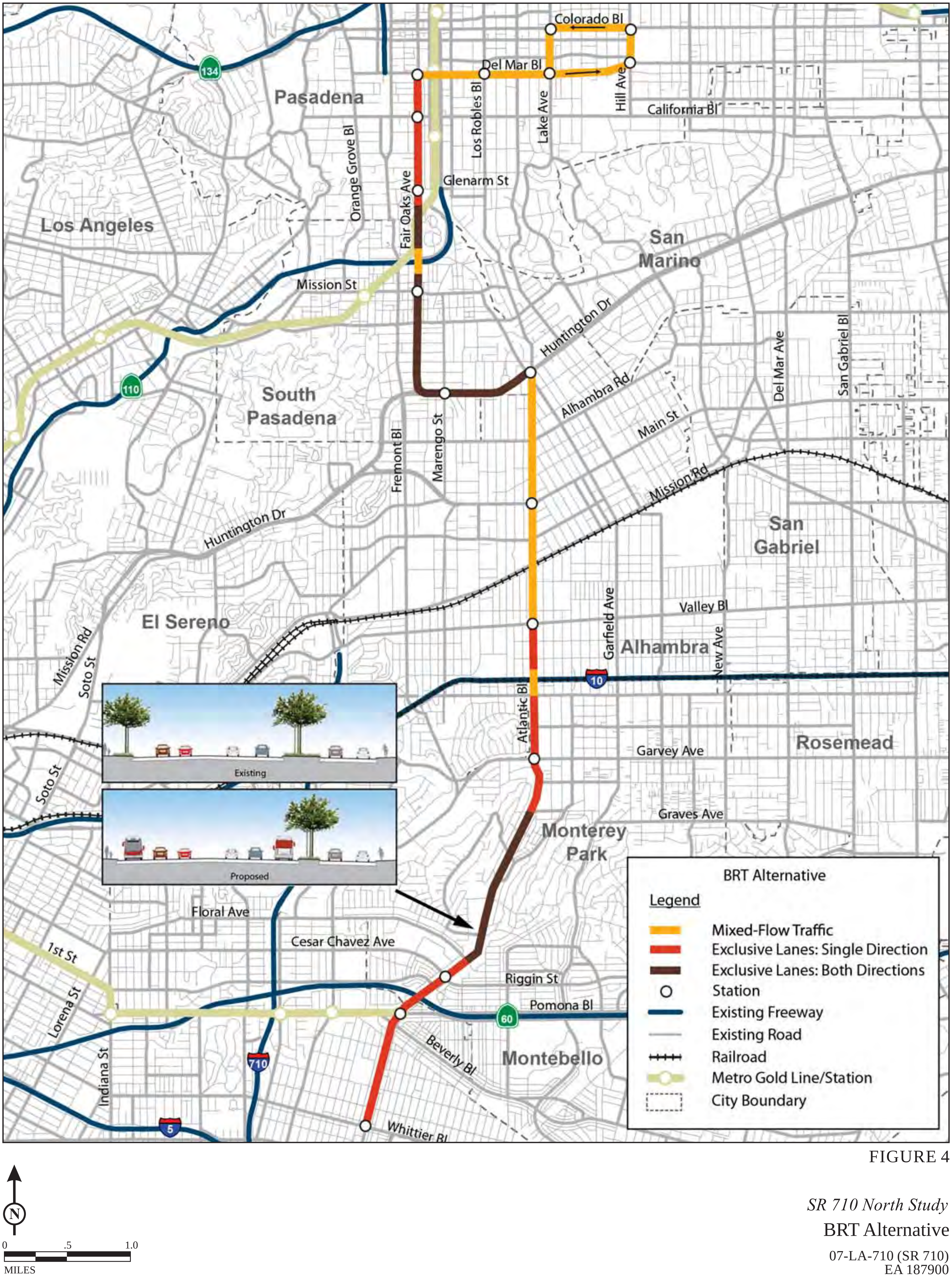


FIGURE 4

SOURCE: CH2M HILL (2013)

I:\CHM1105\G\BRT Alternative.cdr (10/27/14)

SR 710 North Study

BRT Alternative

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

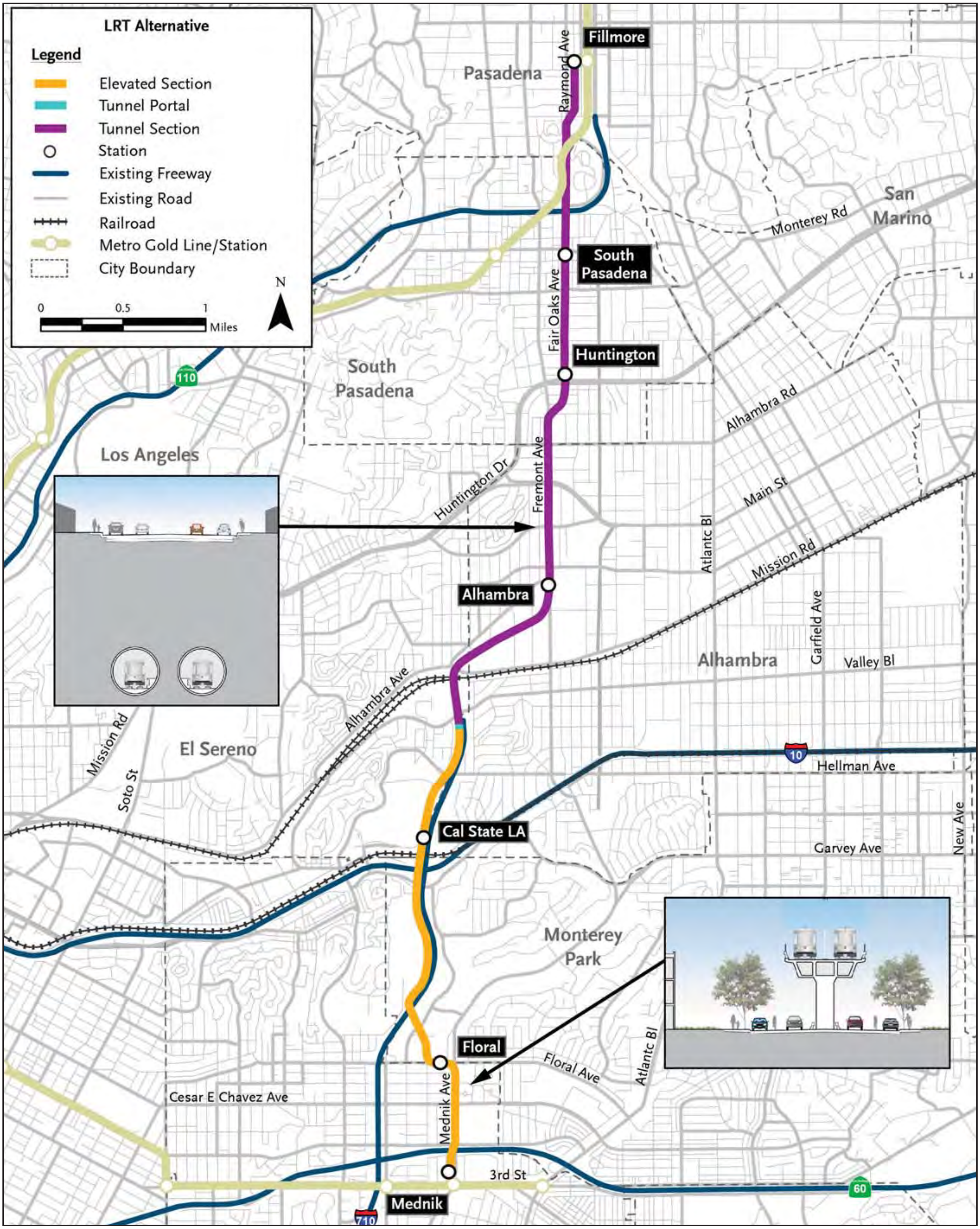


FIGURE 5

SR 710 North Study

LRT Alternative

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

0 .5 1
MILES

SOURCE: AECOM (2013)

I:\CHM1105\G\LRT Alternative.cdr (10/27/14)

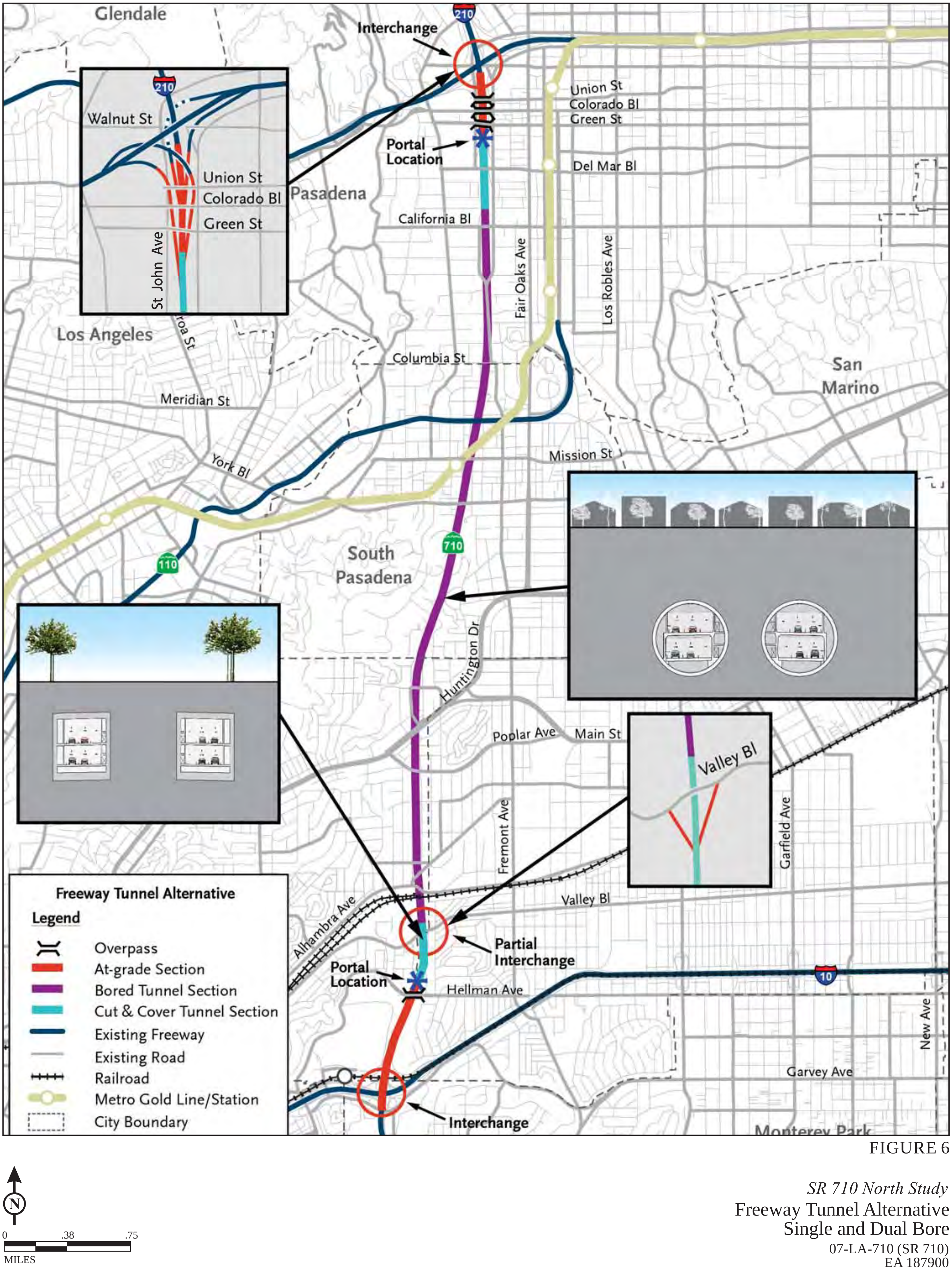


FIGURE 6

SR 710 North Study

Freeway Tunnel Alternative
Single and Dual Bore

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: CH2M HILL (2013)

I:\CHM1105\G\Freeway Tunnel Alt Single&Dual Bore.cdr (10/27/14)

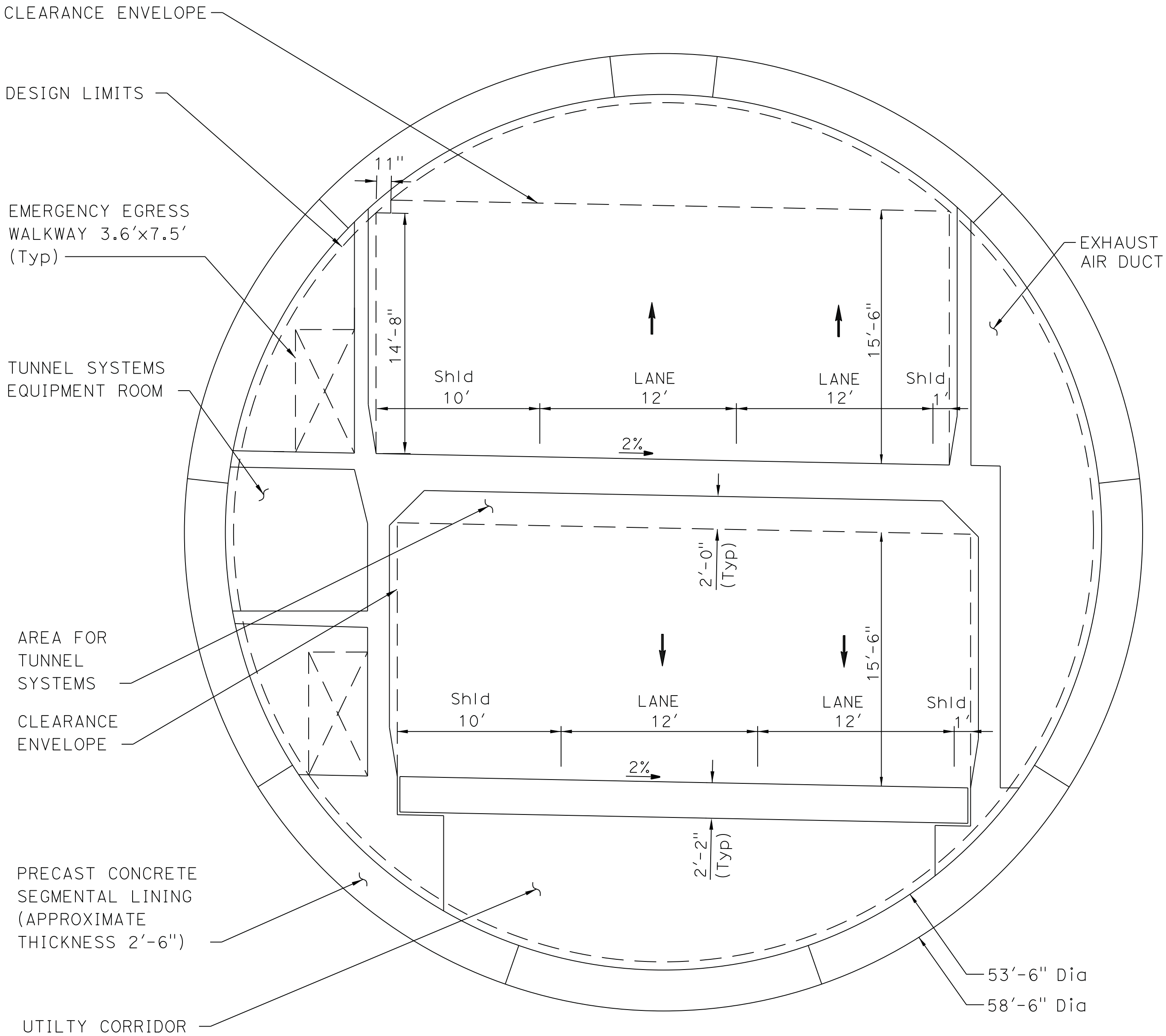


FIGURE 7

SR 710 North Study

Freeway Tunnel Alternative
Single Bore Cross Section

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: CH2M HILL (2014)

I:\CHM1105\G\Single Bore Cross Section.cdr (10/27/14)

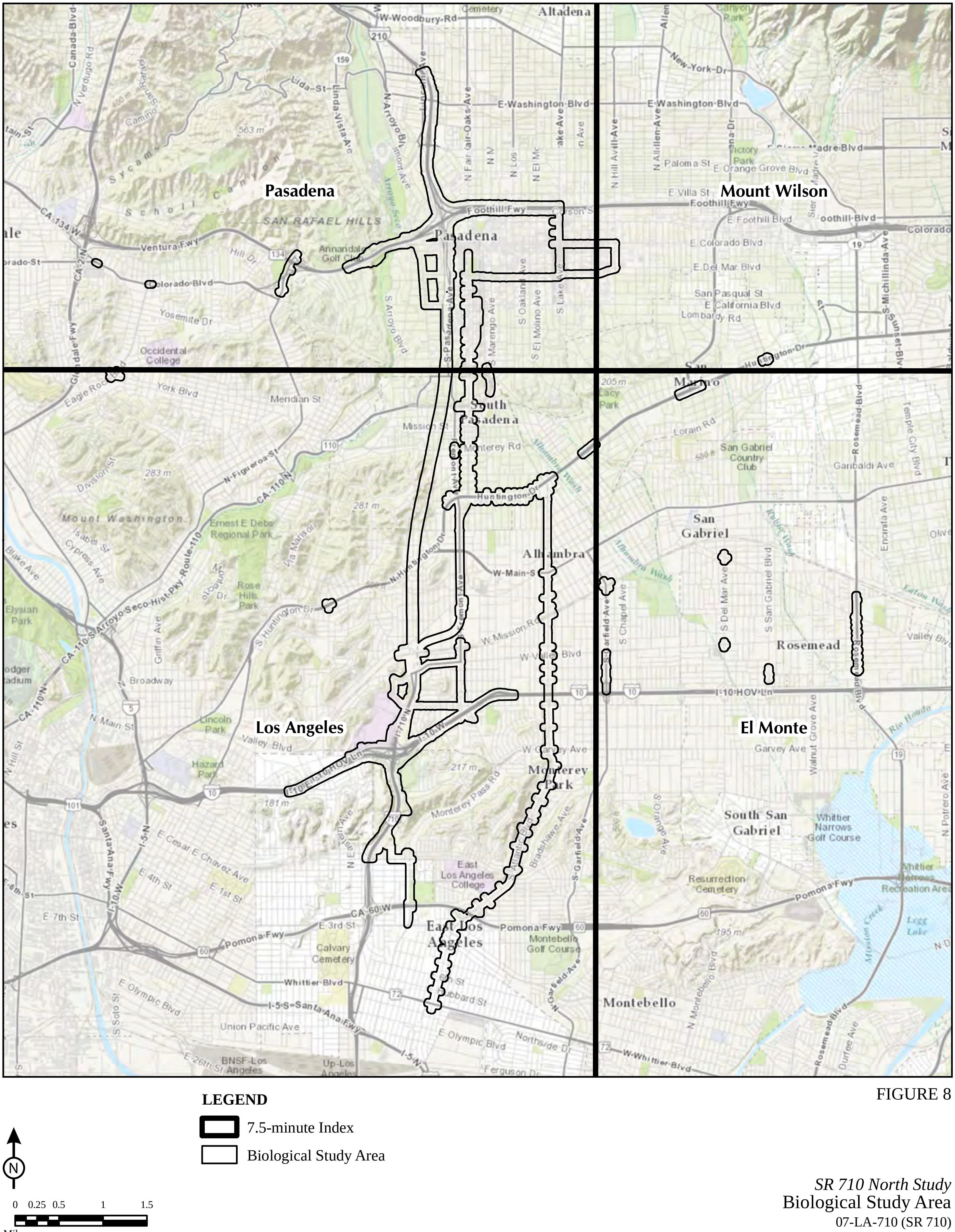
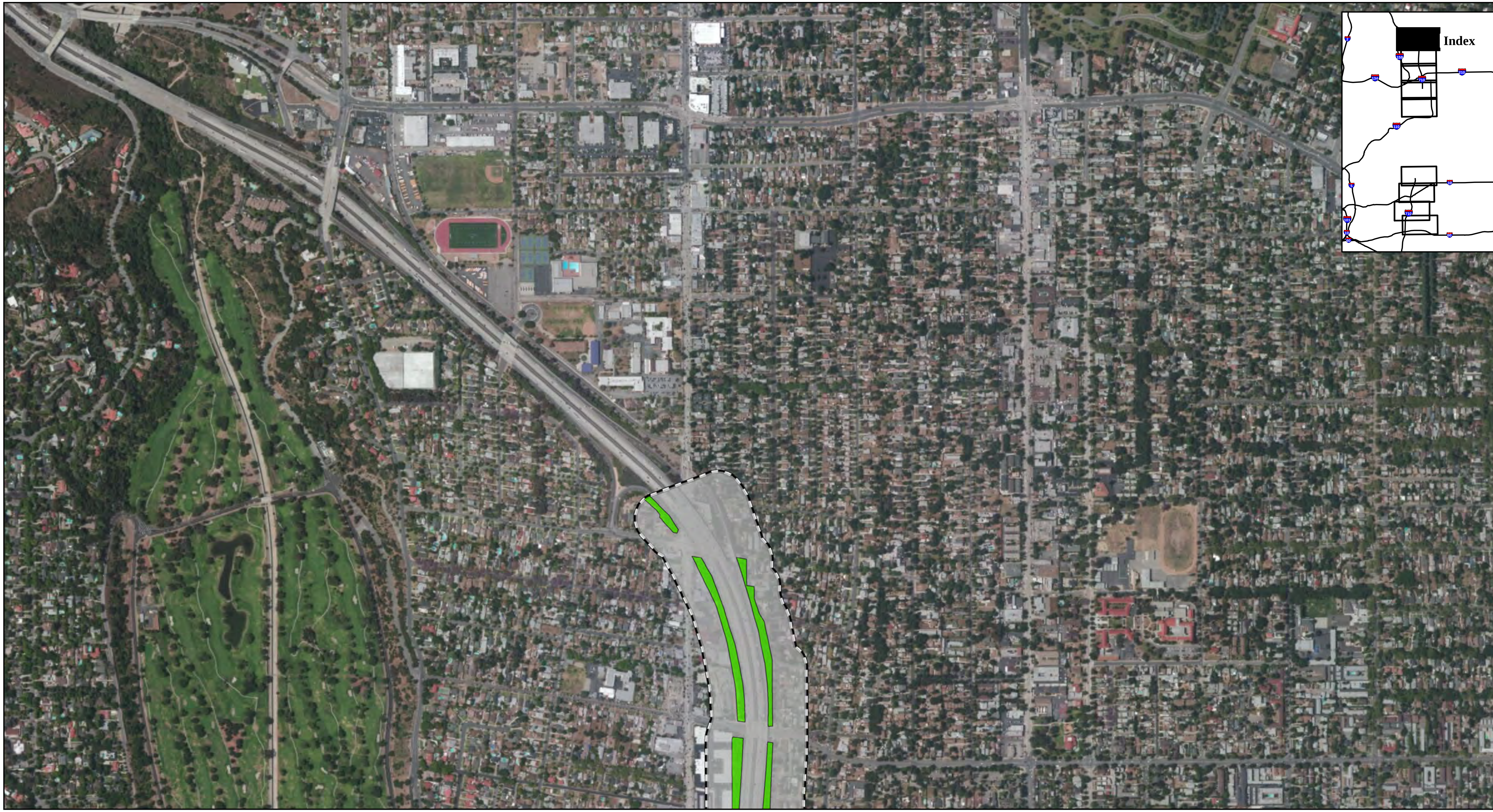


FIGURE 8

SR 710 North Study
Biological Study Area
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\BiologicalStudyArea_updated.mxd (10/28/2014)



LEGEND

Stream
Biological Study Areas

Plant Communities

Arroyo Willow Thicket
Black Cottonwood Forest
Coast Live Oak Woodland
Disturbed/Developed
Giant Reed Breaks
Laurel Sumac Scrub
Non-Native Grassland
Non-Native Riparian Woodland
Non-Native Woodland
Wetland Complex
White Alder Groves

N

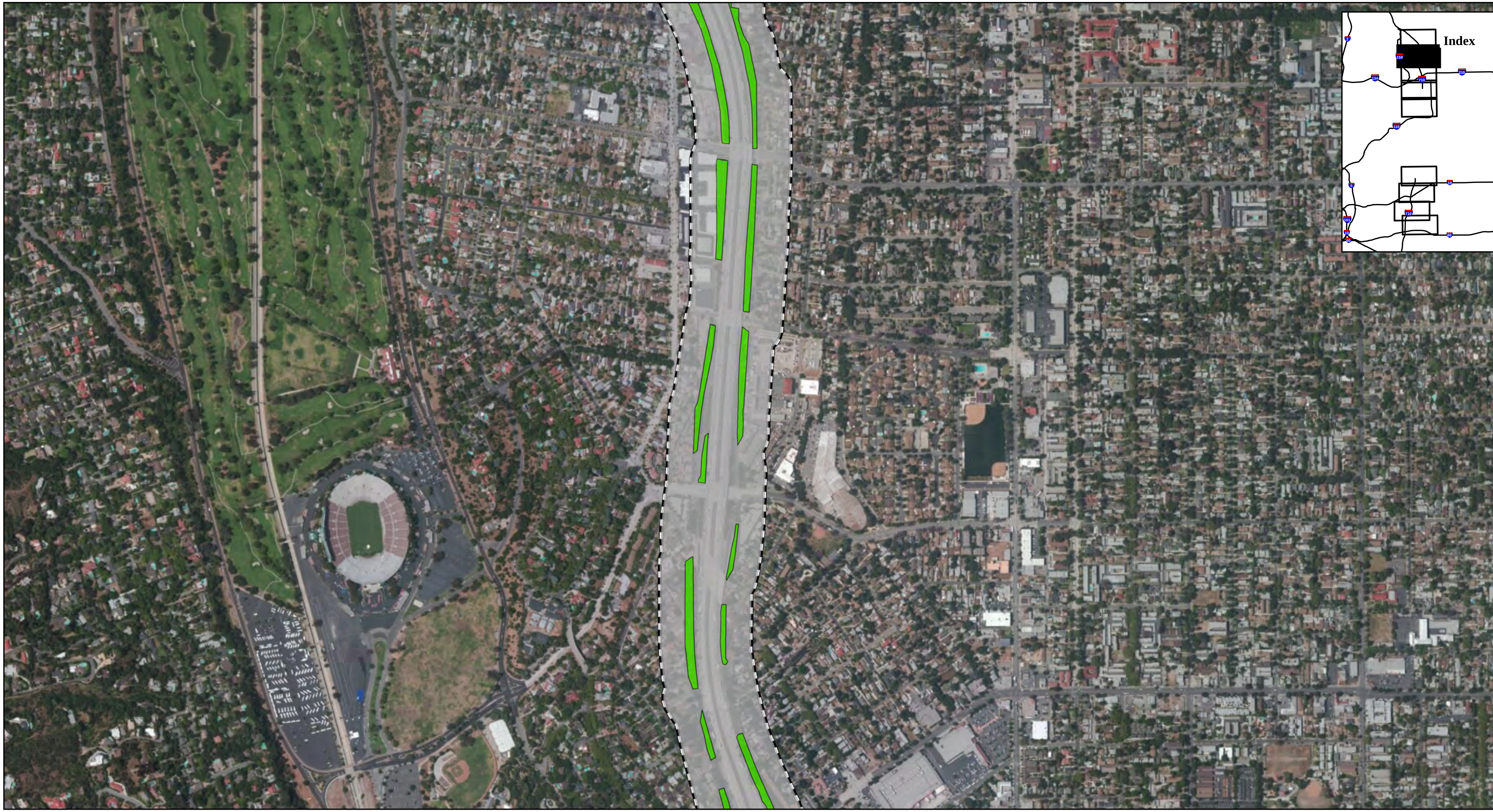
0 250 500 1,000
Feet

FIGURE 9.1

Page 1 of 9

SR 710 North Study
Plant Community Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); CH2MHill (5/2013); AECOM (4/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\PlantCommunity_index.mxd (10/28/2014)



LEGEND

Stream
Biological Study Areas

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

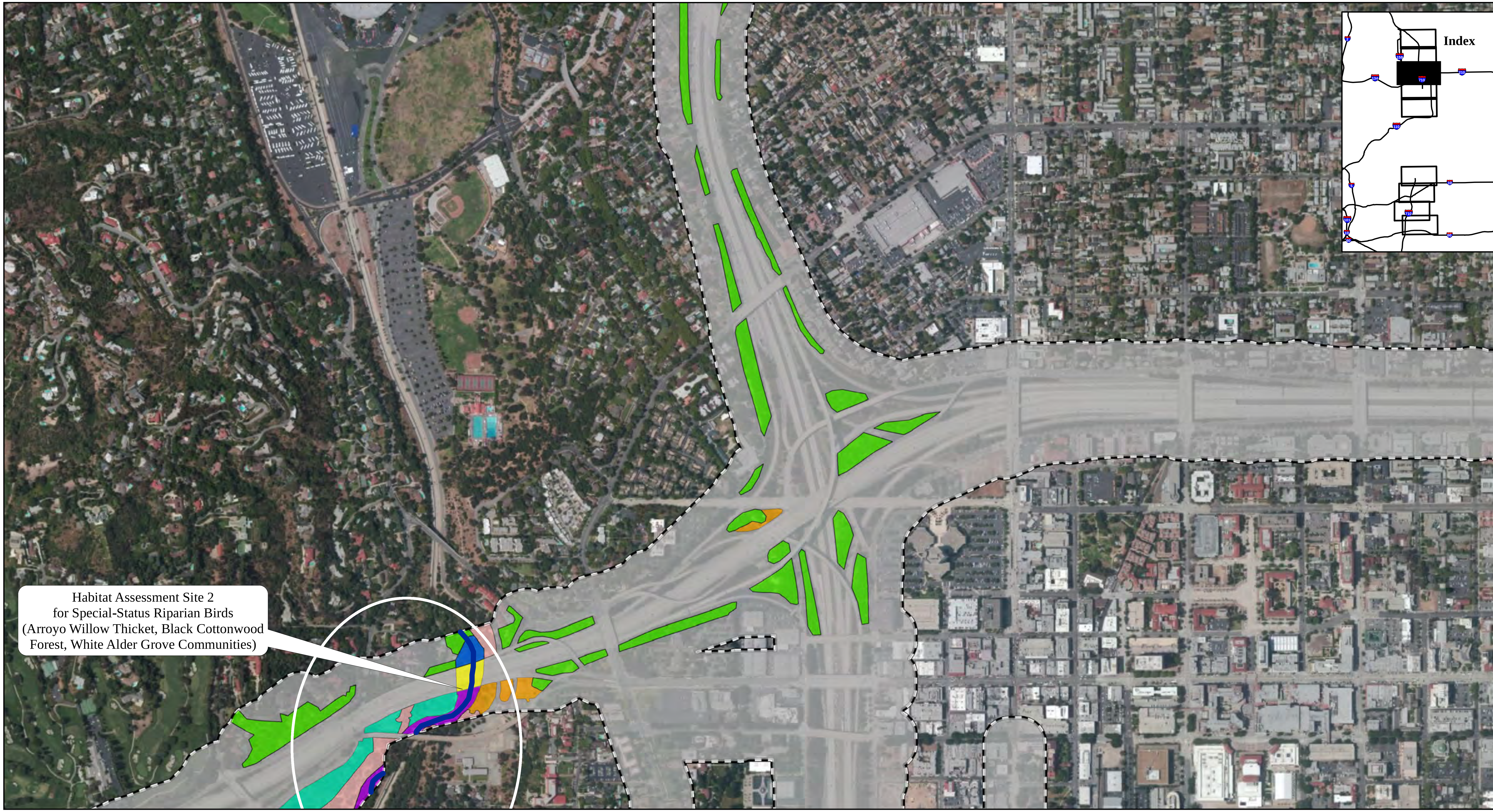
N

0 250 500 1,000
Feet

FIGURE 9.2
Page 2 of 9

SR 710 North Study
Plant Community Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); CH2MHill (5/2013); AECOM (4/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\PlantCommunity_index.mxd (10/28/2014)



LEGEND

Stream

Biological Study Areas

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 250 500 1,000

Feet

FIGURE 9.3

Page 3 of 9

SR 710 North Study

Plant Community Map

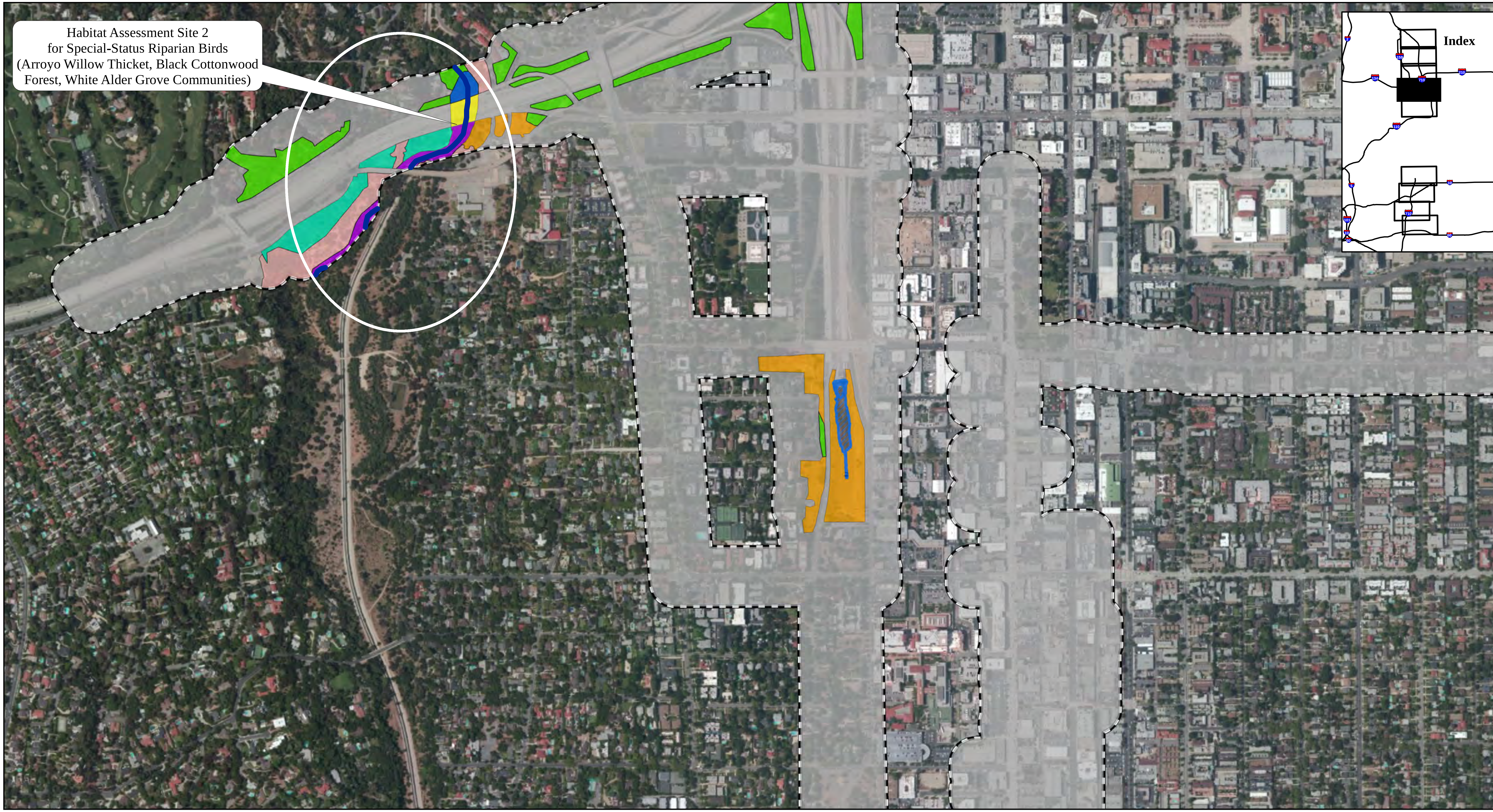
07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Bing Maps(circa 2008); CH2MHill (5/2013); AECOM (4/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\PlantCommunity_index.mxd (10/28/2014)



LEGEND

Stream

Biological Study Areas

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

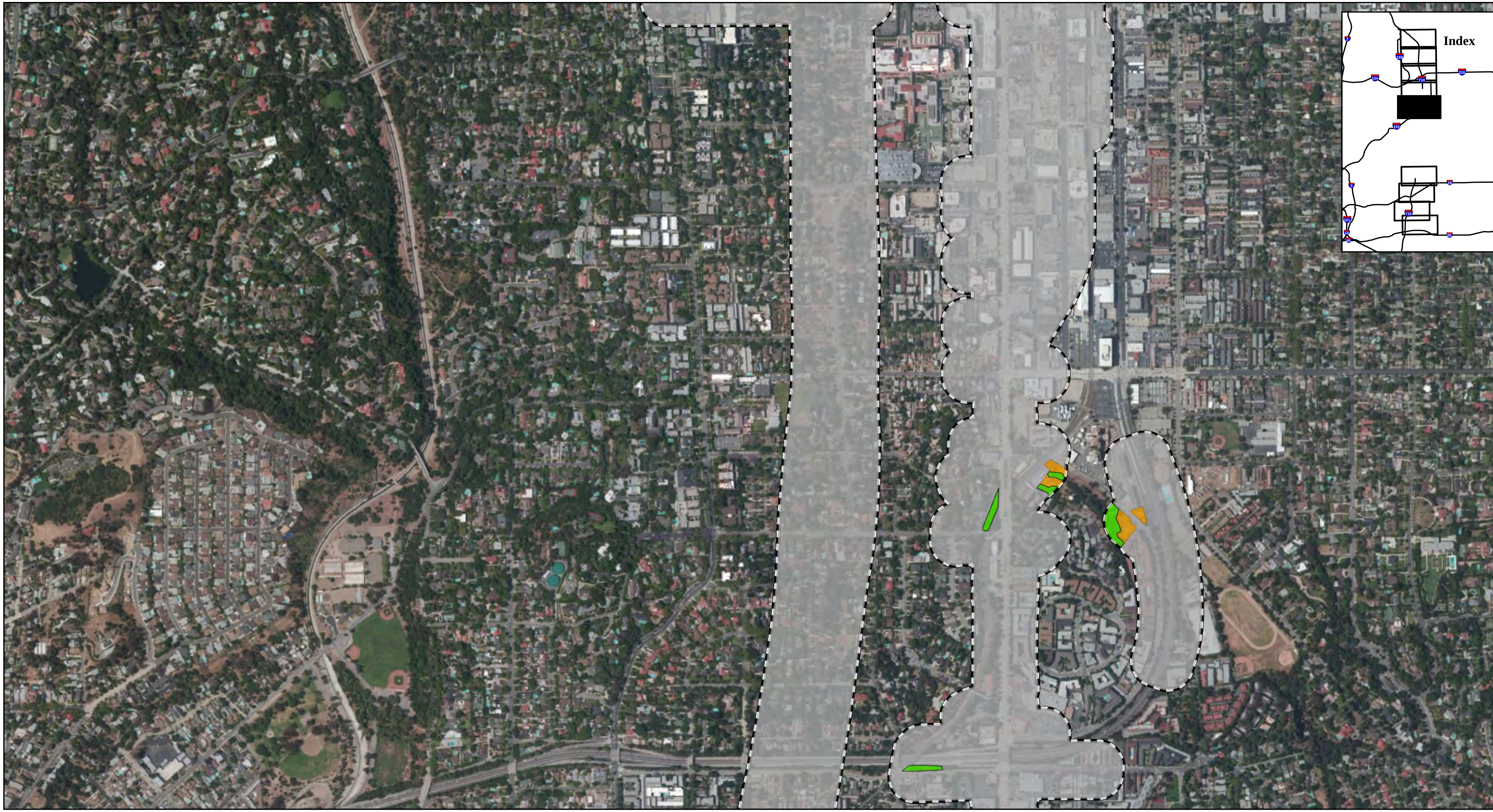
N

0 250 500 1,000
Feet

SOURCE: Bing Maps(circa 2008); CH2MHill (5/2013); AECOM (4/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\PlantCommunity_index.mxd (10/28/2014)

FIGURE 9.4

SR 710 North Study
Plant Community Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191



LEGEND

Stream
Biological Study Areas

Plant Communities

Arroyo Willow Thicket
Black Cottonwood Forest
Coast Live Oak Woodland
Disturbed/Developed
Giant Reed Breaks
Laurel Sumac Scrub
Non-Native Grassland
Non-Native Riparian Woodland
Non-Native Woodland
Wetland Complex
White Alder Groves

N

0 250 500 1,000
Feet

SOURCE: Bing Maps(circa 2008); CH2MHill (5/2013); AECOM (4/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\PlantCommunity_index.mxd (10/28/2014)

FIGURE 9.5
Page 5 of 9

SR 710 North Study
Plant Community Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

LEGEND

- Stream
- Biological Study Areas

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 250 500 1,000
Feet

FIGURE 9.6
Page 6 of 9

SR 710 North Study
Plant Community Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); CH2MHill (5/2013); AECOM (4/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\PlantCommunity_index.mxd (10/28/2014)

LEGEND

- Stream
- Biological Study Areas

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 250 500 1,000
Feet

FIGURE 9.7

Page 7 of 9

SR 710 North Study

Plant Community Map

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Bing Maps(circa 2008); CH2MHill (5/2013); AECOM (4/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\PlantCommunity_index.mxd (10/28/2014)

LEGEND

Stream

Biological Study Areas

Plant Communities

Arroyo Willow Thicket
Black Cottonwood Forest
Coast Live Oak Woodland
Disturbed/Developed
Giant Reed Breaks
Laurel Sumac Scrub
Non-Native Grassland
Non-Native Riparian Woodland
Non-Native Woodland
Wetland Complex
White Alder Groves

N

0 250 500 1,000
Feet

FIGURE 9.8

SR 710 North Study
Plant Community Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); CH2MHill (5/2013); AECOM (4/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\PlantCommunity_pg8.mxd (10/28/2014)

LEGEND

- Stream
- Biological Study Areas

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 250 500 1,000
Feet

FIGURE 9.9

Page 9 of 9

SR 710 North Study

Plant Community Map

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Bing Maps(circa 2008); CH2MHill (5/2013); AECOM (4/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\PlantCommunity_index.mxd (10/28/2014)

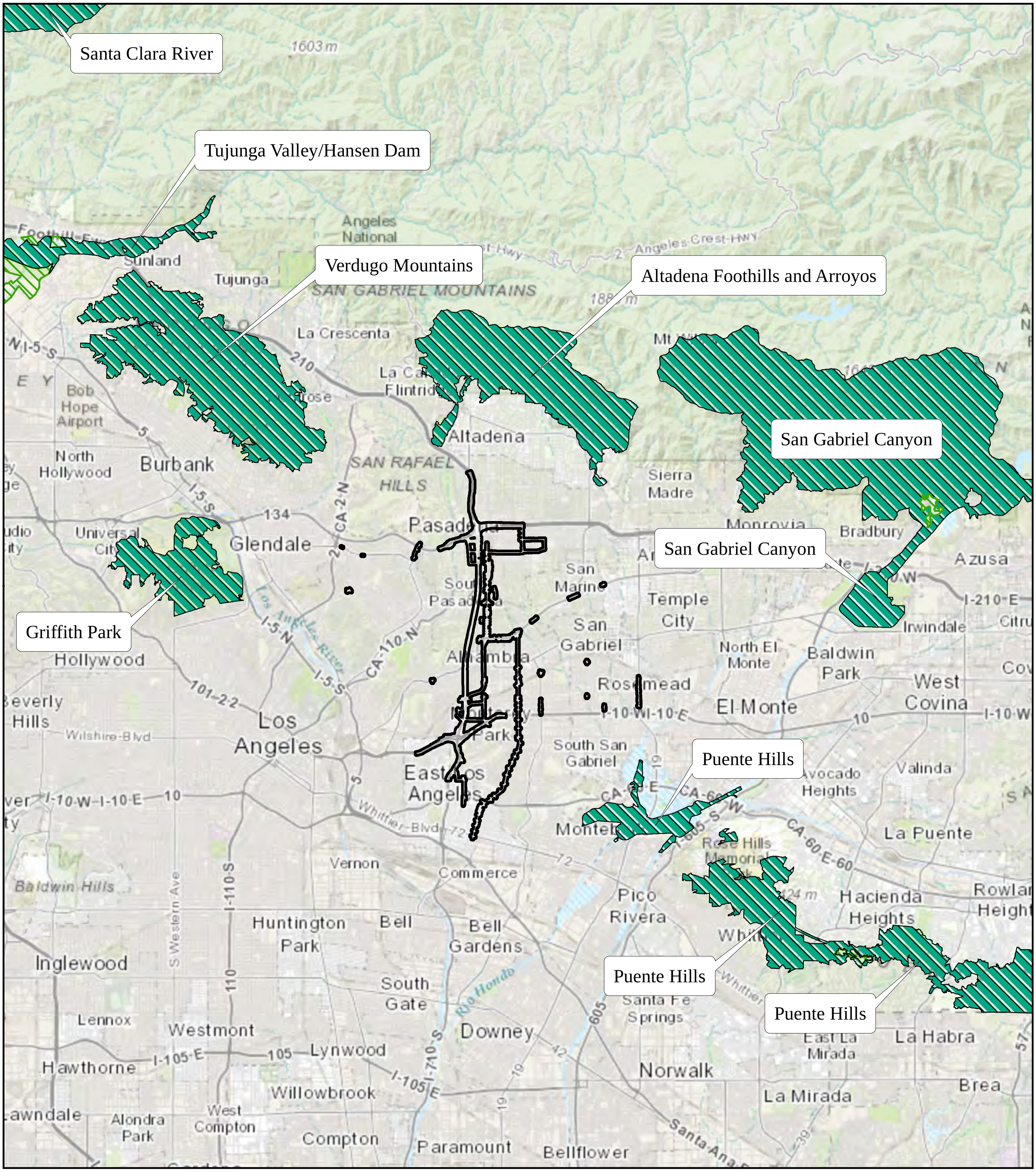


FIGURE 10

LEGEND

- Significant Ecological Area (Proposed)
- Ecological Transition Area (Proposed)
- Biological Study Area

N

0 1 2 4

Miles

SR 710 North Study

Significant Ecological Areas

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013); Los Angeles County

Q:\1282\SR_710\ArcProjects\BIO_NES\SignificantEcologicalAreas.mxd (10/28/2014)

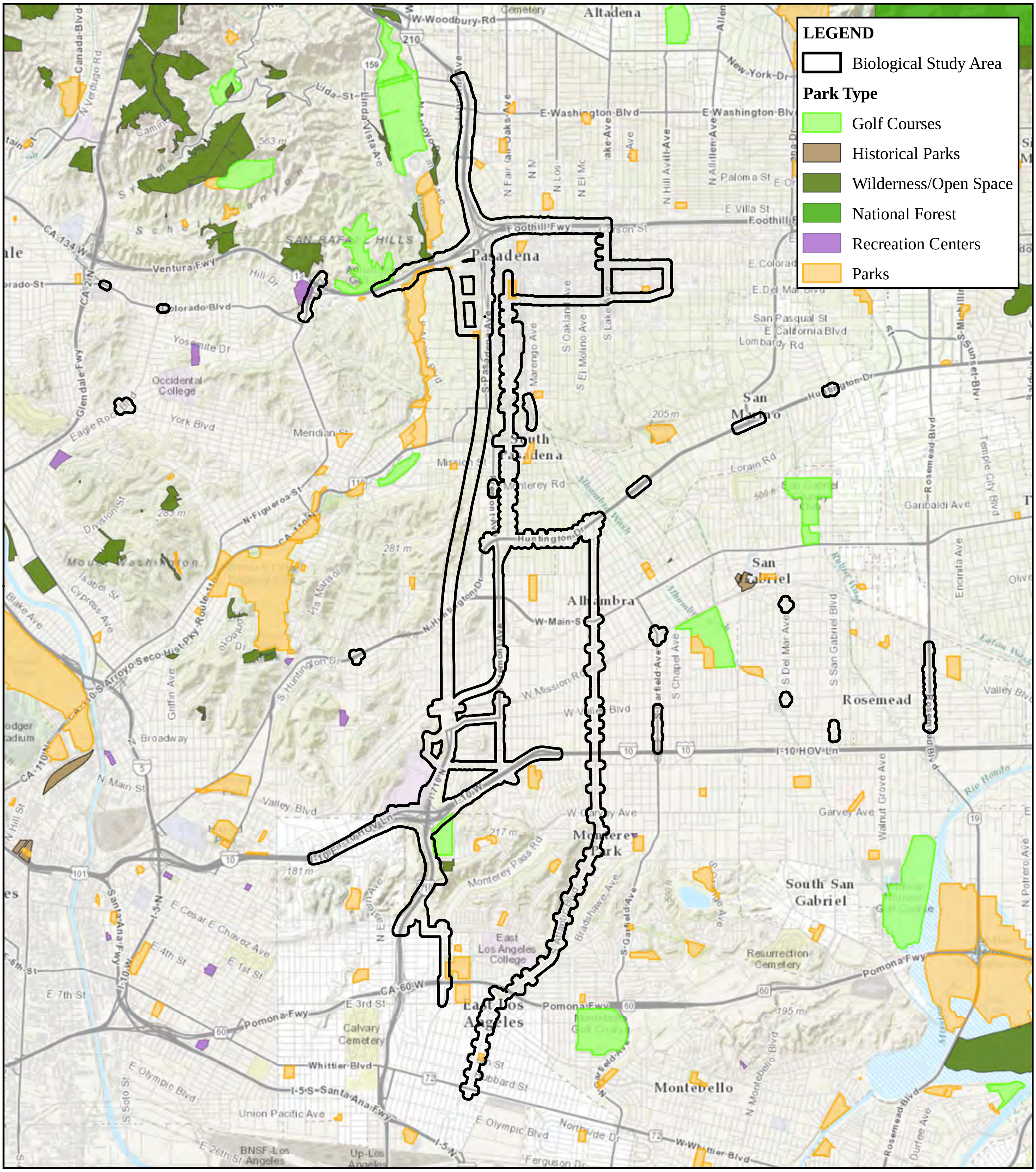
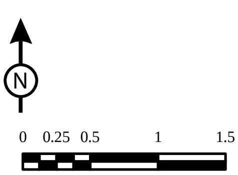


FIGURE 11



SR 710 North Study
Parks within the Proposed Project Vicinity
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013); Los Angeles County
Q:\1282\SR_710\ArcProjects\BIO_NES\Parks.mxd (10/28/2014)

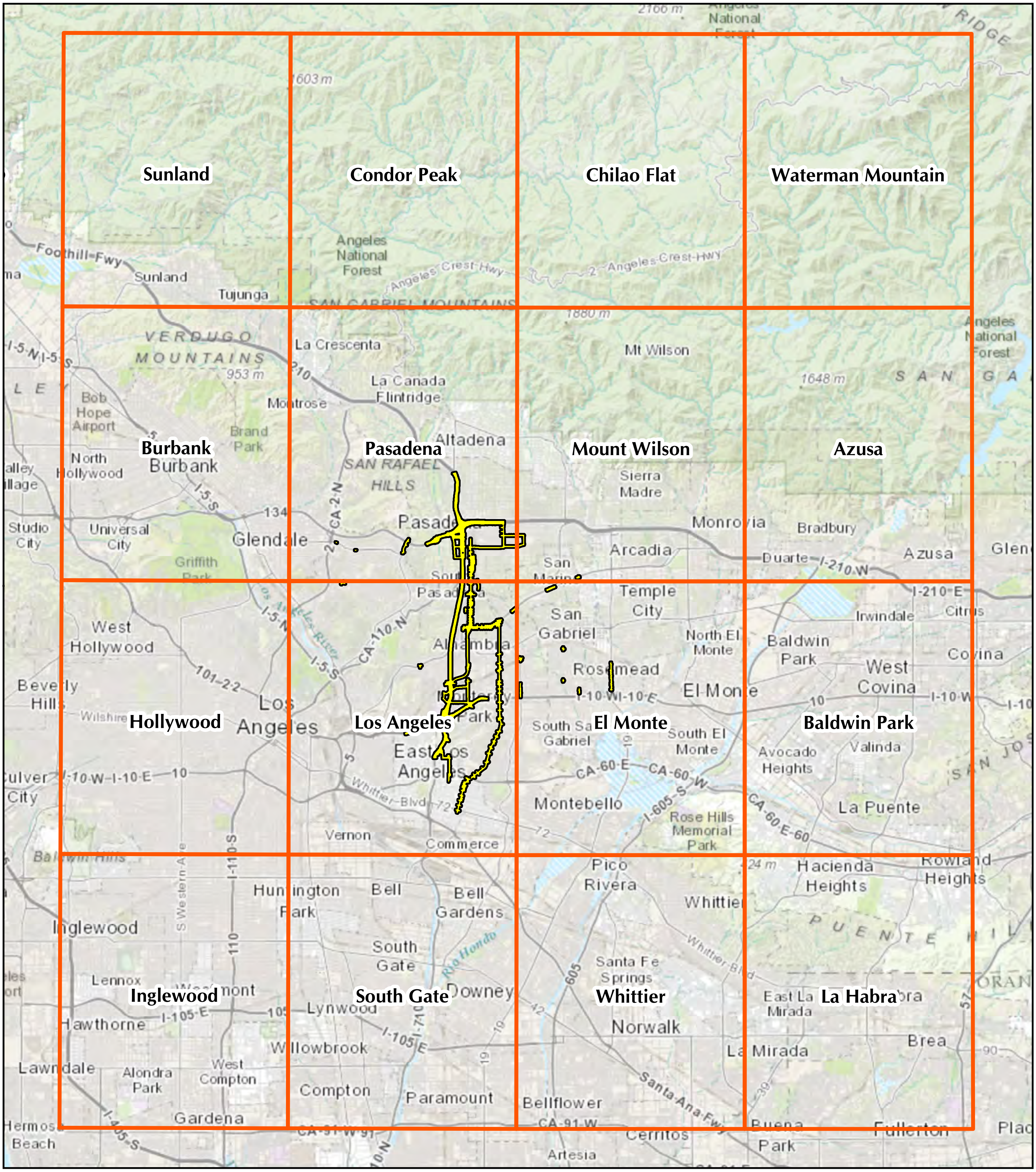


FIGURE 12

LEGEND

CNDDB Search Area 7.5-minute Quadrangles

Biological Study Area

N

0 2.5 5

Miles

SR 710 North Study

California Natural Diversity Database Search Area

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\CNDDB_SearchArea.mxd (10/28/2014)

LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

TSM/TDM Alternative Impacts
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 50 100 200 300
Feet

FIGURE 13.1
Page 1 of 4

SR 710 North Study
TSM/TDM Alternative Impacts to Plants and Plant Communities
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
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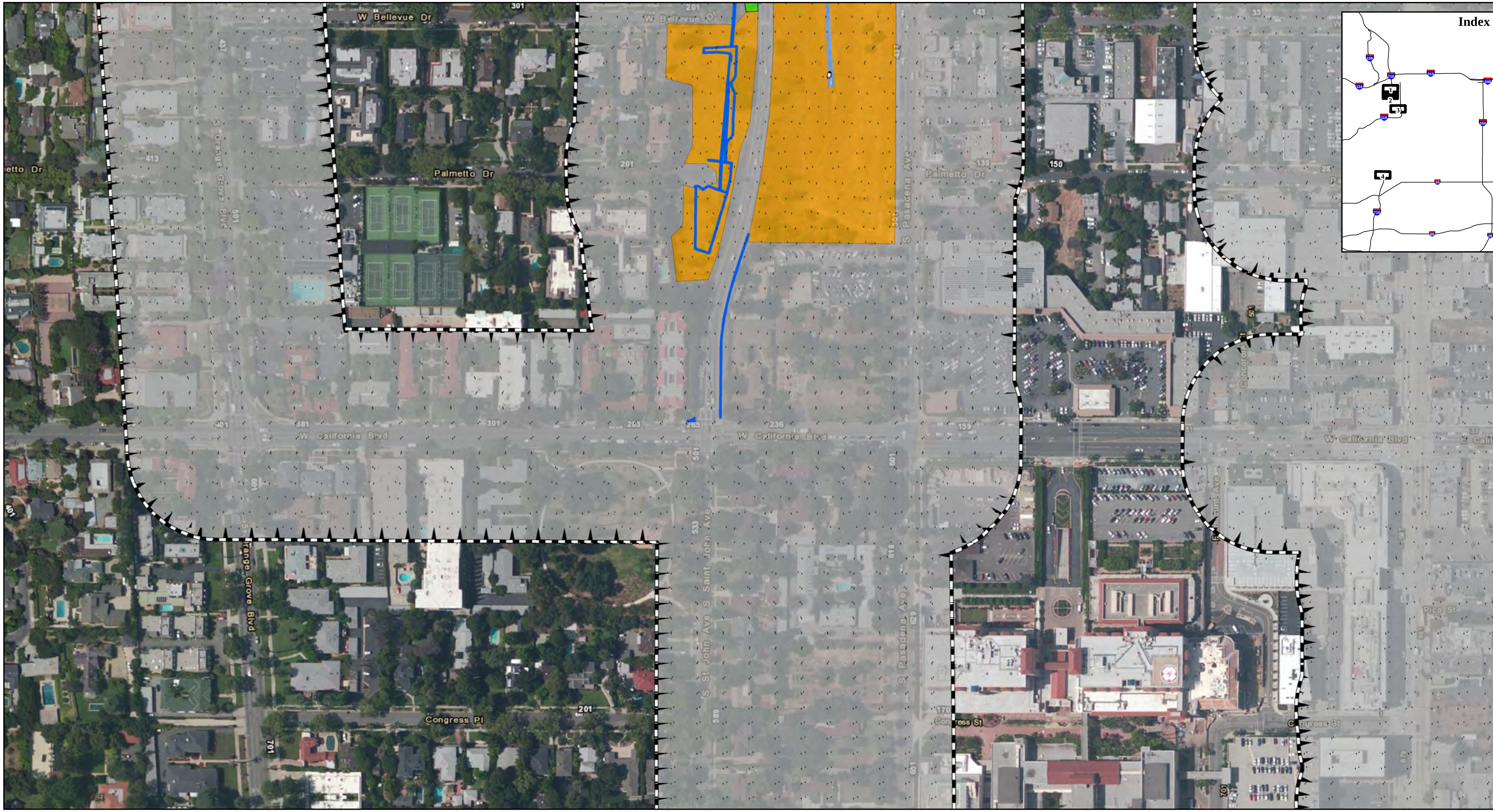

LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

TSM/TDM Alternative Impacts
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 50 100 200 300
Feet

FIGURE 13.2
Page 2 of 4

SR 710 North Study
TSM/TDM Alternative Impacts to Plants and Plant Communities
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
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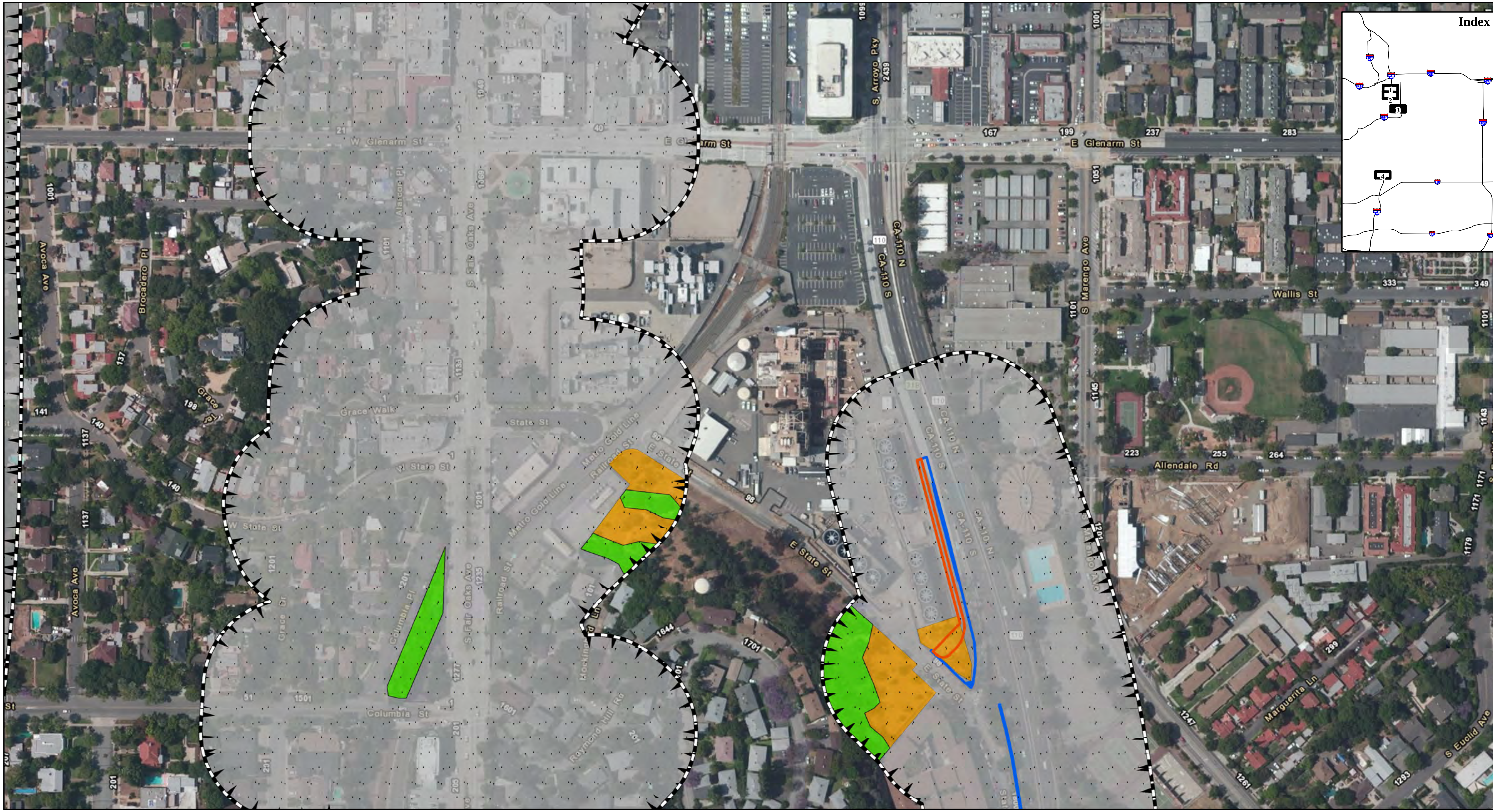


LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

TSM/TDM Alternative Impacts
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

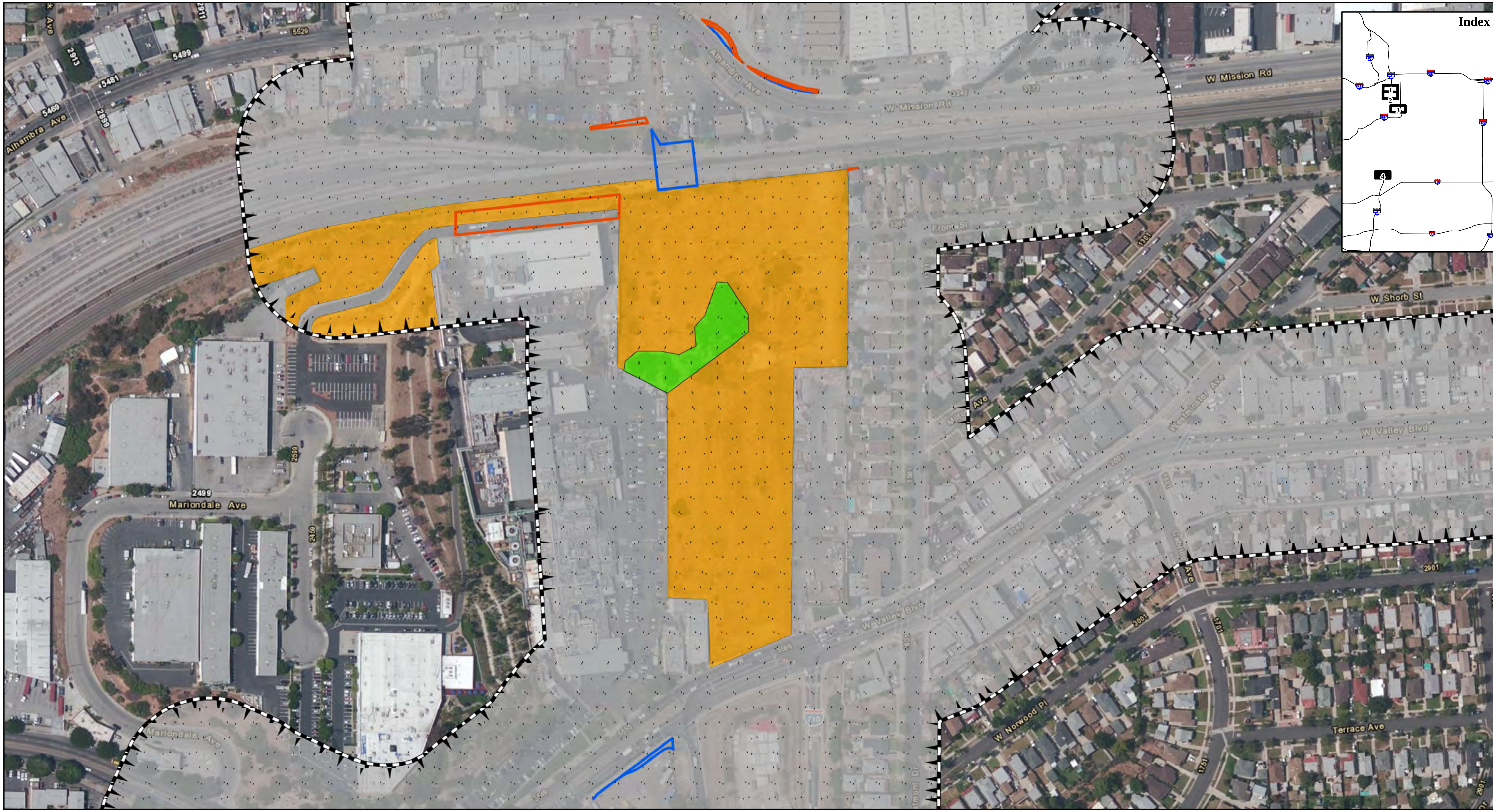
N

0 50 100 200 300
Feet

FIGURE 13.3
Page 3 of 4

SR 710 North Study
TSM/TDM Alternative Impacts to Plants and Plant Communities
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_TSMTDM_PlantCommun_20131119.mxd (10/28/2014)



LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

TSM/TDM Alternative Impacts
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 50 100 200 300

Feet

FIGURE 13.4

Page 4 of 4

SR 710 North Study

TSM/TDM Alternative Impacts to Plants and Plant Communities

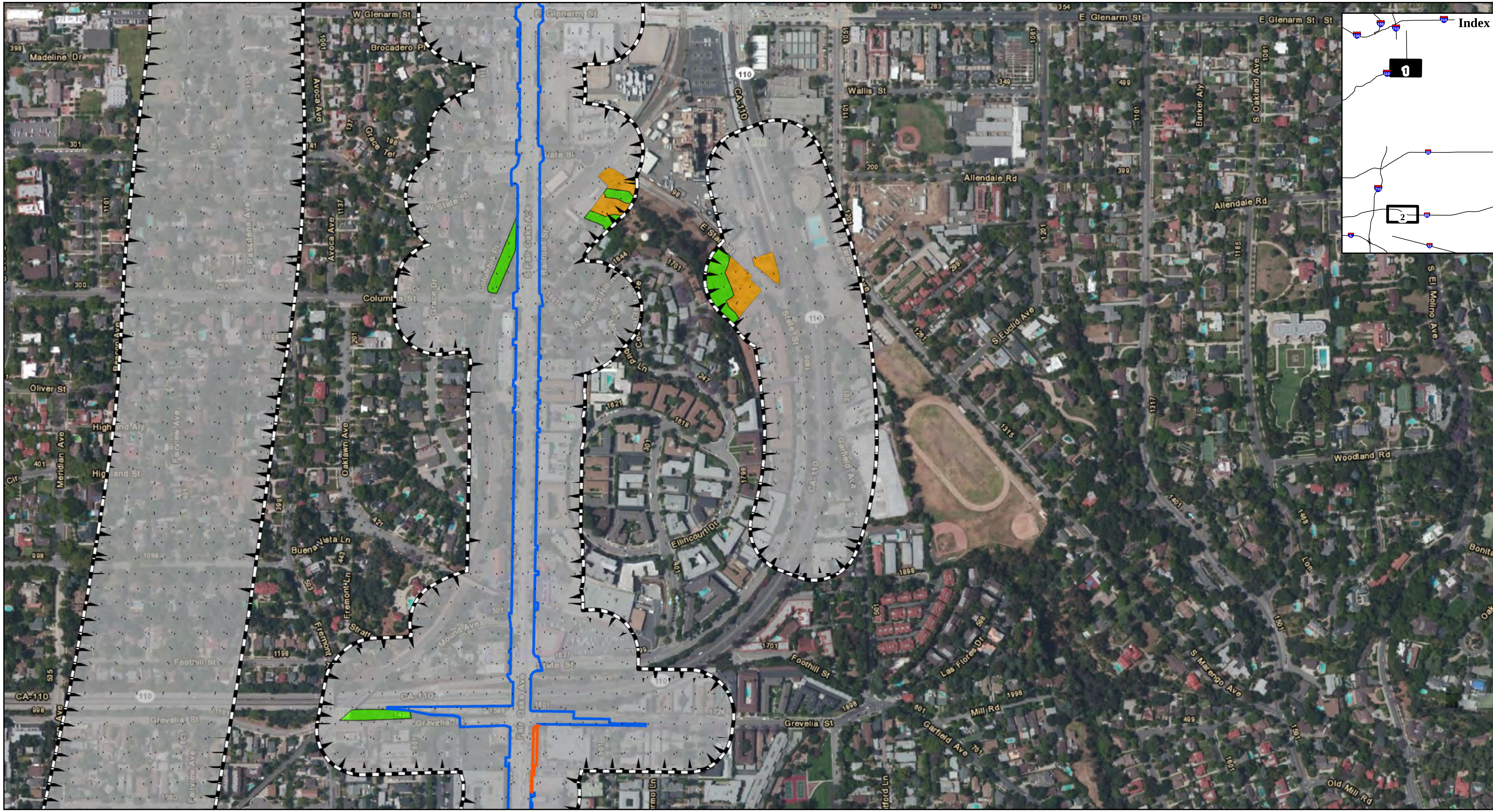
07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_TSMTDM_PlantCommun_20131119.mxd (10/28/2014)



LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

BRT Alternative Impacts
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 100 200 400 600
Feet

FIGURE 14.1
Page 1 of 2

SR 710 North Study
BRT Alternative Impacts to Plants and Plant Communities
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_BRT_PlantCommun.mxd (10/28/2014)

LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

BRT Alternative Impacts
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

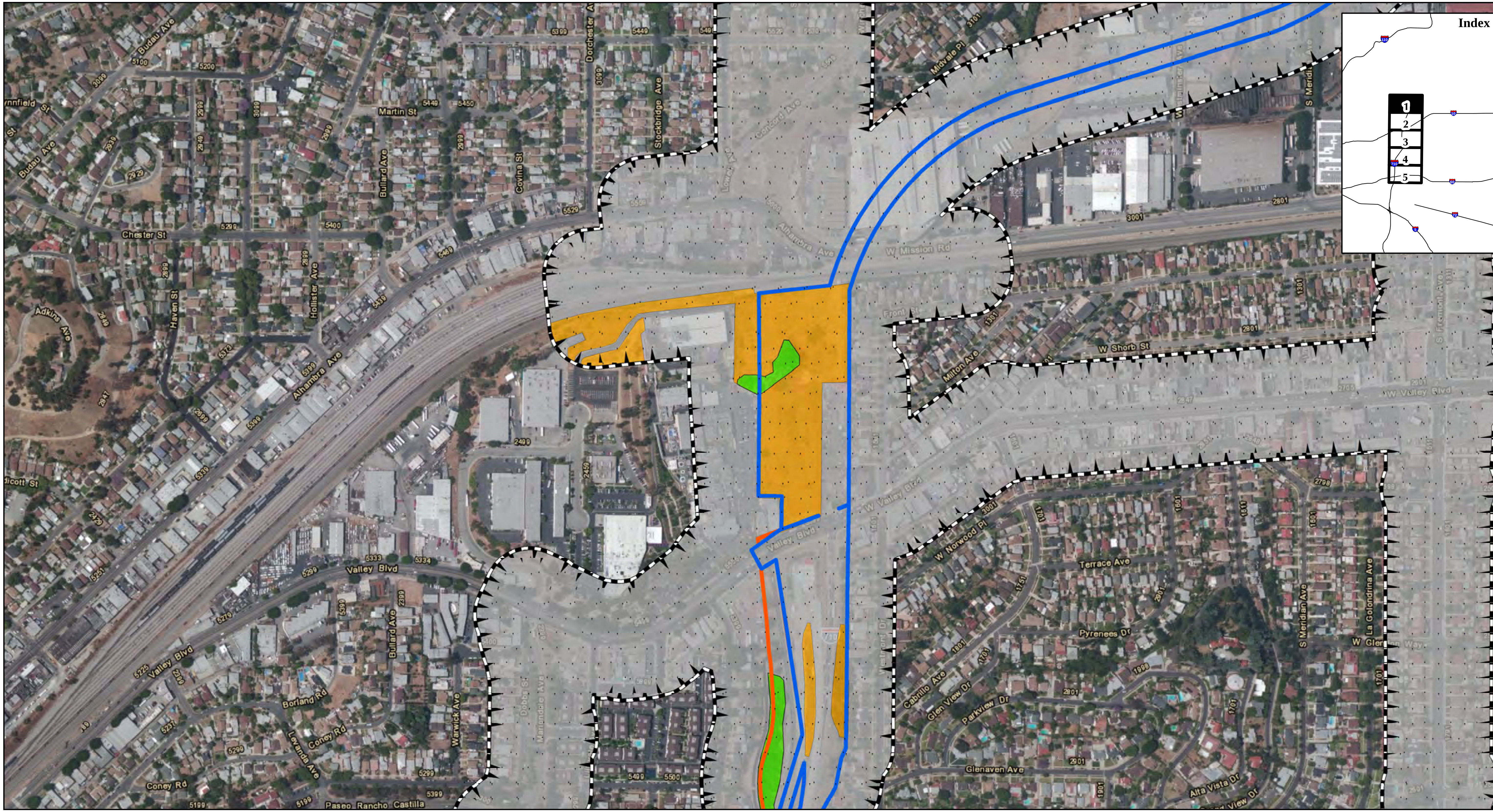
N

0 100 200 400 600
Feet

FIGURE 14.2
Page 2 of 2

SR 710 North Study
BRT Alternative Impacts to Plants and Plant Communities
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_BRT_PlantCommun.mxd (10/28/2014)



LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

ImpactBio
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

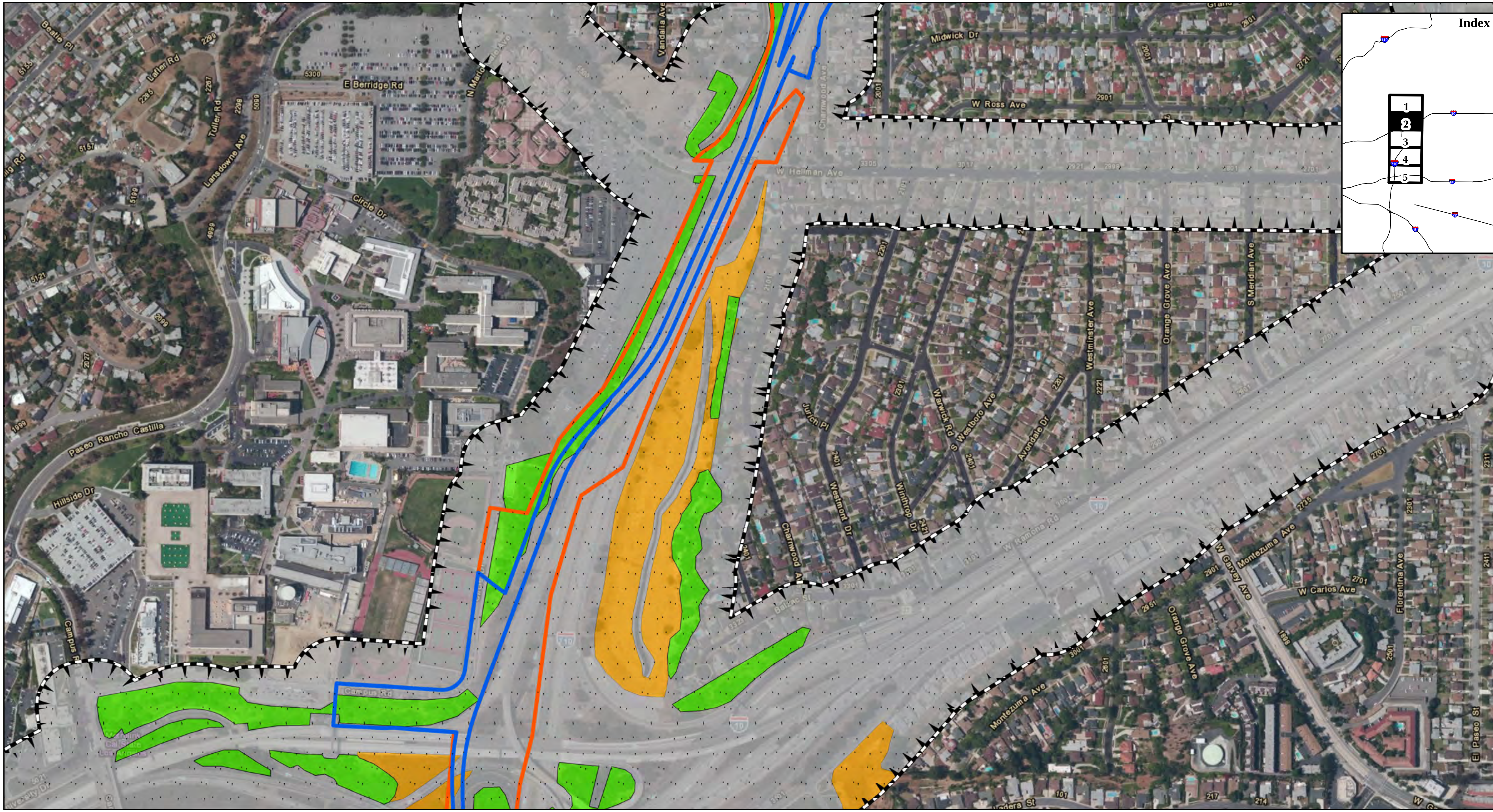
N

0 100 200 400 600
Feet

FIGURE 15.1
Page 1 of 5

SR 710 North Study
LRT Alternative Impacts to Plants and Plant Communities
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_LRT_PlantCommun.mxd (10/28/2014)



LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

ImpactBio
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 100 200 400 600
Feet

FIGURE 15.2
Page 2 of 5

SR 710 North Study
LRT Alternative Impacts to Plants and Plant Communities
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_LRT_PlantCommun.mxd (10/28/2014)

LEGEND

Observed Special-Status Plants

- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

ImpactBio

- Permanent
- Temporary

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 100 200 400 600

Feet

FIGURE 15.3

Page 3 of 5

SR 710 North Study

LRT Alternative Impacts to Plants and Plant Communities

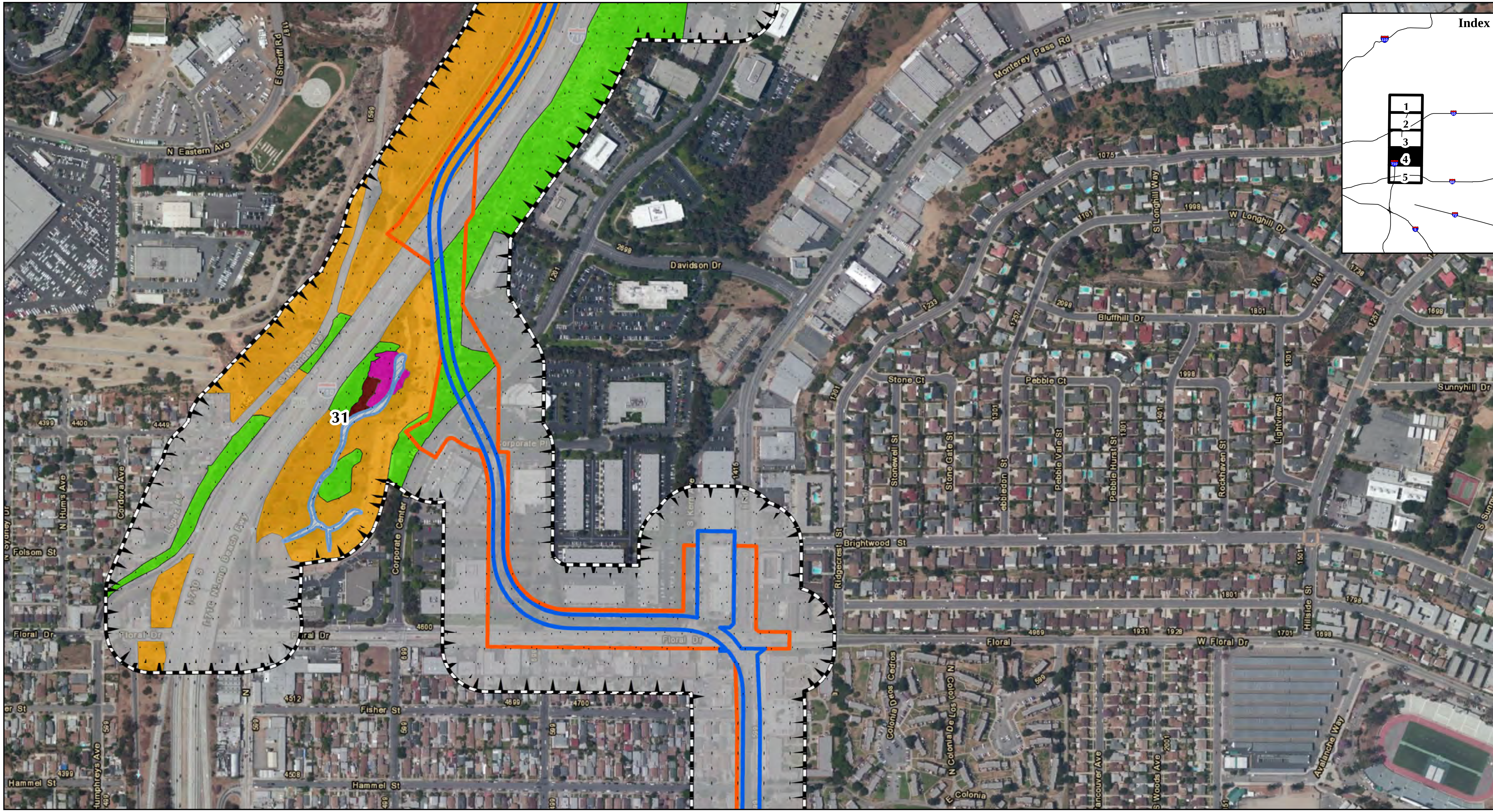
07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_LRT_PlantCommun.mxd (10/28/2014)



LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

ImpactBio
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 100 200 400 600
Feet

FIGURE 15.4
Page 4 of 5

SR 710 North Study
LRT Alternative Impacts to Plants and Plant Communities
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_LRT_PlantCommun.mxd (10/28/2014)

LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

ImpactBio
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

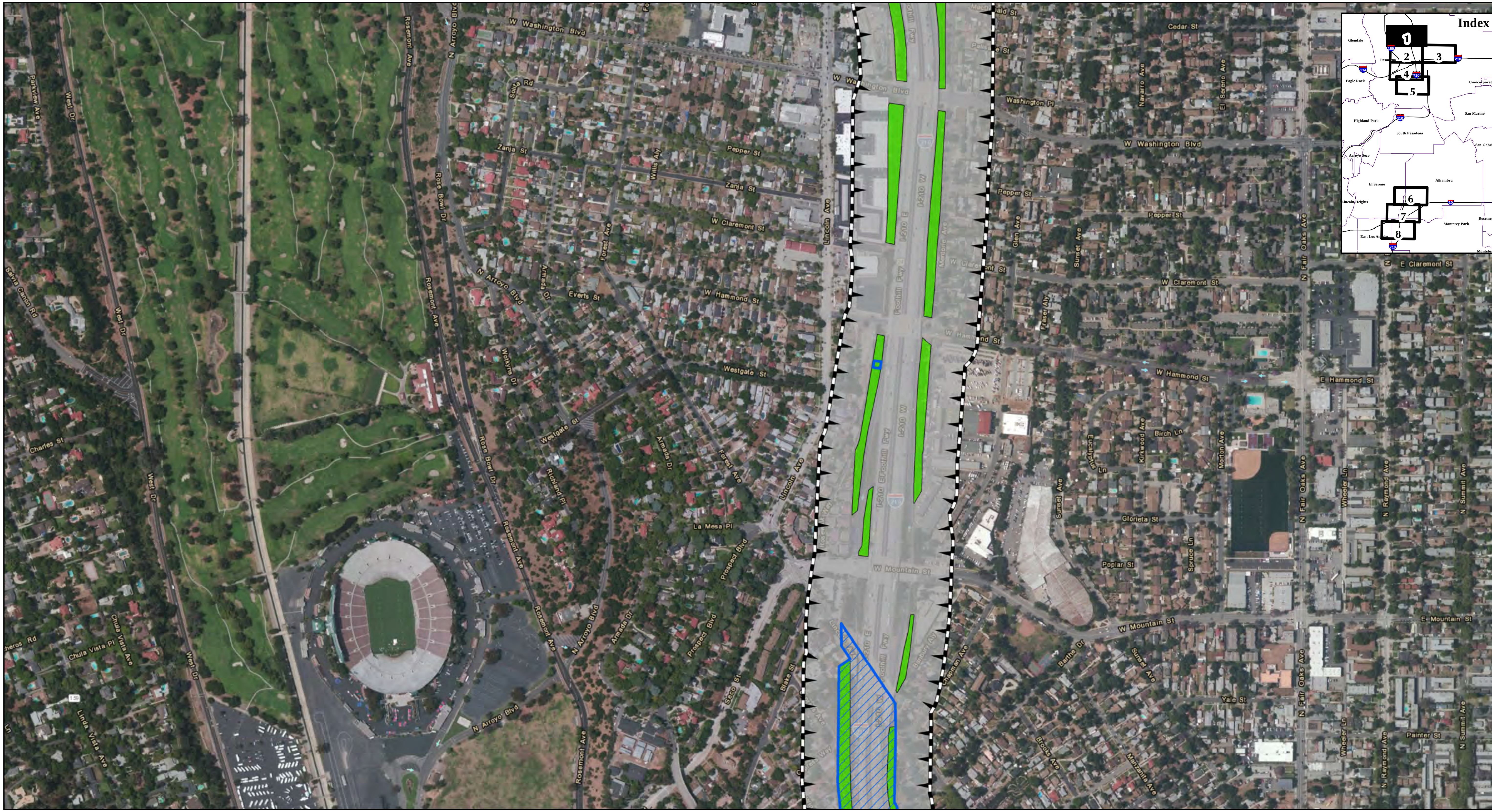
N

0 100 200 400 600
Feet

FIGURE 15.5
Page 5 of 5

SR 710 North Study
LRT Alternative Impacts to Plants and Plant Communities
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_LRT_PlantCommun.mxd (10/28/2014)



LEGEND

N

0 100 200 400 600

Feet

Observed Special-Status Plants

- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

Freeway Tunnel - Single/Dual Bore Impacts

- Permanent
- Temporary

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

FIGURE 16.1

Page 1 of 8

SR 710 North Study

Freeway Tunnel Alternative Impacts to Plants and Plant Communities

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_Freeways_PlantCommun.mxd (10/28/2014)

LEGEND

Observed Special-Status Plants

- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

Freeway Tunnel - Single/Dual Bore Impacts

- Permanent
- Temporary

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 100 200 400 600

Feet

FIGURE 16.2

Page 2 of 8

SR 710 North Study

Freeway Tunnel Alternative Impacts to Plants and Plant Communities

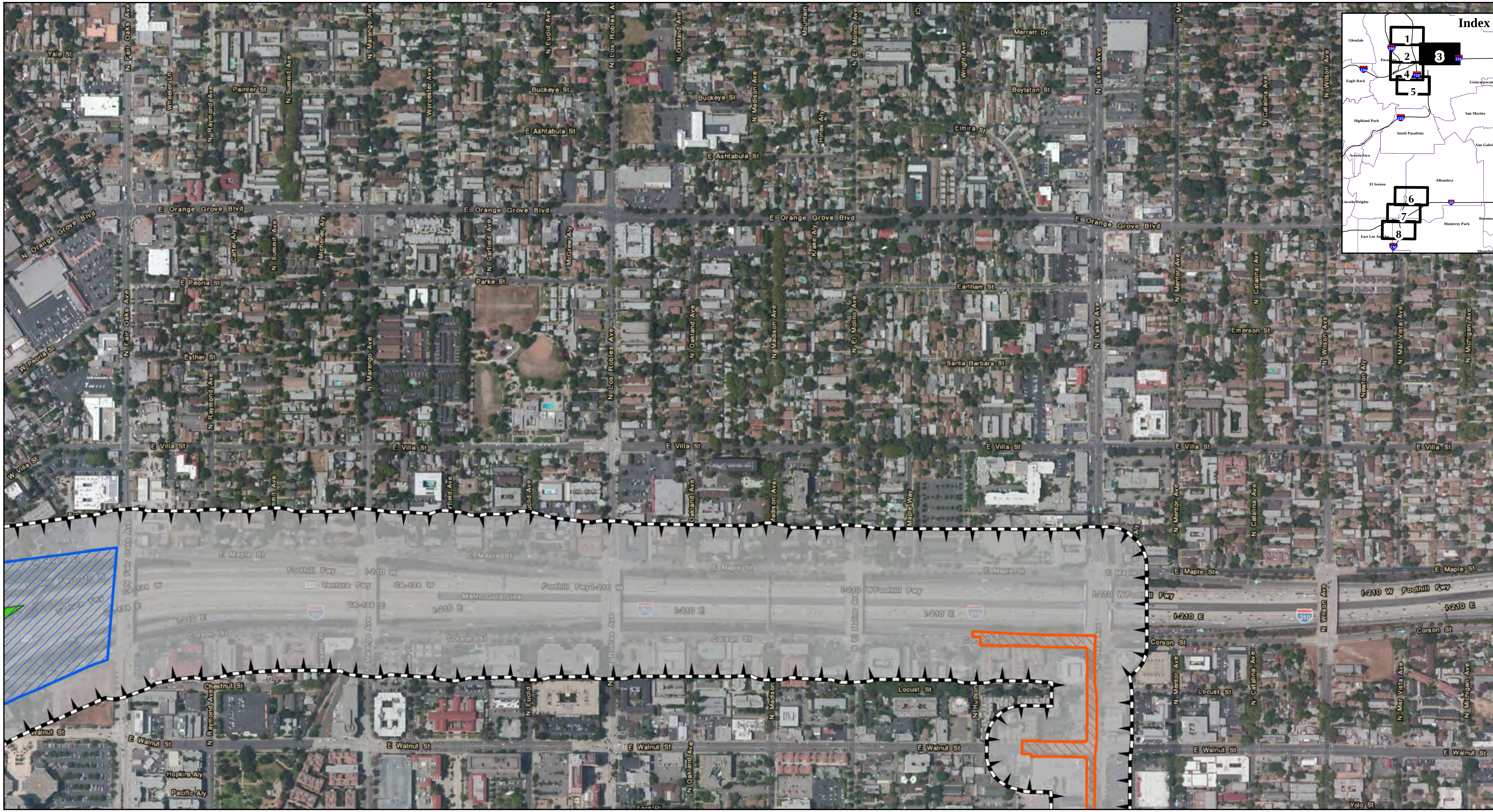
07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_Freeways_PlantCommun.mxd (10/28/2014)



LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

Freeway Tunnel - Single/Dual Bore Impacts
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 100 200 400 600

Feet

FIGURE 16.3

Page 3 of 8

SR 710 North Study

Freeway Tunnel Alternative Impacts to Plants and Plant Communities

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)

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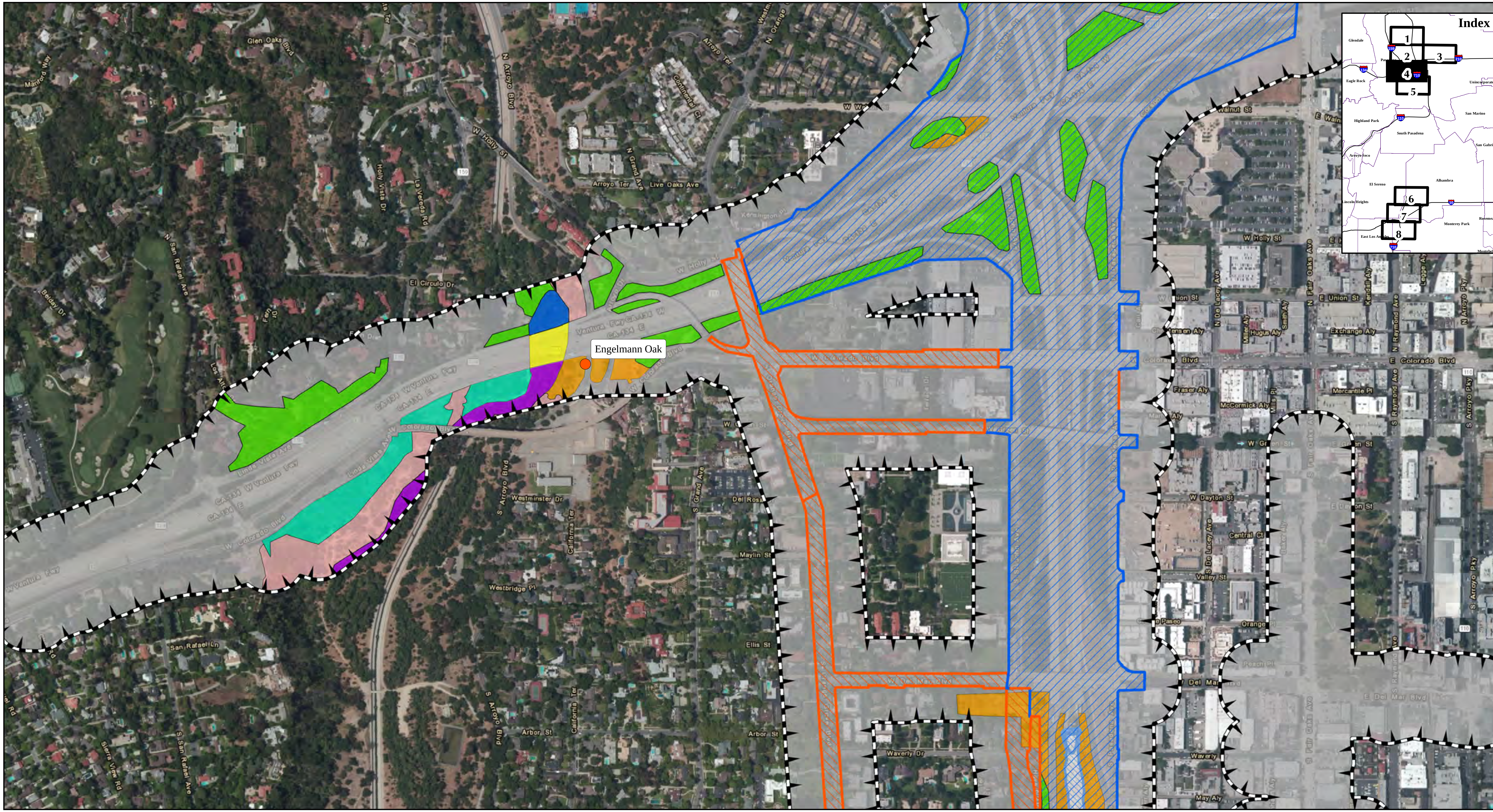


LEGEND

N

0 100 200 400 600
Feet

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

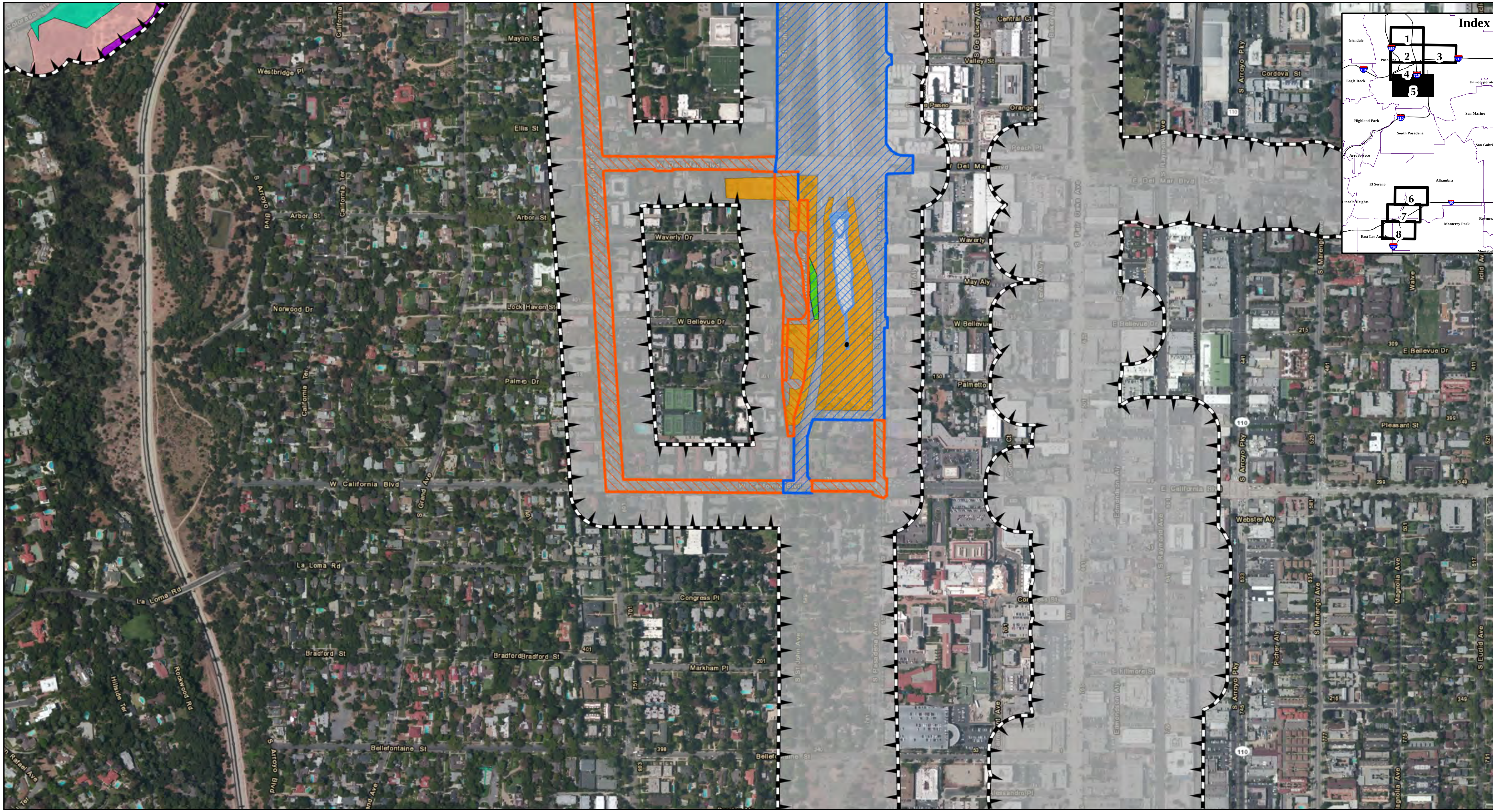
Freeway Tunnel - Single/Dual Bore Impacts
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

FIGURE 16.4
Page 4 of 8

SR 710 North Study
Freeway Tunnel Alternative Impacts
to Plants and Plant Communities
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_Freeways_PlantCommun.mxd (10/28/2014)



LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

Freeway Tunnel - Single/Dual Bore Impacts
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

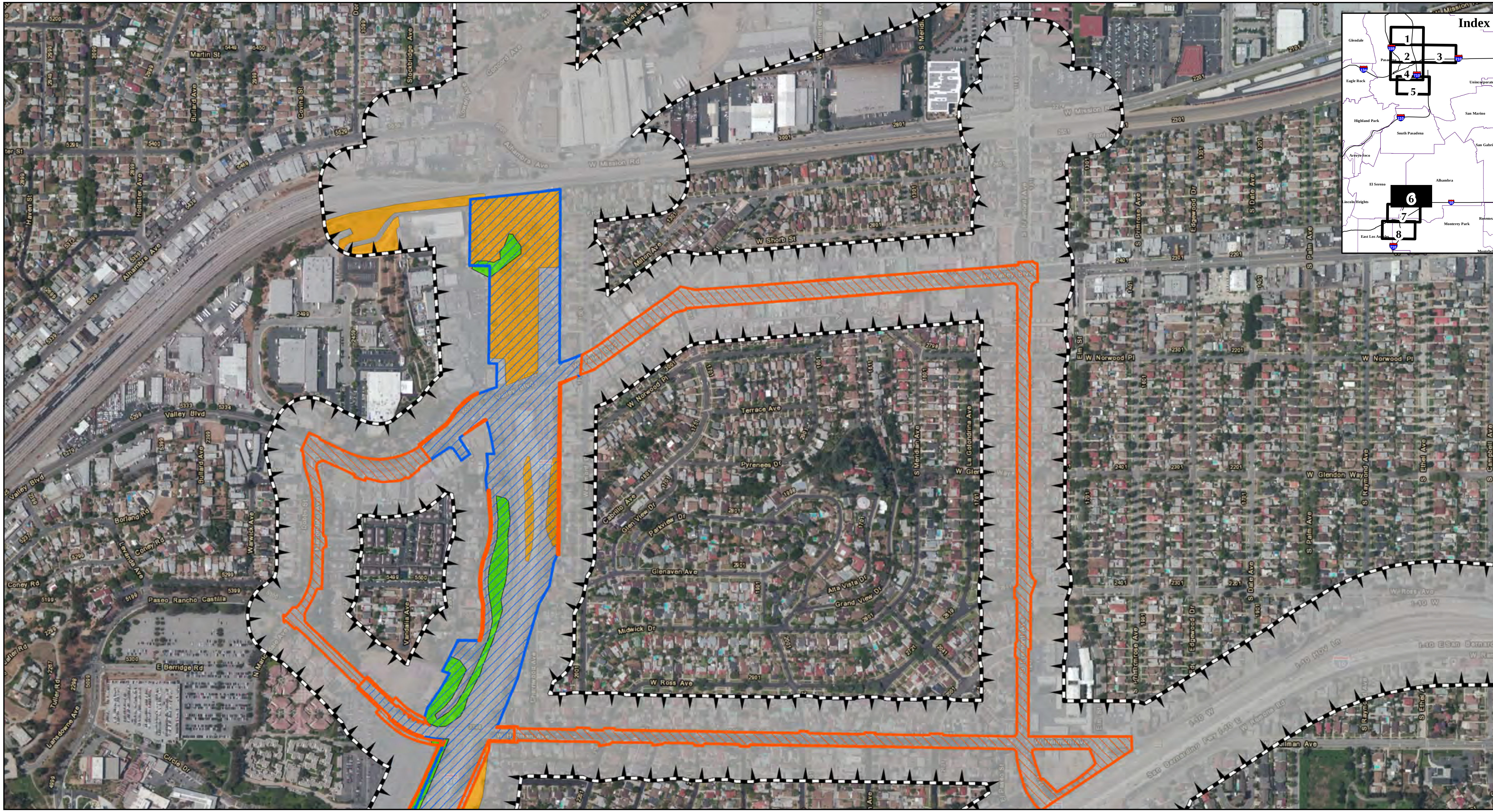
N

0 100 200 400 600
Feet

FIGURE 16.5
Page 5 of 8

SR 710 North Study
Freeway Tunnel Alternative Impacts
to Plants and Plant Communities
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_Freeways_PlantCommun.mxd (10/28/2014)



LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

Freeway Tunnel - Single/Dual Bore Impacts
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

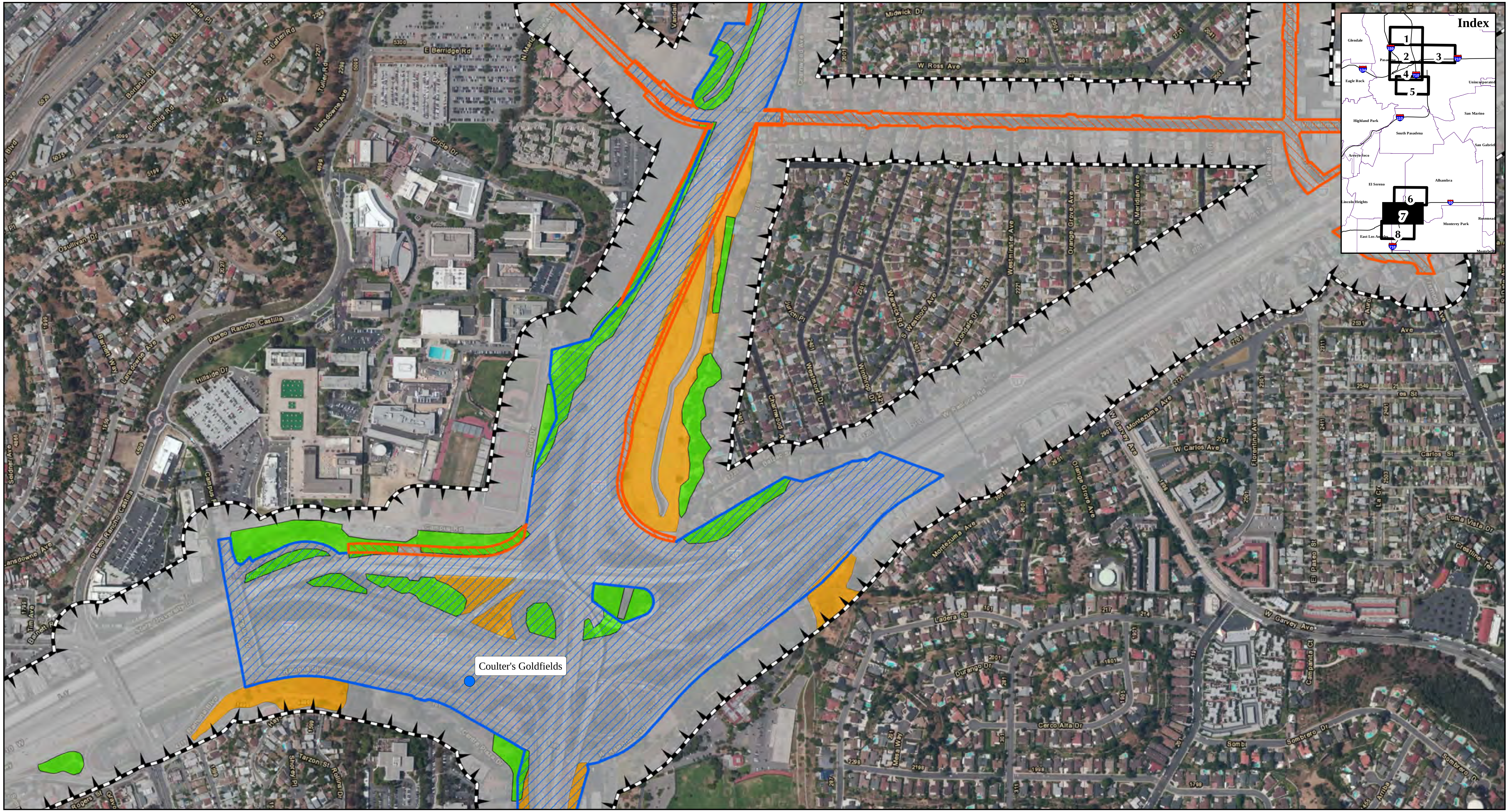
N

0 100 200 400 600
Feet

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_Freeways_PlantCommun.mxd (10/28/2014)

FIGURE 16.6
Page 6 of 8

SR 710 North Study
Freeway Tunnel Alternative Impacts
to Plants and Plant Communities
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191



LEGEND

Observed Special-Status Plants

- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

Freeway Tunnel - Single/Dual Bore Impacts

- Permanent
- Temporary

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 100 200 400 600

Feet

FIGURE 16.7

Page 7 of 8

SR 710 North Study

Freeway Tunnel Alternative Impacts to Plants and Plant Communities

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_Freeways_PlantCommun.mxd (10/28/2014)

LEGEND

Observed Special-Status Plants
- Southern California Walnut
- Engelmann Oak
- Coulter's Goldfields

Biological Study Area

Freeway Tunnel - Single/Dual Bore Impacts
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 100 200 400 600

Feet

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_Freeways_PlantCommun.mxd (10/28/2014)

FIGURE 16.8

SR 710 North Study

Freeway Tunnel Alternative Impacts to Plants and Plant Communities

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

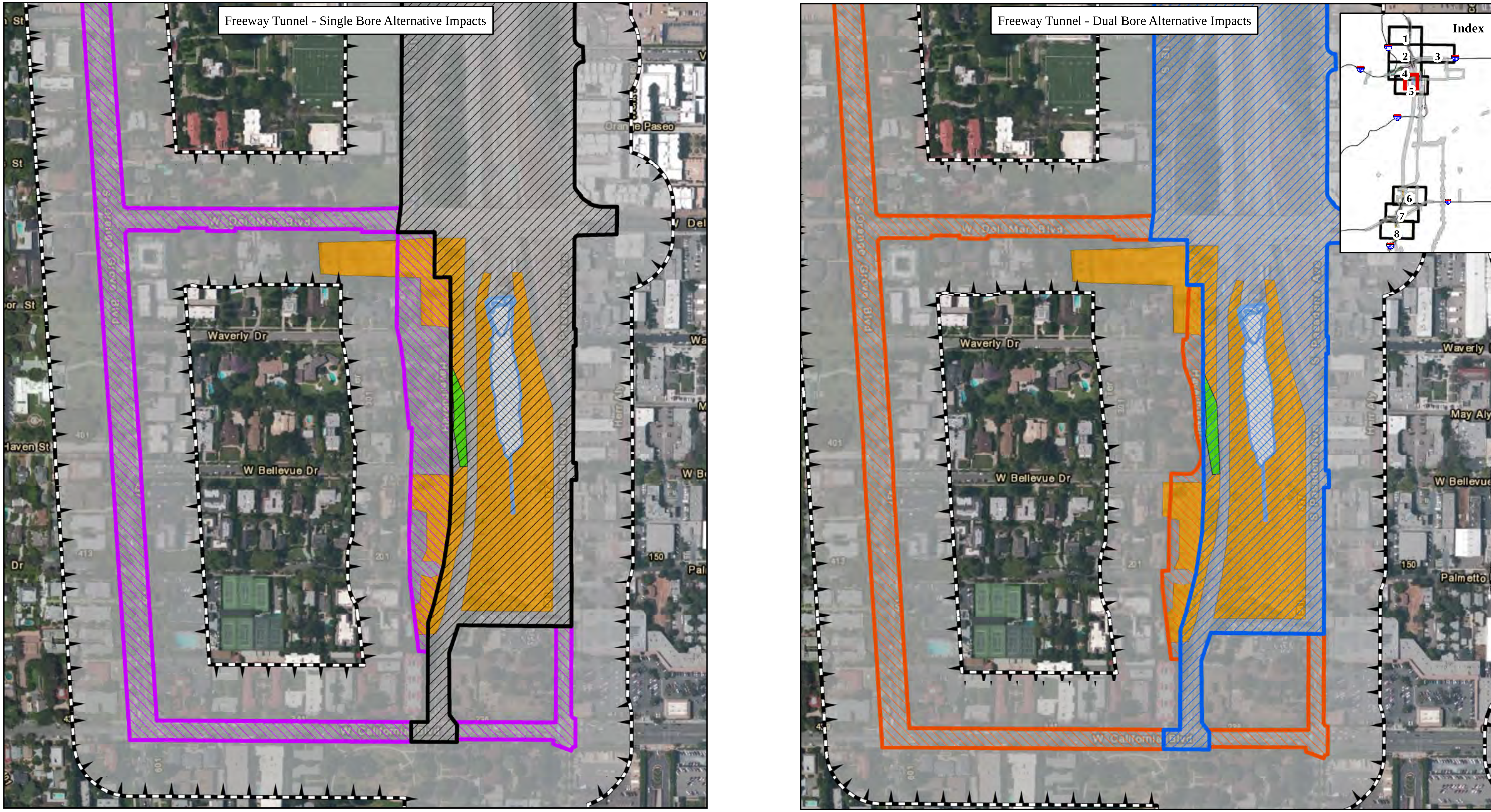


FIGURE 16.9

LEGEND

Biological Study Area

Freeway Tunnel - Single Bore Impacts
- Permanent
- Temporary

Freeway Tunnel - Dual Bore Impacts
- Permanent
- Temporary

Plant Communities
- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves

N

0 100 200 400
Feet

SR 710 North Study
Freeway Tunnel Alternative Impacts
(Single vs Dual Bore) to Plants and Plant Communities
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
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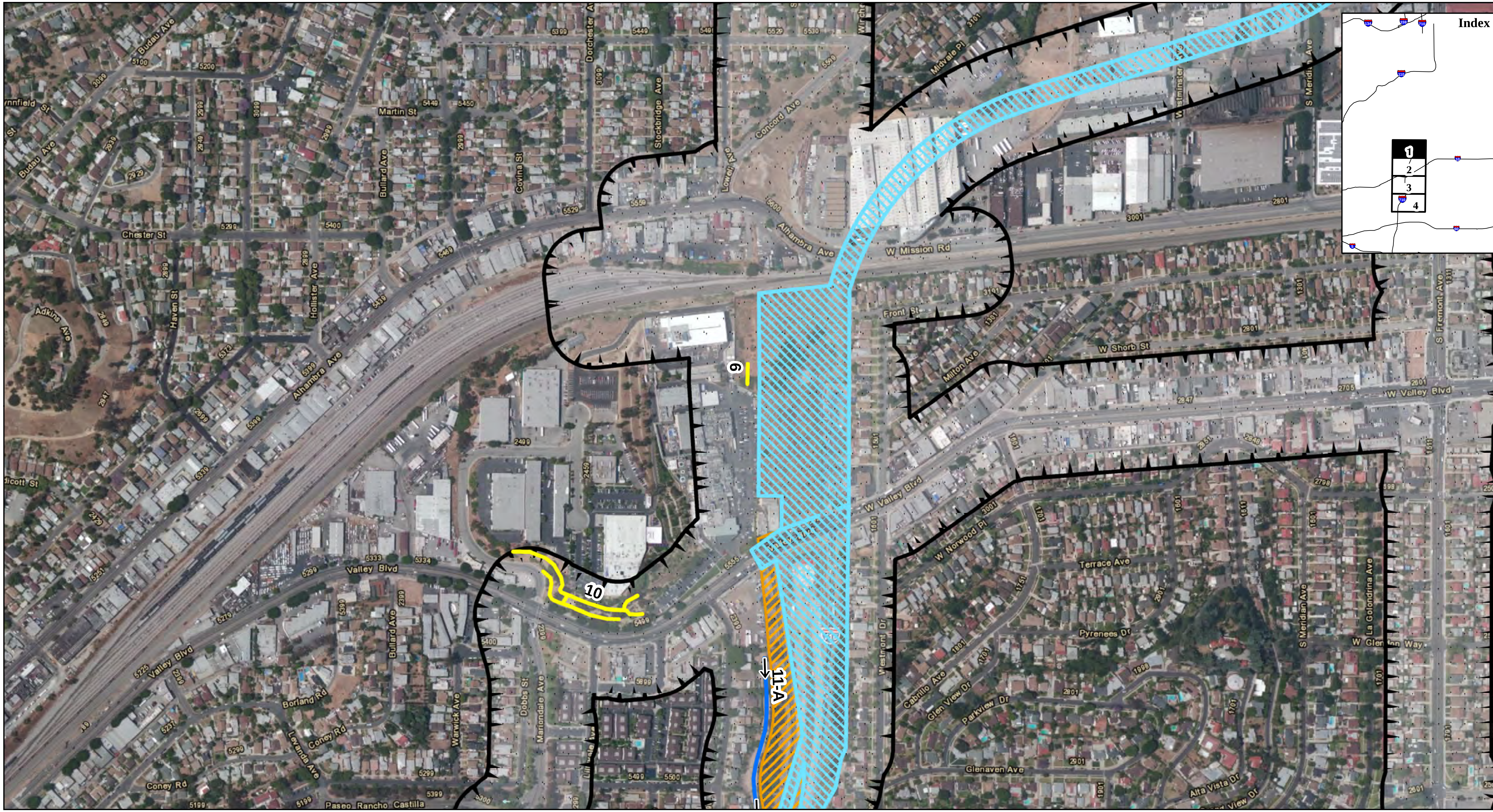

LEGEND

↑ Stream Flow Direction

Biological Study Area

LRT Alternative Impact

Permanent

Temporary

Non-Jurisdictional

Potential Jurisdiction

Non-Wetland

Riparian Communities and Wetland Areas

Arroyo Willow Thicket

Black Cottonwood Forest

Giant Reed Breaks

Non-Native Riparian Woodland

Wetland Complex

White Alder Groves

N

0 50 100 200 300 400 500 600

Feet

SOURCE: ESRI (3/2014); Sapphos Environmentall (10/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_LRT_JD_Feature_impacts.mxd (10/28/2014)

FIGURE 17.1

Page 1 of 4

SR 710 North Study

LRT Alternative Impacts to Potentially Jurisdictional Features

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

LEGEND

↑ Stream Flow Direction

Biological Study Area

LRT Alternative Impact

Permanent

Temporary

Non-Jurisdictional

Potential Jurisdiction

Non-Wetland

Riparian Communities and Wetland Areas

Arroyo Willow Thicket

Black Cottonwood Forest

Giant Reed Breaks

Non-Native Riparian Woodland

Wetland Complex

White Alder Groves

N

0 50 100 200 300 400 500 600

Feet

FIGURE 17.2

SR 710 North Study

LRT Alternative Impacts to Potentially Jurisdictional Features

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmentall (10/2013)

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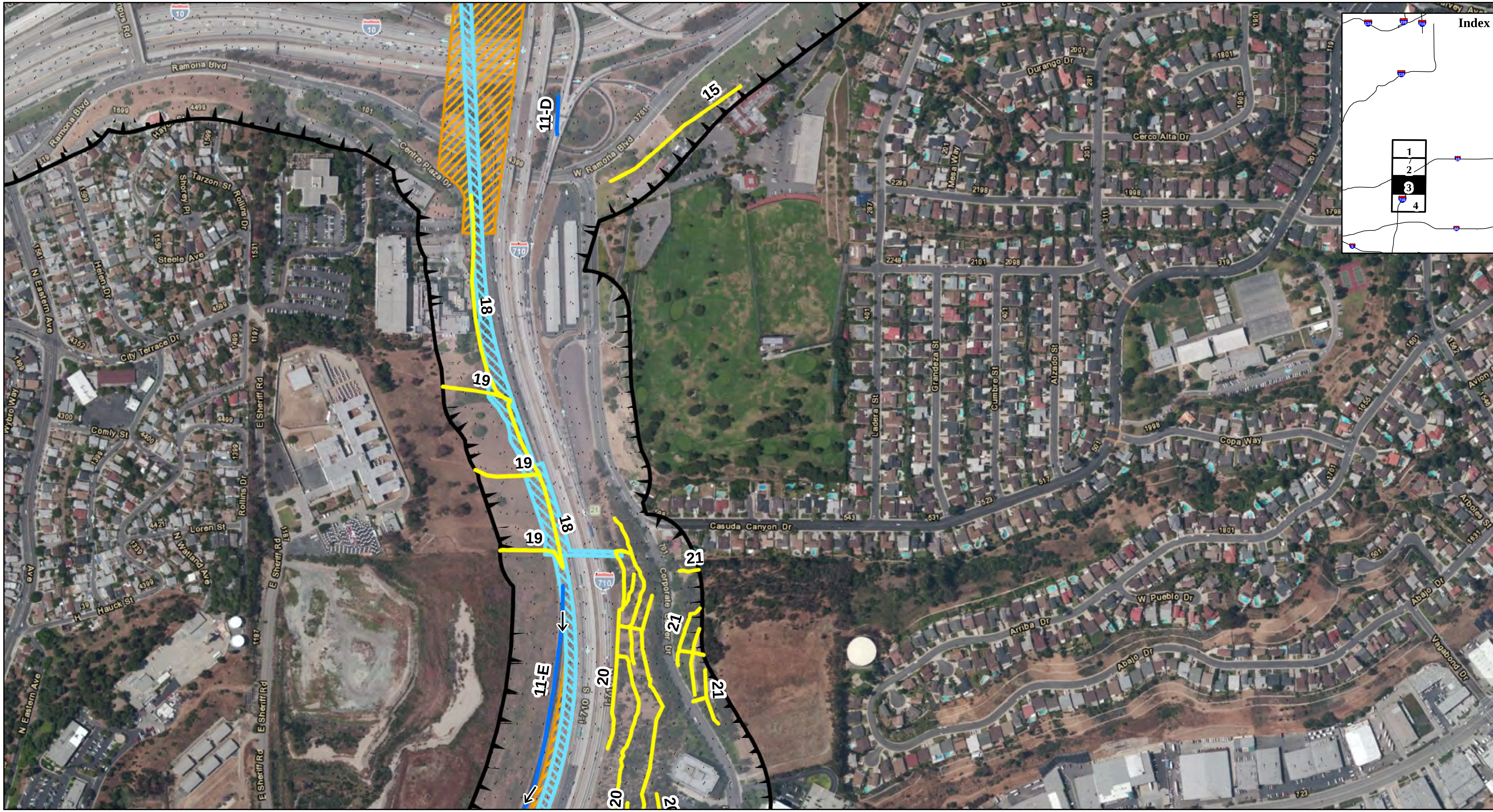

LEGEND

Stream Flow Direction

Biological Study Area

LRT Alternative Impact

Permanent

Temporary

Non-Jurisdictional

Potential Jurisdiction

Non-Wetland

Riparian Communities and Wetland Areas

Arroyo Willow Thicket

Black Cottonwood Forest

Giant Reed Breaks

Non-Native Riparian Woodland

Wetland Complex

White Alder Groves

0 50 100 200 300 400 500 600
Feet

FIGURE 17.3

Page 3 of 4

SR 710 North Study

LRT Alternative Impacts to Potentially Jurisdictional Features

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmentall (10/2013)

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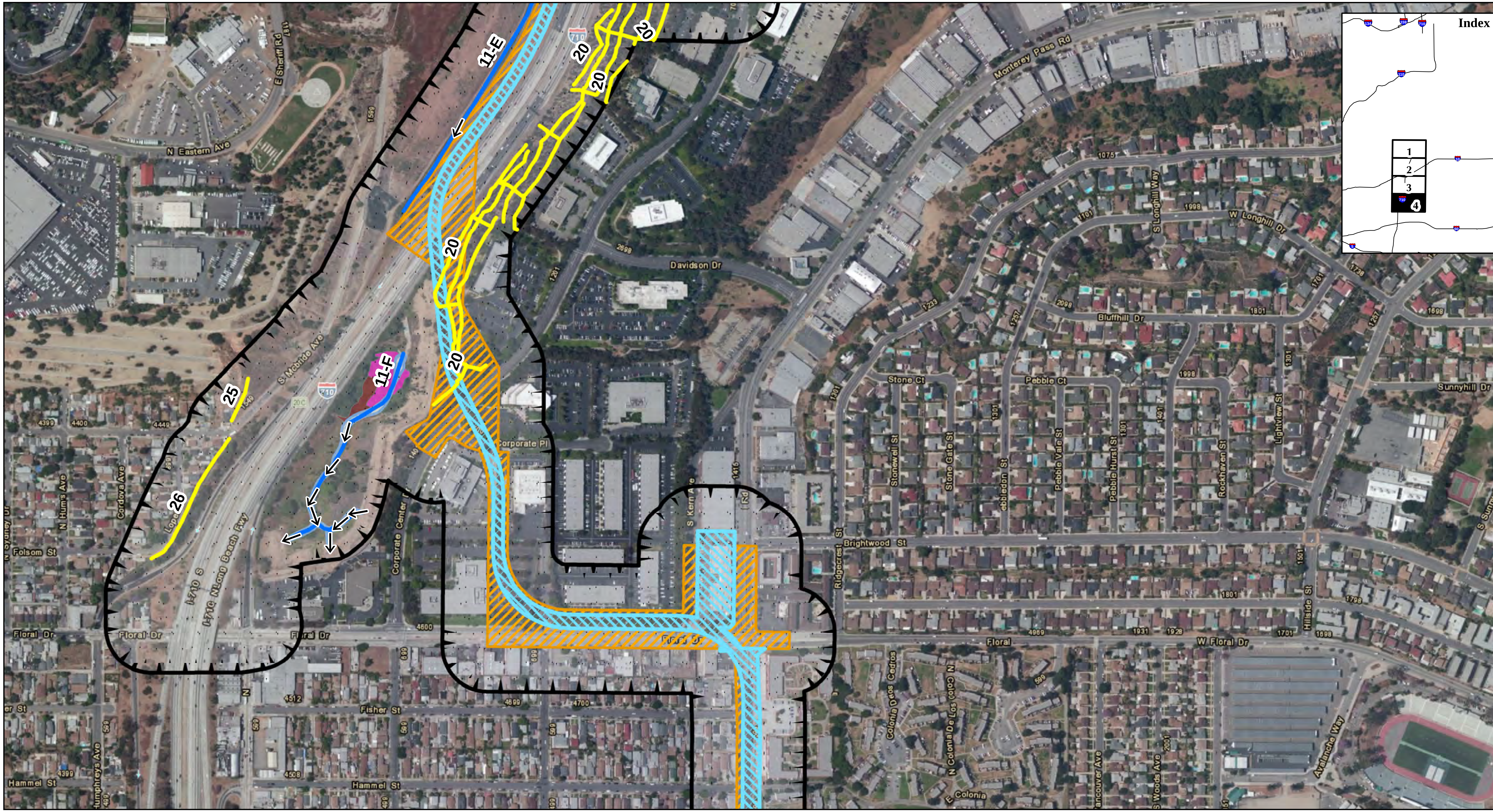

N

0 50 100 200 300 400 500 600
Feet

LEGEND

- Stream Flow Direction
- Biological Study Area

LRT Alternative Impact

- Permanent
- Temporary

- Non-Jurisdictional

Potential Jurisdiction

- Non-Wetland

Riparian Communities and Wetland Areas

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- Wetland Complex
- White Alder Groves

FIGURE 17.4

Page 4 of 4

SR 710 North Study

LRT Alternative Impacts to Potentially Jurisdictional Features

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmentall (10/2013)

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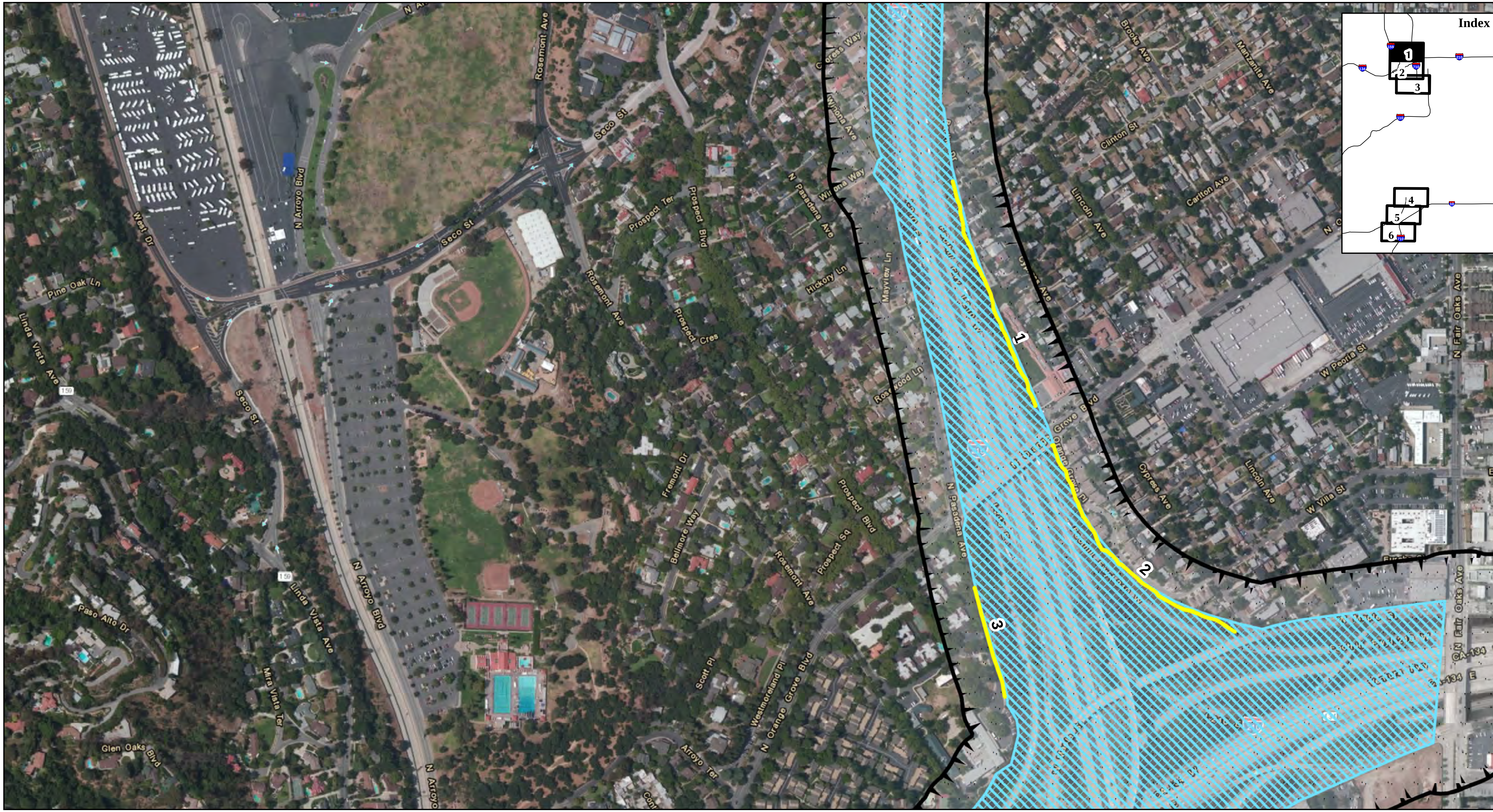

LEGEND

Stream Flow Direction

Biological Study Area

0 50 100 200 300 400 500 600

Feet

Freeway Tunnel Alternative Impacts

Permanent

Temporary

Non-Jurisdictional

Potential Jurisdiction

Non-Wetland

Riparian Communities and Wetland Areas

Arroyo Willow Thicket

Black Cottonwood Forest

Giant Reed Breaks

Non-Native Riparian Woodland

Wetland Complex

White Alder Groves

FIGURE 18.1

Page 1 of 6

SR 710 North Study

Freeway Tunnel Alternative Impacts to Potentially Jurisdictional Features

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)

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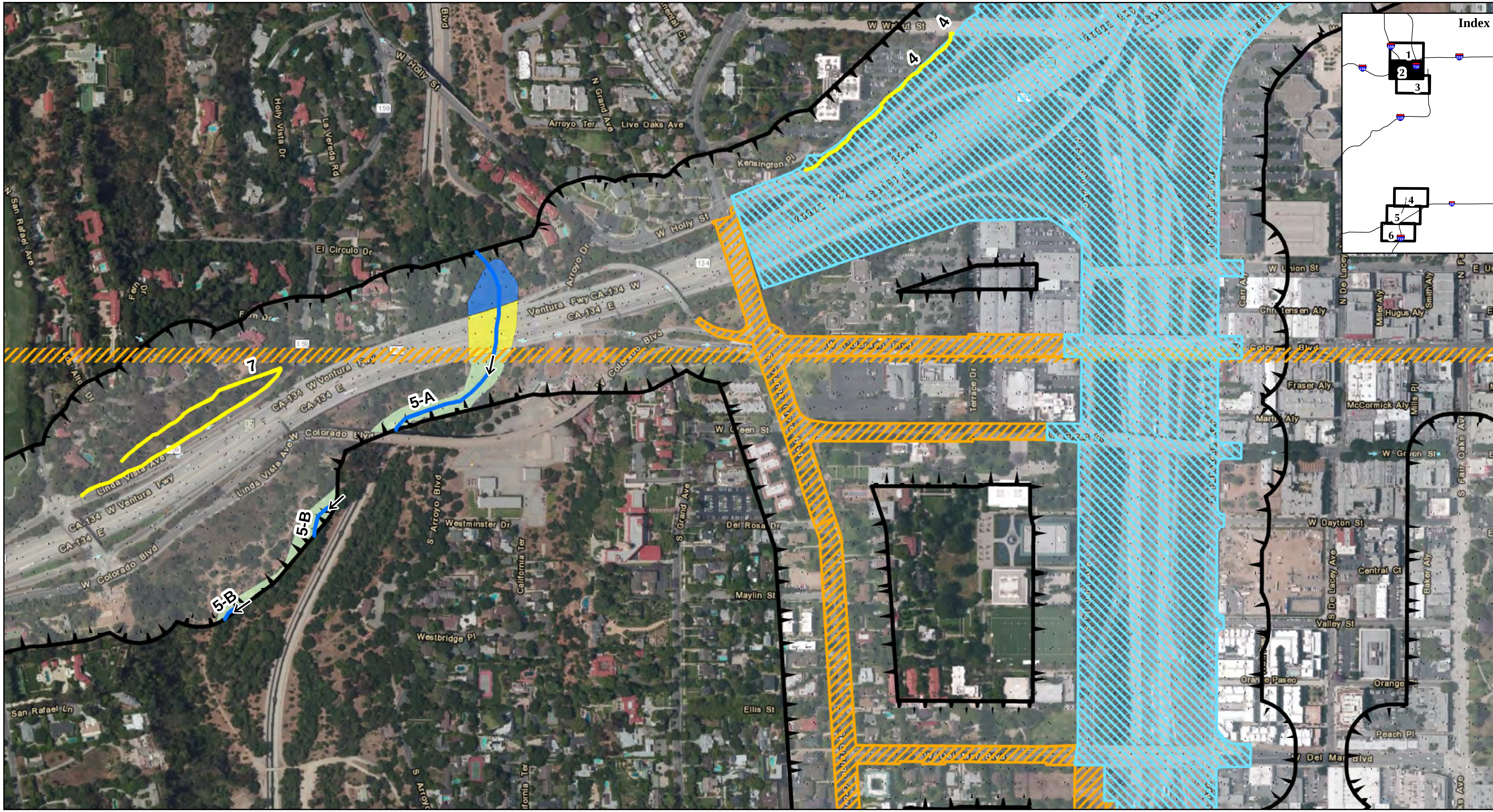

LEGEND

Stream Flow Direction

Biological Study Area

Freeway Tunnel Alternative Impacts

Permanent

Temporary

Non-Jurisdictional

Potential Jurisdiction

Non-Wetland

Riparian Communities and Wetland Areas

Arroyo Willow Thicket

Black Cottonwood Forest

Giant Reed Breaks

Non-Native Riparian Woodland

Wetland Complex

White Alder Groves

N

0 50 100 200 300 400 500 600

Feet

FIGURE 18.2

Page 2 of 6

SR 710 North Study

Freeway Tunnel Alternative Impacts to Potentially Jurisdictional Features

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)

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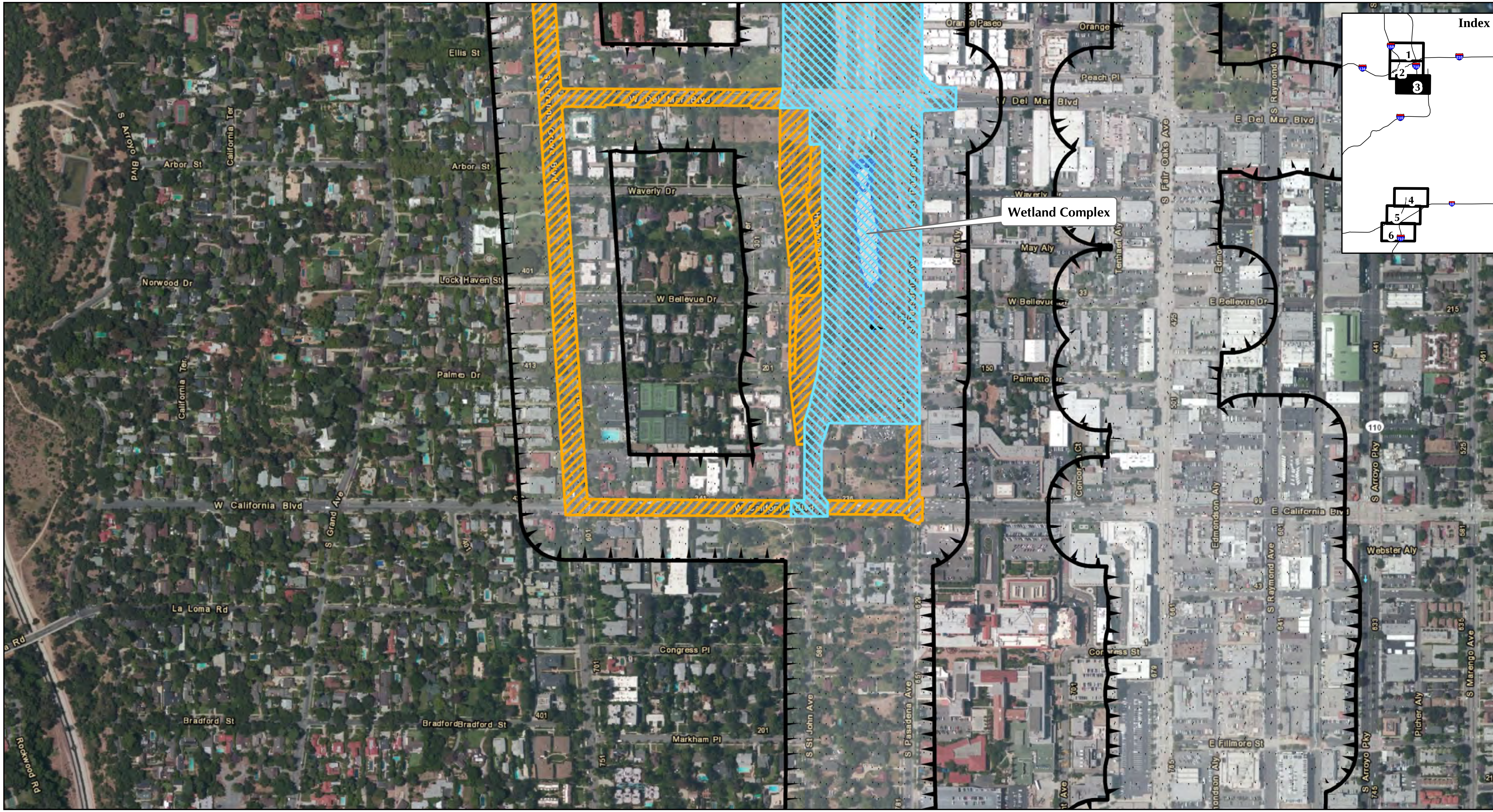

LEGEND

Stream Flow Direction

Biological Study Area

Freeway Tunnel Alternative Impacts

Permanent

Temporary

Non-Jurisdictional

Potential Jurisdiction

Non-Wetland

Riparian Communities and Wetland Areas

Arroyo Willow Thicket

Black Cottonwood Forest

Giant Reed Breaks

Non-Native Riparian Woodland

Wetland Complex

White Alder Groves

0 50 100 200 300 400 500 600

Feet

FIGURE 18.3

Page 3 of 6

SR 710 North Study

Freeway Tunnel Alternative Impacts to Potentially Jurisdictional Features

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_FreewayTunnel_Drainages_impacts.mxd (10/28/2014)

LEGEND

- Stream Flow Direction
- Biological Study Area

Freeway Tunnel Alternative Impacts

- Permanent
- Temporary

- Non-Jurisdictional

Potential Jurisdiction

- Non-Wetland

Riparian Communities and Wetland Areas

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- Wetland Complex
- White Alder Groves

0 50 100 200 300 400 500 600
Feet

FIGURE 18.4
Page 4 of 6

SR 710 North Study
Freeway Tunnel Alternative Impacts to Potentially Jurisdictional Features
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\Alternatives_FreewayTunnel_Drainages_impacts.mxd (10/28/2014)

LEGEND

Stream Flow Direction

Biological Study Area

Freeway Tunnel Alternative Impacts

Permanent

Temporary

Non-Jurisdictional

Potential Jurisdiction

Non-Wetland

Riparian Communities and Wetland Areas

Arroyo Willow Thicket

Black Cottonwood Forest

Giant Reed Breaks

Non-Native Riparian Woodland

Wetland Complex

White Alder Groves

N

0 50 100 200 300 400 500 600

Feet

FIGURE 18.5

Page 5 of 6

SR 710 North Study

Freeway Tunnel Alternative Impacts to Potentially Jurisdictional Features

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)

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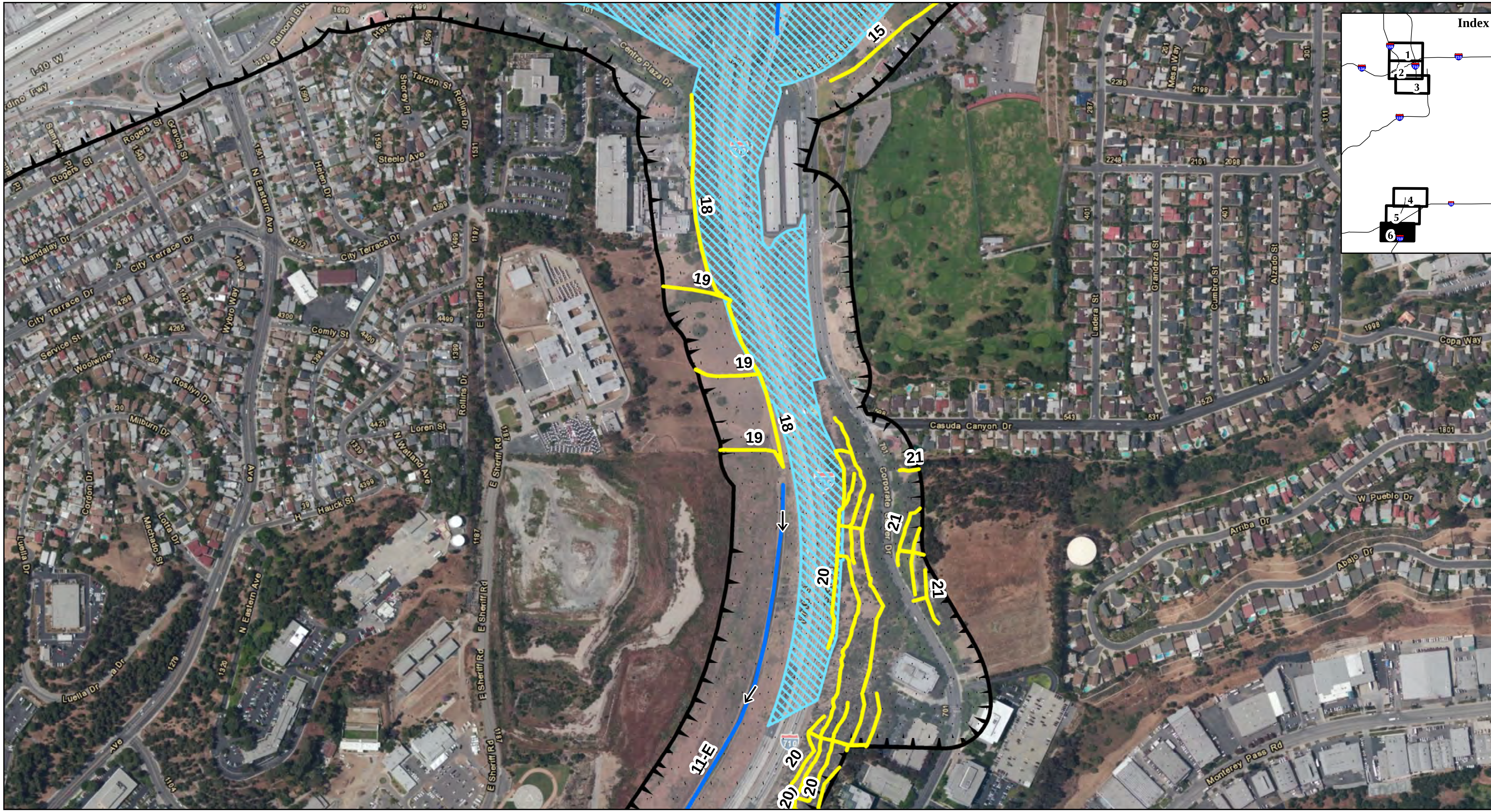

LEGEND

Stream Flow Direction

Biological Study Area

Freeway Tunnel Alternative Impacts

Permanent

Temporary

Non-Jurisdictional

Potential Jurisdiction

Non-Wetland

Riparian Communities and Wetland Areas

Arroyo Willow Thicket

Black Cottonwood Forest

Giant Reed Breaks

Non-Native Riparian Woodland

Wetland Complex

White Alder Groves

0 50 100 200 300 400 500 600
Feet

FIGURE 18.6

Page 6 of 6

SR 710 North Study

Freeway Tunnel Alternative Impacts to Potentially Jurisdictional Features

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)

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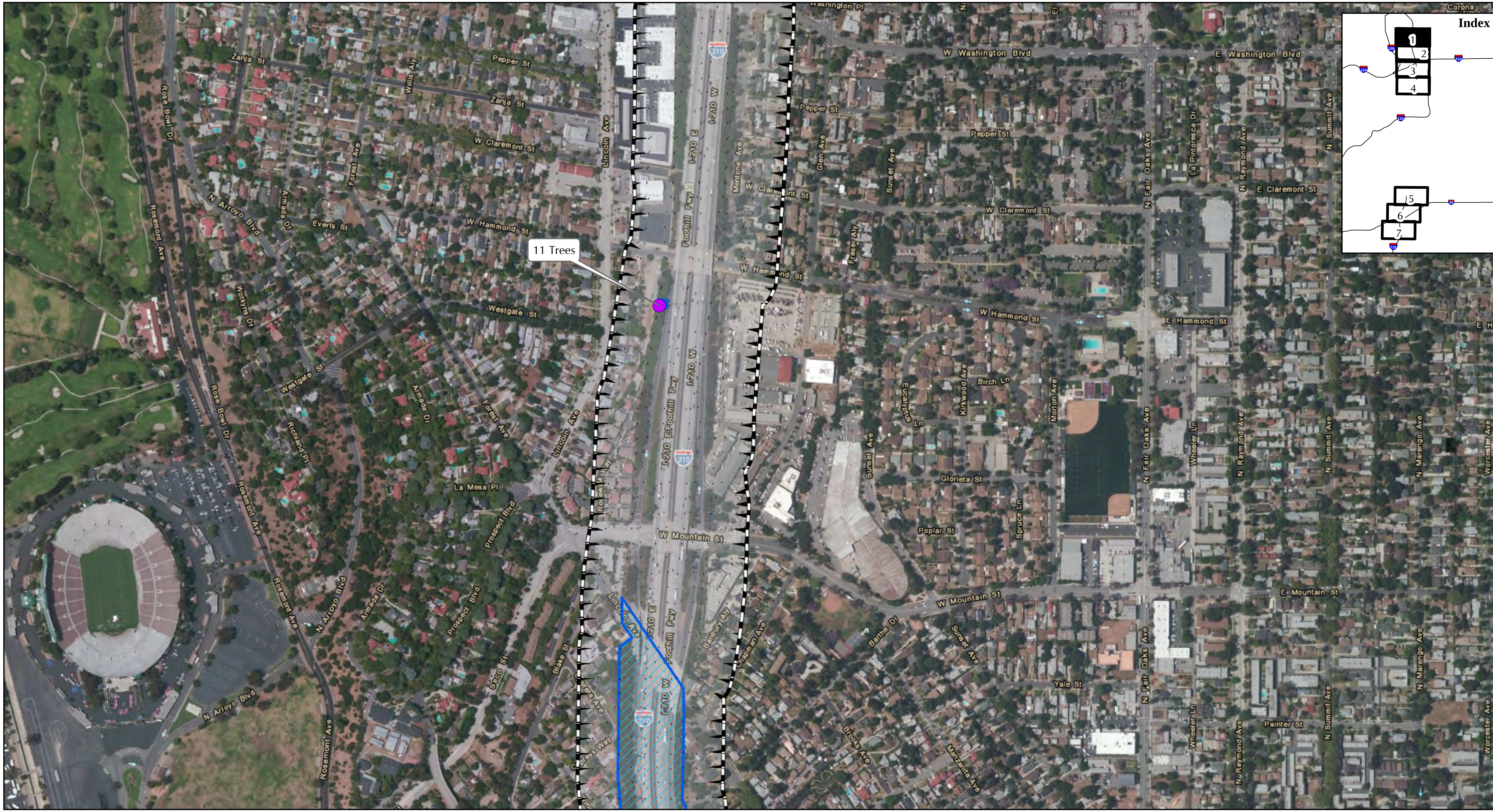

FIGURE 19.1
Page 1 of 7

N

0 100 200 400
Feet

LEGEND

Biological Study Area
Caltrans Right of Way

Freeway Tunnel - Single/Dual Bore Impacts

Permanent
Temporary

Tree Location

Non-Native Tree Species
Oak Tree (In Caltrans ROW)

SR 710 North Study
Freeway Tunnel Alternative Impacts
to Protected Trees
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)
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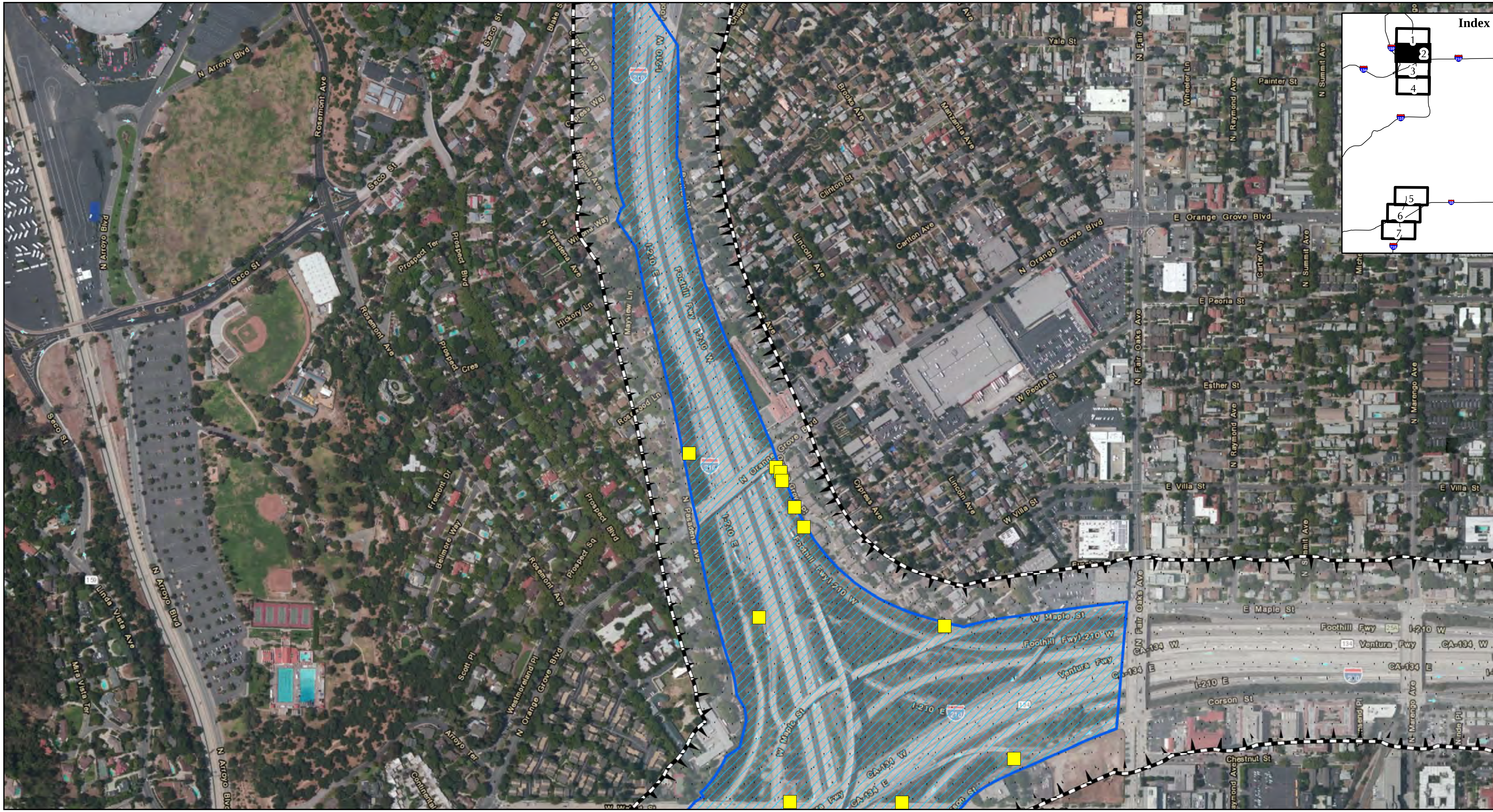

FIGURE 19.2
Page 2 of 7

N

0 100 200 400
Feet

LEGEND

Biological Study Area

Caltrans Right of Way

Freeway Tunnel - Single/Dual Bore Impacts

Permanent

Temporary

Tree Location

Non-Native Tree Species

Oak Tree (In Caltrans ROW)

SR 710 North Study
Freeway Tunnel Alternative Impacts
to Protected Trees
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_Tunnel_Impacts.mxd (11/10/2014)

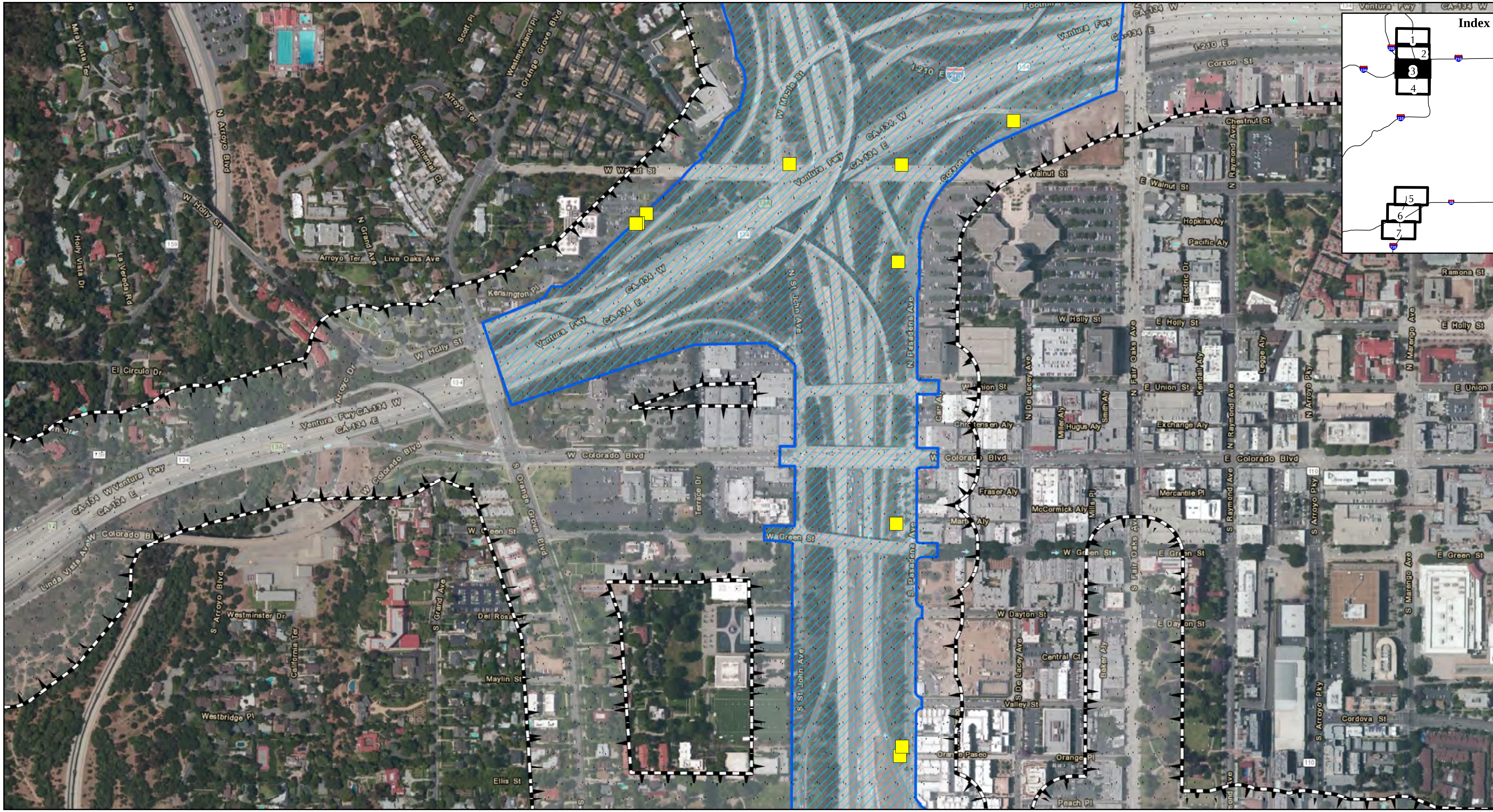

FIGURE 19.3
Page 3 of 7

N

0 100 200 400
Feet

LEGEND

Biological Study Area

Caltrans Right of Way

Freeway Tunnel - Single/Dual Bore Impacts

Permanent

Temporary

Tree Location

Non-Native Tree Species

Oak Tree (In Caltrans ROW)

SR 710 North Study
Freeway Tunnel Alternative Impacts
to Protected Trees
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_Tunnel_Impacts.mxd (11/10/2014)

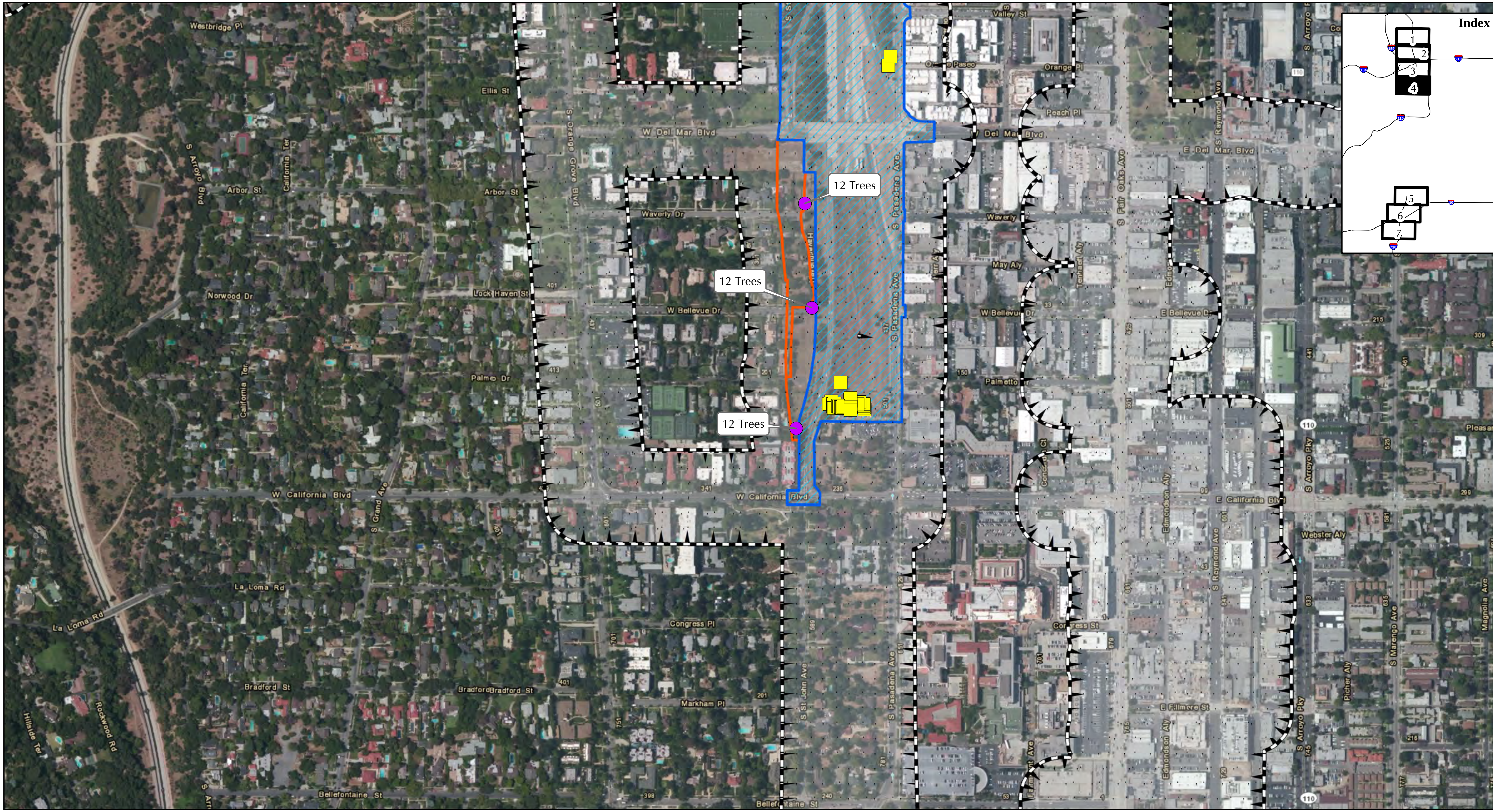

FIGURE 19.4
Page 4 of 7

LEGEND

Biological Study Area
Caltrans Right of Way

Freeway Tunnel - Single/Dual Bore Impacts

Permanent
Temporary

Tree Location

Non-Native Tree Species
Oak Tree (In Caltrans ROW)

0 100 200 400
Feet

SR 710 North Study
Freeway Tunnel Alternative Impacts
to Protected Trees
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_Tunnel_Impacts.mxd (11/10/2014)

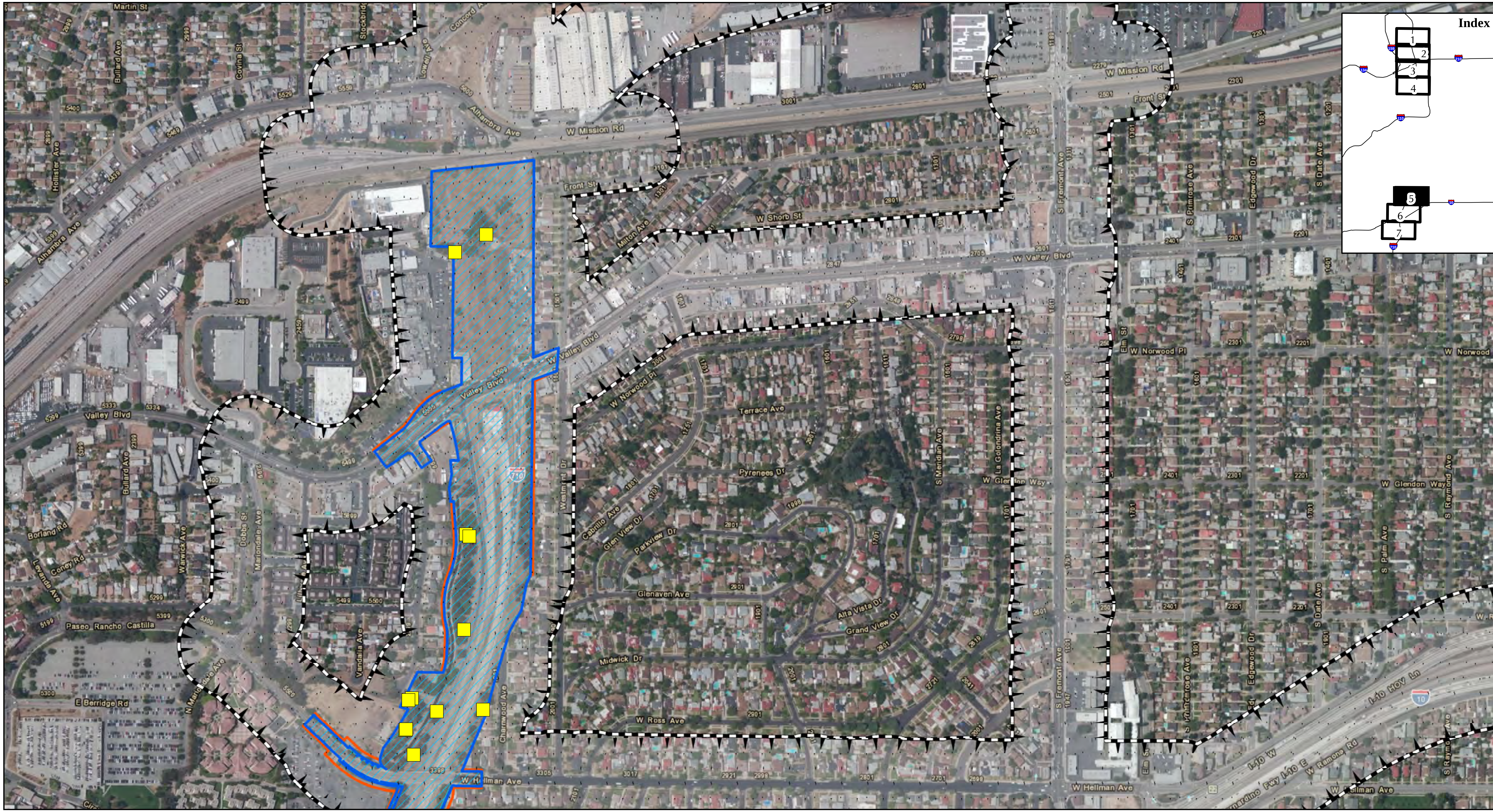

FIGURE 19.5
Page 5 of 7

N

0 100 200 400
Feet

LEGEND

Biological Study Area
Caltrans Right of Way

Freeway Tunnel - Single/Dual Bore Impacts

Permanent
Temporary

Tree Location

Non-Native Tree Species
Oak Tree (In Caltrans ROW)

SR 710 North Study
Freeway Tunnel Alternative Impacts
to Protected Trees
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_Tunnel_Impacts.mxd (11/10/2014)

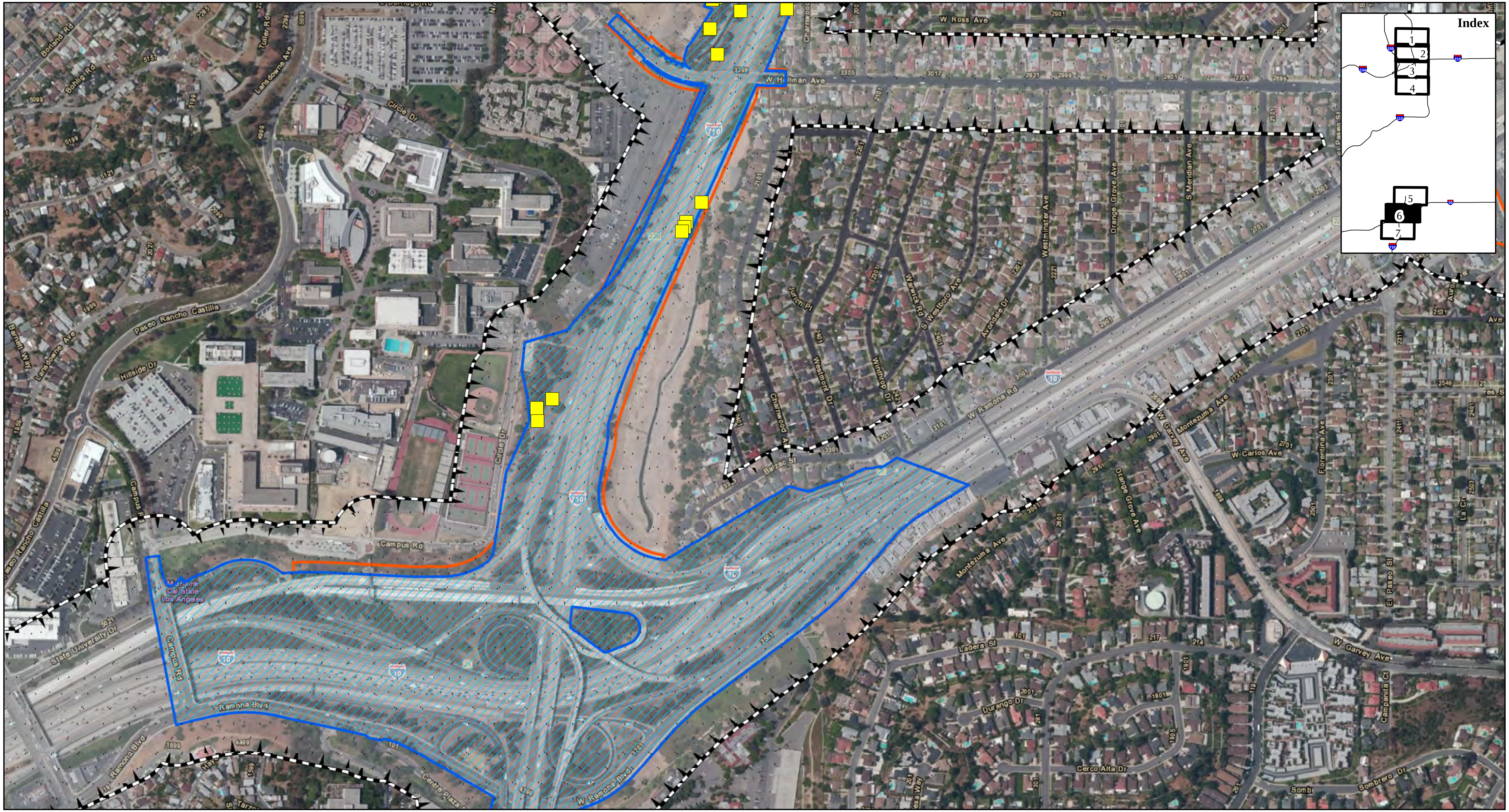

FIGURE 19.6
Page 6 of 7

LEGEND

Biological Study Area
Caltrans Right of Way

Freeway Tunnel - Single/Dual Bore Impacts

Permanent
Temporary

Tree Location

Non-Native Tree Species
Oak Tree (In Caltrans ROW)

N

0 100 200 400
Feet

SR 710 North Study
Freeway Tunnel Alternative Impacts
to Protected Trees
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_Tunnel_Impacts.mxd (11/10/2014)

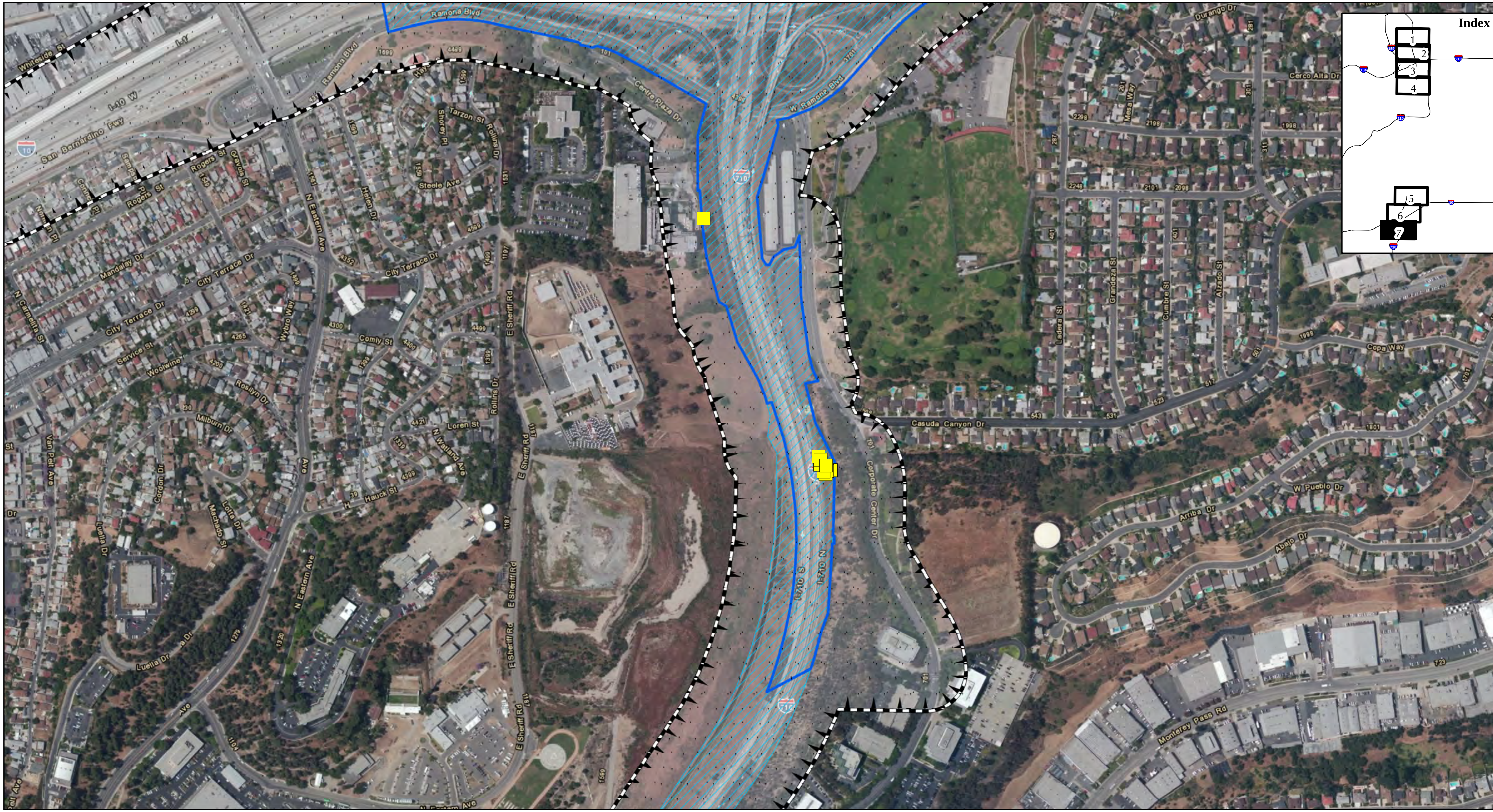

FIGURE 19.7
Page 7 of 7

LEGEND

Biological Study Area
Caltrans Right of Way

Freeway Tunnel - Single/Dual Bore Impacts

Permanent
Temporary

Tree Location

Non-Native Tree Species
Oak Tree (In Caltrans ROW)

N

0 100 200 400
Feet

SR 710 North Study
Freeway Tunnel Alternative Impacts
to Protected Trees
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Microsoft(Imagery date: 5-8-2010); Sapphos Environmental (10/2013)
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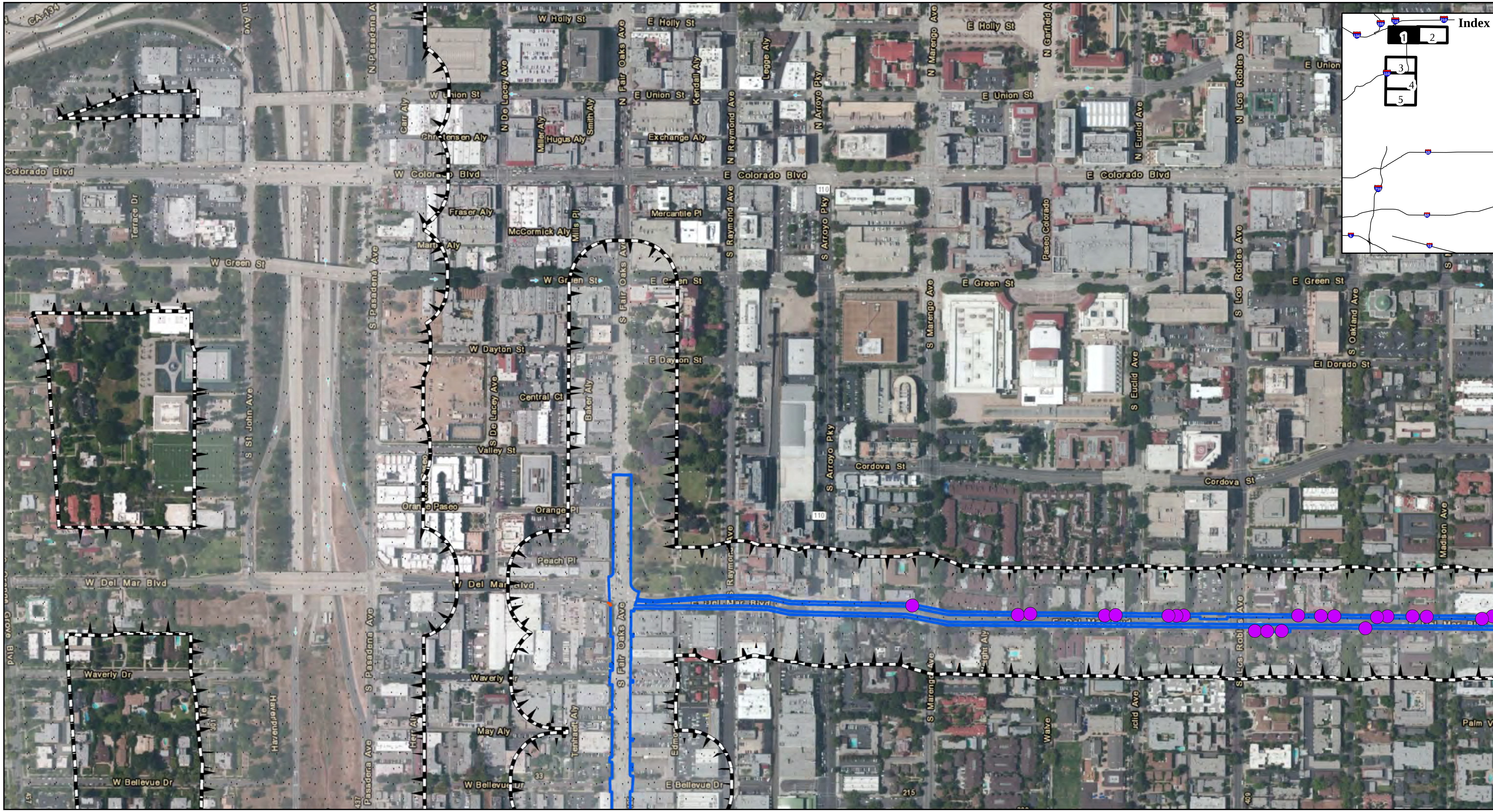


LEGEND

Biological Study Area

BRT Alternative Impacts

Permanent

Temporary

Tree Location

Native Tree Species

Non-Native Tree Species

0 100 200 400 600
Feet

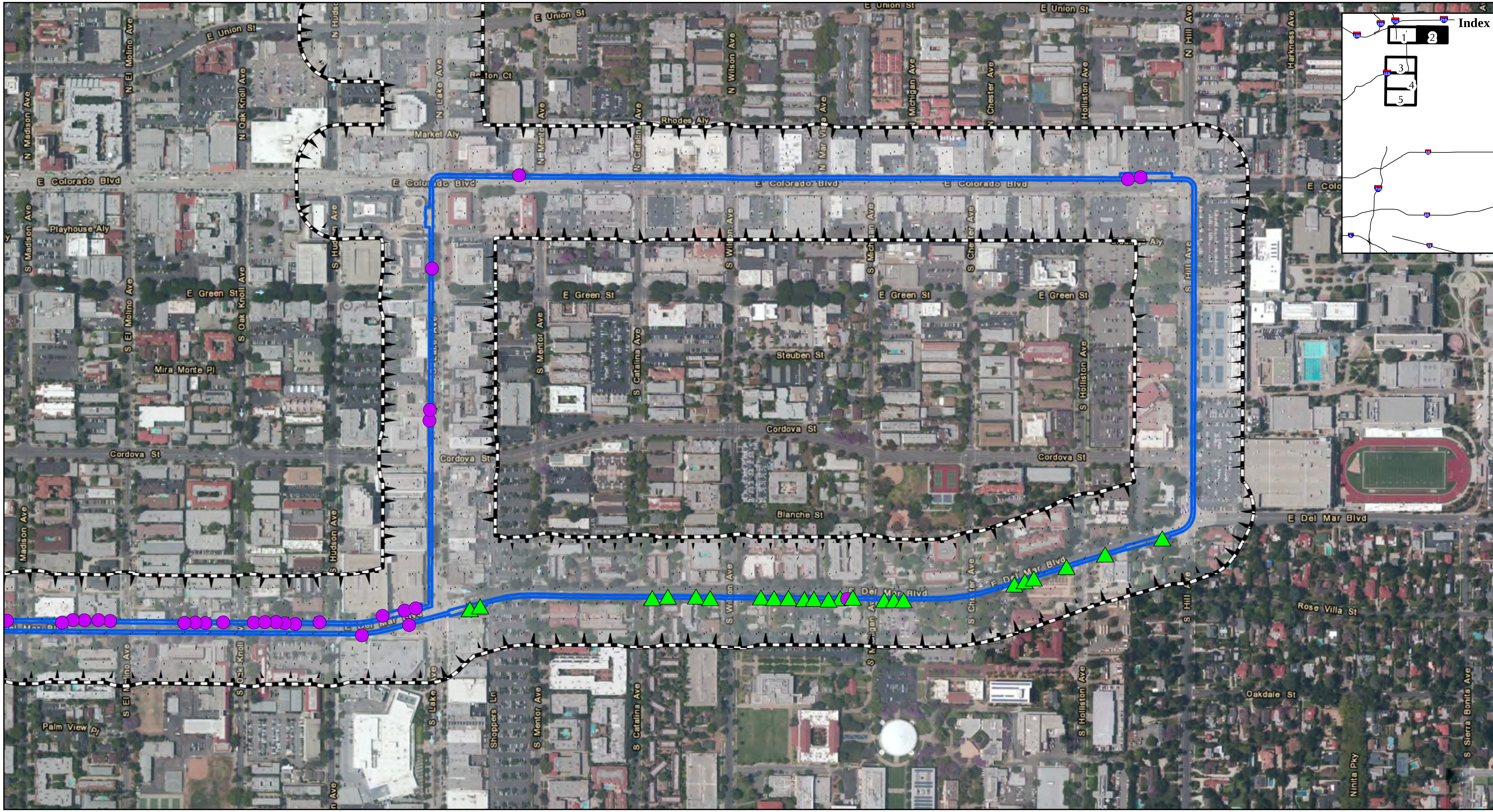
SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_BRT_Impacts.mxd (10/28/2014)

FIGURE 20.1
Page 1 of 5

SR 710 North Study

BRT Alternative Impacts to Protected Trees Outside the Caltrans Right of Way

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191



LEGEND

Biological Study Area

BRT Alternative Impacts

Permanent

Temporary

Tree Location

Native Tree Species

Non-Native Tree Species

N

0 100 200 400 600

Feet

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_BRT_Impacts.mxd (10/28/2014)

FIGURE 20.2

Page 2 of 5

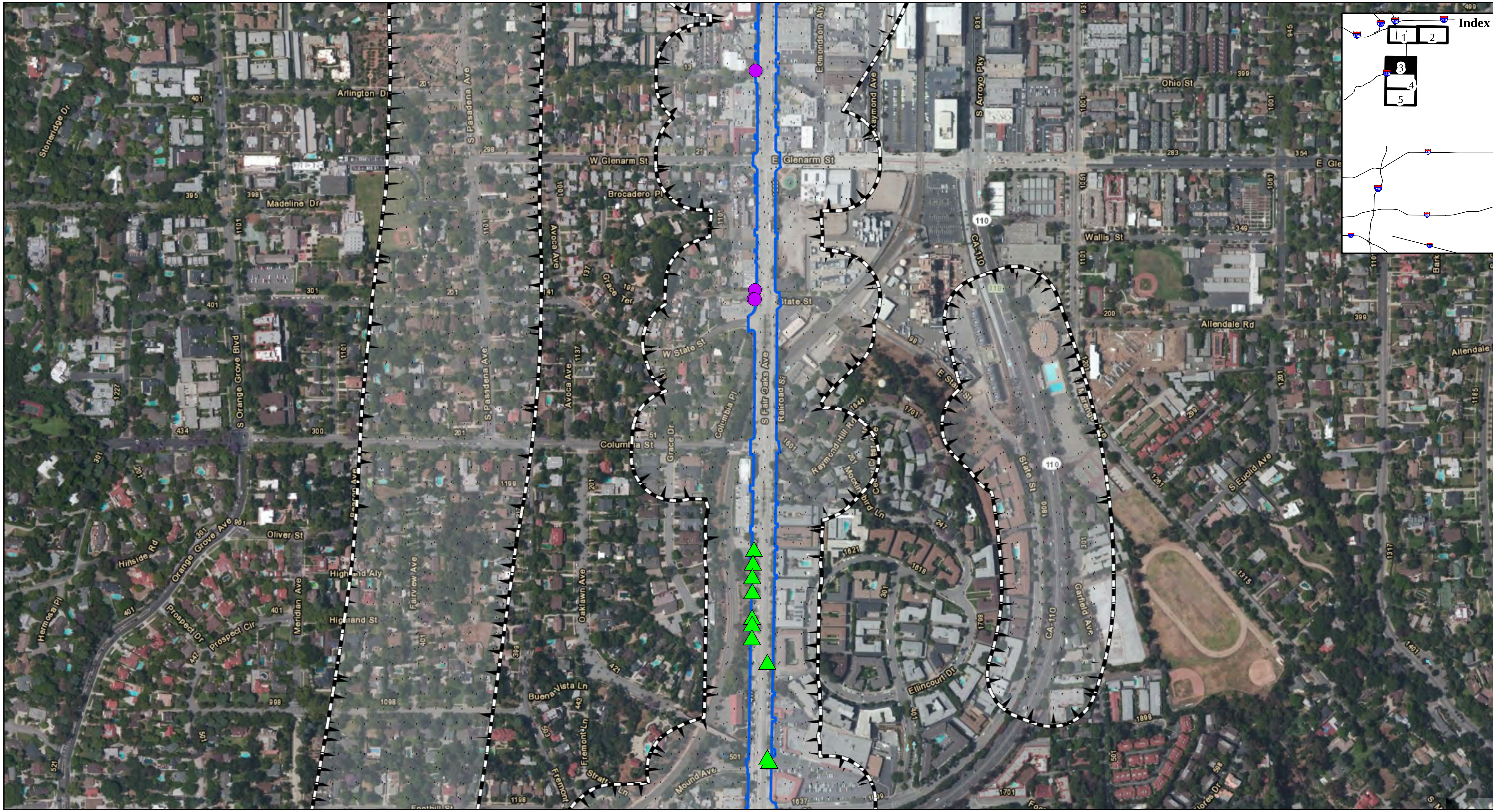
SR 710 North Study

BRT Alternative Impacts to Protected Trees Outside the Caltrans Right of Way

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191



LEGEND

Biological Study Area

BRT Alternative Impacts

Permanent

Temporary

Tree Location

Native Tree Species

Non-Native Tree Species

0 100 200 400 600
Feet

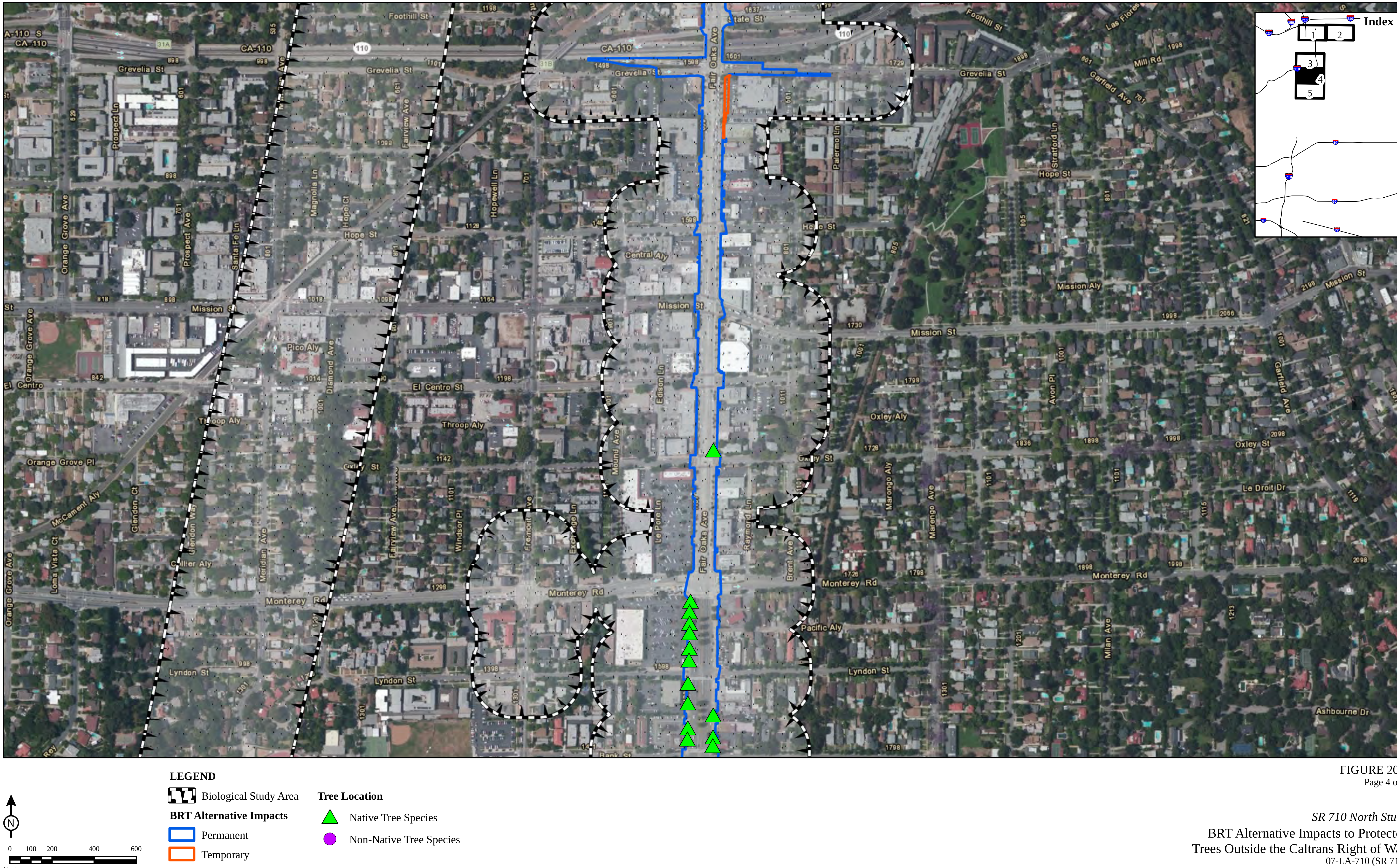
SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_BRT_Impacts.mxd (10/28/2014)

FIGURE 20.3
Page 3 of 5

SR 710 North Study

BRT Alternative Impacts to Protected Trees Outside the Caltrans Right of Way

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191



SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
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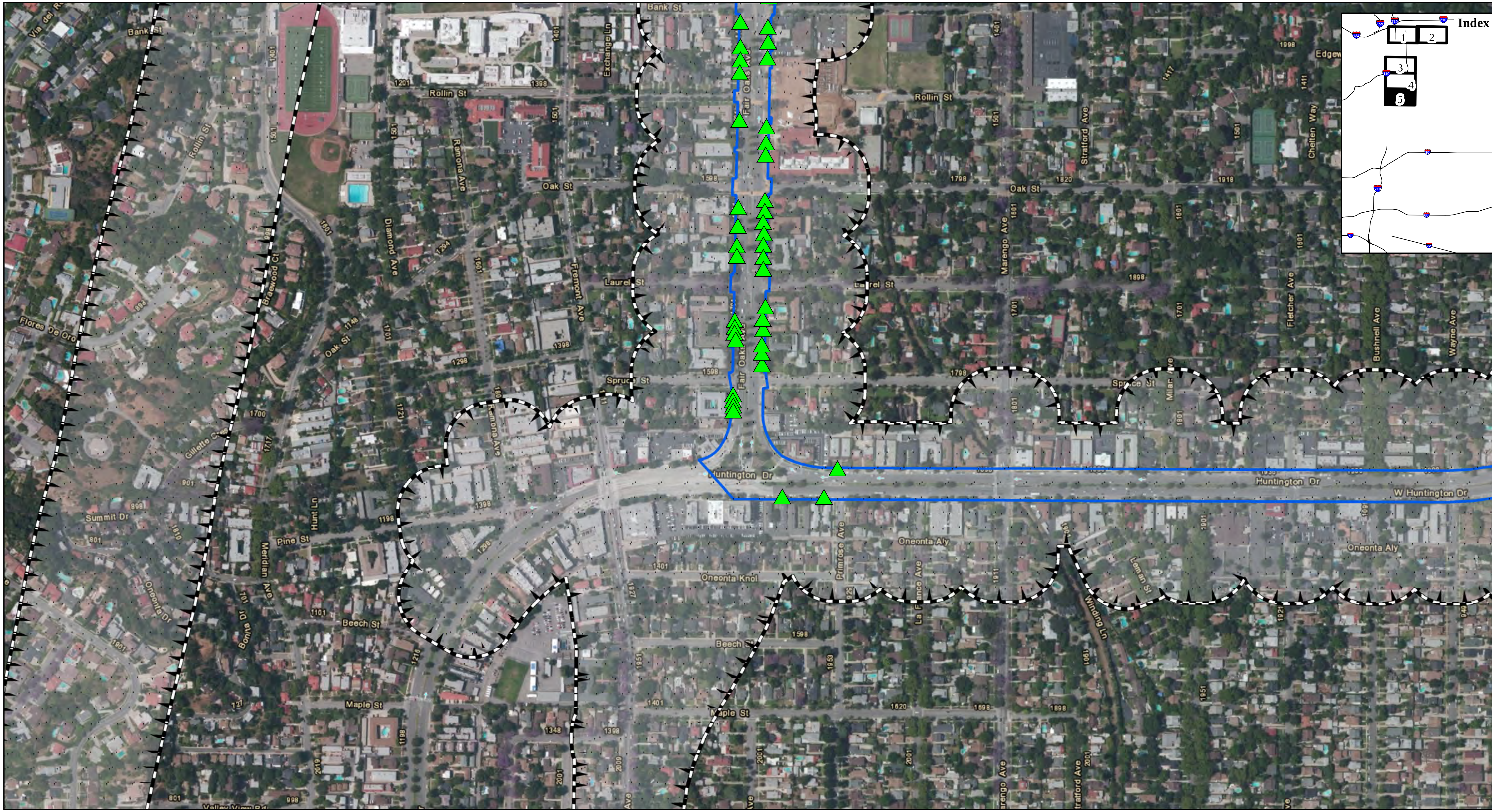
FIGURE 20.4
Page 4 of 5

SR 710 North Study

BRT Alternative Impacts to Protected Trees Outside the Caltrans Right of Way

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191



LEGEND

Biological Study Area

BRT Alternative Impacts

Permanent

Temporary

Tree Location

Native Tree Species

Non-Native Tree Species

N

0 100 200 400 600

Feet

FIGURE 20.5

Page 5 of 5

SR 710 North Study

BRT Alternative Impacts to Protected Trees Outside the Caltrans Right of Way

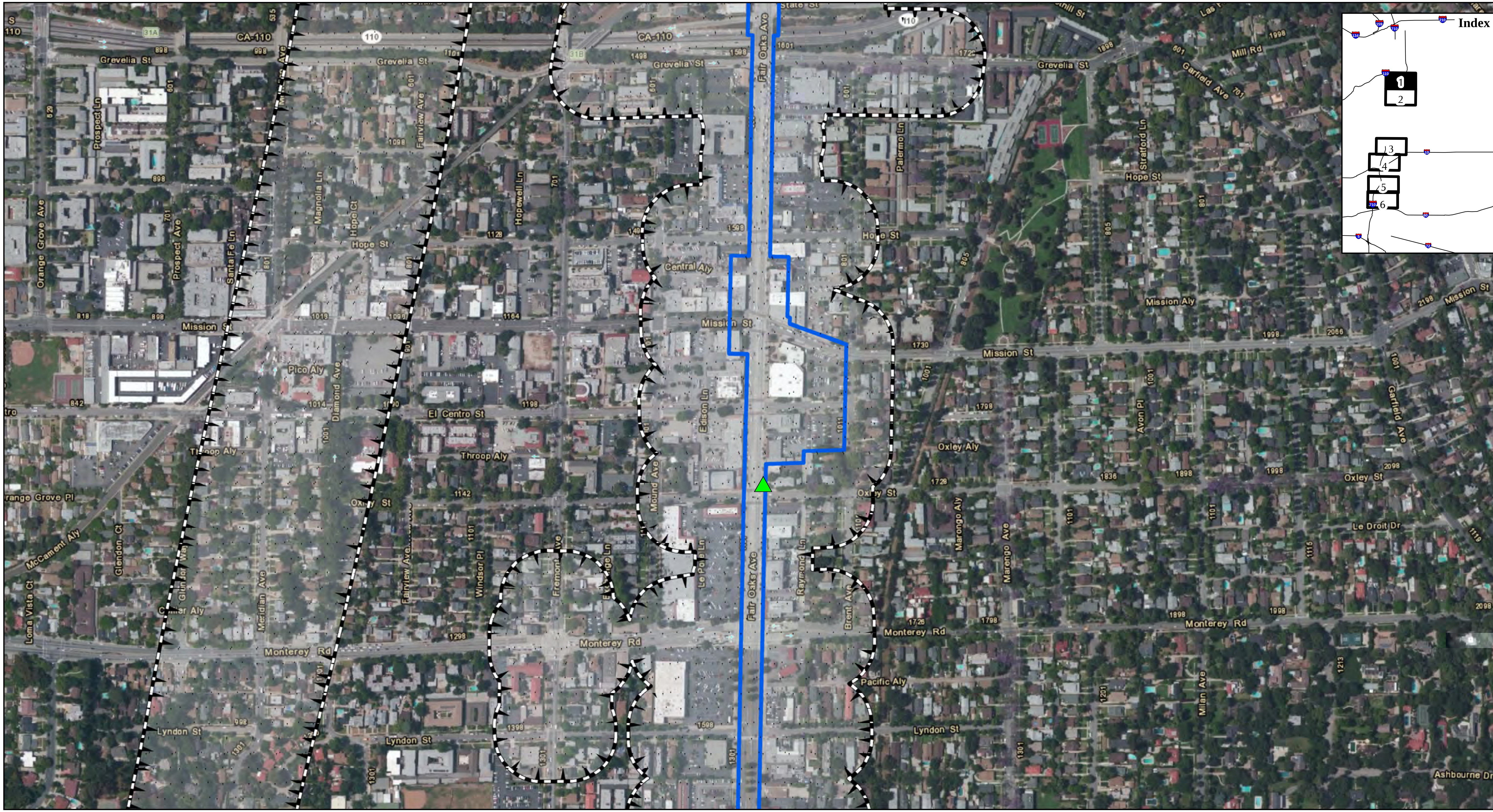
07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_BRT_Impacts.mxd (10/28/2014)



LEGEND

Biological Study Area

Caltrans Right of Way

LRT Alternative Impacts

Permanent

Temporary

Tree Location

Native Tree Species

Oak Tree (In Caltrans ROW)

N

0 100 200 400 600

Feet

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)

Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_LRT_Impacts.mxd (11/10/2014)

FIGURE 21.1

Page 1 of 6

SR 710 North Study

LRT Alternative Impacts to Protected Trees

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

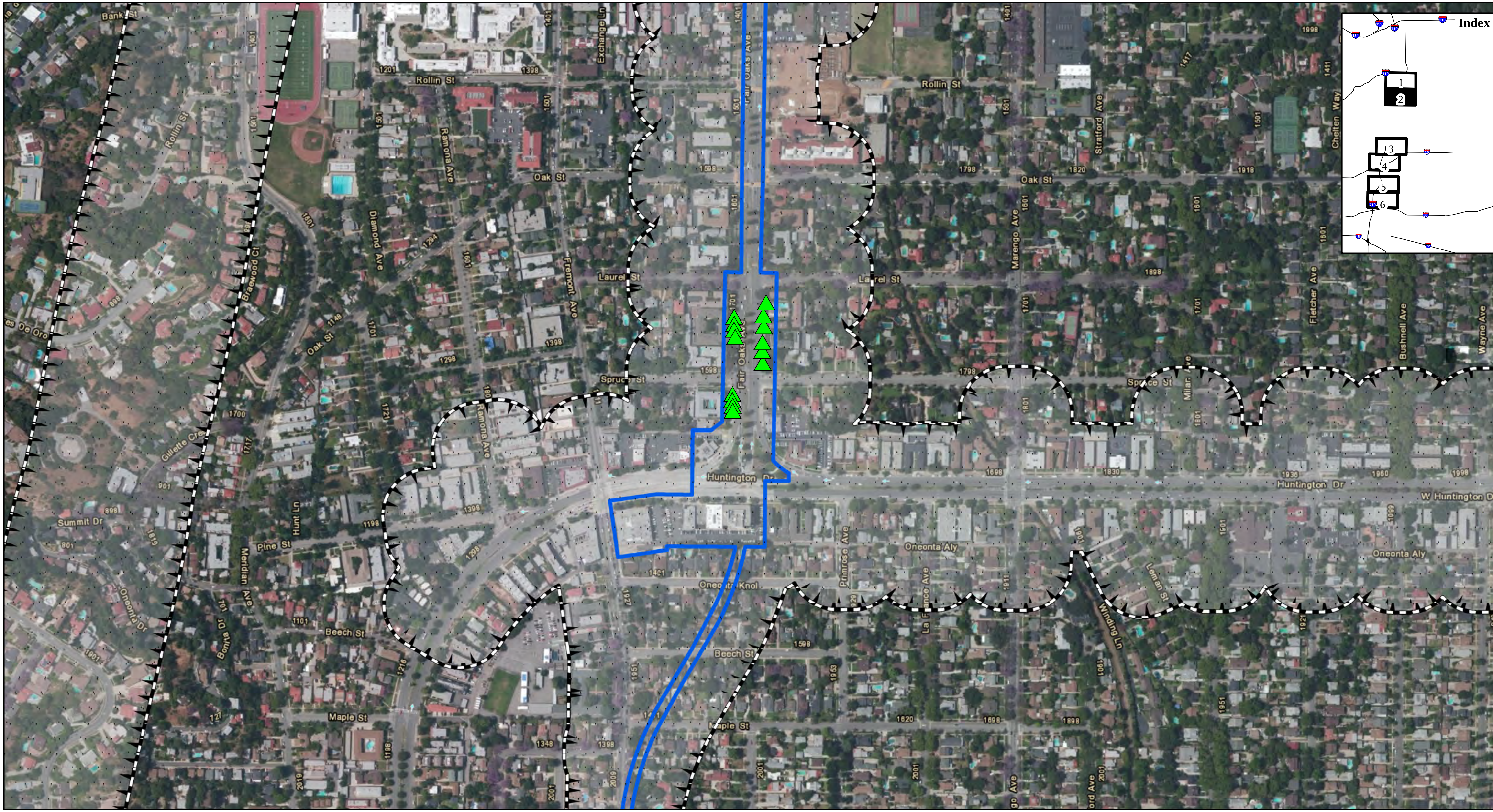


FIGURE 21.2
Page 2 of 6

N

0 100 200 400 600
Feet

LEGEND

Biological Study Area
Caltrans Right of Way

LRT Alternative Impacts
Permanent
Temporary

Tree Location
Native Tree Species
Oak Tree (In Caltrans ROW)

SR 710 North Study
LRT Alternative Impacts to Protected Trees
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_LRT_Impacts.mxd (11/10/2014)

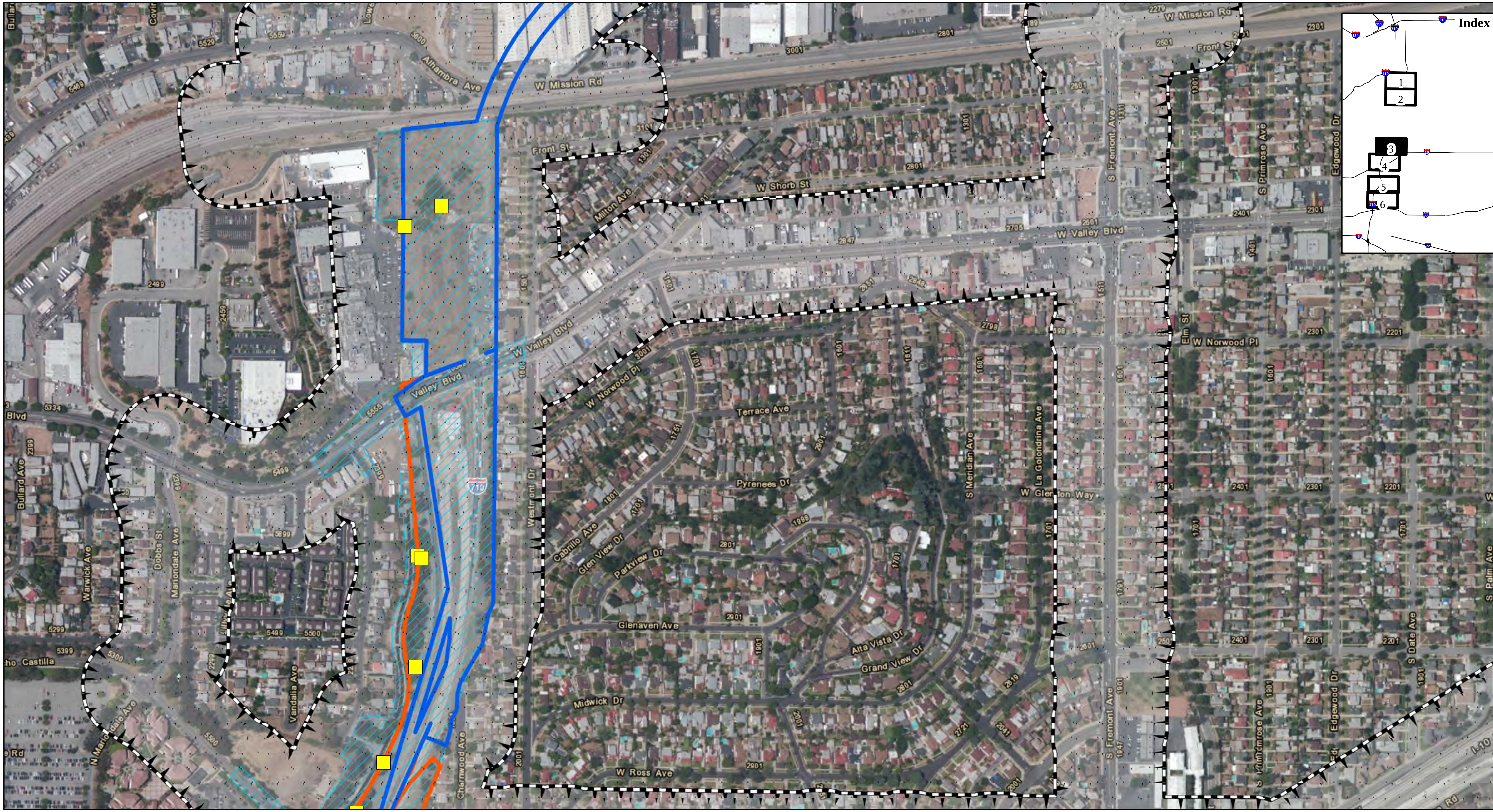


FIGURE 21.3
Page 3 of 6

LEGEND

Biological Study Area
Caltrans Right of Way

LRT Alternative Impacts
Permanent
Temporary

Tree Location
Native Tree Species
Oak Tree (In Caltrans ROW)

0 100 200 400 600
Feet

SR 710 North Study
LRT Alternative Impacts to Protected Trees
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_LRT_Impacts.mxd (11/10/2014)

FIGURE 21.4
Page 4 of 6

LEGEND

Biological Study Area
Caltrans Right of Way

LRT Alternative Impacts
Permanent
Temporary

Tree Location
Native Tree Species
Oak Tree (In Caltrans ROW)

N

0 100 200 400 600
Feet

SR 710 North Study
LRT Alternative Impacts to Protected Trees
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_LRT_Impacts.mxd (11/10/2014)

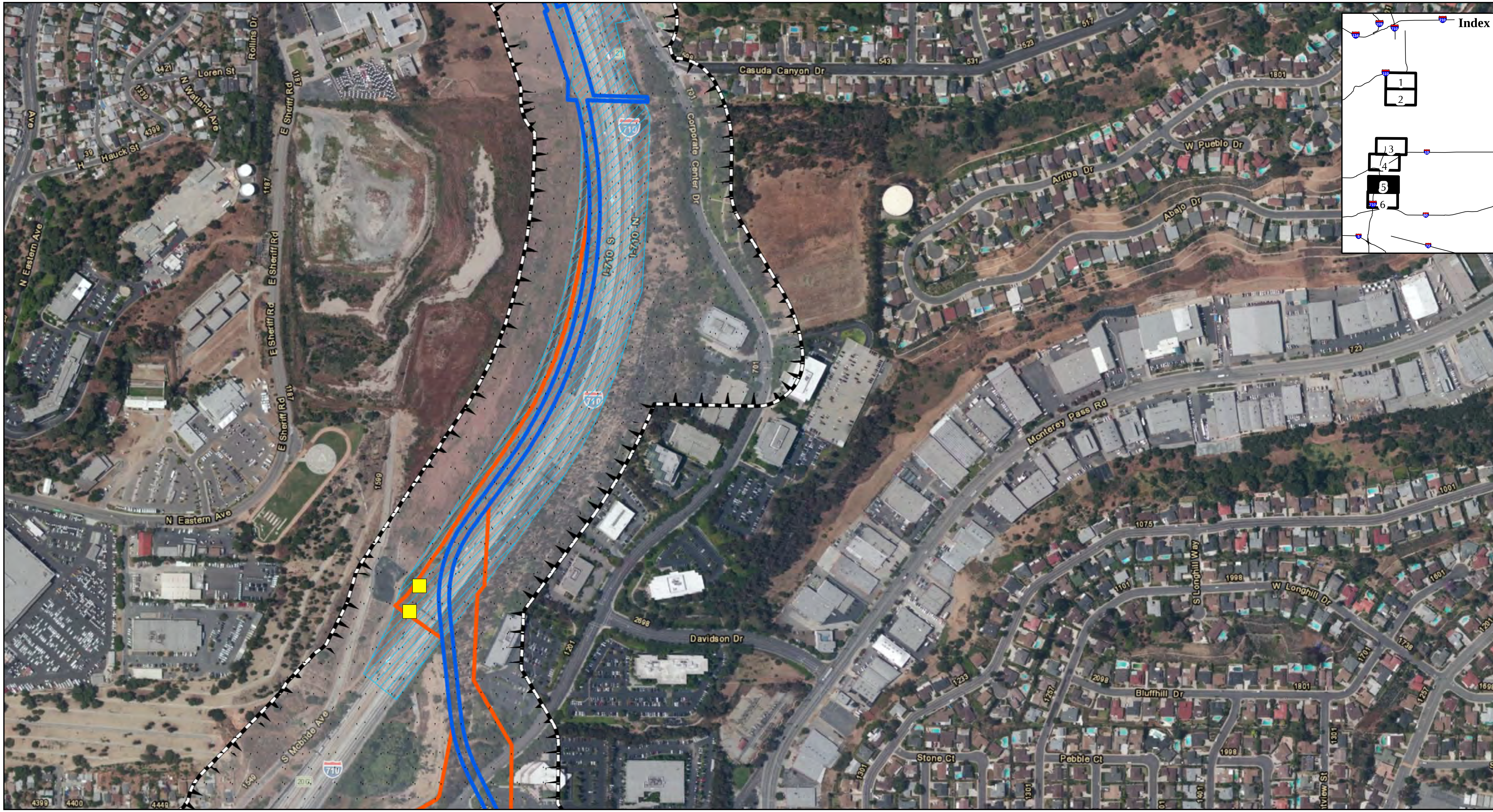


FIGURE 21.5
Page 5 of 6

LEGEND

Biological Study Area
Caltrans Right of Way

LRT Alternative Impacts
Permanent
Temporary

Tree Location
Native Tree Species
Oak Tree (In Caltrans ROW)

0 100 200 400 600
Feet

SR 710 North Study
LRT Alternative Impacts to Protected Trees
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
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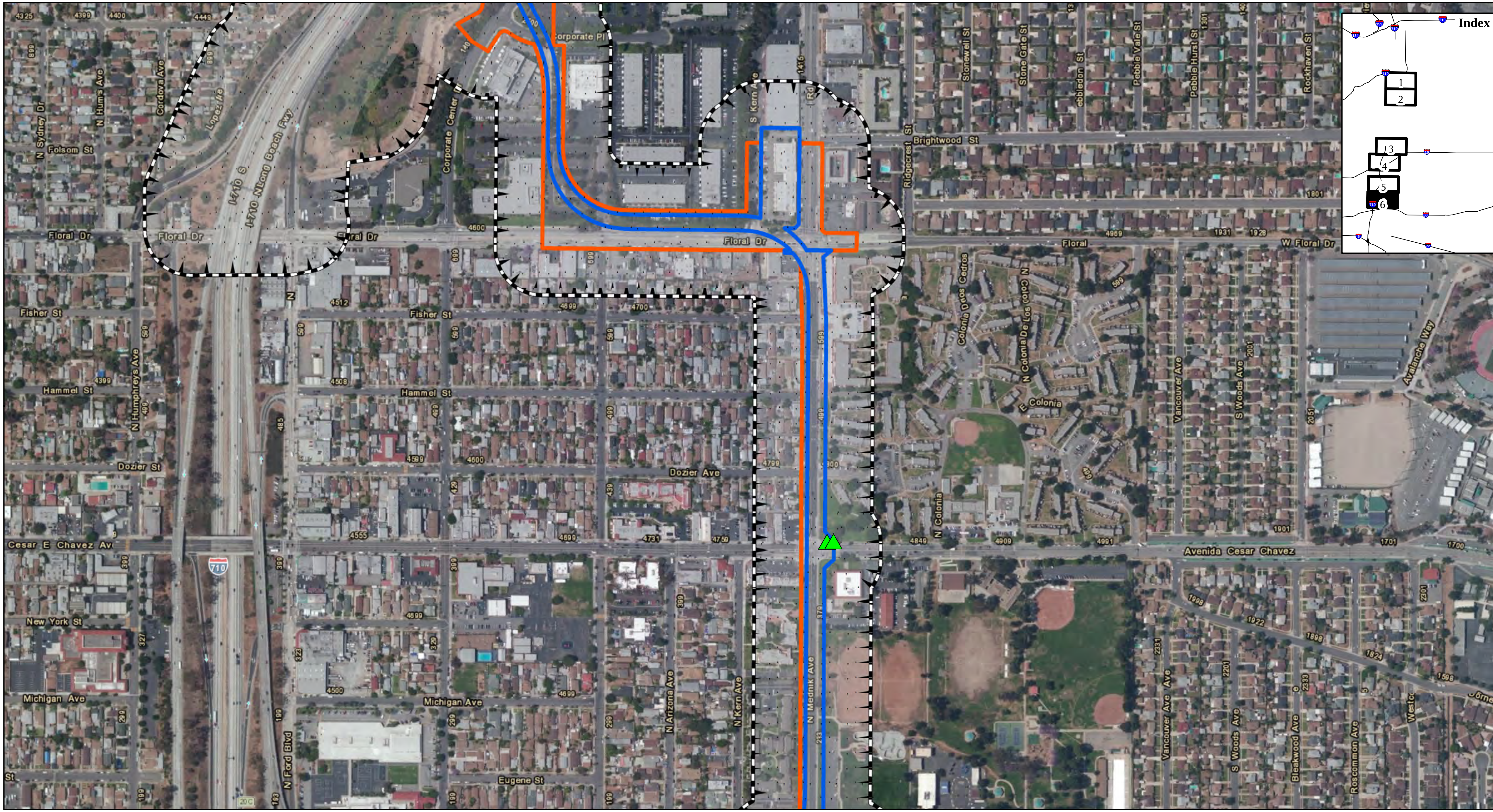


FIGURE 21.6
Page 6 of 6

LEGEND

Biological Study Area
Caltrans Right of Way

LRT Alternative Impacts
Permanent
Temporary

Tree Location
Native Tree Species
Oak Tree (In Caltrans ROW)

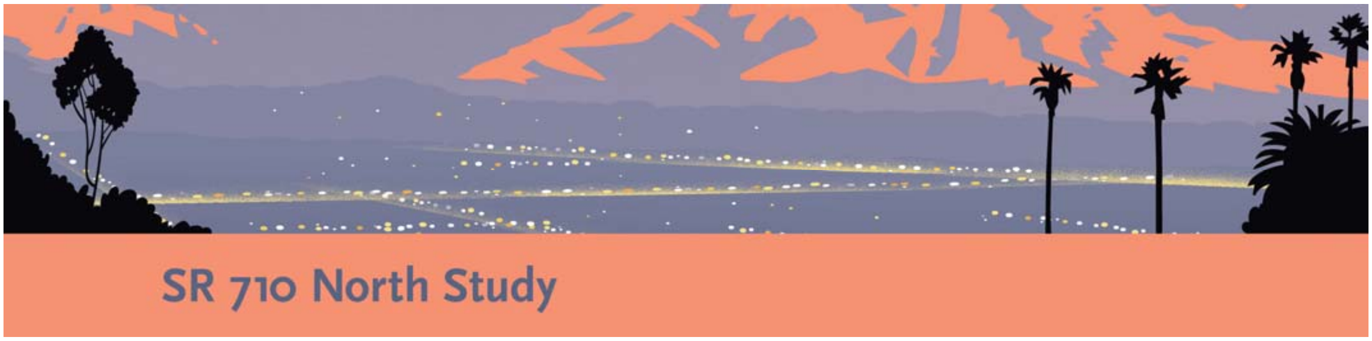
N

0 100 200 400 600
Feet

SR 710 North Study
LRT Alternative Impacts to Protected Trees
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: Bing Maps(circa 2008); Sapphos Environmentall (10/2013)
Q:\1282\SR_710\ArcProjects\BIO_NES\TreeLocs_LRT_Impacts.mxd (11/10/2014)

Appendix B Tree Survey



TECHNICAL MEMORANDUM

Tree Survey Report

PREPARED FOR:	Sapphos Environmental, Inc. (Ms. Marie Campbell and Dr. Pauline Roberts)
COPY TO:	N/A
PREPARED BY:	Sapphos Environmental, Inc. (Mr. Thomas Kmett and Ms. Lauren Dorough)
DATE:	April 2014
PROJECT NUMBER:	0700000191 / EA 187900

Executive Summary

This Memorandum for the Record (MFR) transmits the results of tree surveys conducted from June 4 through August 30, 2013 in support of the State Route (SR) 710 North Study (Proposed Project) located in Los Angeles County, California. The five alternatives of the Proposed Project include a No Build Alternative, Transportation System Management / Transportation Demand Management (TSM/TDM) Alternative, Bus Rapid Transit (BRT) Alternative, Light Rail Transit (LRT) Alternative, and Freeway Tunnel Alternative.

A pedestrian survey of protected trees was conducted to provide the numbers and locations of trees protected by county and city ordinances within the Proposed Project. The area surveyed included the areas considered for inclusion in the limits of disturbance (survey area) at the time of the survey, for all of the alternatives. A total of 5,459 protected trees were catalogued in accordance with the applicable cities' tree ordinance and the Los Angeles County Oak Tree Ordinance, including 811 oaks (*Quercus sp.*) and 113 other ordinance-protected California native trees. The remaining trees surveyed were non-native and/or ornamental trees. The Freeway Tunnel Alternative was identified as the alternative with the potential to have the greatest impact on protected trees within the Proposed Project area, with 3,487 protected trees located within its survey area.

The tree surveys entailed documentation of individuals of any tree species covered under applicable city tree ordinances and the Los Angeles County Oak Tree Ordinance present within the survey area of the combined Proposed Project Build Alternatives.

Introduction

Mature trees provide aesthetic and ecological resources, and are often considered to add value to the communities around them. Oak trees in particular are often associated as historically valuable trees in California. For these reasons, the County of Los Angeles and each city within provide protections to oaks and other mature trees in the form of tree ordinances.

As part of the Proposed Project, four Build Alternatives are under consideration: the TSM/TDM Alternative; the BRT Alternative; the LRT Alternative; and the Freeway Tunnel Alternative, including dual bore and single bore options. In addition, a No Build Alternative will be analyzed. The Proposed Project includes portions of eight cities in the County of Los Angeles: (1) Los Angeles, (2) Monterey Park, (3) Alhambra, (4) San Gabriel, (5) Rosemead, (6) San Marino, (7) South Pasadena, and (8) Pasadena, as well as unincorporated areas of Los Angeles County (to the east of Monterey Park and to the south of the City of Los Angeles). Land uses within the Proposed Project include typical urban settings, such as residential areas, industrialized warehouse, commercial businesses, and existing transportation systems.

In order to inform project planning and permitting, an inventory of trees protected pursuant to locally applicable ordinances (protected trees) was conducted within the area under consideration to be included in the limits of disturbance of any of the Proposed Project Alternatives (Figure 1, *Protected Tree Survey Area*). The tree survey area includes approximately 1,152 acres that may be subject to impacts under one or more of the Proposed Project Build Alternatives. The county and city ordinances provide protections against damage, trimming, and removal of protected trees; indirect impacts are not addressed. Therefore, the tree survey area was limited to the area, where direct impacts could occur. Implementation of the Proposed Project may necessitate the removal or trimming of protected trees and thus require permits and/or permission to be obtained from the appropriate city and/or the County of Los Angeles. The results of the survey may be used to inform project design, evaluate environmental impacts associated with the Proposed Project, and prepare environmental documents for the Proposed Project.

Regulatory Framework

Trees within the study area may be protected under one or more county or city ordinance. The Los Angeles County Oak Tree Ordinance covers the portions of the study area that fall into unincorporated Los Angeles County and provides specific protections and permitting requirements for trees meeting criteria outlined in the ordinance. Trees may also be protected pursuant to the applicable city ordinance for the city where the tree is located. Summaries of the pertinent ordinance information to determine which trees are protected by location are included below.

County Ordinance

Los Angeles County Oak Tree Ordinance – Municipal Code Sections 22.56.2050 – 22.56.2260. The Los Angeles County Oak Tree Ordinance requires a permit prior to the cutting, removing, destroying, relocating, inflicting damage on, or encroaching into a protected zone of any tree within the oak genus. The ordinance regulates only oak trees (genus *Quercus*) located within unincorporated areas of Los Angeles County. In addition, the circumference of an oak tree with one trunk must be 25 inches (8 inches in diameter) or more. For oak trees with multiple trunks, any two trunks must have a circumference of 38 inches (12 inches in diameter) or more. Measurements must be recorded at 4.5 feet above mean natural grade.

City Ordinances

The degree of tree protection within incorporated cities of Los Angeles County varies per city ordinance. The Cities of Los Angeles, Pasadena, South Pasadena, Rosemead, and San Gabriel have adopted tree ordinances that have greater specificity and stricter protected tree regulations than the Los Angeles County Oak Tree Ordinance. In turn, more public trees are protected within these cities compared to others within the survey area. However, where the survey areas entered the City of San Gabriel, no protected trees were encountered. In addition, the tree ordinance of the City of San Marino is more specific than the Los Angeles County Oak Tree Ordinance, but only applies to trees located in front, rear, or side yards which were not included in the survey area. The Cities of Alhambra and Monterey Park have not adopted the Los Angeles County Oak Tree Ordinance and have not implemented ordinances that protect specific trees. As a result, no trees were catalogued where the survey areas entered those cities.

City of Los Angeles Protected Tree Ordinance No. 177404. The City of Los Angeles Protected Tree Ordinance No. 177404 prohibits relocating, removing, or engaging in any act that may result in the death of a protected tree without prior applicable government action.[1] Protected under this ordinance are any individuals of the following native Southern California tree species which measure 4 inches or more in cumulative diameter, as measured at 4.5 feet above the ground level at the base of the tree: Oak tree, including valley oak (*Quercus lobata*) and coast

[1] Section 5, Subsection R, of Section 17.05 of the Los Angeles Municipal Code.

live oak (*Q. agrifolia*) or any other tree of the oak genus indigenous to California; Southern California black walnut (*Juglans californica var. californica*); western sycamore (*Platanus racemosa*); and California bay (*Umbellularia californica*). Tree species which are not protected are scrub oak (*Q. dumosa*) and nursery grown oaks. The ordinance does not protect any tree grown or held for sale by a licensed nursery or trees planted or grown as part of a tree planting program.

City of Pasadena City Trees and Tree Protection Ordinance – Municipal Code 8.52. Under the Pasadena City Trees and Tree Protection Ordinance, the trees meeting specific criteria (native, specimen, landmark, landmark-eligible, mature, and public trees) are protected from pruning, injury, or removal without a permit. To qualify for protection, it must meet the criteria for one or more of the following classes:

- *Native tree:* defined as any tree with a trunk more than 8 inches in diameter at a height of 4.5 feet above natural grade that is one of the following species: coast live oak, Engelmann oak (*Q. engelmanni)*, canyon oak (*Q. chrysolepis*), California sycamore, California black walnut, scrub oak *(Q. berberidifolia*), valley oak, California bay, Fremont Cottonwood (*Populus fremontii*), California alder (*Alnus rhombifolia*), black cottonwood (*P. trichocarpa*), arroyo willow (*Salix lasiolepis*), and California buckeye (*Aesculus californica*).
- *Specimen tree:* any tree meeting the criteria established by resolution of the City Council by species and size of tree which is thereby presumed to possess distinctive form, size or age, and to be an outstanding specimen of a desirable species and to warrant the protections of this chapter.
- *Landmark tree:* a tree designated as a landmark under Chapter 17.62 of this code as a tree of historic or cultural significance and of importance to the community due to any of the following factors: It is one of the largest or oldest trees of the species located in the city; it has historical significance due to an association with a historic building, site, street, person or event; or it is a defining landmark or significant outstanding feature of a neighborhood.
- *Landmark-eligible tree:* a tree which meets the criteria for designation as a landmark tree as determined by the review authority.
- *Mature tree:* an otherwise non-protected tree with a diameter at breast height (DBH) of 19 inches or greater.
- *Public tree:* a tree located in a place or area under ownership or control of the city, including, but without limitation, streets, parkways, open space, and parkland, and including city-owned property under the operational control of another entity by virtue of a lease, license, operating, or other agreement.

City of South Pasadena – Municipal Code 34 – Trees and Shrubs. The municipal code of the City of South Pasadena requires that a permit be obtained prior to removing or transplanting any significant or mature heritage tree, a significant or a mature native species tree, or a significant or mature oak tree from any property within the city; trim or prune more than 20 percent of the live foliage or limbs of any significant or mature heritage tree located within the city; trim or prune more than ten percent of the live foliage or limbs of any significant or mature oak or a significant or mature native species tree located within the city; remove any tree that is part of a watershed, wildlife habitat, and/or erosion control on hillsides. In addition, the code resolves that it is unlawful for any person to damage or cause to be damaged any significant or mature heritage tree, significant or mature oak tree, or significant or mature native species tree located within the city. In addition, written permission of the public works director or designee is required in order to remove any tree or shrub from the parkway area between a sidewalk or private property line and street curb.

The city of South Pasadena defines the aforementioned tree types as follows:

- *Heritage tree:* a tree of historical value because of its association with a place; building; natural feature of the land; or an event of local, regional, or national historic significance. It could be found on private or public property.
- *Mature tree:* any variety of tree that has a DBH of at least 4 inches.
- *Significant tree:* a tree that has a DBH of 12 inches or more.
- *Oak tree:* any species of tree of the genus *Quercus*, of any size.

- *Native species tree:* coast redwood (*Sequoia sempervirens*), giant redwood (*Sequoiadendron giganteum*), dawn redwood (*Metasequoia glyptostroboides*), California black walnut, western sycamore, Christmas berry (*Heteromeles arbutifolia*), blue elderberry (*Sambucus cerulea*), and Mexican elderberry (*Sambucus mexicana*).

City of San Marino Municipal Code – 23.06.15 – Preservation of Trees. The municipal code of the City of San Marino provides that in R-1 (Single-Family Dwelling) and C-1 (Commercial) zones it is unlawful for:

- Any person to remove any established tree or oak tree, whether alive, dead, diseased, or dying, located in the front yard or side yard adjacent to a street of a property without first obtaining a tree removal permit from the city.
- Any person to remove any established tree or oak tree whether alive, dead, diseased, or dying, located in the rear yard or a side yard not adjacent to a street of a property without first obtaining a tree removal permit from the city.
- Any person to severely prune or damage an established tree or oak tree in any yard of any lot.

Where an established tree is defined as "in the front yard and side yard adjacent to a street, any woody plant that is at least fifteen feet (15') in height and whose trunk is at least thirty six inches (36") or more in circumference when measured at a point four and one-half feet (4 feet 6 inches) above natural grade level and in the rear yard and side yard not adjacent to a street, any woody plant that is at least fifteen feet (15') in height and whose trunk is at least forty nine inches (49") in circumference when measured at a point four and one-half feet (4 feet 6 inches) above the natural grade level" and an oak tree is defined as "any oak tree of the genus *Quercus* that is at least fifteen feet (15') in height and whose trunk is at least thirty six inches (36") or more in circumference when measured at a point four and one-half feet (4 feet 6 inches) above natural grade level."

These regulations do not apply to trees in the historical and cultural zone and the parks and recreational zone or in the public parkways adjacent to the R-1 and C-1 zones.

City of Rosemead Ordinance No. 919 – Regulations for the Placement, Maintenance, and Removal of Trees on Public Property. The City of Rosemead Ordinance No. 919 states that a tree permit shall be required in order for any city tree, including any street tree, to be altered, which is defined as "filling, surfacing, grading, compacting, or changing the drainage pattern of the soil around any tree, in a manner that threatens the health of the tree". Approval from the Director of Public works shall be required in order to engage in the removal of any city tree including any street tree.

In addition, the ordinance states that Native trees and Prominent trees shall not be removed without first obtaining a Street Tree Permit approved by the Director. The City of Rosemead shall issue such permits only after the presentation of evidence showing that the subject tree is a significant health or fire hazard.

The following definitions have been set forth by the City of Rosemead to directly apply to the regulations in Ordinance No. 919:

- *City tree:* any tree owned or controlled by the City found growing in parkways, public property, and any landscape easements granted to the City and/or the public.
- *DBH:* the measurement of the diameter of a specific tree trunk at 4.5 feet (4'6") above finished grade.
- *Native tree:* any tree indigenous to the desert, foothills, or canyons of Southern California, provided that the plant has an expected mature trunk size of 6 inches (6") DBH or more and has an expected mature height of 15 feet (15') or higher.
- *Prominent Tree:* any tree with an existing trunk DBH of 6 inches (6") or more, or an existing height of 15 feet (15') or higher.
- *Street tree:* any tree not owned or controlled by the City growing along any street or within any parkway.
- *Tree:* shall mean a woody perennial plant which usually has, but is not limited to, a single dominant trunk and has an expected mature height of 15 feet (15') or more, or has an existing trunk diameter of 4 inches (4") or more measured at 2 feet (2') above finished grade.

City of San Gabriel Municipal Code – Title IX – Chapter 95: Trees and Shrubs. The municipal code of the City of San Gabriel provides that it is unlawful for any person to plant, move, remove, or replace any tree or shrub in the streets, avenues, highways, parks, parkways and public places of the city, or to cause the same to be done, unless and until a permit in writing so to do shall have been first obtained from the Community Development Director.

In Single-Family Residential Zones, the following prohibitions apply:

- No person shall cut, trim, prune, transplant, destroy or remove more than one third (33 percent) of the live foliage of any mature Class I tree located anywhere on private property in the Single-Family Residential Zones of the city without first obtaining a permit from the city.
- No person shall cut, trim, prune, transplant or destroy more than one-third (33 percent) of the live foliage or remove any tree of "historical/landmark" significance located in any of the Single-Family Residential Zones of the city anywhere on private property without first obtaining a permit from the city.
- No person shall reduce the height of any protected mature tree by more than one-fourth (25 percent) over two years without first obtaining a permit from the city.

Class 1 trees are defined as any of the following trees: Alder (*Alnus* sp.), Ash (*Fraxinus* sp.), Beech (*Fagus* sp.), Birch (*Betula* sp.), Camphor (*Cinnamomum camphora*), Carrot Wood (*Cupaniopsis anacardiopsis*), Cedars (*Cedrus atlantica* and *C. deodara*), Chinese Flame tree (*Koelreuteria bipinnata*), Coral tree (*Erythina* sp.), Crape Myrtle (*Lagerstroemia indica*), Fern Pine (*Podocarpus gracilior*), Fig tree (*Ficus rubiginosa*), Floss Silk tree (*Chorisia sp.*), Ginkgo (*Ginkgo biloba*), Jacaranda (*Jacaranda mimosifolia*), Magnolia (*Magnolia grandiflora*), Oaks (*Quercus* sp.), Olive (*Olea europaea*), California Pepper (*Schinus molle*), Canary Island Pine (*Pinus canariensis*), Italian Stone Pine (*Pinus pinea*), Coast Redwood (*Sequoia sempervirens*), Sequoia (*Sequoia giganteum*), Strawberry tree (*Arbutus unedo*), Sweetgum (*Liquidamber styraciflua*), Western Sycamore (*Platanus racemosa*), and Tulip Tree (*Liriodendron tulipifera*).

Historical/Landmark trees are defined as any tree or stand of trees (except palm trees) that meet one of the following criteria: A tree or stand of trees which have taken on an aura of historical value by virtue of age or location and/or a tree which has a trunk with a 40-inch circumference (12.75-inch diameter), if located in the front yard, or 60 inches in circumference (19-inch diameter), if located in the rear and side yards.

Mature trees are defined as any variety of a tree (except fruit trees) that is more than 12.5 inches in circumference (4-inch diameter) when measured at a point 4 feet above the natural grade.

Additional Tree Protections

In addition to the tree protections and regulations outlined above, the cities of Alhambra and Monterey Park designate that it unlawful to remove, trim, or damage any tree on city property without prior city official approval.

Methods

Survey Methodology

The surveys were conducted in accordance with the requirements set forth by the Los Angeles County Oak Tree Ordinance as well as each respective applicable city tree protection ordinance. Trees were surveyed throughout the study area. The study area covered all areas under consideration to be included in the limits of disturbance at the time of the survey, and therefore, all areas where protected trees may be directly impacted by the Proposed Project. The study area included approximately 1,152 acres.

The tree surveys were conducted by Sapphos Environmental, Inc. biologists (Ms. Lauren Dorough, Mr. Thomas Kmett, Ms. Amariah Lebsock, Mr. John Ivanov, Ms. Angelica Mendoza, Mr. Jorge Guzman, Mr. Jordan Zylstra, and Ms. Debra De La Torre) on June 4–7, 11–13, 20–21, and 25; July 3, 9, 12, 17, 18, 29--31; and August 1–2, 5–9, 28, and 30, 2013. Teams of two to three biologists walked the entirety of the study area and catalogued every tree meeting ordinance criteria for DBH and/or species using an Ashtech global positioning system (GPS) unit with sub-meter accuracy. The city and Build Alternative where each catalogued tree was located were also recorded. A diameter tape was used to measure DBHs of each tree to determine what, if any, ordinance they fell under. Some areas within the survey area were inaccessible due to fences, freeway crossings, steep slopes, impenetrably thick brush, or other safety hazards. Where practical, these areas were observed at a distance, trees were identified from multiple angles through the use of binoculars, and location was estimated and mapped.

All Sapphos Environmental, Inc. survey personnel were experienced in the undertaking of field surveys, as well as knowledgeable of the identification and ecology of protected tree species. The survey team was knowledgeable about each city's specific tree ordinance as well as the Los Angeles County Oak Tree Ordinance, and was familiar with federal and state statutes relating to common and listed tree species. Surveyors had in-depth knowledge and familiarity with the species of the area, including rare tree species. In addition, field teams were knowledgeable of the habitat requirements for each of the target species, locations of various habitats within the survey area, and of the characteristics of each target species.

Description of Project Alternative Survey Area

The protected tree survey area included the combined areas under consideration to be included in the limits of disturbance for all of the alternatives associated with the Proposed Project (Figure 1). However, because the characteristics of the tree survey area within segments represented by each Build Alternative's survey area differed considerably, the survey area of each Build Alternative is described below.

TSM/TDM Alternative Description

The portion of tree survey area associated with the TSM/TDM Alternative consists primarily of short (less than 1 block) street segments and traffic signal intersections located throughout the Cities of Monterey Park, Los Angeles, Rosemead, San Gabriel, Alhambra, South Pasadena, San Marino, Pasadena, and through unincorporated areas of Los Angeles County (Figure 2, *TSM/TDM Alternative*). This area consisted almost entirely of city streets with the exception of a patch of unmaintained vegetation just north of West Valley Boulevard in unincorporated Los Angeles County.

BRT Alternative Description

The portion of the tree survey area associated with the BRT Alternative consists primarily of major city streets (Atlantic Boulevard, Huntington Drive, Fair Oaks Avenue, and Del Mar Boulevard) and the smaller residential streets that extended from them (Figure 3, *Bus Rapid Transit Alternative*). The protected trees represented in the BRT Alternative survey area were almost entirely planted trees that lined sidewalks along city streets. The only areas of unmaintained vegetation present within the BRT Alternative were just north and south of the SR 60 freeway off of Atlantic Boulevard in the City of Monterey Park and just west of Fair Oaks Boulevard and north of Columbia Street in the City of Pasadena. With the exception of these locations, this area is nearly entirely developed.

LRT Alternative Description

The portion of the tree survey area associated with the LRT Alternative consists primarily of city streets and freeway edges and medians (Figure 4, *Light Rail Transit Alternative*). Most of the southern portion of the LRT Alternative is proposed to be underground. The aboveground portions of the underground impact areas were not surveyed for trees, as belowground activities were not anticipated to affect trees. The only areas of unmaintained vegetation present within the proposed aboveground survey area were isolated areas of non-native woodland and non-native grassland along freeway edges and medians near SR 710, SR 60, and Interstate 10 (I-10) in the cities of Monterey Park, Los Angeles, Alhambra, and north of West Valley Boulevard in unincorporated Los Angeles County. This area in its entirety spanned parts of the cities of Monterey Park, Los Angeles, Alhambra, Pasadena, South Pasadena, and portions of unincorporated Los Angeles County.

Freeway Tunnel Alternative Description

The Freeway Tunnel Alternative survey area consists almost entirely of freeway edges and medians along the SR 710 / I-10 interchange and the SR 134 / I-210 interchange (Figure 5, *Freeway Tunnel Alternative*). A portion of the survey area for the Freeway Tunnel Alternative is proposed to be underground. The aboveground portions of the underground impact areas were not surveyed for trees, as belowground activities were not anticipated to affect trees. The survey area consisted mostly of semi-maintained non-native vegetation areas alongside the freeway and within freeway medians. Areas of unmaintained vegetation in the survey area within this alternative included areas of non-native woodland and grassland within and around the freeway interchanges as well as areas of white alter groves and laurel sumac scrub along and underneath SR 134. This area included parts of the Cities of Monterey Park, Los Angeles, Alhambra, Pasadena, and portions of unincorporated Los Angeles County.

Survey Results

Fifty-three (53) tree species were identified within the project area as a result of surveys (Attachment A, *Tree Compendium*). A total of 5,459 individual trees in the study area were identified as meeting criteria for protection pursuant to at least one city or county ordinance (Table 1, *Recorded Protected Trees by Build Alternative and City*).

TABLE 1
Protected Trees by Build Alternative and City

Protected Trees by City	TSM/TDM	BRT	LRT	Freeway Tunnel Alternative
Alhambra	0	0	0	0
Monterey Park	0	0	0	0
Los Angeles	19	0	15	21
Rosemead	11	0	0	0
San Marino	0	0	0	0
Pasadena	220	732	0	3,462
South Pasadena	120	767	139	0
Unincorporated Los Angeles County	0	6	2	4
Total Trees	**370**	**1,505**	**156**	**3,487**

The great majority of trees recorded were non-native ornamental trees located along city streets and within freeway edges and margins and, therefore, were likely planted and not naturally occurring. Common ornamental tree species encountered throughout the surveys included: crape myrtle, southern magnolia, blue jacaranda, eucalyptus, and sweetgum. Of the 811 individual oak trees catalogued, more than 75 percent were coast live oaks. However, one valley oak, one black oak, and one Engelmann oak were identified. Holly oak and cork oak were identified along some streets, primarily along the BRT alternative; both species are native to the Mediterranean region of Europe.

TSM/TDM Alternative

Overall, 370 protected trees were recorded in the survey area within the TSM/TDM Alternative (Table 1). Within this alternative, a total of 76 protected oak trees were identified. A total of 23 protected native tree species were encountered and recorded; these were located in the Cities of Los Angeles and South Pasadena.

BRT Alternative

Within this alternative, a total of 232 oak trees covered by city ordinances or the Los Angeles County Oak Tree Ordinance were recorded. A total of 41 protected native tree species were encountered and recorded in the Cities of Pasadena and South Pasadena. Overall, 1,505 protected trees were recorded in the survey area within this alternative (Table 1).

LRT Alternative

The survey area within the LRT Alternative contained the fewest ordinance protected trees, and nearly all appeared to be planted and/or non-native. Within this alternative, a total of 25 oak trees covered by city ordinances and/or the Los Angeles County Oak Tree Ordinance were recorded. A total of 9 protected native tree species were encountered and recorded in the City of Los Angeles. Overall, 156 protected trees were recorded in the survey area within this alternative (Table 1).

Freeway Tunnel Alternative

The survey area within the Freeway Tunnel Alternative contained the highest number of ordinance protected trees and oak trees. Within this alternative, a total of 576 oak trees covered by city ordinances and/or the Los Angeles County Oak Tree Ordinance were recorded. A total of 50 protected native tree species were encountered and recorded in the Cities of Los Angeles and Pasadena. Overall, 3,487 protected trees were recorded in the survey area within this alternative (Table 1).

Discussion

Trees protected by city ordinances or the Los Angeles County Oak Tree Ordinance were identified in all four Build Alternatives. The Freeway Tunnel Alternative covered the largest area of all the alternatives with almost half of the area being located in Pasadena, which has protection for all public trees. As a result, the Freeway Tunnel Alternative survey area contained the most oaks and ordinance protected trees, followed by the BRT Alternative, the TSM/TDM Alternative, and the LRT Alternative. Should any impacts to protected trees be planned, the applicable city or county tree permits and/or city official approval would be required prior to the damage, trimming, and/or removal of said trees.

Should there be any questions regarding the information contained in this MFR, please contact Ms. Lauren Dorough or Mr. Thomas Kmett at (626) 683-3547.

REPORT FIGURES

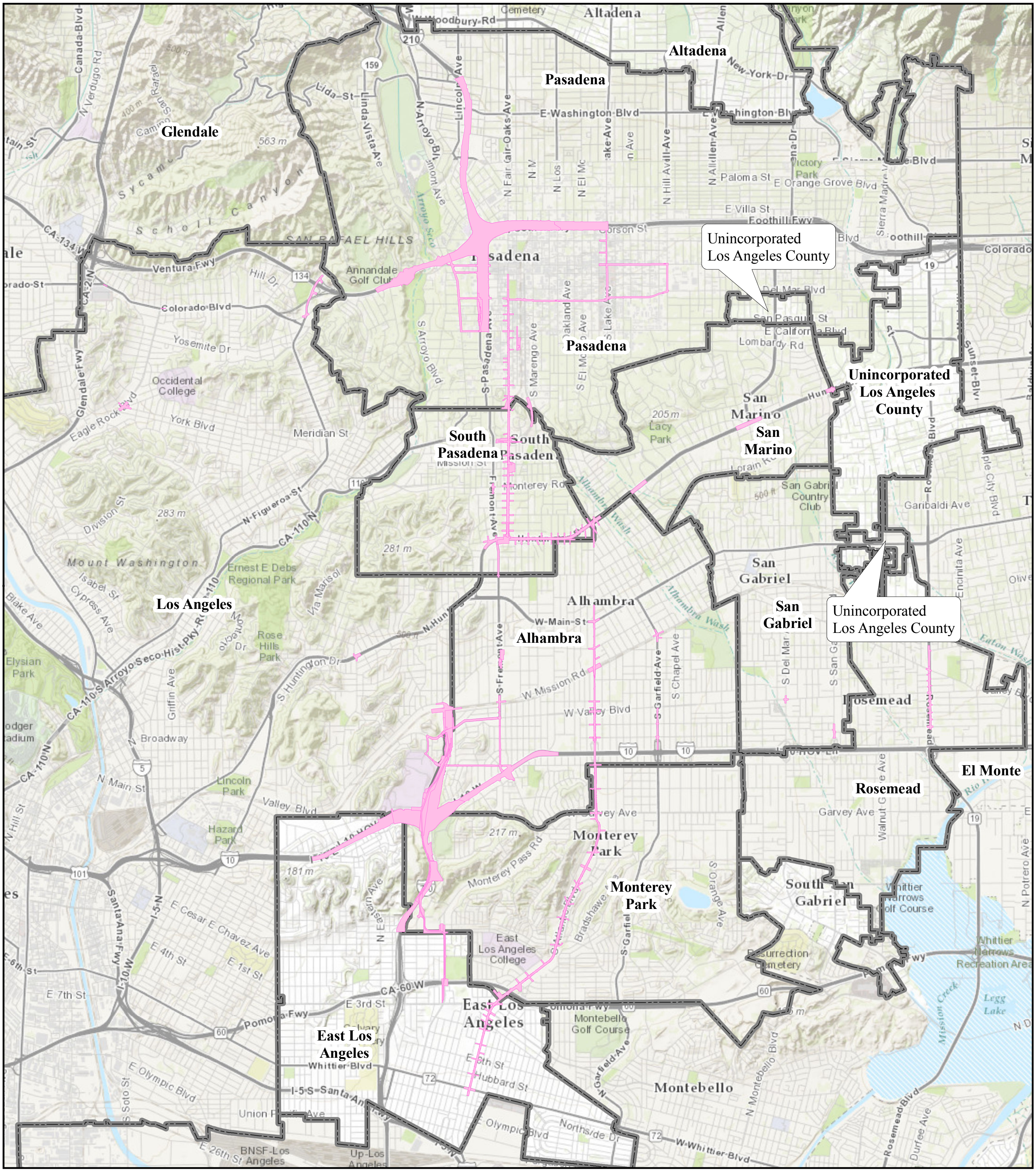


FIGURE 1

LEGEND

Protected Tree Survey Area

City/Community Boundaries

0 0.25 0.5 1 1.5
Miles

SR 710 North Study

Protected Tree Survey Area

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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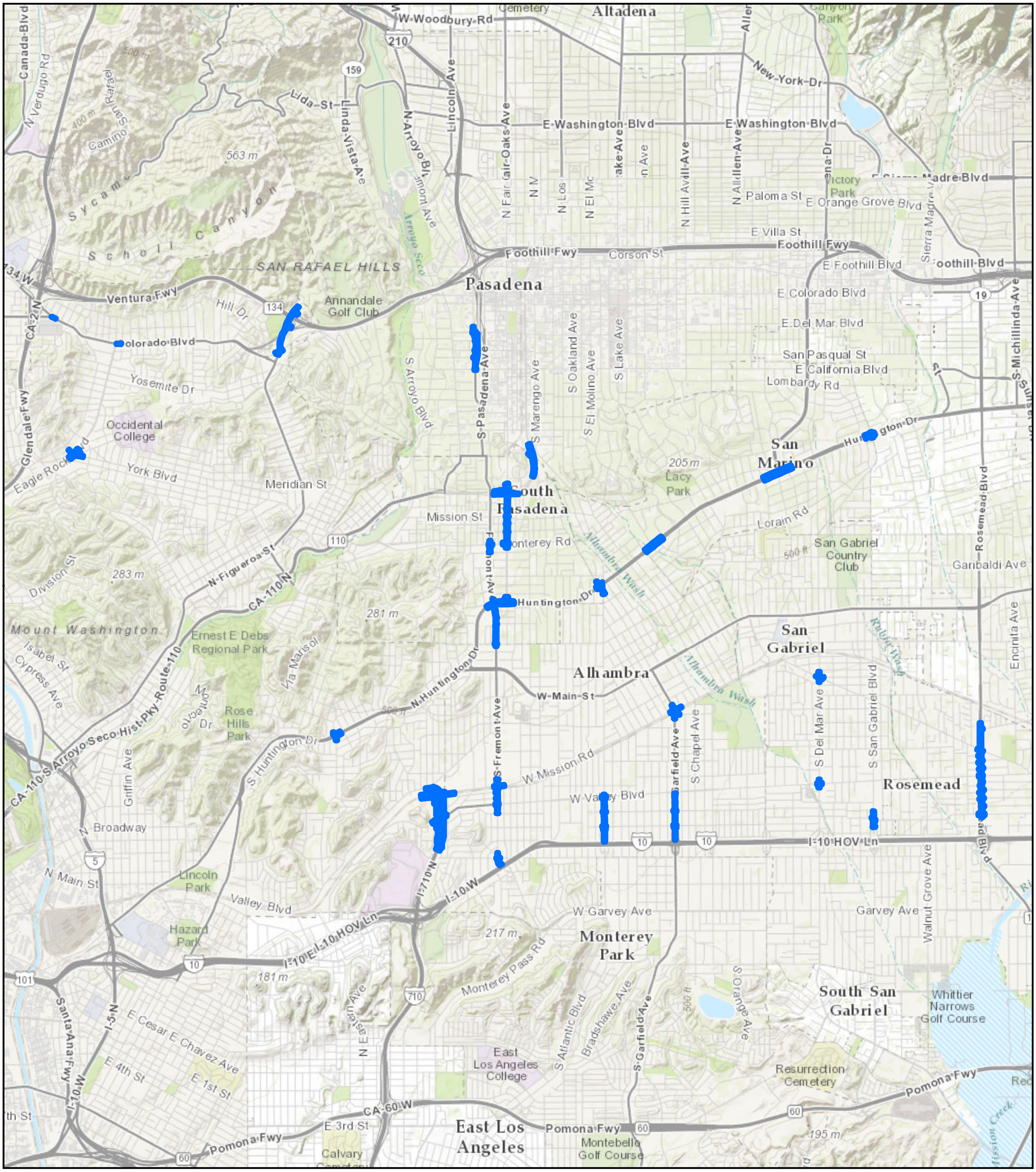

LEGEND

TSM/TDM Alternative Protected Tree Survey Area

0 0.25 0.5 1 1.5
Miles

FIGURE 2

SR 710 North Study

TSM/TDM Alternative

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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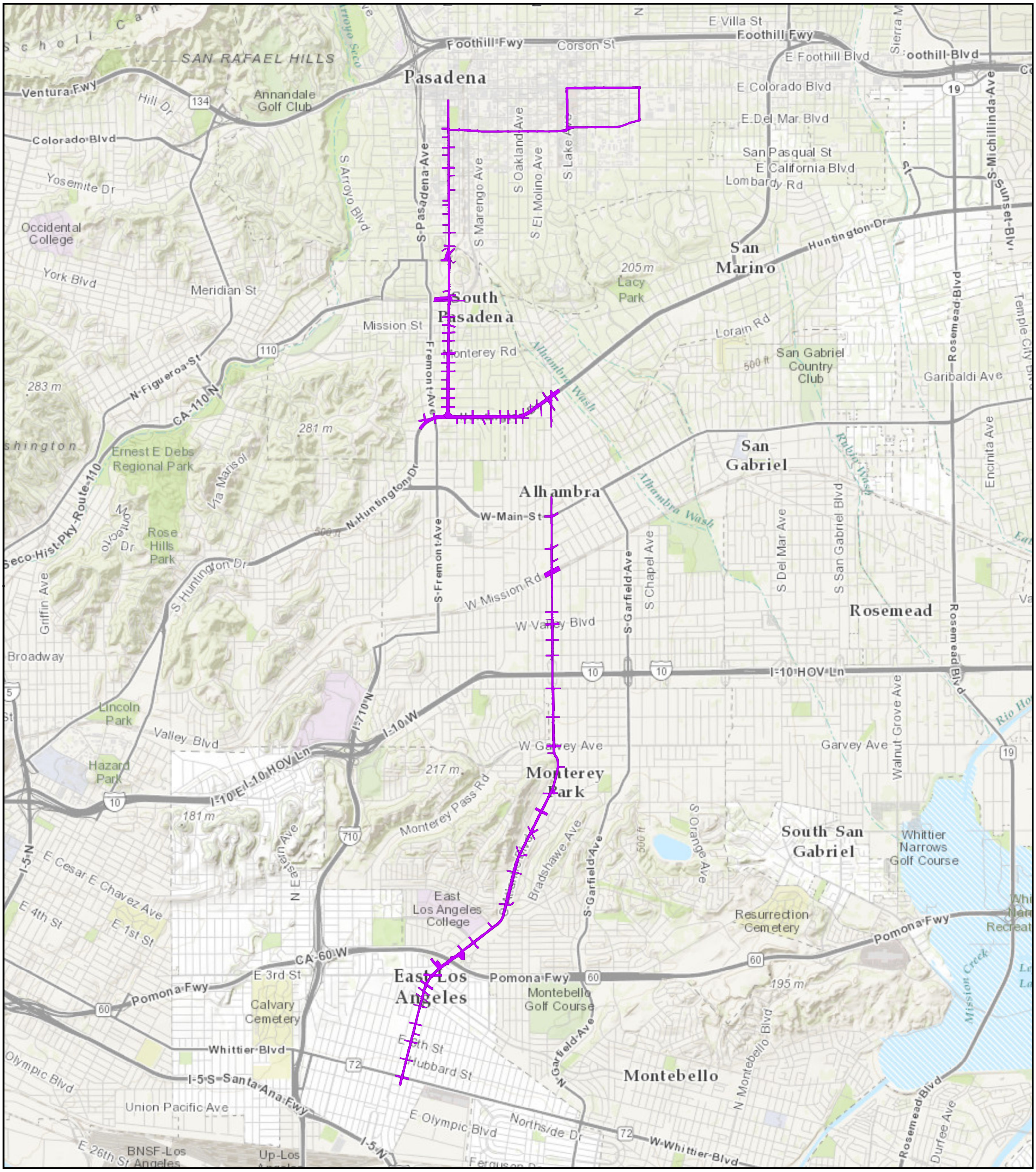

FIGURE 3

LEGEND

Bus Rapid Transit Alternative Protected Tree Survey Area

N

0 0.25 0.5 1 1.5
Miles

SR 710 North Study

Bus Rapid Transit Alternative

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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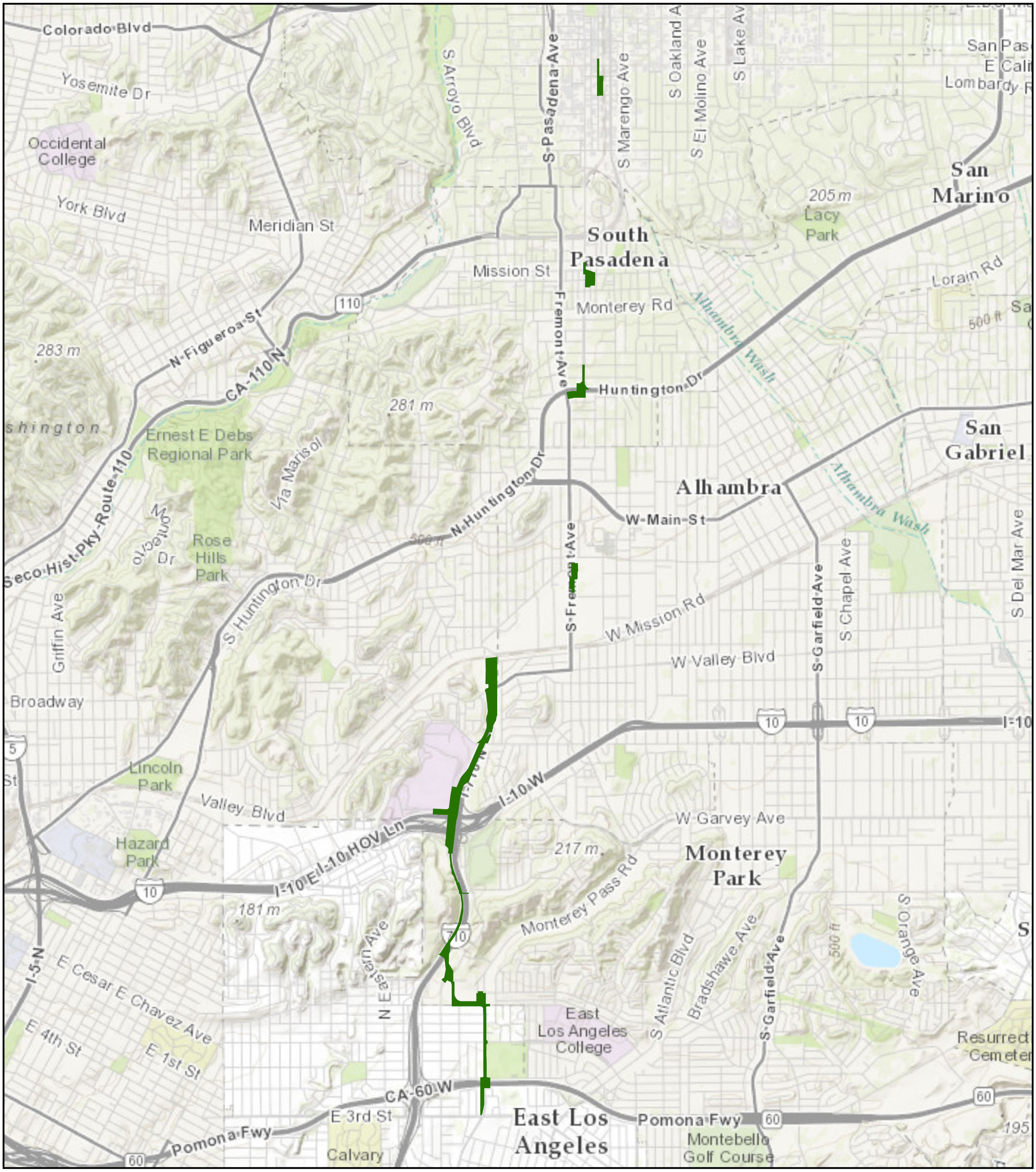

LEGEND

FIGURE 4

Light Rail Transit Alternative Protected Tree Survey Area

N

0 0.25 0.5 1
Miles

SR 710 North Study
Light Rail Transit Alternative
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)
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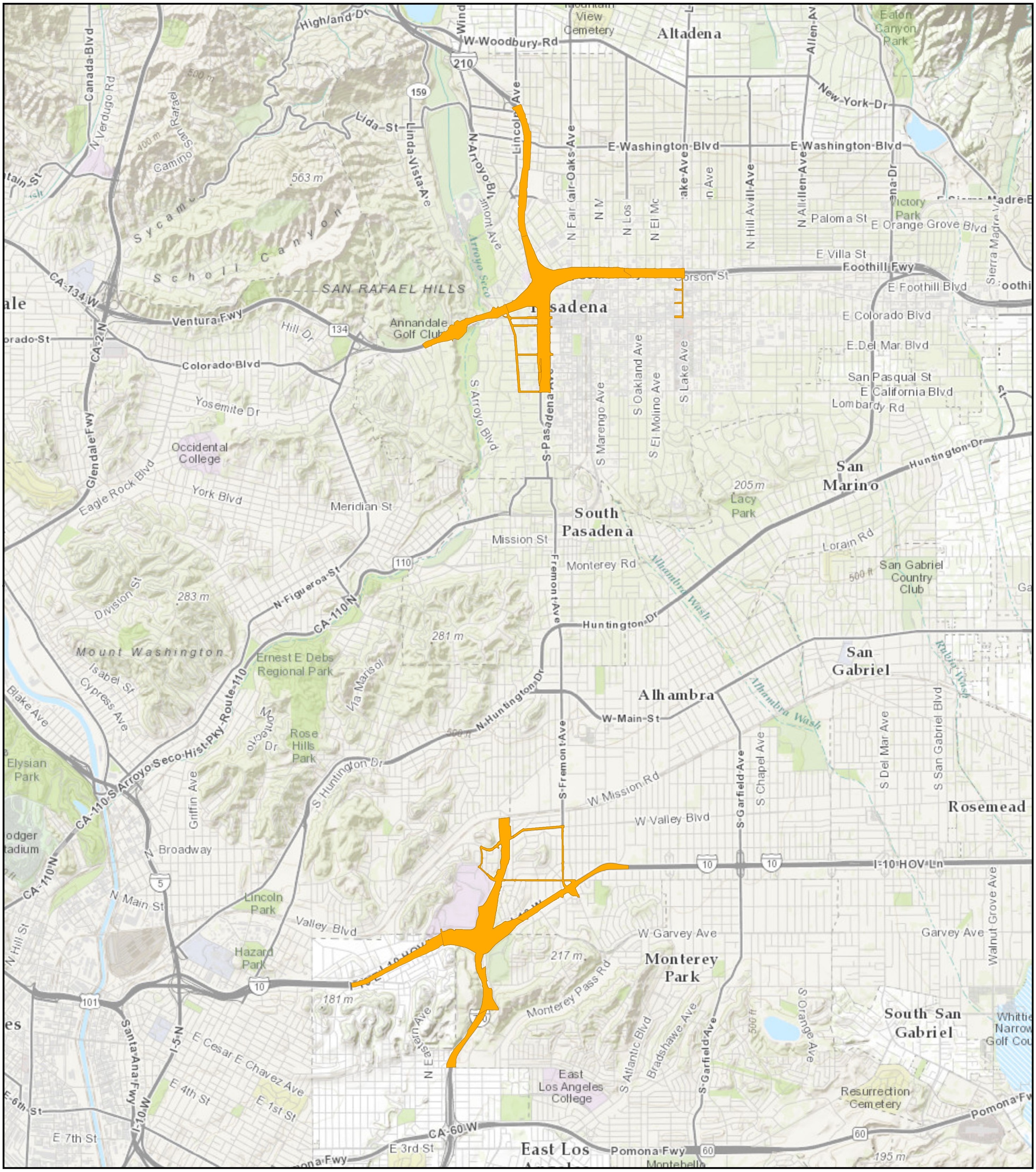

FIGURE 5

LEGEND

Freeway Tunnel Alternative (Dual Bore) Protected Tree Survey Area

N

0 0.25 0.5 1 1.5

Miles

SR 710 North Study

Freeway Tunnel Alternative

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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ATTACHMENT A
TREE COMPENDIUM

ATTACHMENT A
TREE COMPENDIUM

* Nonnative trees are indicated with an asterisk
+ California Rare Plant Rank (CRPR) species
CRPR 4.2 indicates a plant that is uncommon and moderately threatened in California.

All trees listed were observed on-site during surveys conducted in July and August 2013.

GYMNOSPERMS

Cupressaceae – Cypress family

*Cupressus sp.**
Cypress

Pinaceae – Pine family

*Cedrus deodara**
Deodar cedar
*Pinus canariensis**
Canary Island pine
*Pinus halepensis**
Aleppo pine

ANGIOSPERMS

<u>Dicots</u>

Adoxaceae – Muskroot family

Sambucus nigra ssp. *caerulea*
Blue elderberry

Anacardiaceae – Sumac family

*Schinus molle**
Peruvian peppertree
*Schinus terebinthifolius**
Brazilian peppertree

Betulaceae – Birch family

Alnus rhombifolia
White alder

Bignoniaceae – Trumpet-creeper family

*Jacaranda mimosifolia**
Black poui

Ericaceae – Heather family

*Arbutus sp.**
Madrone

Fabaceae – Pea family

*Acacia sp.**
Thorntree
*Robinia pseudoacacia**
Black locust

Fagaceae – Oak family

Quercus agrifolia var. agrifolia
California live oak
Quercus engelmannii++
Engelmann oak
*Quercus ilex**
Holly oak
Quercus kelloggii
Black oak
Quercus lobata
Valley oak

Ginkgoaceae – Ginkgo family

*Ginkgo biloba**
Ginkgo

Hamamelidaceae – Sweetgum family

*Liquidambar styraciflua**
Sweetgum

Juglandaceae – Walnut family

Juglans californica++
Southern California walnut

Lauraceae – Laurel family

Cinnamomum camphora
Camphortree

Lythraceae – Loosestrife family

*Lagerstroemia indica**
Crape myrtle

Magnoliaceae – Magnolia family

*Magnolia grandiflora**
Southern magnolia

Malvaceae – Mallow family

*Ceiba speciosa**
Silk floss tree

Moraceae – Mulberry family

*Ficus carica**
Edible fig
*Morus alba**
White mulberry

Myrtaceae – Myrtle family

*Callistemon citrinus**
Crimson bottlebrush
*Eucalyptus citriodora**
Lemon scented gum
*Eucalyptus cladocalyx**
Sugargum
*Eucalyptus globulus**
Tasmanian bluegum
*Eucalyptus polyanthemos**
Red box
*Eucalyptus sideroxylon**
Red ironbark
*Melaleuca linariifolia**
Flax-leaved paperbark

Oleaceae – Olive family

Fraxinus sp.
Ash
*Ligustrum lucidum**
Glossy privet

Platanaceae – Sycamore family

*Platanus ×hispanica**
London plane tree
*Platanus occidentalis **
American sycamore
Platanus racemosa
California sycamore

Podocarpaceae – Podocarp family

*Podocarpus sp.**
Podocarpus

Rosaceae – Rose family

*Prunus cerasifera**
Purple leaf plum

Salicaceae – Willow family

Populus fremontii
Fremont cottonwood
Salix exigua
Narrowleaf willow
Salix gooddingii
Goodding's willow
Salix laevigata
Red willow
Salix lasiolepis
Arroyo willow

Sapindaceae – Soapberry family

Acer negundo
Box elder
Aesculus californica
California buckeye
Koelreuteria sp.*
Goldenrain tree

Simaroubaceae – Simarouba family

*Ailanthus altissima**
Tree of heaven

Ulmaceae – Elm family

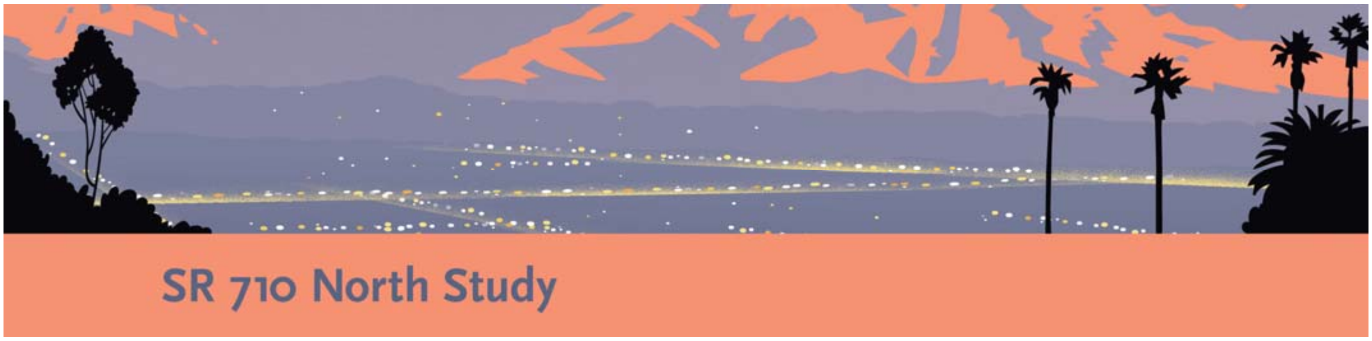
*Ulmus parvifolia**
Chinese elm

Monocots

Arecaceae – Palm family

*Phoenix canariensis**
Canary Island date palm
*Washingtonia robusta**
Washington fan palm
Washingtonia filifera
California fan palm

Appendix C Botanical Survey



TECHNICAL MEMORANDUM

Botanical Survey Report

PREPARED FOR:	Sapphos Environmental, Inc. (Ms. Marie Campbell and Dr. Pauline Roberts)
COPY TO:	N/A
PREPARED BY:	Sapphos Environmental, Inc. (Mr. Jordan Zylstra and Ms. Lauren Dorough)
DATE:	April 2014
PROJECT NUMBER:	0700000191 / EA 187900

Executive Summary

This Memorandum for the Record (MFR) transmits the results of the botanical surveys conducted on July 29 through August 9, 2013, in support of the State Route (SR) 710 North Study (Proposed Project) located in Los Angeles County, California. The five alternatives of the Proposed Project include a No Build Alternative, Transportation System Management / Transportation Demand Management (TSM/TDM) Alternative, Bus Rapid Transit (BRT) Alternative, Light Rail Transit (LRT) Alternative, and Freeway Tunnel Alternative.

No federally or state-listed rare, threatened, or endangered plants were located as a result of the surveys. In addition, the surveys resulted in the determination that all but one of the federally or state-listed plants identified as potentially present were absent and/or lacked supporting suitable habitat in the 3,378-acre Biological Study Area (BSA). The sole exception was slender-horned spineflower (*Dodecahema leptoceras*), which was not observed, but suitable habitat was identified and surveys were not conducted during the blooming period when this species would be most detectable. Three sensitive non-listed plants were found in or adjacent to the BSA: Coulter's goldfields (*Lasthenia glabrata* var. *coulteri*), Southern California walnut (*Juglans californica*), and Engelmann oak (*Quercus engelmannii*). Avoidance and mitigation measures may be appropriate for these species prior to project implementation. Overall, the area was mostly disturbed, but the few areas of unmaintained native and non-native vegetation do have the potential to provide marginally suitable habitat for some plants with high California Rare Plant Rank (CRPR) designations. Twelve plant community and cover types were identified within the BSA, including four which are sensitive natural communities: black cottonwood forest, arroyo willow thickets, white alder groves, and coast live oak woodland. However, construction impacts are not planned where the BSA overlaps these natural communities, so avoidance and mitigation measures are not necessary.

Introduction

This MFR documents the results of literature reviews; reviews of applicable federal, state, and local statutes and guidelines; database searches; field surveys; and geospatial analysis related to the botanical resources in the BSA for the Proposed Project. The purpose of the surveys was to document any special-status plants located within the Proposed Project BSA and to delineate the limits of plant communities present within the BSA. For the purposes of this document, special-status plants include: (1) any plants officially listed by the state of California or the federal government as endangered, threatened, rare, or candidate species; and (2) taxa listed in the California

Native Plant Society's *Inventory of Rare and Endangered Plants of California.*[1]

The BSA within which the focused botanical surveys were conducted was developed based on the areas under consideration to be included in the limits of disturbance as of July 2013, plus a buffer of approximately 200 feet (ft) (Figure 1, *Biological Study Area*). The BSA is an approximately 3,410-acre area generally focused between the SR 710 / Interstate-10 (I-10) interchange and I-210 freeway. The BSA is located on the United States Geological Survey (USGS) Pasadena, Los Angeles, El Monte, and Mt. Wilson 7.5-minute series topographical quadrangles. A range of land uses exist adjacent to the BSA, including transportation, residential, commercial, industrial, infrastructure, and recreational land uses.

Regulatory Framework

Federal

Federal Endangered Species Act. The federal Endangered Species Act (ESA) defines and lists species, subspecies, and distinct population segments as "endangered" and "threatened" and provides regulatory protection for the listed species. The federal ESA provides a program for conservation and recovery of threatened and endangered species; it also ensures the conservation of designated critical habitat that the USFWS has determined is required for the survival and recovery of these listed species. Section 9 of the federal ESA prohibits the "take" of species listed by USFWS as threatened or endangered. *Take* is defined as follows: "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in such conduct." In recognition that take cannot always be avoided, Section 10(a) of the federal ESA includes provisions for take that is incidental to, but not the purpose of, otherwise lawful activities. Section 10(a)(1)(B) permits (incidental take permits) may be issued if take is incidental and does not jeopardize the survival and recovery of the species.

Section 7(a)(2) of the federal ESA requires that all federal agencies, including the USFWS and the Federal Highway Administration FHWA, evaluate projects with respect to any species proposed for listing or already listed as endangered or threatened and any proposed or designated critical habitat for the species. Federal agencies must undertake programs for the conservation of endangered and threatened species and are prohibited from authorizing, funding, or carrying out any action that will jeopardize a listed species or destroy or modify its critical habitat.

State

California Endangered Species Act and California Fish and Game Code Sections 2080 and 2081. The California ESA (California Fish and Game Code §§ 2050 *et seq.*) prohibits the take of listed species, except as otherwise provided in state law. Take under the California ESA is defined as it is in the federal ESA; however, unlike the federal ESA, the California ESA also applies the take prohibitions to species that are candidates for listing, as well as listed species. State lead agencies are required to consult with the California Department of Fish and Wildlife (CDFW) to ensure that any actions undertaken by the lead agency are not likely to jeopardize the continued existence of any state-listed species or result in destruction or degradation of required habitat. CDFW is authorized to enter into Memoranda of Understanding (MOUs) with individuals, public agencies, universities, zoological gardens, and scientific or educational institutions to import, export, take, or possess listed species for scientific, educational, or management purposes. Permits for incidental take of species protected pursuant to the California ESA are available under certain circumstances as described in Sections 2080 and 2081 of the California Department of Fish and Game Code described below.

Section 2080 of the State Fish and Game Code (Code) states:

> No person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission [State Fish and Game Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter

[1] California Native Plant Society. 2013. Inventory of Rare, Threatened, and Endangered Species. Available at: http://www.rareplants.cnps.org/

[Chapter 1.5, Endangered Species], or the Native Plant Protection Act, or the California Desert Native Plants Act.

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

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

Local Regulations

The County of Los Angeles, as well as many of the cities that fall within the county, has regulations in place to protect native and mature trees within the county, such as the Los Angeles County Oak Tree Ordinance. Because of the many ordinances specifically defining protections for trees meeting criteria that differ widely among the cities within the BSA, focused surveys to inventory protected trees were conducted and reported in a separate report.[2]

Methods

Literature and Database Search

Prior to conducting the field survey, Sapphos Environmental, Inc. biologists conducted a California Natural Diversity Database (CNDDB) query of rare, threatened, and endangered plant species occurring on the Los Angeles, Pasadena, El Monte, Mount Wilson, and 12 surrounding USGS 7.5-minute quadrangles (Burbank, Chilao Flat, Condor Peak, Waterman Mountain, Azusa, Baldwin Park, La Habra, Hollywood, Inglewood, South Gate, Sunland, and Whittier) (Figure 2, *California Natural Diversity Database Search Area*). All special-status plants identified as a result of the database query were considered potentially present within the BSA. The BSA was searched carefully for evidence of these plants and was evaluated for suitable habitat.

Reference Population Visits

Sapphos Environmental, Inc. biologists Mr. Jordan Zylstra and Ms. Lauren Dorough visited a reference site for a potential rare herbaceous plant on July 29, 2013, prior to the start of the general botanical surveys. The site was visited to verify phenology, detectability, and habitat characteristics. Reference populations were not visited for trees and shrubs because they are detectable and identifiable year-round.

Field Surveys

Botanical surveys and plant community mapping were conducted by Sapphos Environmental, Inc. botanist Mr. Jordan Zylstra and biologists Ms. Lauren Dorough and Mr. Thomas Kmett on July 29, 30, 31, and August 1, 2, 5, 6, 7, 8, and 9, 2013 throughout the entirety of the BSA. A follow-up plant community mapping confirmation survey was conducted by Sapphos Environmental, Inc. biologists Mr. Brian Bielfelt and Mr. John Ivanov on October 14,

[2] Sapphos Environmental, Inc. October 2013. Memorandum for the Record No. 5: Tree Survey Report for the State Route 710 North Study. Project No. 1282-002. Pasadena, CA.

2013. The study was conducted assuming that direct impacts would occur only within the BSA; however, if a species of concern was observed directly adjacent to the BSA, it was also noted.

The BSA is largely in an urban and semi-urban environment; therefore, survey efforts were concentrated on areas that were relatively unmaintained and with a higher likelihood of the occurrence of native and naturalized plant species. Vegetation cover was delineated to differentiate between these semi-natural areas and highly maintained landscaped areas, which had correspondingly low rare plant or even native plant potential. Vegetation communities were mapped at the alliance level using the keys and descriptions provided in *A Manual of California Vegetation.*[3]

Ashtech global positioning system (GPS) units with sub-meter accuracy were used to record the locations for all rare plants encountered. Representative habitat photos as well as close-up pictures of identifying characteristics were also taken of any rare species encountered. Due to steep slopes and areas of impenetrable vegetation or other barriers, meandering intuitively controlled transects were walked throughout the BSA. Several areas within the BSA were inaccessible due to fences, freeway crossings, steep slopes, or other safety issues. Where practical, these areas were observed at a distance from multiple angles with binoculars.

The botanical survey methods were based on the guidelines put forward by California Native Plants Society and CDFW.[4,5] The survey was conducted during the blooming period for most of the sensitive plants considered potentially present. Observers searched for all plants, whether blooming or not, during the survey. For those species which were not likely to be flowering during the survey period, observers searched for suitable habitat for these plants within the BSA to identify any locations where the plants may have been present but were not detected or were unidentifiable. Those sensitive plants which would not have been blooming and were not observed were considered potentially present if suitable habitat was identified. The surveys were floristic in scope, meaning that all plants found in identifiable condition were identified to the lowest taxonomic level necessary to determine their rarity status. A compendium of all plants within the BSA that were not dependent on maintenance for their continued survival was prepared; plants in highly urbanized residential or commercial yards and gardens were not included in the compendium. The nomenclature used for plant scientific names follows the *Jepson Manual 2nd Edition*.[6] Several non-native ornamental plants encountered are not included in Jepson, and therefore follow the nomenclature of the United States Department of Agriculture PLANTS online database.[7]

Results

Literature and Database Search

As a result of the CNDDB query of rare, threatened, and endangered plants occurring on the Los Angeles, Pasadena, El Monte, Mount Wilson, and 12 surrounding USGS 7.5-minute quadrangles (Burbank, Chilao Flat, Condor Peak, Waterman Mountain, Azusa, Baldwin Park, La Habra, Hollywood, Inglewood, South Gate, Sunland, and Whittier) and a thorough literature review, it was determined that a total of 53 sensitive plants had the potential to occur on or within the vicinity of the BSA. Eleven (11) of these sensitive plants are federally and/or state-listed endangered, threatened, rare, or candidate species. Further information on these plants, including

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[3] Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation.* 2nd Edition. Sacramento, CA: California Native Plant Society.

[4] California Native Plant Society. 2001. *Botanical survey guidelines of the California Native Plant Society* (December 9, 1983; Revised June 2, 2001). Available at: http://www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf

[5] California Department of Fish and Game. 2009. *Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities.* Sacramento, CA. Available at: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/protocols_for_surveying_and_evaluating_impacts.pdf

[6] Baldwin, B.G., ed. 2012. *The Jepson Manual: Higher Plants of California.* 2nd Edition. Berkeley, CA: University of California Press.

[7] United States Department of Agriculture Natural Resources Conservation Service. 2013. The PLANTS Database. Greensboro, NC. National Plant Data Team, Available at: http://plants.usda.gov

status, habitat requirements, and potential for occurrence, is summarized in Attachment A, *Listed, Proposed, and Special-Status Plant Species Potentially Occurring or Known to Occur Within and in the Vicinity of the BSA.*

Reference Site Visit

A reference population for southern tarplant (*Centromadia parryi ssp. australis*) along I-710 near the intersection of South Atlantic Boulevard and Bandini Road in the City of Vernon, California, was visited on the first day of surveys to verify phenology, detectability, and habitat characteristics for the species. Approximately 20 individuals of southern tarplant were observed to be blooming in an approximately 16-foot (ft) radius area during the field visit on July 29, 2013 (Attachment B, *Site Photographs*, Photo 1). Access to the population was blocked by a chain-link fence, so observations were made through binoculars. The surrounding area was landscaped with ornamental plants and appeared to be maintained with brush trimming and weed removal, whereas the actual site of the population appeared to be unmaintained. Similar habitat exists in much of the Freeway Tunnel Alternative. Reference sites for the other potential rare plants were not visited. However, suitable habitat for these species was assessed throughout the entire BSA to identify potential areas where they might be present but not observed.

Plant Community Mapping

Twelve plant communities and cover types were identified in the BSA, and are discussed in further detail below (Table 1, *Vegetation Cover Types within the BSA*). Five of the natural communities, (1) *Alnus rhombifolia* Forest Alliance (white alder groves), (2) *Populus trichocarpa* Forest Alliance (black cottonwood forest), (3) *Malosma laurina* Shrubland Alliance (laurel sumac scrub), (4) *Salix lasiolepis* Shrubland Alliance (arroyo willow thickets), and (5) *Quercus agrifolia* Woodland Alliance (coast live oak woodland) (*Q. agrifolia*/chaparral association), are vegetation community alliances dominated by native species and defined in *A Manual of California Vegetation* (Figure 3).[8] Many portions of the BSA were comprised entirely of the disturbed/developed type; Figure 3 does not depict these areas (e.g., most of the TSM/TDM and BRT Alternatives).

TABLE 1
Vegetation Cover Types within The BSA

Vegetation Cover Type / Alliance	CaCode	Rarity Ranking	Acres
Disturbed/Developed	N/A	NA	3,223.2
Non-native Woodland	N/A	NA	79.7
Non-native Grassland	N/A	NA	85.8
Non-native Riparian Woodland	N/A	N/A	0.5
Wetland Complex	N/A	N/A	1.5
Giant Reed Semi-natural Stand	42.080.01	N/	0.2
White alder groves	61.420.00	G4 S4	1.0
Black cottonwood forest	61.120.00	G5 S3	0.8
Arroyo willow thickets	61.201.00	G4 S4	2.3
Laurel sumac scrub	45.455.00	G4 S4	5.0
Coast live oak woodland	71.060.29	G5 S4	5.9
Streams	N/A	N/A	4.4
Total			**3,377.9**

[8] Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation.* 2nd Edition. Sacramento, CA: California Native Plant Society.

TABLE 1
Vegetation Cover Types within The BSA

Vegetation Cover Type / Alliance	CaCode	Rarity Ranking	Acres

a. Sum of acreages may vary due to rounding

CaCode = California Natural Community Code

State Rank

S3 = Vulnerable: Vulnerable in the state due to a restricted range, relatively few populations (often 80 or fewer), recent and widespread declines, or other factors making it vulnerable to extirpation.

S4 = Apparently Secure: Uncommon but not rare; some cause for long-term concern due to declines or other factors.

Global Rank

G4 = Apparently Secure: Uncommon but not rare; some cause for long-term concern due to declines or other factors.

G5 = Secure: Common; widespread and abundant.

The white alder groves, black cottonwood forest, and arroyo willow thickets are all riparian communities and are collectively referred to as riparian habitat for the purposes of this document. Two additional riparian areas dominated by non-native species were identified, both near a stream in the southern end of the BSA. The first, *Arundo donax* semi-natural stand (giant reed breaks) is classified in *A Manual of California Vegetation*. The second, an area of non-native riparian woodland dominated by Mexican fan palm (*Washingtonia robusta*), with some arroyo willow present, does not match any vegetation alliance identified in *A Manual of California Vegetation* Sawyer et al. 2009).

Three additional cover types were mapped (1) non-native woodland, (2) non-native grassland, and (3) wetland complex, and (4) disturbed/developed, which are generalized cover types that contain vegetation alliances that are not included in *A Manual of California Vegetation* because they are dominated by non-native species, and/or are comprised of multiple vegetation alliances smaller than the minimum mapping unit of 0.1 ac. Lastly, large portions of the BSA were mapped as the cover type disturbed/developed, which included maintained, ornamental vegetation (as residences and businesses), and urban areas.

Disturbed/Developed. The disturbed / developed cover type includes all areas of existing urbanization within the BSA, including buildings, residences, yards, gardens, ornamental landscaping, and road surfaces. These cover types have very low potential for rare or native plant occurrence. Even naturalized weedy pests are in low diversity under this cover type. Also included in this cover type are water channels that are concrete-lined and provide little opportunity for plant establishment; aquatic and mesic vegetation were present in these channels, but vegetation development was not complex enough to qualify for any alliance-level classification. The disturbed/developed cover type was the predominant cover type within the BSA (Figure 3).

Non-Native Woodland. Non-native woodland is a generalized cover type that includes several semi-natural vegetation alliances. Alliances under this cover type within the BSA consist of Eucalyptus (*globules, camaldulensis*) Semi-Natural Woodland Stands (*Eucalyptus* groves), Schinus (*S. molle*, *S. terebinthifolius*)–*Myoporum laetum* Semi-Natural Woodland Stands (pepper tree or *Myoporum* groves), as well as stands without formal alliance status, dominated by any of the following: Chinese elm (*Ulmus parvifolia*), blackwood (*Acacia melanoxylon*), Aleppo pine (*Pinus halepensis*), Canary Island pine (*Pinus canariensis*), Mexican fan palm (*Washingtonia robusta*), and rosewood (*Tipuana tipu*).

The non-native woodland cover type is generally less maintained than the disturbed / developed cover type and has a higher diversity of plant species, although native plant diversity is still low. Native trees were often intermixed in these stands, including coast live oak and velvet ash (*Fraxinus velutina*). An understory shrub layer was typically present, indicating a low level of maintenance. This cover type was predominantly found in the along the margins of existing freeways within the BSA (Figure 3).

Non-Native Grassland. Non-native grassland is a generalized cover type that includes several semi-natural vegetation alliances. Alliances under this cover type within the BSA consist of Bromus (*B. diandrus*, *B.*

hordeaceus)–*Brachypodium distachyon* semi-natural stands (annual brome grassland), *Lolium perenne* semi-natural stands (perennial rye grassfields), *Avena* (*A. barbata*, *A. fatua*) semi-natural stands (wild oats grasslands), *Brassica* (*B. nigra*), other mustards semi-natural stands (upland mustards), and *Centaurea* (*C. solstitialis, C. melitensis*) semi-natural stands (yellow star thistle fields).

The non-native grassland cover type is generally less maintained than the disturbed / developed cover type, although swaths of it are generally found to be mowed late in the season for fire abatement. Naturalized species are in relative abundance in non-native grassland fields, and native plants are often intermixed in small numbers. This cover type was predominantly found along the margins of existing freeways in the BSA (Figure 3). Rare plants can be present in this cover type; however, within the BSA the landscape is highly modified, such as along the banks of freeways, and the native soil and associated seedbank required for the presence of rare plants are likely absent.

Non-native Riparian Woodland. Non-native riparian woodland is a generalized cover type representing areas dominated by trees occurring the riparian zone. Riparian habitats typically have higher biological productivity than non-riparian habitats, and often have high habitat value for plants and wildlife. No recognized semi-natural alliances occurred in this cover type within the BSA. In the BSA, this cover type was dominated by an overstory of Mexican fan palm, and is not regularly maintained. One area of this cover type (0.5 acres) occurred streamside in the southern end of the BSA, along the Laguna Channel (Figure 3). Rare plants can be present in this cover type; however, within the BSA, the landscape is highly modified, and the native soil and associated seedbank of rare plants are likely absent.

Wetland Complex. Wetland complex is a generalized cover type that includes several alliances that are associated with wetlands and riparian areas. Alliances under this cover type within the BSA include *Typha* (*T. angustifolia*, *T. domingensis*, *T. latifolia*) Herbaceous Alliances (cattail marshes), *Lolium perenne* Semi-Natural Herbaceous Stands (perennial rye grass fields), *Distichlis spicata* Herbaceous Alliance (salt grass flats), *Salix lasiolepis* Shrubland Alliances (arroyo willow thickets), Arroyo Willow Thickets, Giant Reed Semi-Natural Herbaceous Stands (giant reed breaks), and *Echinocloa* Undetermined Semi-Natural Stands (barnyard grass marshes).

The vegetation alliances within the wetland complex cover type are usually associated with periodic flooding, and are found in low-lying areas such as swales, ditches, and along low-gradient streams and channels. Both the landscape features and the presence of water can be either naturally occurring or the result of human activities. This cover type occurred within the BSA at an isolated manmade wetland associated with the Del Mar Pump Station, and abutting the Laguna Channel at its southernmost location within the BSA (Figure 3). Alliances found at the Del Mar Pump Station included cattail marshes, perennial rye grass fields, salt grass flats, arroyo willow thickets, and barnyard grass marshes. Alliances found in the wetland at the Laguna Channel included cattail marshes, arroyo willow thickets, giant reed breaks, and barnyard grass marshes. The native-dominated alliances at both sites (cattail marsh, salt grass flats and arroyo willow thicket), were all smaller than the minimum mapping unit of 0.1 acres and therefore pooled into the wetland complex cover type. Rare plants can be present in this cover type; however, within the BSA the landscape is highly modified, such as along the banks of freeways, and the native soil and associated seedbank required for the presence of rare plants are likely absent.

Giant Reed Semi-Natural Stands. Giant reed is a large and fast-growing member of the grass family that can reach heights of 25 ft. This semi-natural alliance is characterized by at least 75% cover of giant reed, In riparian settings, giant reed often grows in dense virtually monotypic stands. One stand of this cover type (0.2 acres) occurred streamside in the southern end of the BSA, along the Laguna Channel (Appendix A, Figure 9). Rare plants can be present in this cover type; however, few native species can compete effectively with giant reed. In the BSA, the native soil and associated seedbank required for the presence of rare plants are likely absent.

White Alder Groves. White alder is a deciduous hardwood tree that can grow to 115 ft in height. In California, white alder stands are a riparian plant community that generally occurs in the inland foothills and lower montane zones as a narrow strip along river bottoms. Stands typically occur on seasonally flooded stream banks, but they can also occur on floodplains or permanently saturated seeps. Other co-dominant trees in the stands can include bigleaf maple (*Acer macrophylla*), western sycamore, and Fremont cottonwood (*Populus fremontii*).

One stand of white alder groves (1 acre) was identified under a bridge within the BSA where the SR 134 crosses the Arroyo Seco River in Pasadena. The majority of this vegetation stand within the BSA occurs underneath the wide SR 134 overpass (Figure 3); however, sunlight penetration appears to be adequate to maintain this riparian system. The river here is not channelized in concrete, and a moderate riparian understory is present, including some of the following species: California rose (*Rosa californica*), mugwort (*Artemisia douglasiana*), and mulefat (*Baccharis salicifolia*). There is also a large component of non-native species here that degrades habitat quality, including eupatory (*Ageratina adenophora*), cape ivy (*Delairea odorata*), veldtgrass (*Ehrharta erecta*), and smilo grass (*Stipa miliacea*) (Attachment B, Photo 8). The quality of this habitat was somewhat degraded because of its proximity to urban areas and associated impacts of human activity.

Black Cottonwood Forest. Black cottonwood is one of two species of cottonwood that commonly occur within riparian areas of Southern California and is a fast-growing tree that can be up to 164 ft tall. In California, black cottonwood forest is generally found in montane elevations or outer coastal regions but is replaced by Fremont cottonwood forests in hotter and drier climates. Like white alder groves, this is a riparian plant community. Other riparian trees that can be associated within this plant community can include Fremont cottonwood (*Populus fremontii*), willows (*Salix* sp.), and western sycamore.

Within the BSA, approximately 0.8 acre of black cottonwood forest was delineated. The only stand of black cottonwood in the BSA was found north of where the SR 134 crosses the Arroyo Seco River in Pasadena (Figure 3). This plant community abuts and intergrades with the White alder grove to the south. The river here is not channelized in concrete and other riparian vegetation is present including some of the following species: arroyo willow and white alder. The quality of this habitat was somewhat degraded because of its proximity to urban areas and associated impacts of human activity.

Arroyo Willow Thicket. Arroyo willow is a tall riparian shrub or tree that grows up to 26 ft tall. In California, arroyo willow thickets occur in seasonally or intermittently flooded locations, which include riparian areas. This plant community can be dominated by arroyo willow growing as trees or shrubs. Other riparian trees that can be associated within this plant community can include: black cottonwood and western sycamore.

Within the BSA, approximately 2.3 acres of arroyo willow thicket was delineated within riparian areas. The vegetation appeared to be planted and relatively young. A diversity of other plants were detected within this area, including Southern California walnut, white alder, narrow-leaved willow (*Salix exigua*), coast live oak, rose (*Rosa* spp.), and western sycamore. Understory was sparse in some areas as a result of trail maintenance and foot traffic, and mostly dominated by nonnative plants. The only stands of arroyo willow thickets in the BSA occurred south of where the SR 134 crosses the Arroyo Seco River in Pasadena (Figure 3). A man-made dam helps maintain the community north of Colorado Street bridge and the community continues through the area where water has been diverted. The quality of this habitat was somewhat degraded because of its proximity to urban areas and associated impacts of human activity.

Laurel Sumac Scrub. Laurel sumac is a large evergreen shrub that can grow to 16 ft in height. In California, Laurel sumac scrub is generally found on temperate slopes near the coast, and its extent is largely limited by its frost sensitivity. This species is often found to grow in steep slopes with shallow soils among California sagebrush (*Artemisia californica*), California brittlebush (*Encelia californica*), California buckwheat, and toyon (*Heteromeles arbutifolia*), among others.

Within the BSA, approximately 5 acres of laurel sumac scrub was delineated. California buckwheat was found to dominate the interspaces between the large shrubbery and prevalence of California sagebrush, toyon, and California brittlebush was relatively low. The stands of laurel sumac scrub in the BSA were found on a steep slope west of the SR 134/I-210 interchange in Pasadena, both north and south of the Colorado Street Bridge (Figure 3). The quality of this habitat was somewhat degraded because of its proximity to urban areas and associated impacts of human activity.

Coast Live Oak Woodland. Coast live oak is a drought-tolerant evergreen tree that can grow to 82 ft in height. In California, stands of coast live oak woodland occur in a range of setting from upland savannas to bottomlands and riparian forests. The plant association for this plant alliance in the BSA is the *Quercus agrifolia*/chaparral community, which is dominated by chaparral shrub species in the understory of coast live oak. Shrub and herbaceous layers are sparse to intermittent; chaparral species for this association include species that are more evergreen than typical coast sage scrub species. Chaparral species can include California buckwheat, toyon, chamise (*Adenostoma fasciculatum*), and sugarbush (*Rhus ovata*).

Within the BSA, approximately 5.9 acres of coast live oak woodland was delineated. Stands were present in the BSA where the SR 134 crosses the Arroyo Seco River in Pasadena (Figure 3). This community typically dominated areas between the riparian plant communities and more upland areas such as nonnative grasslands and laurel sumac scrub. The quality of this habitat was somewhat degraded because of its proximity to urban areas and associated impacts of human activity.

Rare Plants in the Biological Study Area

A total of 253 plant species, subspecies, and varieties were observed within the BSA (Attachment C, *Floral Compendium*). The vast majority of these were present in and adjacent to freeway margins, whereas the residential areas had very low diversity due to their highly urbanized environments. Of the 253 species, 172 are not native to California, with 66 of those considered noxious or invasive by the California Invasive Plant Council (Cal-IPC).

Marginally suitable habitat was located within the BSA that has the potential to support 16 of the 53 potentially occurring rare and listed plants within the BSA: marsh sandwort, slender-horned spineflower, Gambel's water cress, Davidson's bush-mallow, Greata's aster, Los Angeles sunflower, Parish's gooseberry, Robinson's pepper-grass, San Bernardino aster, Santa Barbara morning-glory, slender mariposa-lily, southern tarplant, white rabbit-tobacco, Coulter's goldfields, Southern California walnut, and Engelmann oak.

No federally or state-listed rare, threatened, or endangered plants were identified within the BSA. However, three of the potentially occurring plants with marginally suitable habitat within the BSA were located: Coulter's goldfields, Southern California walnut, and Engelmann oak (Figure 4, *Special-Status Plants Documented in Biological Study Area*).

Coulter's Goldfields (Lasthenia glabrata var. coulteri). Coulter's goldfields is an annual herb in the sunflower family (Asteraceae) that is generally found in saline places, such as on the margins of marshes, playas, and vernal pools.[9] Coulter's goldfields blooms from February to June.[10] This species has been recorded as far north in California as Chico; however, it is typically found in Southern California from Bakersfield down to San Diego in areas below 3,281 ft in elevation.[11] Coulter's goldfields has no state or federal listing status; however, it has a CRPR of 1B.1, indicating that it is seriously threatened in California.

Botanical surveys conducted throughout the entire BSA in 2013 resulted in the identification of a small population of Coulter's goldfields within a freeway edge along the I-10 freeway near the SR 710 / I-10 interchange in Monterey Park (Figure 4; Attachment B, Photos 2–3). This species was found to be blooming out of season with other spring annuals near a leaking irrigation system in an area that appeared to have been recently hydro-seeded, most likely during road maintenance activities. Coulter's goldfields is known to occasionally be found outside of its typical habitat due to its inclusion in native wildflower seed mixes distributed by certain seed suppliers. This also appears to be the case for its presence within the BSA.

Southern California Walnut (Juglans californica var. californica). Southern California walnut (*Juglans californica* var. *californica)* is a relatively small deciduous tree in the walnut family (Juglandaceae) that is generally found on hillsides and canyons in the coastal and inland valleys of Southern California.[12] This species blooms from March to

[9] Baldwin, B.G., ed. 2012. *The Jepson Manual: Higher Plants of California.* 2nd Edition. Berkeley, CA: University of California Press.

[10] California Native Plant Society. November 2012. Inventory of Rare, Threatened, and Endangered Species. Coulter's goldfields. Available at: http://www.rareplants.cnps.org/detail/1706.html

[11] California Native Plant Society. 2001. *Botanical survey guidelines of the California Native Plant Society* (December 9, 1983; Revised June 2, 2001). Available at: http://www.cnps.org/cnps/rareplants/pdf/cnps_survey_guidelines.pdf

[12] Baldwin, B.G., ed. 2012. *The Jepson Manual: Higher Plants of California.* 2nd Edition. Berkeley, CA: University of California Press.

August and is usually found at elevations between 64 and 2,953 ft in elevation.[13] This species has no federal or state listing status, but has a CRPR of 4.2, indicating that it is uncommon and moderately threatened in California. Black walnut woodlands are also a sensitive habitat due to fragmentation and urban encroachment.

During 2013 botanical surveys of the entire BSA, a single young Southern California walnut was observed growing in the understory of a stand of unmaintained Aleppo pine (*Pinus halepensis*) woodland, upslope from the westbound I-210 freeway in Pasadena (Figure 4). The individual was approximately 15 ft tall, with four main stems of about 1 in. diameter each, and without fruits or flowers (Attachment B, Photos 4–5). Other associated species in the vicinity were California live oak (*Quercus agrifolia* var. *agrifolia*) and blackwood (*Acacia melanoxylon*).

No other individuals of this species were identified within the BSA. Due to the conspicuous nature of trees such as the Southern California walnut during botanical surveys, the potential for the species to be present but not observed is low. Therefore, with the exception of the individual described above, the species was considered unlikely to be present within the BSA.

Engelmann Oak (<u>Quercus engelmannii</u>). Engelmann oak is an evergreen tree in the oak family (Fagaceae) that is generally found on foothill slopes below 4,265 ft in elevation.[14] It typically blooms between March and June.[15] Engelmann oak is known only from the coastal and inland valleys of Southern California, south of the Transverse Range, and Baja California. This oak has distinctive dull blue-green leaves with entire or wavy-dentate margins.[16] Engelmann oak has no federal or state listing status, but has a CRPR of 4.2, indicating that it is uncommon and moderately threatened in California. This is also a locally important species, with local attention being paid to its preservation and propagation.[17]

During 2013 botanical surveys of the entire BSA, a single Engelmann oak individual was found within the BSA, in the City of Pasadena (Figure 4). The individual was found along Arroyo Boulevard, just west of the SR 134 overpass, and appears to potentially be a planted street tree, among several coast live oak trees. The tree is approximately 15 ft tall with a 6 in. diameter trunk (Attachment B, Photos 6–7). At the time of survey, the tree had many immature acorns forming.

No other individuals of this species were identified within the BSA. Due to the conspicuous nature of trees such as the Engelmann oak during botanical surveys, the potential for the species to be present but not observed is low. Therefore, with the exception of the individual described above, the species was considered unlikely to be present within the BSA.

Discussion

Focused botanical surveys were conducted to assess the plant communities within the BSA and identify occurrences of any special-status plants or natural communities of special concern. Of the nine plant communities delineated within the BSA, four are considered natural communities of special concern: white alder grove, Arroyo willow thicket, black cottonwood forest, and coast live oak woodland. The quality of these habitats that were found beneath and adjacent to the SR 134 freeway bridge within the Freeway Tunnel Alternative area of the BSA was somewhat degraded because of their proximity to urban areas and associated impacts of human activity. The likelihood of special status plants within these sections of the BSA being present but not detected is very low

[13] California Native Plant Society. March 2010. Inventory of Rare, Threatened, and Endangered Species. Southern California black walnut. Available at: http://www.rareplants.cnps.org/detail/1704.html

[14] Baldwin, B.G., ed. 2012. *The Jepson Manual: Higher Plants of California.* 2nd Edition. Berkeley, CA: University of California Press.

[15] California Native Plant Society. March 2010. Inventory of Rare, Threatened, and Endangered Species. Engelmann oak. Available at: http://www.rareplants.cnps.org/detail/1408.html

[16] California Department of Fish and Game. 2009. *Protocol for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities.* Sacramento, CA. Available at: http://www.dfg.ca.gov/biogeodata/cnddb/pdfs/protocols_for_surveying_and_evaluating_impacts.pdf

[17] Arroyo Seco Foundation. Accessed August 2013. Help Save the Engelmann Oak. Available at: http://www.arroyoseco.org/eoak.htm

because of the degraded condition of the habitats due to non-native plants and high levels of foot traffic from hikers and those residing temporarily in the area.

No federally or state-listed rare, threatened, or endangered plants were located as a result of the surveys. Suitable habitat was identified for 16 of the 53 potentially occurring rare and listed plants within the BSA. With the exception of Coulter's goldfields, Southern California walnut, and Engelmann oak, no other special-status plants were located within the BSA. However, surveys for plant species occurred outside of the primary flowering period for some of the plant species identified as potentially present. In addition, unusually dry conditions during the previous two winters prior to the survey may have contributed to reduced or absent flowering periods for some plants of interest, and limited the emergence of herbaceous annuals. Although these plants may still have been identifiable, additional surveys earlier in the year or during a flowering period following a winter with increased rainfall, would have covered the flowering period of each plant and would have potentially increased the surveyors' opportunity for observation and identification of special-status species within the BSA.

In order to confirm the absence of the species with suitable habitat identified within the BSA for which surveys were conducted outside of the appropriate blooming period (slender-horned spineflower, Parish's gooseberry, Santa Barbara morning-glory, and slender mariposa-lily), follow-up focused surveys during the appropriate blooming periods should be conducted. In general, the BSA is highly disturbed and has little potential to support naturally occurring populations of sensitive plant species.

Should there be any questions regarding the information contained in this MFR, please contact Ms. Lauren Dorough or Dr. Pauline Roberts at (626) 683-3547.

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California Native Plant Society. November 2012. Inventory of Rare, Threatened, and Endangered Species. Coulter's goldfields. Available at: http://www.rareplants.cnps.org/detail/1706.html

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REPORT FIGURES

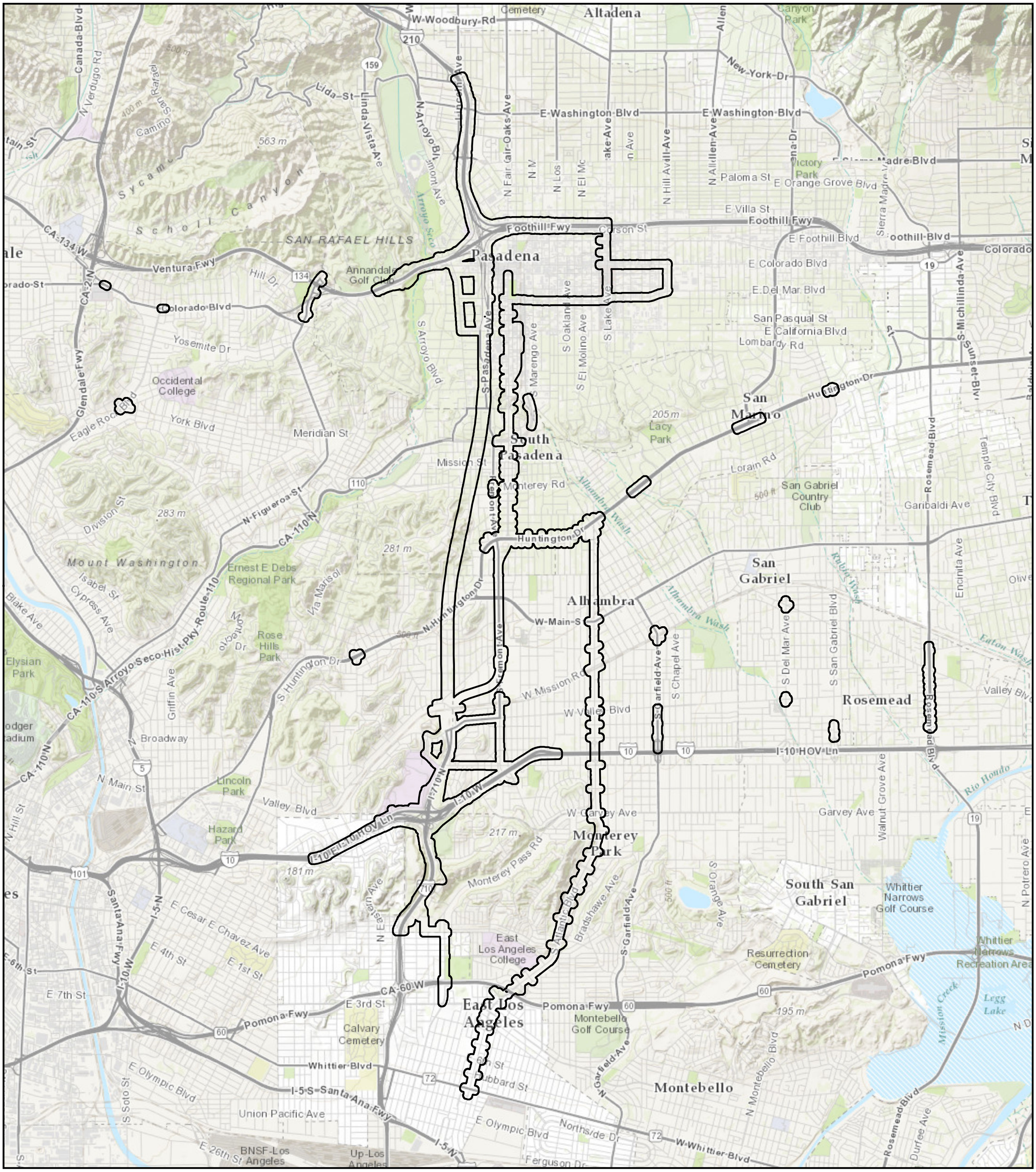

FIGURE 1

LEGEND

Biological Study Area

0 0.25 0.5 1 1.5

Miles

SR 710 North Study

Biological Study Area

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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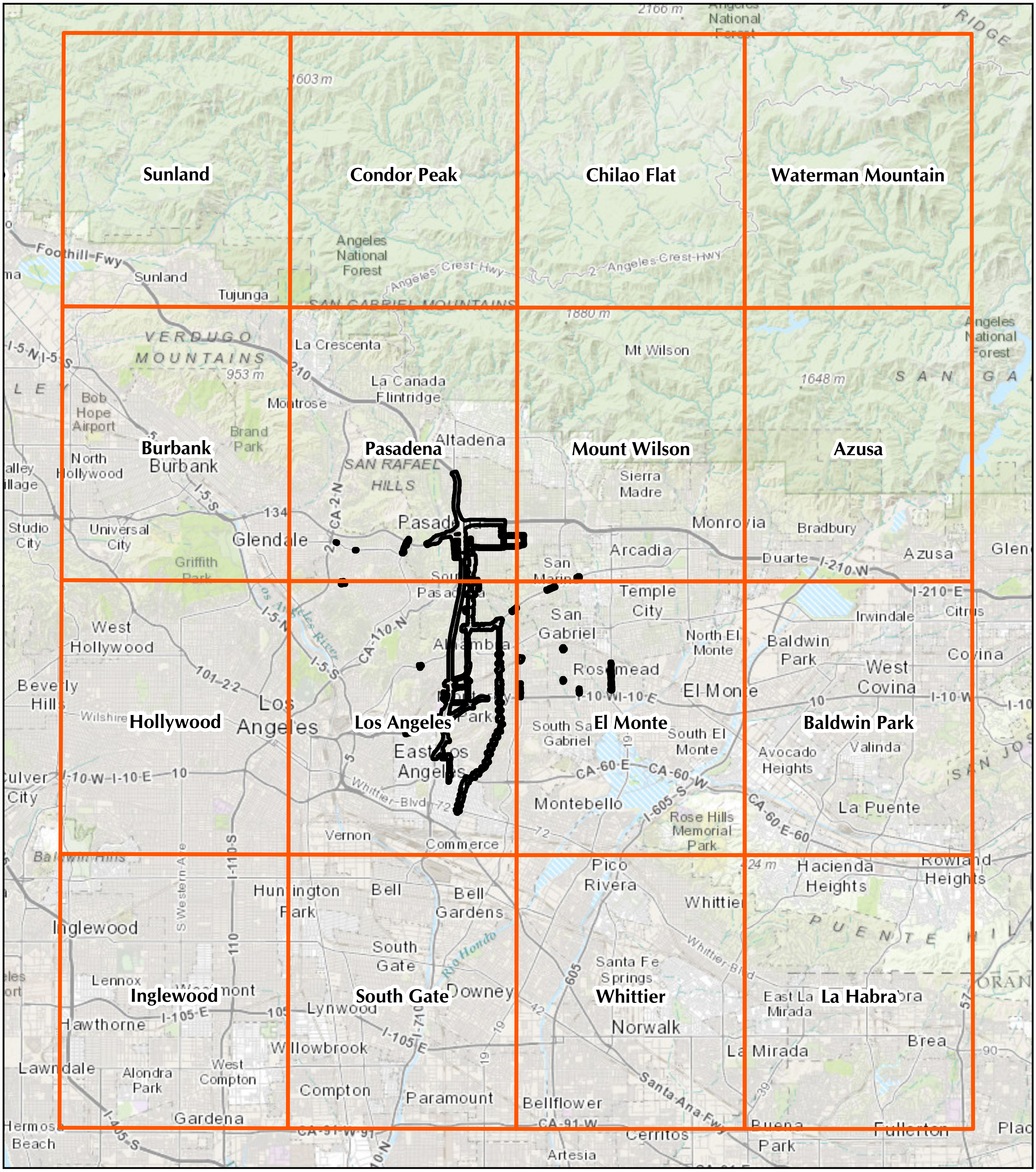

FIGURE 2

N

0 2.5 5

Miles

LEGEND

CNDDB Search Area 7.5-minute Quadrangles

Biological Study Area

SR 710 North Study

California Natural Diversity Database Search Area

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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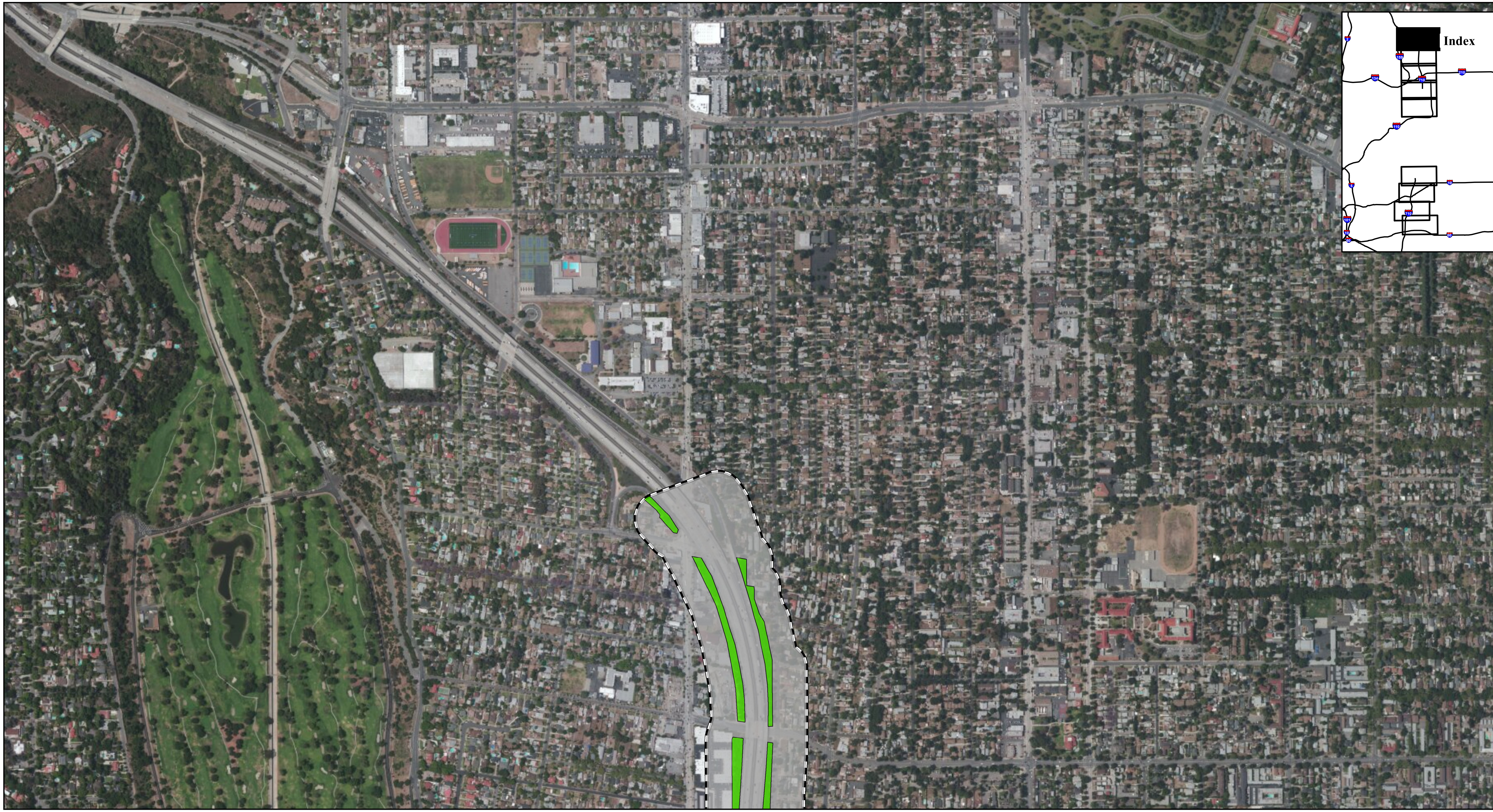

LEGEND

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves
- Biological Study Areas

N

0 250 500 1,000

Feet

FIGURE 3.A

Page 1 of 9

SR 710 North Study

Plant Community Map

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: ESRI (3/2014); CH2MHill (5/2013); AECOM (4/2013)

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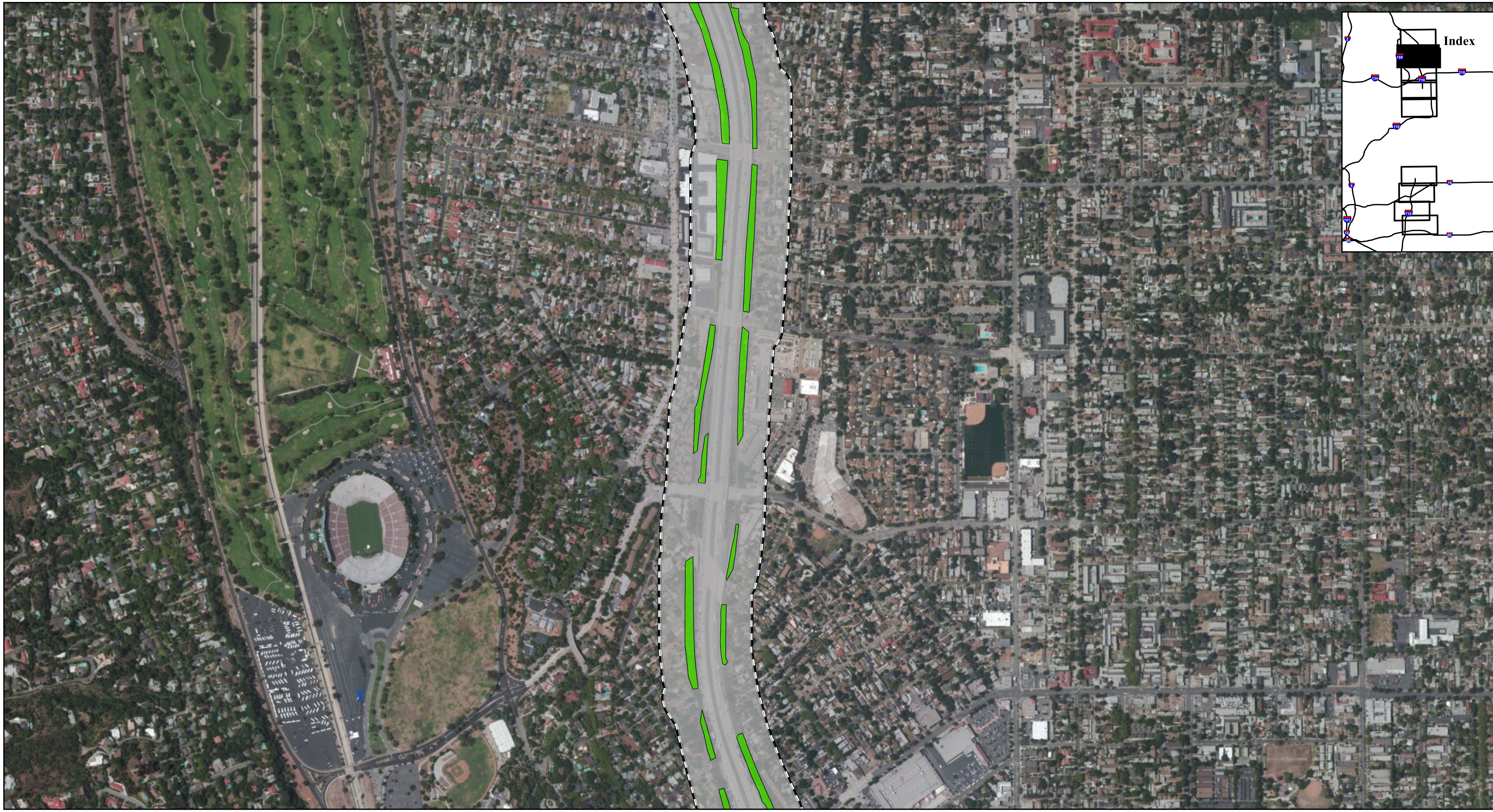

LEGEND

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves
- Biological Study Areas

N

0 250 500 1,000
Feet

FIGURE 3.B

Page 2 of 9

SR 710 North Study
Plant Community Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); CH2MHill (5/2013); AECOM (4/2013)
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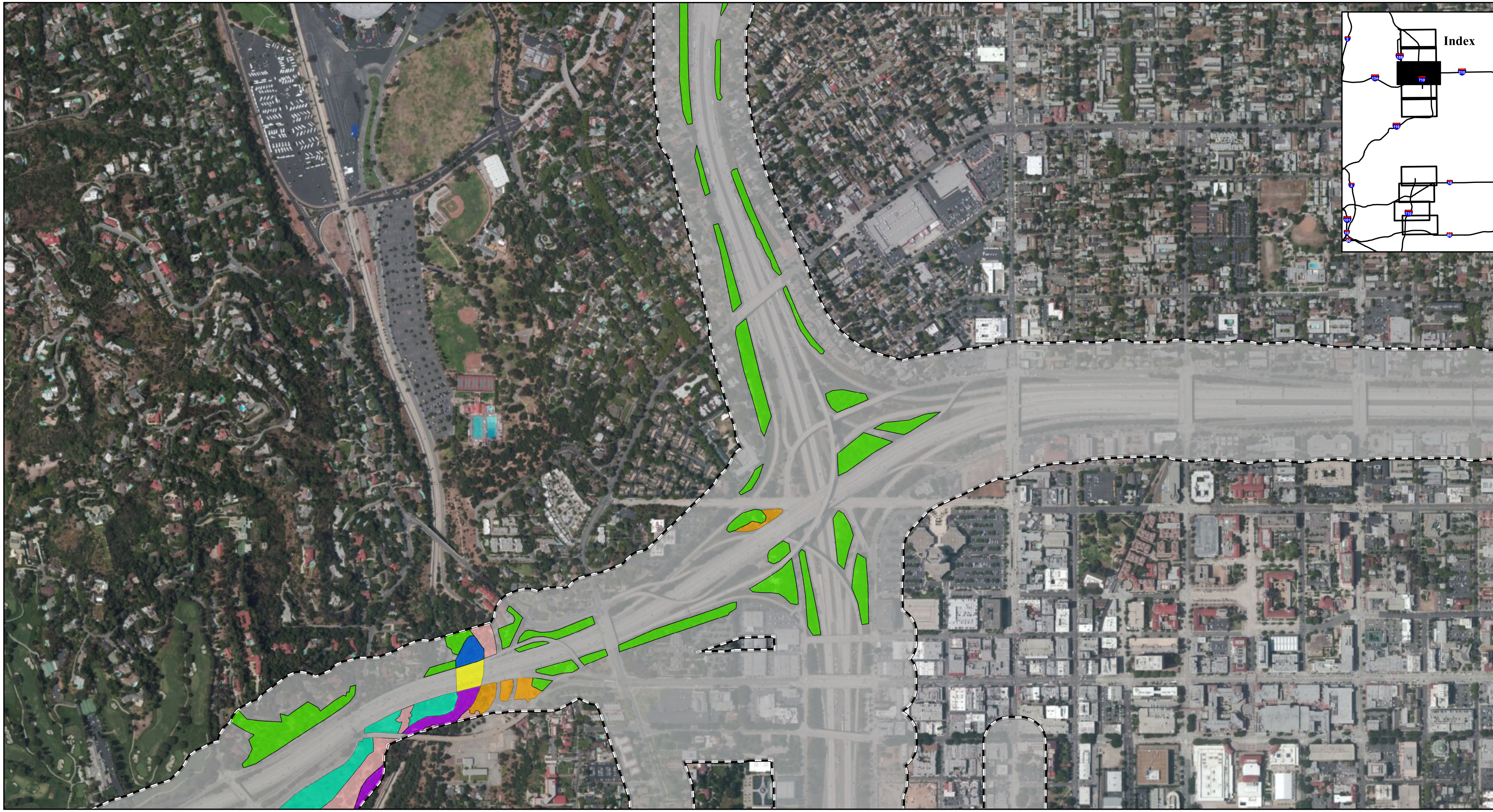

LEGEND

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves
- Biological Study Areas

N

0 250 500 1,000

Feet

FIGURE 3.C

Page 3 of 9

SR 710 North Study

Plant Community Map

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: ESRI (3/2014); CH2MHill (5/2013); AECOM (4/2013)

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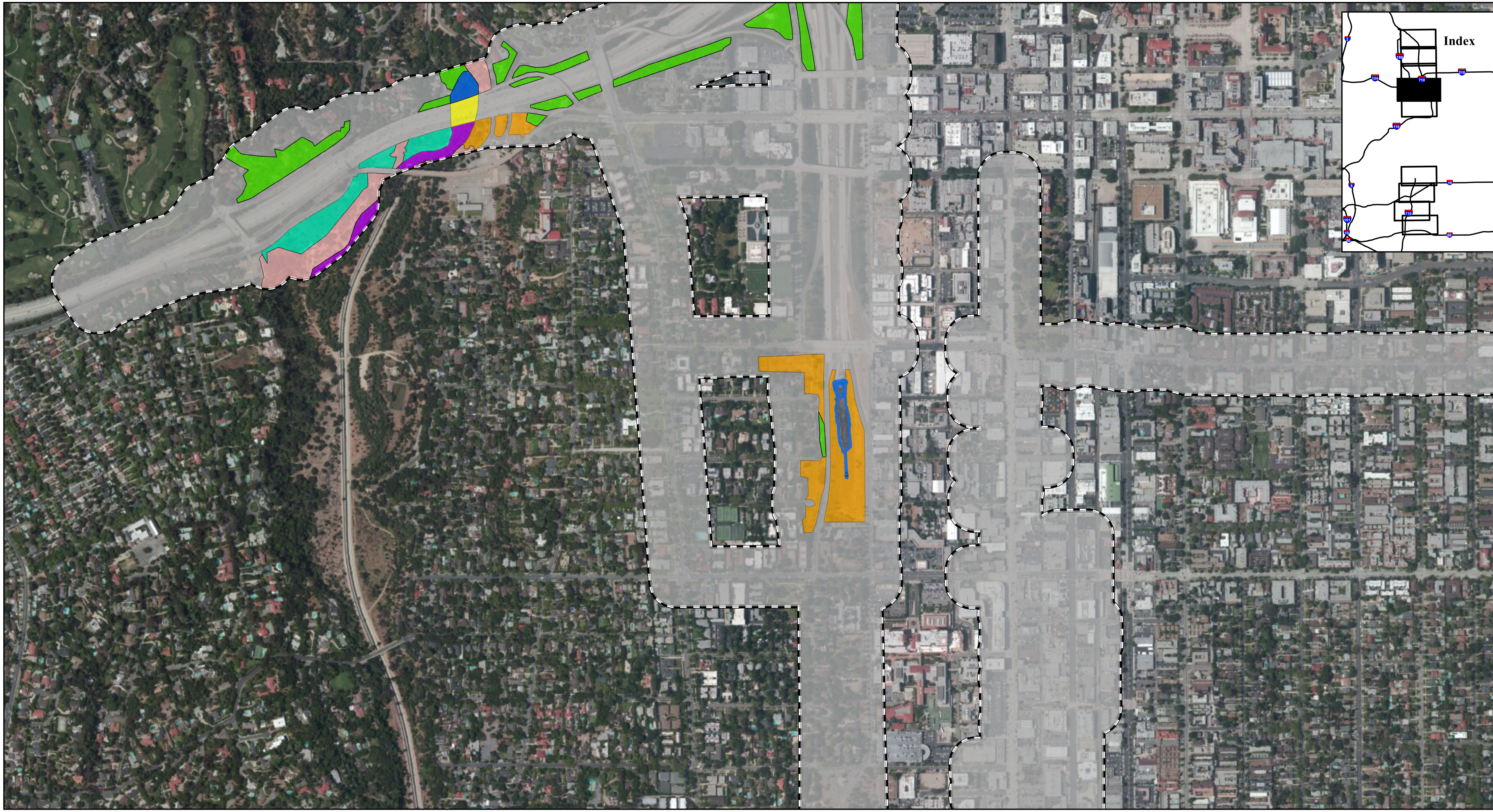

LEGEND

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves
- Biological Study Areas

N

0 250 500 1,000

Feet

FIGURE 3.D

Page 4 of 9

SR 710 North Study

Plant Community Map

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: ESRI (3/2014); CH2MHill (5/2013); AECOM (4/2013)

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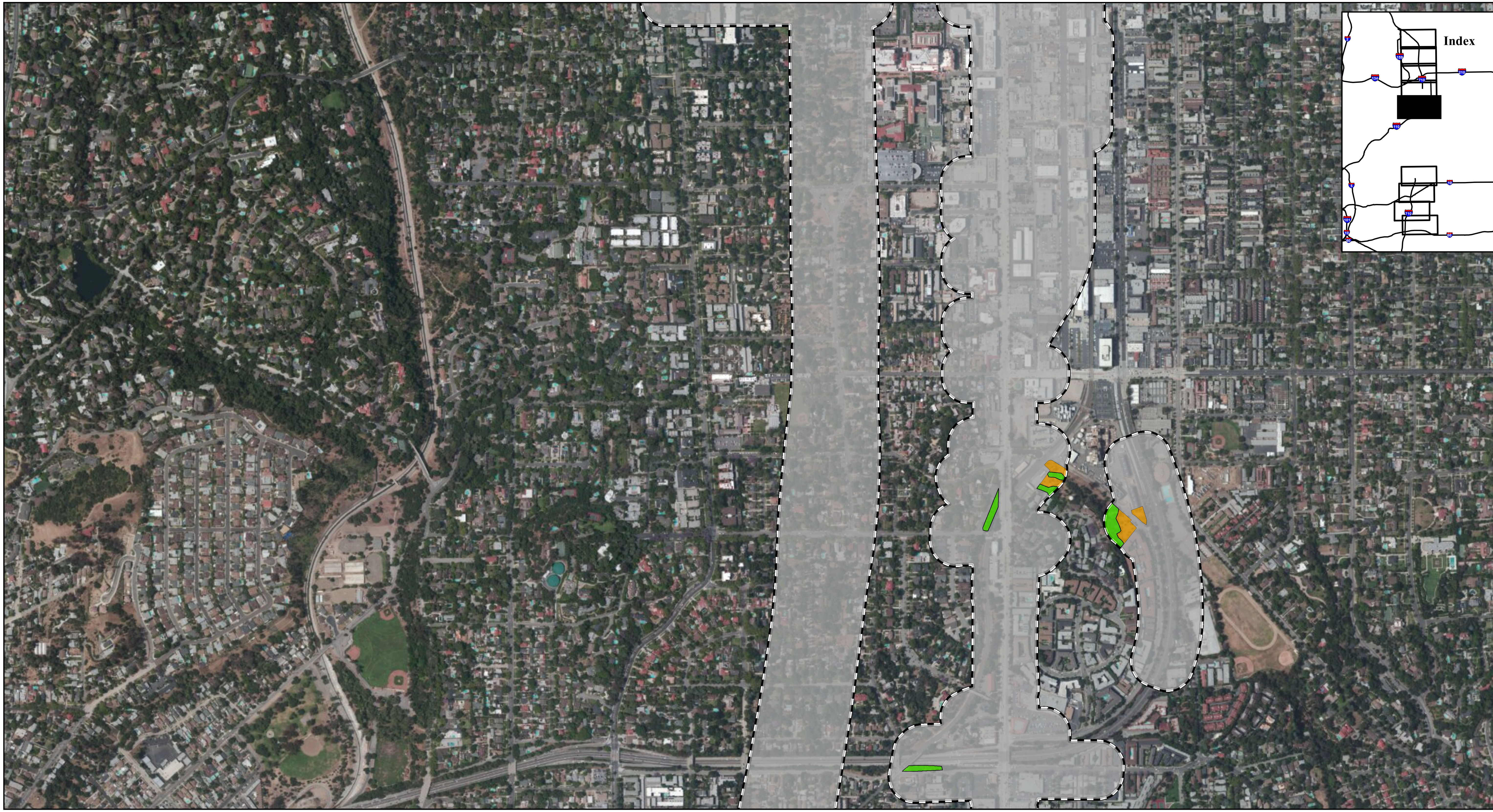

LEGEND

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves
- Biological Study Areas

N

0 250 500 1,000
Feet

SOURCE: ESRI (3/2014); CH2MHill (5/2013); AECOM (4/2013)
Q:\1282\SR_710\ArcProjects\MFR_Plants\PlantCommunity_index_ddm.mxd (10/24/2014)

FIGURE 3.E

SR 710 North Study
Plant Community Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

LEGEND

Plant Communities

Arroyo Willow Thicket
Black Cottonwood Forest
Coast Live Oak Woodland
Disturbed/Developed
Giant Reed Breaks
Laurel Sumac Scrub
Non-Native Grassland
Non-Native Riparian Woodland
Non-Native Woodland
Wetland Complex
White Alder Groves
Biological Study Areas

N

0 250 500 1,000
Feet

FIGURE 3.F
Page 6 of 9

SR 710 North Study
Plant Community Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); CH2MHill (5/2013); AECOM (4/2013)
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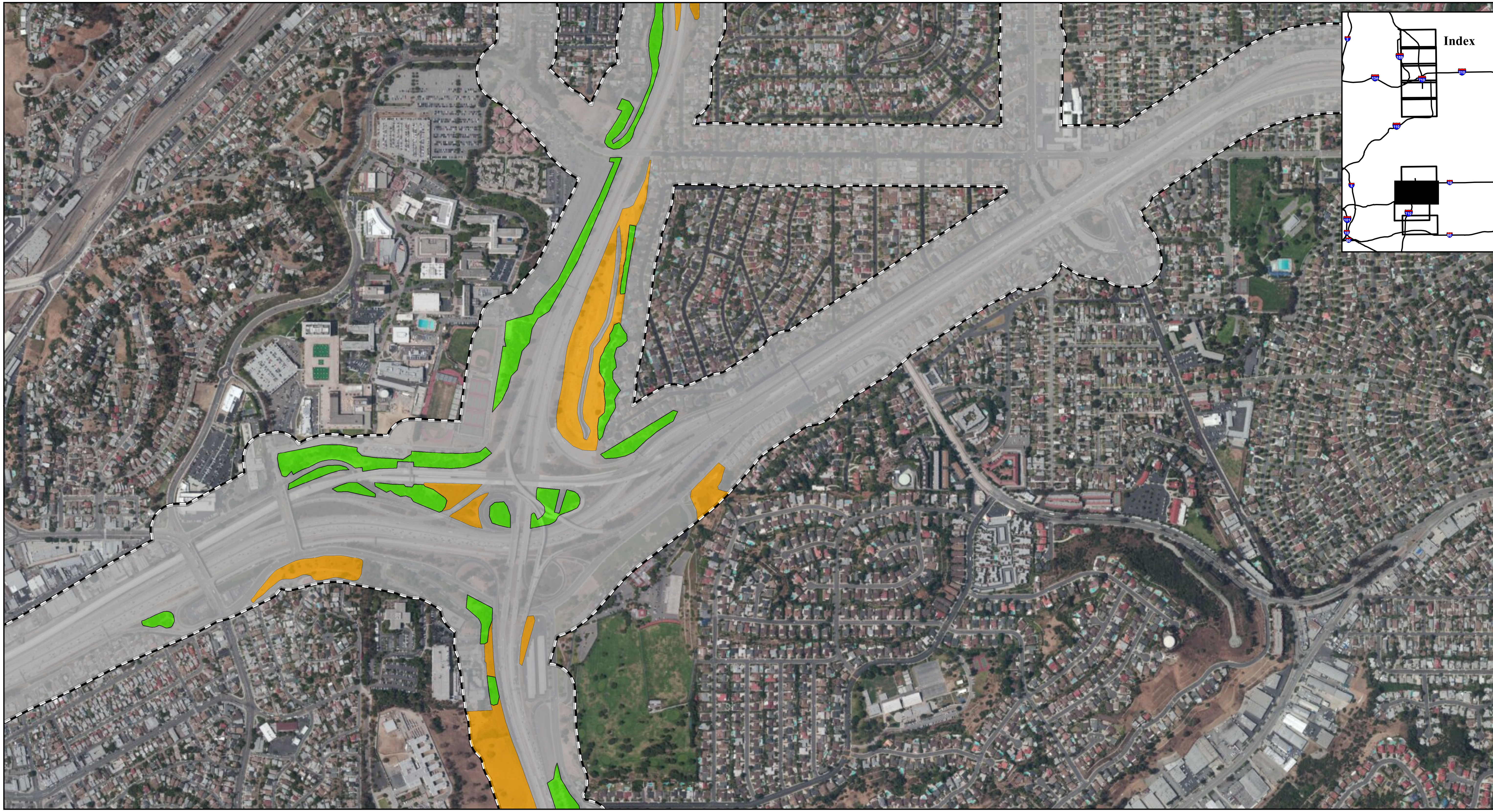

N

0 250 500 1,000

Feet

LEGEND

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves
- Biological Study Areas

FIGURE 3.G

Page 7 of 9

SR 710 North Study

Plant Community Map

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: ESRI (3/2014); CH2MHill (5/2013); AECOM (4/2013)

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LEGEND

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves
- Biological Study Areas

N

0 250 500 1,000

Feet

FIGURE 3.H

Page 8 of 9

SR 710 North Study

Plant Community Map

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: ESRI (3/2014); CH2MHill (5/2013); AECOM (4/2013)

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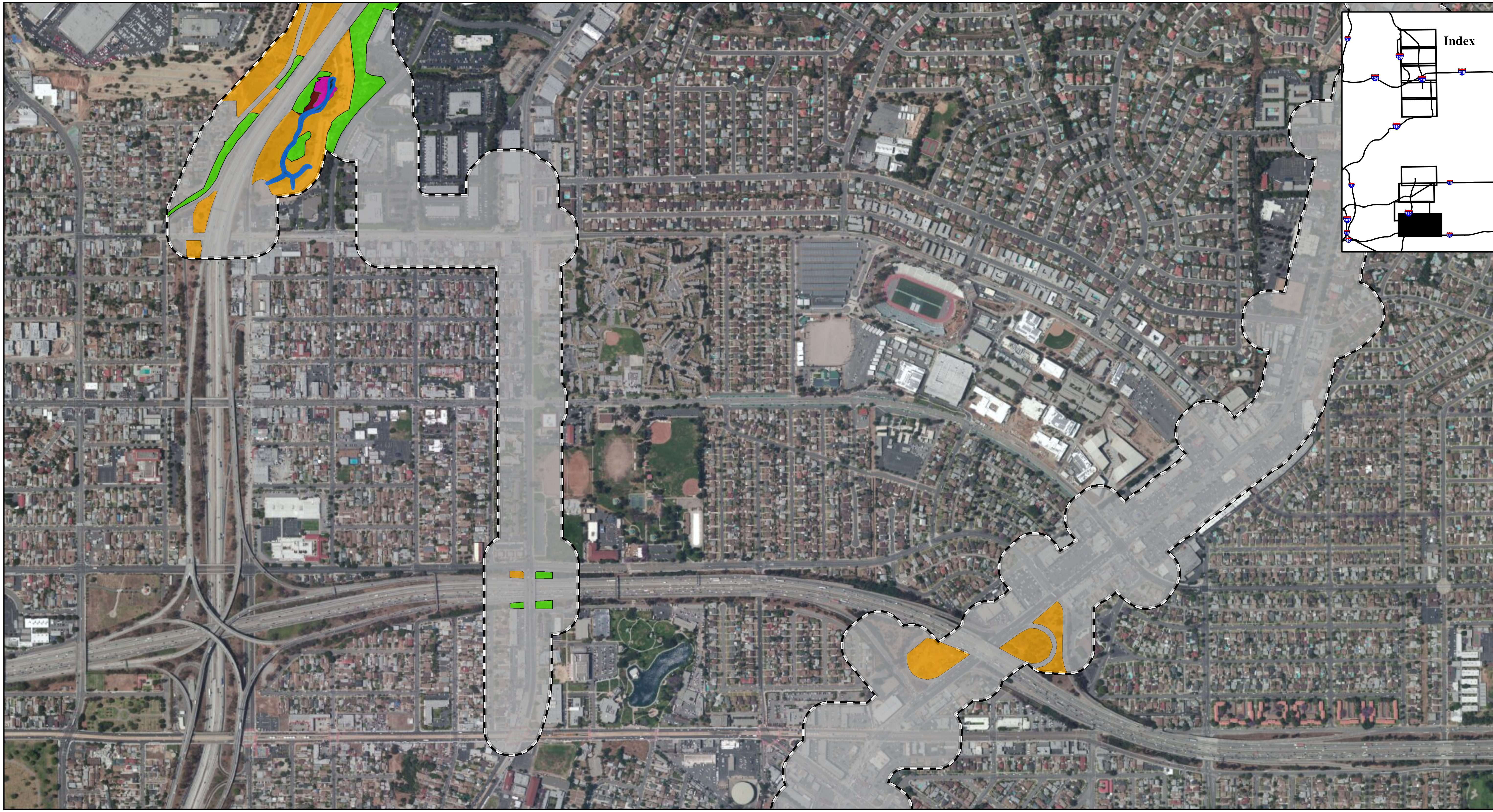


LEGEND

Plant Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Coast Live Oak Woodland
- Disturbed/Developed
- Giant Reed Breaks
- Laurel Sumac Scrub
- Non-Native Grassland
- Non-Native Riparian Woodland
- Non-Native Woodland
- Wetland Complex
- White Alder Groves
- Biological Study Areas

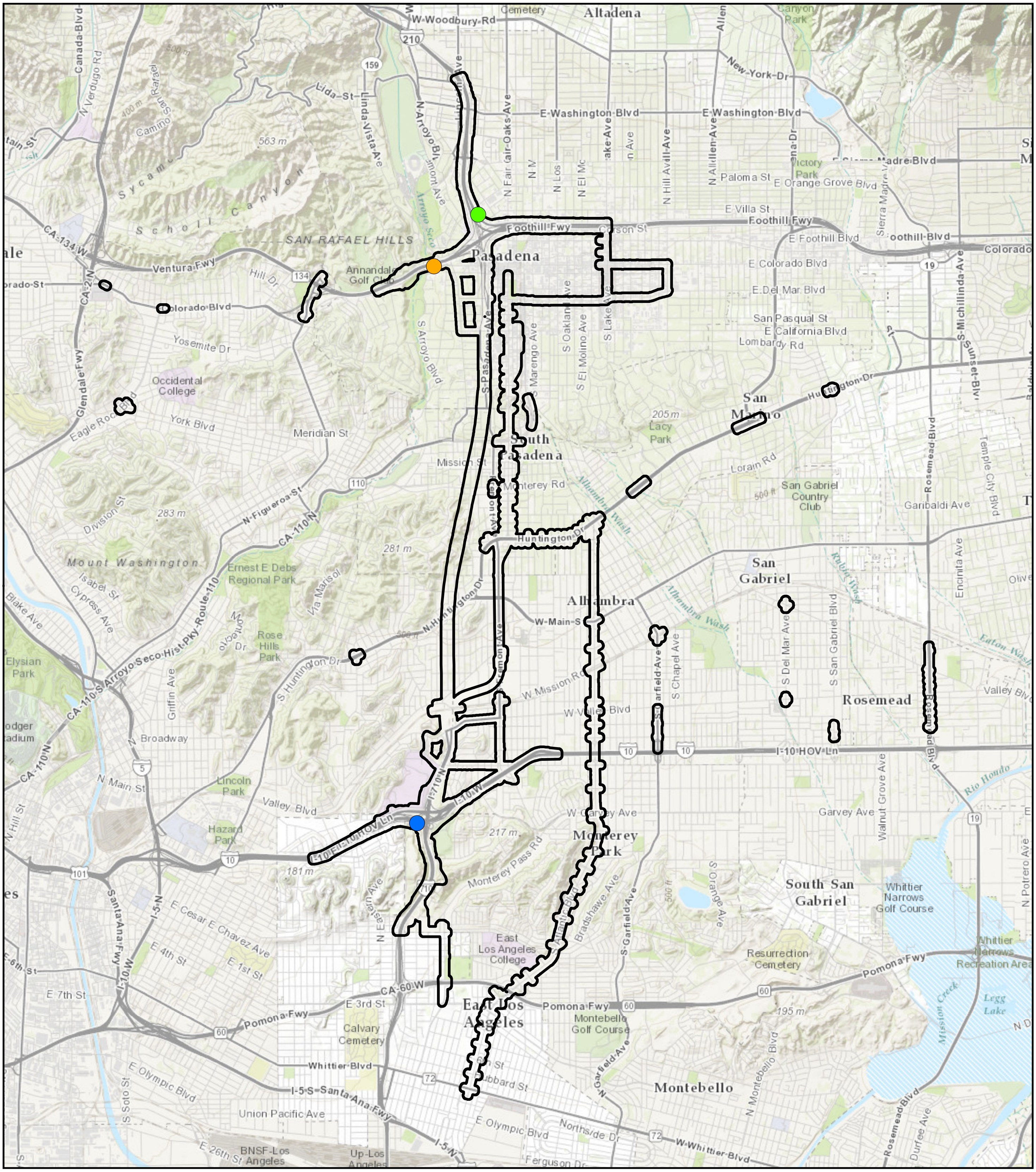
N

0 250 500 1,000
Feet

SOURCE: ESRI (3/2014); CH2MHill (5/2013); AECOM (4/2013)
Q:\1282\SR_710\ArcProjects\MFR_Plants\PlantCommunity_index_ddm.mxd (10/24/2014)

FIGURE 3.I

SR 710 North Study
Plant Community Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191



LEGEND

Biological Study Area

Observed Special-Status Plants

Southern California Walnut

Engelmann Oak

Coulter's Goldfields

0 0.25 0.5 1 1.5

Miles

FIGURE 4

SR 710 North Study

Special-Status Plants Observed in Biological Study Area

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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ATTACHMENT A
LISTED, PROPOSED, AND SPECIAL-STATUS PLANTS POTENTIALLY OCCURRING OR KNOWN TO OCCUR WITHIN AND IN THE VICINITY OF THE BSA

ATTACHMENT A

Listed, Proposed, and Special-Status Plants Potentially Occurring or Known to Occur within and in the Vicinity of the BSA

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Habitat Present or Absent	Rationale
Alkali mariposa-lily	*Calochortus striatus*	CRPR: 1B.2	Perennial bulbiferous herb; Chaparral, chenopod scrub, desert wash, meadow and seep, Mojavean desert scrub, wetland, alkaline, mesic; occurs between 70 and 1,595 m (230 – 5,233 ft) above MSL.	April - June	A	No native alkali soils or other suitable mesic habitat occurs within the BSA.
Brand's star phacelia	*Phacelia stellaris*	FC, CRPR: 1B.1	Annual herb; Coastal dunes, coastal scrub; occurs between 1 and 400 m (3 – 1,312 ft) above MSL.	March – June	A	No coastal dunes or coastal scrub habitat occurs within the BSA.
Braunton's milk-vetch	*Astragalus brauntonii*	FE, CRPR: 1B.1	Perennial herb; Chaparral, closed-cone coniferous forest, coastal scrub, limestone, valley and foothill grassland; often in recent burned or disturbed areas; usually in sandstone soil with carbonate layers; occurs between 4 and 640 m (13 – 2,100 ft) above MSL.	January - August	A	No limestone soils or other suitable habitat occurs within the BSA. Not observed during 2013 focused botanical surveys.
California muhly	*Muhlenbergia californica*	CRPR: 4.3	Perennial rhizomatous herb; Chaparral, coastal scrub, lower montane coniferous forest, meadow and seep, in mesic soils along seeps and streambanks; occurs between 100 and 2,000 m (328 – 6,562 ft) above MSL.	June - September	A	No suitable mesic habitat occurs within the BSA. Not observed during 2013 focused botanical surveys.
California Orcutt grass	*Orcuttia californica*	FE, SE, CRPR: 1B.1	Annual herb; Vernal pool, wetland; occurs between 15 and 660 m (49 – 2,165 ft) above MSL	April - August	A	No vernal pools or other suitable habitat occur within the BSA. Not observed during 2013 focused botanical surveys.
California satintail	*Imperata brevifolia*	CRPR: 2.1	Perennial rhizomatous herb; Occurs in chaparral, coastal scrub, meadow and seep (often alkali), Mojavean desert scrub, riparian forest, wetland, on mesic soils; occurs between 0 and 1,215 m (0 – 3,986 ft) above MSL.	September - May	A	No suitable habitat in mesic soils occurs within the BSA. This plant may have been conspicuous outside of the appropriate blooming period if present as it is a perennial rhizomatous herb.
California saw-grass	*Cladium californicum*	CRPR: 2.2	Perennial rhizomatous herb; Alkali marsh, freshwater marsh, meadow and seep, wetland; occurs between 60 and 865 m (197 – 2,838 ft) in elevation.	June - September	A	No alkali wetland or other suitable habitat occurs within the BSA. Not observed during 2013 focused botanical surveys.
Coastal dunes milk-vetch	*Astragalus tener* var. *titi*	FE, SE, CRPR: 1B.1	Annual herb; Coastal bluff scrub (sandy), coastal dunes, coastal prairie (mesic), often in vernally mesic areas; occurs between 1 and 50 m (3 – 164 ft) above MSL.	March – May	A	No coastal bluff scrub, coastal dunes, coastal prairie, or other suitable habitat occur within the BSA.
Coulter's goldfields	*Lasthenia glabrata* ssp. *coulteri*	CRPR: 1B.1	Annual herb; Alkali playa, marsh and swamp, salt marsh, valley and foothill grassland, vernal pool, wetland; occurs between 1 and 1,220 m (3 – 4,003 ft) above MSL.	February – June	HP, O	2013 focused botanical surveys resulted in the identification of a small population of Coulter's goldfields in non-typical disturbed/developed habitat in the BSA within a freeway edge along the I-10 freeway near the I-710/I-10 interchange (Figure 3G). Population is believed to have been planted. No other suitable habitat for this plant occurs within the BSA.
Davidson's bush-mallow	*Malacothamnus davidsonii*	CRPR: 1B.2	Perennial deciduous shrub; Chaparral, cismontane woodland, coastal scrub, riparian woodland; occurs between 185 and 855 m (607 – 2,805 ft) above MSL.	June - January	HP	Marginal suitable habitat exists within the BSA within the coast live oak woodland and laurel sumac scrub habitats at the SR 134 bridge over the Arroyo Seco river (Figure 3C-3D) however this plant was not observed during 2013 focused botanical surveys.
Davidson's saltscale	*Atriplex serenana* var. *davidsonii*	CRPR: 1B.2	Annual herb; Coastal bluff scrub, coastal scrub, alkaline; occurs between 10 and 200 m (33 – 656 ft) above MSL.	April - October	A	No native alkali soils or other suitable habitat occurs within the BSA. Not observed during 2013 focused botanical surveys.
Engelmann oak	*Quercus engelmannii*	CRPR: 4.2	Perennial deciduous tree; Chaparral, cismontane woodland, riparian woodland, valley and foothill grassland; occurs between 50 and 1,300 m (164 – 4,265 ft) above MSL.	March – June	HP, O	A single Engelmann oak individual was observed at the boundary of two plant communities: distiurbed/developed and non-native grassland, just west of the SR 134 overpass in Pasadena (Figure 3C-D).
Gambel's water cress	*Nasturtium gambelii*	FE, ST, CRPR: 1B.1	Perennial rhizomatous herb; Brackish marsh, freshwater marsh, marsh and swamp, wetlands; occurs between 5 and 330 m (16 – 1,083 ft) above MSL.	April - October	HP	Small spots of wetland complex habitat within the BSA located in Pasadena and Monterey Park are marginally suitable and are not of sufficient quality (Figure 3D, 3H-I). Not observed during 2013 focused botanical surveys.
Greata's aster	*Symphyotrichum greatae*	CRPR: 1B.3	Rhizomatous herb; Occurs in chaparral, broadleafed upland forest, cismontane woodland, lower montane coniferous forest, and riparian woodland on mesic soils; from 300 to 2,010 m (985 - 6,595 ft) in elevation.	June - October	HP	Marginal suitable mesic habitat exists within the riparian habitat and the coast live oak woodland habitat at the SR 134 bridge over the Arroyo Seco river (Figure 3C-D). Not observed during 2013 focused botanical surveys.
Intermediate mariposa-lily	*Calochortus weedii* var. *intermedius*	CRPR: 1B.2	Perennial bulbiferous herb; Chaparral, coastal scrub, valley and foothill grassland, rocky, calcareous; occurs between 105 and 855 m (344 – 2,805 ft) above MSL.	May - July	A	No suitable rocky soils present within the BSA. Not observed during 2013 focused botanical surveys.
Lemon lily	*Lilium parryi*	CRPR: 1B.2	Perennial bulbiferous herb; Lower montane coniferous forest, meadows and seeps, riparian forest, upper montane coniferous forest; mesic; occurs between 1,220 and 2,745 m (4,002 – 9,006 ft) above MSL.	July - August	A	The BSA is outside of the known elevational range of the species. Not observed during 2013 focused botanical surveys.
Los Angeles sunflower	*Helianthus nuttallii* ssp. *parishii*	CRPR: 1A	Perennial rhizomatous herb; Freshwater marsh, marsh and swamp, salt marsh, wetlands; occurs between 10 and 1,675 m (33 – 5,495 ft) above MSL.	August - October	HP	Low quality habitat exists within the wetland complex habitats in the BSA (Figure 3D, 3H-I). Not observed during 2013 focused botanical surveys.
Many-stemmed dudleya	*Dudleya multicaulis*	CRPR: 1B.2	Perennial herb; Chaparral, coastal scrub, valley and foothill grassland, often clay; occurs between 50 and 790 m (164 – 2,592 ft) above MSL.	April - July	A	No suitable clay soils present within the BSA. Not observed during 2013 focused botanical surveys.
Marsh sandwort	*Arenaria paludicola*	FE, SE, CRPR: 1B.1	Perennial stoloniferous herb; Freshwater marsh, marsh and swamp, wetland, sandy, openings; occurs between 3 and 170 m (10 – 558 ft) above MSL.	May - August	HP	Low quality habitat exists within the wetland complex habitats in the BSA (Figure 3D, 3H-I). Not observed during 2013 focused botanical surveys.
Mesa horkelia	*Horkelia cuneata* var. *puberula*	CRPR: 1B.1	Perennial herb; Chaparral, cismontane woodland, coastal shrub; occurs between 70 and 810 m (230 – 2,657 ft) above MSL.	February - September	A	No suitable sandy chaparral habitat present within the BSA. Not observed during 2013 focused botanical surveys.
Mt. Gleason paintbrush	*Castilleja gleasoni*	SR, CRPR: 1B.2	Hemiparasitic perennial herb; Chaparral, lower montane coniferous forest, pinyon and juniper woodland; occurs between 1,160 and 2,170 m (3,806 – 7,119 ft) above MSL.	May - September	A	The BSA is outside of the known elevational range of the species. Not observed during 2013 focused botanical surveys.

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Habitat Present or Absent	Rationale
Nevin's barberry	*Berberis nevinii*	FE, SE, CRPR: 1B.1	Perennial evergreen shrub; Chaparral, cismontane woodland, coastal scrub, riparian scrub, in sandy or gravelly soils; occurs between 274 to 825 m (899 – 2,707 ft) above MSL.	March - June	A	No suitable sandy or gravelly soils occur within the BSA. This species would have been conspicuous outside of its blooming period if present within the BSA as it is a perennial evergreen shrub. Not observed during 2013 focused botanical surveys.
Palmer's mariposa-lily	*Calochortus palmeri* var. *palmeri*	CRPR: 1B.2	Bulbiferous herb; Chaparral, lower montane coniferous forest, meadows, and seeps; occurs between 1,000 and 2,390 m (3,280 – 7,841 ft) above MSL.	May - July	A	The BSA is outside of the known elevational range of the species. Not observed during 2013 focused botanical surveys.
Parish's brittlescale	*Atriplex parishii*	CRPR: 1B.1	Annual herb; Alkali playa, chenopod scrub, meadow and seep, vernal pool, wetland; occurs 25 to 1,900 m (82 – 6,234 ft) above MSL.	June - October	A	No alkali soils or other suitable habitat occurs within the BSA. Not observed during 2013 focused botanical surveys.
Parish's gooseberry	*Ribes divaricatum* var. *parishii*	CRPR: 1A	Perennial deciduous shrub; Riparian woodland, moist woodland; occurs between 65 and 300 m (213 – 984 ft) above MSL.	February - April	HP	Marginally suitable habitat present within the BSA within the riparian habitats at the SR 134 bridge over the Arroyo Seco river (Figure 3C-D). This plant would have been conspicuous outside of its blooming period if present within the BSA as it is a perennial deciduous shrub. This plant was not observed during 2013 focused botanical surveys. This species is presumed extinct. The last known population of Parish's gooseberry was in 1980 at the Whittier Narrows Nature Center, approximately three miles southeast of the BSA.
Parry's spineflower	*Chorizanthe parryi* var. *parryi*	CRPR: 1B.1	Annual herb; Sandy or rocky openings, chaparral, cismontane woodland, coastal scrub, valley and foothill grassland; occurs between 275 and 1,220 m (902 – 4,003 ft) above MSL.	April - June	A	No suitable sandy or rocky soils occur within the BSA. Areas within the BSA that fall into this plants elevational range contain only disturbed/developed and non-native woodland habit not suitable for this species.
Peirson's lupine	*Lupinus peirsonii*	CRPR: 1B.3	Perennial herb; Joshua tree woodland, lower montane coniferous forest, pinyon and juniper woodland, upper montane coniferous forest; gravelly or rocky soils; between 1,000 and 2,500 m (3,280 – 8,202 ft) above MSL	April - June	A	The BSA is outside of the known elevational range of the species. No suitable woodland or forest habitat occurs within the BSA.
Peruvian dodder	*Cuscuta obtusiflora* var. *glandulosa*	CRPR: 2.2	Annual parasitic vine; Freshwater marsh and swamp, wetland; occurs between 15 and 280 m (49 – 919 ft) above MSL.	July - October	A	The BSA is outside of the known range of the species. No quality suitable habitat, and not observed during 2013 focused botanical surveys.
Plummer's mariposa-lily	*Calochortus plummerae*	CRPR: 4.2	Perennial bulbiferous herb; Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, valley and foothill grassland, in granitic rocky soil; occurs between 100 and 1,700 m (328 – 5,577 ft) above MSL.	May - July	A	No suitable rocky soils present within the BSA. Not observed during 2013 focused botanical surveys.
Prostrate vernal pool navarretia	*Navarretia prostrata*	CRPR: 1B.1	Annual herb; Mesic, coastal scrub, meadows and seeps, valley and foothill grassland (alkaline), vernal pool, wetland; occurs between 15 and 1,210 m (49 – 3,970 ft) above MSL.	April - July	A	No vernal pools or other suitable habitat occur within the BSA. Not observed during 2013 focused botanical surveys.
Robbins' nemacladus	*Nemacladus secundiflorus* var. *robbinsii*	CRPR: 1B.2	Annual herb; Chaparral, valley and foothill grassland; found in openings; occurs between 350 and 1,700 m (1,148 – 5,577 ft) above MSL.	April - June	A	The BSA is outside of the known elevational range of the species. No suitable chaparral or grassland habitat is present within elevational range of this species in the BSA.
Robinson's pepper-grass	*Lepidium virginicum* var. *robinsonii*	CRPR: 1B.2	Annual herb; Chaparral, coastal scrub; occurs between 1 and 885 m (3 – 2,904 ft) above MSL.	January - July	HP	Marginally suitable habitat is present within the BSA within the laurel sumac scrub habitat on a steep slope west of the SR 134/I-210 interchange, however this plant was not observed during 2013 focused botanical surveys.
Rock Creek broomrape	*Orobanche valida* ssp. *Valida*	CRPR: 1B.2	Perennial parasitic herb; Chaparral, pinyon and juniper woodlands, granitic; occurs between 1,250 and 2,000 m (4,101 – 6,562 ft) above MSL.	May - September	A	The BSA is outside of the known elevational range of the species. Not observed during 2013 focused botanical surveys.
Round-leaved filaree	*California macrophylla*	CRPR: 1B.1	Annual herb; Cismontane woodland, valley and foothill grassland; clay soils; occurs between 15 and 1,200 m (49 – 3,937 ft) above MSL.	March - May	A	No suitable clay soils present within the BSA.
San Bernardino aster	*Symphyotrichum defoliatum*	CRPR: 1B.2	Perennial rhizomatous herb; Cismontane woodland, coastal scrub, lower montane coniferous forest, marsh and swamp, meadow and seep, valley and foothill grassland, wetland, near ditches, streams, springs; occurs between 2 and 2,040 m (7 – 6,693 ft) above MSL.	July - November	HP	Marginally suitable grassland habitat exists within the BSA within fallow grasslands in flat areas or shallow basins along freeway edges within the non-native grassland habitats (Figure 3C-I); however not observed during 2013 focused botanical surveys.
San Fernando Valley spineflower	*Chorizanthe parryi* var. *fernandina*	FC, SE, CRPR: 1B.1	Annual herb; Coastal scrub in sandy soil, valley and foothill grassland; occurs between 150 and 1,220 m (492 – 4,003 ft) above MSL.	April - July	A	No suitable sandy soils occur within the BSA. Not observed during 2013 focused botanical surveys.
San Gabriel bedstraw	*Galium grande*	CRPR: 1B.2	Perennial deciduous shrub; Broadleaved upland forest, chaparral, cismontane woodland, lower montane coniferous forest; occurs between 425 and 1,500 m (1,394 – 4,921 ft) above MSL.	January - July	A	The BSA is outside of the known elevational range of the species. Not observed during 2013 focused botanical surveys.
San Gabriel linanthus	*Linanthus concinnus*	CRPR: 1B.2	Annual herb; Lower montane coniferous forest, upper montane coniferous forest, chaparral, rocky openings; occurs between 1,520 and 2,800 m (4,987 – 9,186 ft) above MSL.	April - July	A	The BSA is outside of the known elevational range of the species. Not observed during 2013 focused botanical surveys.
San Gabriel manzanita	*Arctostaphylos glandulosa* ssp. *gabrielensis*	CRPR: 1B.2	Perennial evergreen shrub; Chaparral, rocky; occurs between 595 and 1,500 m (1,952 – 4,921 ft) above MSL.	March	A	The BSA is outside of the known elevational range of the species. This species would have been conspicuous outside of the blooming period if it had been present within the BSA as it is a perennial evergreen shrub.
San Gabriel Mountains dudleya	*Dudleya densiflora*	CRPR: 1B.1	Perennial herb; Chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, riparian woodland; granitic soils, cliffs and canyon walls; occurs between 244 and 610 m (801 – 2,001 ft) above MSL.	March - June	A	No suitable granitic soil or rocky outcrop habitat occurs within the BSA.

Common Name	Scientific Name	Status	General Habitat Description	Flowering Period	Habitat Present or Absent	Rationale
San Gabriel River dudleya	*Dudleya cymosa* ssp. *crebrifolia*	CRPR: 1B.2	Perennial herb; Chaparral on granitic soil; occurs between 275 and 457 m (902 – 1,831 ft) above MSL.	April - July	A	No suitable granitic soil occurs within the BSA. Not observed during 2013 focused botanical surveys.
Santa Barbara morning-glory	*Calystegia sepium* ssp. *binghamiae*	CRPR: 1B.1	Perennial rhizomatous herb; Marsh and swamp (coastal), salt marsh, wetland, riparian scrub (alluvial); occurs between 0 and 220 m (0 – 722 ft) above MSL.	April - May	HP	Low quality habitat exists within the wetland complex habitats in the BSA (Figure 3D, 3H-I).
Short-joint beavertail	*Opuntia basilaris* var. *brachyclada*	CRPR: 1B.2	Perennial stem succulent; Chaparral, Joshua Tree woodland, Mojavean desert scrub, pinyon and juniper woodlands, riparian woodland; occurs between 425 and 1,800 m (1,394 – 5,906 ft) above MSL.	April - August	A	The BSA is outside of the known elevational range of the species. Not observed during 2013 focused botanical surveys.
Slender mariposa-lily	*Calochortus clavatus* var. *gracilis*	CRPR: 1B.2	Perennial bulbiferous herb; Chaparral, coastal scrub, valley and foothill grassland; occurs between 320 and 1,000 m (1,050 – 3,281 ft) above MSL.	March - June	HP	Marginally suitable chaparral / coastal scrub habitat is present within the BSA in the laurel sumac scrub habitat on a steep slope west of the SR 134/I-210 interchange (Figure 3C-D). However this species is not known to occur away from the lower slopes of the Transverse Range.
Slender silver moss	*Anomobryum julaceum*	CRPR: 2.2	Moss; Broadleafed upland forest, lower montane coniferous forest, north coast coniferous forest; damp rock and soil on outcrops, usually on roadcuts; occurs between 100 and 1,000 m (328 – 3,281 ft) above MSL.	N/A	A	No suitable mesic habitat exists within the BSA. Not observed during 2013 focused botanical surveys.
Slender-horned spineflower	*Dodecahema leptoceras*	FE, SE, CRPR: 1B.1	Annual herb; Chaparral, cismontane woodland, coastal scrub (alluvial fan); often in sandy soil; occurs between 200 and 760 m (656 – 2,493 ft) above MSL.	April - June	HP	Marginally suitable alluvial sandy soils occur within the laurel sumac scrub and coast live oak woodland habitats near the SR-134 bridge in the BSA (Figure 3C-D).
Sonoran maiden fern	*Thelypteris puberula* var. *sonorensis*	CRPR: 2.2	Perennial rhizomatous herb; Meadow and seep, streams, wetland; occurs between 50 and 610 m (164 – 2,001 ft) above MSL.	January - September	A	No suitable mesic habitat occurs within the BSA. Not observed during 2013 focused botanical surveys.
Southern California walnut	*Juglans californica var. californica*	CRPR: 4.2	Perennial deciduous tree; Chaparral, cismontane woodland, coastal scrub; alluvial soils; occurs between 50 – 900 m (164 – 2,953 ft) above MSL	March - August	HP, O	A single young southern California walnut was found growing in a stand of unmaintained Aleppo pine woodland, upslope from the westbound I-210 freeway (Figure 3C).
Southern mountains skullcap	*Scutellaria bolanderi* ssp. *austromontana*	CRPR: 1B.2	Perennial rhizomatous herb; Chaparral, cismontane woodland, lower montane coniferous forest, mesic; occurs between 425 and 2,000 m (1,394 – 6,561 ft) above MSL.	June - August	A	No suitable mesic habitat occurs within the BSA. The BSA is outside of the known elevational range for this plant. Not observed during 2013 focused botanical surveys.
Southern tarplant	*Centromadia parryi* ssp. *australis*	CRPR: 1B.1	Annual herb; Marsh and swamp, salt marsh, valley and foothill grassland, wetland, vernal pools; occurs between 0 and 425 m (0 – 1,394 ft) above MSL.	May - November	HP	Marginally suitable grassland habitat exists within the BSA within fallow grasslands in flat areas or shallow basins along freeway edges within the non-native grassland habitats (Figure 3C-I);, however not observed during 2013 focused botanical surveys.
Spreading navarretia	*Navarretia fossalis*	FT, CRPR: 1B.1	Annual herb; Alkali playa, chenopod scrub, marsh and swamp, vernal pool, wetland; between 30 and 655 m (98 – 2,149 ft) above MSL.	April - June	A	No alkali soils or other suitable habitat occurs within the BSA.
White rabbit-tobacco	*Pseudognaphalium leucocephalum*	CRPR: 2.2	Perennial herb; Chaparral, cismontane woodland, coastal scrub, riparian woodland, in sandy/gravely soil; occurs between 0 and 2,100 m (0 – 6,890 ft) above MSL.	July - December	HP	Very marginal habitat present within the BSA within thelaurel sumac scrub habitat on a steep slope west of the SR 134/I-210 interchange (Figure 3C-D); however not observed during 2013 focused botanical surveys.
Woolly mountain-parsley	*Oreonana vestita*	CRPR: 1B.3	Perennial herb; Lower montane coniferous forest, subalpine coniferous forest, upper montane coniferous forest; found in gravel or talus; occurs between 1,615 and 3,500 m (5,298 – 11,483 ft) above MSL.	March - September	A	The BSA is outside of the known elevational range of the species. No montane or other suitable habitat present within the BSA. Not observed during 2013 focused botanical surveys.

A = Absent; no habitat present and no further work needed.
HP = Habitat present; habitat is, or may be present. The species may be present.
O = Observed; the species was observed during focused surveys.
FE = Federally endangered
SE = State endangered
FT = Federally threatened
ST = State threatened
CRPR Rankings:
List 1A: Presumed extinct in California
List 1B: Rare, threatened, or endangered in California and elsewhere. 0.1: Seriously threatened in California.
List 1B: Rare, threatened, or endangered in California and elsewhere. 0.2: Fairly threatened in California.
List 1B: Rare, threatened, or endangered in California and elsewhere. 0.3: Not very threatened in California.
List 2: Rare, threatened, or endangered in California, but more common elsewhere. 0.1: Seriously threatened in California.
List 2: Rare, threatened, or endangered in California, but more common elsewhere. 0.2: Fairly threatened in California.
List 4: Limited distribution (Watch List). 0.2: Fairly endangered in California.
List 4: Limited distribution (Watch List). 0.3: Not very threatened in California

SCE = State Candidate (Endangered)
FC = Federal Candidate
SR = State Rare
MSL = mean sea level
BSA = Biological Study Area
CRPR = California Rare Plant Rank

ATTACHMENT B
SITE PHOTOGRAPHS

G:\1282\1282-002\Memos\MFR XX Plants

PHOTO 1
Southern tarplant site in Vernon,
with the unmaintained patch in the center of the image (July 29, 2013).

PHOTO 2
Habitat view of the Coulter's goldfields found along the Interstate 10 East to SR 710 South ramp (July 31, 2013).

PHOTO 3
Close-up view of the Coulter's goldfields found along the Interstate 10 East to SR 710 South ramp (July 31, 2013).

PHOTO 4
Habitat view of a Southern California walnut upslope from the 210 freeway (August 6, 2013).

PHOTO 5
Close-up view of a Southern California walnut upslope from the 210 freeway (August 6, 2013).

PHOTO 6
Engelmann oak, south of SR 134 in City of Pasadena. The Engelmann oak is to the left of the street lamp, with a coast live oak to the right (August 7, 2013).

PHOTO 7
Close-up view of Engelmann oak (August 7, 2013)

PHOTO 8
Riparian system under overpass (August 7, 2013)

ATTACHMENT C
FLORAL COMPENDIUM

ATTACHMENT C
FLORAL COMPENDIUM

Non-native plants are indicated with an asterisk (*).
CRPR 1B.1 plants are indicated with ($^{+}$)
Rare, threatened, or endangered in California and elsewhere. Seriously endangered in California
CRPR 4.2 plants are indicated with ($^{++}$)
Uncommon in California. Fairly endangered in California

All plants listed were observed on-site during surveys conducted in July and August 2013.

GYMNOSPERMS

Pinaceae – Pine family

*Cedrus deodara**
Deodar cedar
*Pinus canariensis**
Canary Island pine
*Pinus halepensis**
Aleppo pine

ANGIOSPERMS

Dicots

Adoxaceae – Muskroot family

Sambucus nigra ssp. *caerulea*
Blue elderberry

Aizoaceae – Iceplant family

*Aptenia cordifolia**
Heartleaf iceplant
*Carpobrotus edulis**
Freeway iceplant
*Malephora crocea**
Coppery mesemb

Amaranthaceae – Amaranth family

*Amaranthus albus**
Tumbleweed
Amaranthus blitoides
Procumbent pigweed
*Amaranthus retroflexus**
Redroot pigweed

Anacardiaceae – Sumac family

Malosma laurina
Laurel sumac
Rhus ovata
Sugarbush
*Schinus molle**
Peruvian peppertree
*Schinus terebinthifolius**
Brazilian peppertree
Toxicodendron diversilobum
Pacific poison oak

Apiaceae – Carrot family

*Anthriscus caucalis**
Bur-chervil
*Foeniculum vulgare**
Sweet fennel

Apocynaceae – Dogbane family

Asclepias fascicularis
Narrow-leaf milkweed
*Nerium oleander**
Common oleander
*Vinca major**
Greater periwinkle

Araliaceae – Ginseng family

*Hedera canariensis**
Canary Islands ivy
*Hedera helix**
English ivy

Asteraceae – Sunflower family
Achillea millefolium
Common yarrow
*Ageratina adenophora**
Crofton weed
Ambrosia acanthicarpa
Annual bur-sage
Ambrosia psilostachya
Western ragweed
Artemisia californica
Coastal sagebrush

Baccharis pilularis
Coyotebush
Baccharis salicifolia
Mule fat
*Bellis perennis**
English daisy
*Bidens pilosa**
Common beggar-ticks
Brickellia californica
California brickellbush
Carduus pycnocephalus var. *pycnocephalus**
Italian thistle
*Centaurea maculosa**
Spotted knapweed
*Centaurea melitensis**
Maltese star-thistle
*Chondrilla juncea**
Rush skeletonweed
*Cirsium vulgare**
Bull thistle
*Cotula australis**
Australian waterbuttons
Deinandra fasciculata
Clustered tarweed
*Delairea odorata**
Cape-ivy
Encelia californica
California brittlebush
Encelia farinosa
Brittlebush
*Erigeron bonariensis**
Flax-leaved horseweed
Erigeron canadensis
Canadian horseweed
*Gazania linearis**
Treasure flower
*Glebionis coronarium**
Crown daisy
Helianthus annuus
Common sunflower
*Helminthotheca echioides**
Bristly oxtongue
Heterotheca grandiflora
Telegraph weed
*Lactuca serriola**
Prickly lettuce
Lasthenia glabrata ssp. coulteri[†]
Coulter's goldfields
Malacothrix saxatilis
Cliff aster

Pseudognaphalium biolettii
Two-colored rabbit-tobacco
Pseudognaphalium californicum
Ladie's tobacco
Pseudognaphalium canescens
Wright's cudweed
*Pseudognaphalium luteoalbum**
Jersey cudweed
*Senecio vulgaris**
Common groundsel
*Silybum marianum**
Blessed milkthistle
*Sonchus oleraceus**
Common sowthistle
Stephanomeria virgata
Rod wirelettuce
*Taraxacum officinale**
Common dandelion
Xanthium strumarium
Rough cocklebur

Betulaceae – Birch family

Alnus rhombifolia
White alder

Bignoniaceae – Trumpet-creeper family

*Jacaranda mimosifolia**
Black poui

Boraginaceae – Borage family

Eucrypta chrysanthemifolia
Spotted hideseed
Phacelia campanularia
Desert bluebells
Phacelia ramosissima
Branching phacelia

Brassicaceae – Mustard family

*Brassica nigra**
Black mustard
*Hirschfeldia incana**
Shortpod mustard
Lepidium densiflorum
Common pepperweed
*Lepidium didymum**
Lesser swine cress

*Lobularia maritime**
Sweet alyssum
Nasturtium officinale
Water cress
*Raphanus sativus**
Cultivated radish
*Sinapis arvensis**
Charlock mustard
*Sisymbrium irio**
London rocket
*Sisymbrium orientale**
Indian hedge mustard

Cactaceae – Cactus family

*Opuntia ficus-indica**
Mission prickly-pear

Cannabaceae – Hemp family

Celtis sp.*
Hackberry

Caprifoliaceae – Honeysuckle family

*Lonicera japonica**
Japanese honeysuckle
Lonicera subspicata
Southern honeysuckle

Caryophyllaceae – Pink family

*Spergularia rubra**
Red sand-spurrey

Chenopodiaceae – Goosefoot family

Atriplex canescens
Four-wing saltbush
*Atriplex semibaccata**
Australian saltbush
*Chenopodium album**
Lamb's quarters
*Chenopodium murale**
Nettleleaf goosefoot
*Salsola tragus**
Prickly Russian thistle

Convolvulaceae – Morning-glory family

*Convolvulus arvensis**
Field bindweed
Cuscuta californica
Chaparral dodder
*Dichondra micrantha**
Asian ponysfoot
*Ipomoea indica**
Oceanblue morning-glory

Crassulaceae – Stonecrop family

*Crassula ovata**
Jade plant
*Sedum rubrotinctum**
Pork and beans

Cucurbitaceae – Gourd family

*Cucurbita pepo**
Field pumpkin
Marah sp.
Manroot

Dipsacaceae – Teasel family

*Dipsacus sativus**
Fuller’s teasel

Euphorbiaceae – Spurge family

*Chamaesyce nutans**
Spotted spurge
*Chamaesyce serpens**
Matted sandmat
Croton setigerus
Turkey-mullein
*Euphorbia peplus**
Petty spurge
*Ricinus communis**
Castor bean

Fabaceae – Pea family

*Acacia cyclops**
Cyclops acacia
*Acacia melanoxylon**
Blackwood

Acmispon americanus
Spanish lotus
Acmispon glaber
Common deerweed
*Bauhinia variegata**
Mountain ebony
Erythrina sp.*
Coral tree
Lupinus succulentus
Arroyo lupine
*Medicago lupulina**
Black medick
*Medicago polymorpha**
California burclover
*Melilotus alba**
White sweetclover
*Melilotus indicus**
Sourclover
*Parkinsonia aculeate**
Mexican palo verde
*Robinia pseudoacacia**
Black locust
*Tipuana tipu**
Tipa
*Trifolium repens**
White clover
*Vicia villosa**
Winter vetch

Fagaceae – Oak family

Quercus agrifolia var. agrifolia
California live oak
Quercus engelmannii++
Engelmann oak
*Quercus ilex**
Holly oak

Geraniaceae – Geranium family

*Erodium botrys**
Longbeak stork's bill
*Erodium cicutarium**
Redstem stork's bill

Grossulariaceae – Gooseberry family

Ribes aureum
Golden currant

Hamamelidaceae – Sweetgum family

*Liquidambar styraciflua**
Sweetgum

Juglandaceae – Walnut family

*Carya illinoinensis**
Pecan
Juglans californica++
Southern California walnut

Lamiaceae – Mint family

*Marrubium vulgare**
Horehound
Salvia mellifera
Black sage

Lauraceae – Laurel family

Cinnamomum camphora
Camphor tree

Lythraceae – Loosestrife family

*Lagerstroemia indica**
Crape myrtle

Magnoliaceae – Magnolia family

*Magnolia grandiflora**
Southern magnolia

Malvaceae – Mallow family

*Ceiba speciosa**
Silk floss tree
*Malva parviflora**
Cheeseweed mallow
Malvella leprosa
Alkali mallow

Moraceae – Mulberry family

*Ficus carica**
Edible fig
*Morus alba**
White mulberry

Myrtaceae – Myrtle family

*Callistemon citrinus**
Crimson bottlebrush
*Eucalyptus citriodora**
Lemon scented gum
*Eucalyptus cladocalyx**
Sugar gum
*Eucalyptus globulus**
Tasmanian blu egum
*Eucalyptus polyanthemos**
Red box
*Eucalyptus sideroxylon**
Red ironbark

Nyctaginaceae – Four o'clock family

*Bougainvillea spectabilis**
Great bougainvillea
Mirabilis jalapa var. *jalapa**
Marvel of Peru

Oleaceae – Olive family

Fraxinus sp.
Ash
Fraxinus velutina
Velvet ash
*Ligustrum lucidum**
Glossy privet

Onagraceae – Primrose family

Clarkia sp.
Clarkia
Epilobium brachycarpum
Tall annual willowherb
Epilobium ciliatum
Fringed willowherb
Eulogus californicus
California suncup
*Ludwigia peploides**
Floating primrose-willow
Oenothera elata
Hooker's evening-primrose
*Oenothera laciniata**
Cutleaf evening-primrose
*Oenothera speciosa**
Pink ladies

Oxalidaceae – Oxalis family

*Oxalis corniculata**
Creeping woodsorrel

Papaveraceae – Poppy family

Eschscholzia californica
California poppy
*Fumaria parviflora**
Fineleaf fumitory

Passifloraceae – Passion flower family

*Passiflora caerulea**
Bluecrown passion flower

Plantaginaceae – Plaintain family

*Plantago lanceolata**
Narrowleaf plantain
*Plantago major**
Common plantain
*Veronica anagallis-aquatica**
Water speedwell

Platanaceae – Sycamore family

*Platanus ×hispanica**
London plane tree
Platanus racemosa
California sycamore

Plumbaginaceae – Leadwort family

Limonium sp.*
Sea lavender
*Plumbago auriculata**
Cape leadwort

Polygonaceae – Buckwheat family

Eriogonum fasciculatum var. foliolosum
Leafy California buckwheat
Eriogonum fasciculatum var. polifolium
Mojave Desert California buckwheat
Polygonum aviculare ssp. *depressum**
Prostrate knotweed
Persicaria lapathifolia
Curlytop knotweed

*Rumex crispus**
Curly dock

Portulacaceae – Purslane family

*Portulaca oleracea**
Little hogweed

Rhamnaceae – Buckthorn family

Frangula californica
California coffee berry

Rosaceae – Rose family

*Cotoneaster sp.**
Cotoneaster
Heteromeles arbutifolia
Toyon
*Prunus persica**
Peach
*Prunus sp.**
Cherry
*Pyracantha coccinea**
Scarlet firethorn
Rosa californica
California wild rose
*Rubus armeniacus**
Himalayan blackberry

Rubiaceae – Madder family

Galium aparine
Goose grass

Salicaceae – Willow family

Populus fremontii
Fremont cottonwood
Salix exigua
Narrowleaf willow
Salix gooddingii
Goodding's willow
Salix laevigata
Red willow
Salix lasiolepis
Arroyo willow

Sapindaceae – Soapberry family

Acer negundo
Box elder
Aesculus californica
California buckeye
Koelreuteria sp.*
Goldenrain tree

Scrophulariaceae – Figwort family

Scrophularia californica
California figwort

Simaroubaceae – Simarouba family

*Ailanthus altissima**
Tree of heaven

Solanaceae – Nightshade family

Datura wrightii
Jimson weed
*Nicotiana glauca**
Tree tobacco
Solanum americanum
American black nightshade
Solanum douglasii
Greenspot nightshade
*Solanum aviculare**
New Zealand nightshade

Tamaricaceae – Tamarisk family

*Tamarix ramosissima**
Salt cedar

Tropaeolaceae – Nasturtium family

*Tropaeolum majus**
Nasturtium

Ulmaceae – Elm family

*Ulmus parvifolia**
Chinese elm

Valerianaceae – Valerian family

*Centranthus ruber**
Red valerian

Verbenaceae – Vervain family

*Lantana camara**
Lantana
*Lantana montevidensis**
Trailing shrubverbena
*Verbena pulchella**
South American mock vervain

Vitaceae

Parthenocissus sp.*
Virginia creeper
Vitis girdiana
Desert wild grape
*Vitis vinifera**
Wine grape

Zygophyllaceae

*Tribulus terrestris**
Puncturevine

Monocots

Amaryllidaceae – Amaryllis family

*Amaryllis belladonna**
Belladonna lily

Araceae – Arum family

Lemna sp.
Duckweed

Asparagaceae – Asparagus family

*Asparagus officinalis**
Garden asparagus
*Asparagus setaceus**
Common asparagus fern

Commelinaceae – Spiderwort family

*Commelina benghalensis**
Jio

Poaceae – Grass family

*Agrostis stolonifera**
Creeping bentgrass
*Arundo donax**
Giant reed
*Avena barbata**
Slender wild oat
*Avena fatua**
Wild oat
*Brachypodium distachyon**
Purple false brome
*Bromus catharticus**
Rescuegrass
*Bromus diandrus**
Ripgut brome
*Bromus hordeaceus**
Soft chess
Bromus madritensis ssp. *rubens**
Red brome
*Cortaderia jubata**
Purple pampas grass
*Cortaderia selloana**
Uruguayan pampas grass
*Cynodon dactylon**
Bermuda grass
*Digitaria sanguinalis**
Hairy crabgrass
Distichlis spicata
Saltgrass
*Echinochloa colona**
Jungle rice
*Ehrharta erecta**
Panic veldt grass
Eragrostis sp.*
Lovegrass
*Festuca myuros**
Rattail sixweeks grass
*Festuca perennis**
Perennial ryegrass
*Hordeum murinum**
Wall barley
Leptochloa fusca
Malabar sprangletop

*Paspalum dilatatum**
Dallis grass
*Pennisetum clandestinum**
Kikuyu grass
*Pennisetum setaceum**
Crimson fountain grass
*Phalaris minor**
Little-seeded canary grass
Phyllostachys sp.*
Bamboo
*Poa annua**
Annual bluegrass
*Polypogon australis**
Chilean beard grass
*Polypogon monspeliensis**
Annual beard grass
*Polypogon viridis**
Water beard grass
Setaria parviflora
Knotroot bristlegrass
*Setaria verticillata**
Hooked bristlegrass
*Sorghum bicolor**
Sorghum
*Sorghum halepense**
Johnsongrass
*Stenotaphrum secundatum**
St. Augustine grass
*Stipa miliaceum**
Smilo grass

Typhaceae – Cattail family

Typha latifolia
Broadleaf cattail

Appendix D Floral Compendium

FLORAL COMPENDIUM

Non-native plants are indicated with an asterisk (*).
CRPR 1B.1 plants are indicated with ($^{+}$)
Rare, threatened, or endangered in California and elsewhere. Seriously endangered in California.
CRPR 4.2 plants are indicated with ($^{++}$)
Uncommon in California. Fairly endangered in California.

All plants listed were observed on-site during surveys conducted from July through October, 2013.

GYMNOSPERMS

Cupressaceae – Cypress family

*Cupressus sp.**
Cypress

Pinaceae – Pine family

*Cedrus deodara**
Deodar cedar
*Pinus canariensis**
Canary Island pine
*Pinus halepensis**
Aleppo pine

ANGIOSPERMS

Dicots

Adoxaceae – Muskroot family

Sambucus nigra ssp. *caerulea*
Blue elderberry

Aizoaceae – Iceplant family

*Aptenia cordifolia**
Heartleaf iceplant
*Carpobrotus edulis**
Freeway iceplant
*Malephora crocea**
Coppery mesemb

Amaranthaceae – Amaranth family

*Amaranthus albus**
Tumbleweed
Amaranthus blitoides
Procumbent pigweed
*Amaranthus retroflexus**
Redroot pigweed

Anacardiaceae – Sumac family

Malosma laurina
Laurel sumac
Rhus ovata
Sugarbush
*Schinus molle**
Peruvian peppertree
*Schinus terebinthifolius**
Brazilian peppertree

Apiaceae – Carrot family

*Anthriscus caucalis**
Bur-chervil
*Conium maculatum**
Poison hemlock
*Foeniculum vulgare**
Sweet fennel

Apocynaceae – Dogbane family

Asclepias fascicularis
Narrow-leaf milkweed
*Ilex aquifolium**
English holly
*Nerium oleander**
Common oleander
*Vinca major**
Greater periwinkle

Araliaceae – Ginseng family

*Hedera canariensis**
Canary Islands ivy
*Hedera helix**
English ivy

Asteraceae – Sunflower family

Achillea millefolium
Common yarrow
*Ageratina adenophora**
Crofton weed
Ambrosia acanthicarpa
Annual bur-sage
Ambrosia psilostachya
Western ragweed
Artemisia californica
Coastal sagebrush
Artemisia douglasiana
Mugwort
Baccharis pilularis
Coyotebush
Baccharis salicifolia
Mule fat
*Bellis perennis**
English daisy
Brickellia californica
California brickellbush
Carduus pycnocephalus var. *pycnocephalus**
Italian thistle
*Centaurea maculosa**
Spotted knapweed
*Centaurea melitensis**
Tocalote
*Chondrilla juncea**
Rush skeletonweed
*Cirsium vulgare**
Bull thistle
*Cotula australis**
Australian waterbuttons
*Cotula coronopifolia**
Brass buttons
Deinandra fasciculata
Clustered tarweed
*Delairea odorata**
Cape-ivy
Encelia californica
California brittlebush
Encelia farinosa
Brittlebush
*Erigeron bonariensis**
Flax-leaved horseweed
Erigeron canadensis
Canadian horseweed

*Gazania linearis**
Treasure flower
*Glebionis coronarium**
Crown daisy
Helianthus annuus
Common sunflower
*Helminthotheca echioides**
Bristly oxtongue
Heterotheca grandiflora
Telegraph weed
*Lactuca serriola**
Prickly lettuce
Lasthenia glabrata ssp. coulteri[+]
Coulter’s goldfields
Malacothrix saxatilis
Cliff aster
Pseudognaphalium biolettii
Two-colored rabbit-tobacco
Pseudognaphalium californicum
Ladie’s tobacco
Pseudognaphalium canescens
Wright’s cudweed
*Pseudognaphalium luteoalbum**
Jersey cudweed
*Senecio vulgaris**
Common groundsel
*Silybum marianum**
Blessed milkthistle
*Sonchus oleraceus**
Common sowthistle
Stephanomeria virgata
Rod wirelettuce
*Taraxacum officinale**
Common dandelion
Xanthium strumarium
Rough cocklebur

Betulaceae – Birch family

Alnus rhombifolia
White alder

Bignoniaceae – Trumpet-creeper family

*Jacaranda mimosifolia**
Black poui

Boraginaceae – Borage family

*Echium candicans**
Pride of Madeira
Eucrypta chrysanthemifolia
Spotted hideseed
Phacelia campanularia
Desert bluebells
Phacelia ramosissima
Branching phacelia

Brassicaceae – Mustard family

*Brassica nigra**
Black mustard
*Hirschfeldia incana**
Shortpod mustard
Lepidium densiflorum
Common pepperweed
*Lepidium didymum**
Lesser swine cress
*Lobularia maritime**
Sweet alyssum
Nasturtium officinale
Water cress
*Raphanus sativus**
Cultivated radish
*Sinapis arvensis**
Charlock mustard
*Sisymbrium irio**
London rocket
*Sisymbrium orientale**
Indian hedge mustard

Cactaceae – Cactus family

*Opuntia ficus-indica**
Mission prickly-pear

Cannabaceae – Hemp family

Celtis sp.*
Hackberry

Caprifoliaceae – Honeysuckle family

*Lonicera japonica**
Japanese honeysuckle
Lonicera subspicata
Southern honeysuckle

Caryophyllaceae – Pink family

*Spergularia rubra**
Red sand-spurrey

Chenopodiaceae – Goosefoot family

Atriplex canescens
Four-wing saltbush
*Atriplex semibaccata**
Australian saltbush
*Bassia hyssopifolia**
Fire-hook bassia
*Chenopodium album**
Lamb's quarters
*Chenopodium murale**
Nettleleaf goosefoot
*Salsola tragus**
Prickly Russian thistle

Convolvulaceae – Morning-glory family

*Convolvulus arvensis**
Field bindweed
Cuscuta californica
Chaparral dodder
*Dichondra micrantha**
Asian ponysfoot
*Ipomoea hederacea var. integruiscula**
Ivy leaf morning-glory
*Ipomoea indica**
Oceanblue morning-glory

Crassulaceae – Stonecrop family

*Crassula ovata**
Jade plant
*Sedum rubrotinctum**
Pork and beans

Cucurbitaceae – Gourd family

*Cucurbita pepo**
Field pumpkin
Marah sp.
Manroot

Dipsacaceae – Teasel family

*Dipsacus sativus**
Fuller's teasel

Ericaceae – Heather family

*Arbutus sp.**
Madrone

Euphorbiaceae – Spurge family

*Chamaesyce nutans**
Spotted spurge
*Chamaesyce serpens**
Matted sandmat
Croton setigerus
Turkey-mullein
*Euphorbia peplus**
Petty spurge
*Euphorbia terracina**
Carnation spurge
*Ricinus communis**
Castor bean

Fabaceae – Pea family

*Acacia cyclops**
Cyclops acacia
*Acacia melanoxylon**
Blackwood
*Acacia sp.**
Thorn tree
Acmispon americanus
Spanish lotus
Acmispon glaber
Common deerweed
*Bauhinia variegata**
Mountain ebony
*Cytisus scoparius**
Scotch broom

Erythrina sp.*
Coral tree
Lupinus succulentus
Arroyo lupine
*Medicago lupulina**
Black medick
*Medicago orbicularis**
Button clover
*Medicago polymorpha**
California burclover
*Melilotus alba**
White sweetclover
*Melilotus indicus**
Sourclover
*Parkinsonia aculeate**
Mexican palo verde
*Robinia pseudoacacia**
Black locust
*Tipuana tipu**
Tipa
*Trifolium repens**
White clover
*Vicia villosa**
Winter vetch

Fagaceae – Oak family

Quercus agrifolia var. agrifolia
California live oak
Quercus engelmannii[++]
Engelmann oak
*Quercus ilex**
Holly oak
Quercus kelloggii
Black oak
Quercus lobata
Valley oak

Geraniaceae – Geranium family

*Erodium botrys**
Longbeak stork's bill
*Erodium cicutarium**
Redstem stork's bill

Ginkgoaceae – Ginkgo family

*Ginkgo biloba**
Ginkgo

Grossulariaceae – Gooseberry family

Ribes aureum
Golden currant

Hamamelidaceae – Sweetgum family

*Liquidambar styraciflua**
Sweetgum

Juglandaceae – Walnut family

*Carya illinoinensis**
Pecan
Juglans californica[++]
Southern California walnut

Lamiaceae – Mint family

*Marrubium vulgare**
Horehound
Salvia mellifera
Black sage

Lauraceae – Laurel family

Cinnamomum camphora
Camphor tree

Lemnaceae – Duckweed family

Lemna sp.
Duckweed

Lythraceae – Loosestrife family

*Lagerstroemia indica**
Crape myrtle

Magnoliaceae – Magnolia family

*Magnolia grandiflora**
Southern magnolia

Malvaceae – Mallow family

*Ceiba speciosa**
Silk floss tree
*Malva parviflora**
Cheeseweed mallow
Malvella leprosa
Alkali mallow

Moraceae – Mulberry family

*Ficus carica**
Edible fig
*Morus alba**
White mulberry

Myrtaceae – Myrtle family

*Callistemon citrinus**
Crimson bottlebrush
*Eucalyptus camaldulensis**
Red gum
*Eucalyptus citriodora**
Lemon scented gum
*Eucalyptus cladocalyx**
Sugar gum
*Eucalyptus globulus**
Tasmanian blue gum
*Eucalyptus polyanthemos**
Red box
*Eucalyptus sideroxylon**
Red ironbark
*Melaleuca linariifolia**
Flax-leaved paperbark

Nyctaginaceae – Four o'clock family

*Bougainvillea spectabilis**
Great bougainvillea
Mirabilis jalapa var. *jalapa**
Marvel of Peru

Oleaceae – Olive family

Fraxinus sp.
Ash

Fraxinus velutina
Velvet ash
*Ligustrum lucidum**
Glossy privet
*Olea europaea**
Olive tree

Onagraceae – Primrose family

Clarkia sp.
Clarkia
Epilobium brachycarpum
Tall annual willowherb
Epilobium ciliatum
Fringed willowherb
Eulogus californicus
California suncup
*Ludwigia hexapetala**
Uruguay water primrose
*Ludwigia peploides**
Floating primrose-willow
Oenothera elata
Hooker's evening-primrose
*Oenothera laciniata**
Cutleaf evening-primrose
*Oenothera speciosa**
Pink ladies

Oxalidaceae – Oxalis family

*Oxalis corniculata**
Creeping woodsorrel

Papaveraceae – Poppy family

Eschscholzia californica
California poppy
*Fumaria parviflora**
Fineleaf fumitory

Passifloraceae – Passion flower family

*Passiflora caerulea**
Bluecrown passion flower

Plantaginaceae – Plaintain family

*Plantago lanceolata**
Narrowleaf plantain
*Plantago major**
Common plantain
*Veronica anagallis-aquatica**
Water speedwell

Platanaceae – Sycamore family

*Platanus ×hispanica**
London plane tree
*Platanus occidentalis**
American sycamore
Platanus racemosa
California sycamore

Plumbaginaceae – Leadwort family

Limonium sp.*
Sea lavender
*Plumbago auriculata**
Cape leadwort

Podocarpaceae – Podocarp family

*Podocarpus sp.**
Podocarpus

Polygonaceae – Buckwheat family

Eriogonum fasciculatum var. foliolosum
Leafy California buckwheat
Eriogonum fasciculatum var. polifolium
Mojave Desert California buckwheat
Polygonum aviculare ssp. *depressum**
Prostrate knotweed
Persicaria lapathifolia
Curlytop knotweed
*Rumex crispus**
Curly dock

Portulacaceae – Purslane family

*Portulaca oleracea**
Little hogweed

Rhamnaceae – Buckthorn family

Frangula californica
California coffee berry

Rosaceae – Rose family

*Cotoneaster sp.**
Cotoneaster
*Cotoneaster lacteus**
Parney's cotoneaster
Heteromeles arbutifolia
Toyon
*Prunus cerasifera**
Purple leaf plum
*Prunus persica**
Peach
*Prunus sp.**
Cherry
*Pyracantha coccinea**
Scarlet firethorn
Rosa californica
California wild rose
*Rubus armeniacus**
Himalayan blackberry

Rubiaceae – Madder family

Galium aparine
Goose grass

Salicaceae – Willow family

Populus fremontii
Fremont cottonwood
Populus trichocarpa
black cottonwood
Salix exigua
Narrowleaf willow
Salix gooddingii
Goodding's willow
Salix laevigata
Red willow
Salix lasiolepis
Arroyo willow

Sapindaceae – Soapberry family

Acer negundo
Box elder
Aesculus californica
California buckeye
Koelreuteria sp.*
Goldenrain tree

Scrophulariaceae – Figwort family

Scrophularia californica
California figwort

Simaroubaceae – Simarouba family

*Ailanthus altissima**
Tree of heaven

Solanaceae – Nightshade family

Datura wrightii
Jimson weed
*Nicotiana glauca**
Tree tobacco
Solanum americanum
American black nightshade
Solanum douglasii
Greenspot nightshade
*Solanum aviculare**
New Zealand nightshade

Tamaricaceae – Tamarisk family

*Tamarix ramosissima**
Salt cedar

Tropaeolaceae – Nasturtium family

*Tropaeolum majus**
Nasturtium

Ulmaceae – Elm family

*Ulmus parvifolia**
Chinese elm

Valerianaceae – Valerian family

*Centranthus ruber**
Red valerian

Verbenaceae – Vervain family

*Lantana camara**
Lantana
*Lantana montevidensis**
Trailing shrubverbena
*Verbena pulchella**
South American mock vervain

Vitaceae

Parthenocissus sp.*
Virginia creeper
Parthenocissus vitacea
Virginia creeper
Vitis girdiana
Desert wild grape
*Vitis vinifera**
Wine grape

Zygophyllaceae

*Tribulus terrestris**
Puncturevine

Monocots

Amaryllidaceae – Amaryllis family

*Amaryllis belladonna**
Belladonna lily

Araceae – Arum family

Lemna sp.
Duckweed

Arecaceae – Palm family

*Phoenix canariensis**
Canary Islands palm
Washingtonia filifera
California fan palm

*Washingtonia robusta**
Washington fan palm

Asparagaceae – Asparagus family

*Asparagus officinalis**
Garden asparagus
*Asparagus setaceus**
Common asparagus fern

Commelinaceae – Spiderwort family

*Commelina benghalensis**
Jio

Cyperaceae – Sedge family

Cyperus eragrostis
Tall flatsedge
*Cyperus involucratus**
Umbrella plant
Cyperus erythrorhizos
Red foot flatsedge
Eleocharis macrostachya
Common spikerush

Poaceae – Grass family

*Agrostis stolonifera**
Creeping bentgrass
*Arundo donax**
Giant reed
*Avena barbata**
Slender wild oat
*Avena fatua**
Wild oat
*Brachypodium distachyon**
Purple false brome
*Bromus catharticus**
Rescuegrass
*Bromus diandrus**
Ripgut brome
*Bromus hordeaceus**
Soft chess
Bromus madritensis ssp. *rubens**
Red brome
*Cortaderia jubata**
Purple pampas grass

*Cortaderia selloana**
Uruguayan pampas grass
*Cynodon dactylon**
Bermuda grass
*Digitaria ischaemum**
Smooth crab grass
*Digitaria sanguinalis**
Hairy crabgrass
Distichlis spicata
Saltgrass
*Echinochloa colona**
Jungle rice
*Echinochloa crus-galli**
Barnyard grass
*Ehrharta erecta**
Panic veldt grass
Eragrostis sp.*
Lovegrass
*Festuca myuros**
Rattail sixweeks grass
Festuca perennis
Perennial ryegrass
*Hordeum murinum**
Wall barley
Leptochloa fusca
Malabar sprangletop
*Paspalum dilatatum**
Dallis grass
*Pennisetum clandestinum**
Kikuyu grass
*Pennisetum setaceum**
Crimson fountain grass
*Phalaris minor**
Little-seeded canary grass
Phyllostachys sp.*
Bamboo
*Piptatherum miliaceum**
Smilo grass
*Poa annua**
Annual bluegrass
*Polypogon australis**
Chilean beard grass
*Polypogon monspeliensis**
Annual beard grass
*Polypogon viridis**
Water beard grass
Setaria parviflora
Knotroot bristlegrass

*Setaria verticillata**
Hooked bristlegrass
*Sorghum bicolor**
Sorghum
*Sorghum halepense**
Johnsongrass
*Stenotaphrum secundatum**
St. Augustine grass
*Stipa miliaceum**
Smilo grass

Typhaceae – Cattail family

Typha domingensis
Southern cattail
Typha latifolia
Broadleaf cattail

Appendix E Invasive Plant Species Compendium

INVASIVE PLANT COMPENDIUM

Family	Species	Common Name	Threat Rating	Habitats of Concern and Comments
Aizoaceae	*Carpobrotus edulis*	Freeway iceplant	H	Coastal habitats, especially dunes.
	Malephora crocea	Coppery mesemb	WL	A problem on Southern California islands, but statewide impacts are low.
Anacardiaceae	*Schinus molle*	Peruvian peppertree	L	Riparian. Limited distribution. Impacts largely unknown in California.
	Schinus terebinthifolius	Brazilian peppertree	L	Riparian. Very invasive in tropics. Abiotic impacts unknown, but appear significant locally.
Apiaceae	*Conium maculatum*	Poision hemlock	M	Usually found in disturbed sites, but can invade native plant communities in riparian woodlands and open flood plains of rivers and streams. Common in shady areas.
	Foeniculum vulgare	Sweet fennel	H	Grasslands, scrub.
Apocynaceae	*Ilex aquifolium*	English holly	M, A	Has escaped cultivation and become invasive in certain areas of the moist coastal forests in California, Oregon and Washington. In California it is found in coastal forests, and riparian areas of forests and woodlands.
	Nerium oleander	Oleander	WL	Not known to be invasive, although reported from riparian areas in Central Valley and San Bernardino Mountains.
	Vinca major	Bigleaf periwinkle	M	Riparian, oak woodlands, coastal scrub. Distribution currently limited but spreading in riparian areas. Impacts can be higher locally.
Araliaceae	*Hedera helix*	English ivy	H	Widespread. Found in Riparian Woodland, Riparian Forest, North Coast Coniferous Forest, Closed Cone Coniferous Forest, Broad Leaved Upland Forest, Lower Montane Coniferous Forest and Coastal Scrub adjacent to Oak Woodland.
Arecaceae	*Phoenix canariensis*	Canary Island palm	L	Grows in full sun, so may need disturbance to open up vegetation. Invades riparian areas that are naturally disturbed because they operate under a flood dynamic.
	Washingtonia robusta	Mexican fan palm	M, A	Desert washes. Limited distribution but spreading in Southern California. Impacts can be higher locally.

Family	Species	Common Name	Threat Rating	Habitats of Concern and Comments
Asteraceae	*Ageratina adenophora*	Sticky snakeroot	M	Coastal canyons, scrub, slopes. Very invasive in Australia, limited information and distribution in California.
	Bellis perennis	Lawn daisy	WL	Present along trails, not known to spread into undisturbed areas.
	Carduus pycnocephalus	Italian plumeless thistle	M	Forest, scrub, grasslands, woodland. Very widespread. Impacts may be variable regionally.
	Centaurea maculosa	Spotted knapweed	H	Riparian, grasslands, wet meadows, forests. More widely distributed in other western states.
	Centaurea melitensis	Maltese star-thistle	M	Grasslands, oak woodland; sometimes misidentified as *C. solstitialis*. Impacts vary regionally.
	Chondrilla juncea	Rush skeleton weed	M	Grasslands. Very invasive in other western states, but currently limited in distribution in California.
	Cirsium vulgare	Bull thistle	M	Riparian areas, marshes, meadows. Widespread, can be very problematic regionally.
	Cotula coronopifolia	Brass buttons	L	Prefers disturbed aquatic or wet sites, but can move into undisturbed sites as well.
	Delairea odorata	Cape-ivy	H	Coastal, occasionally other riparian areas, common discard from gardens.
	Glebionis coronarium	Crown daisy	M	Invades areas such as riparian habitat and dunes that receive natural disturbance. Does not invade undisturbed coastal sage scrub.
	Lactuca serriola	Prickly lettuce	WL	Primarily an agricultural and roadside weed.
	Helminthotheca echioides	Bristly oxtongue	L	Coastal prairie, scrub, riparian woodland. Widespread locally. Abiotic impacts unknown.
	Silybum marianum	Blessed milkthistle	L	Grasslands, riparian. Widespread, primarily in disturbed areas. Impacts can be higher locally.
	Taraxacum officinale	Common dandelion	WL	Primarily a turf weed in California.
Boraginaceae	*Echium candicans*	Pride-of-Madeira	L	Many coastal habitats, tolerant of poor soils and able to tolerate drought, once established.
Brassicaceae	*Brassica nigra*	Black mustard	M	Widespread. Primarily a weed of disturbed sites, but can be locally a more significant problem in wildlands.
	Hirschfeldia incana	Shortpod mustard	M	Scrub, grasslands, riparian areas. Impacts not well understood, but appear to be greater in Southern California.
	Lobularia maritima	Sweet alyssum	L	Coastal dune, coastal scrub, coastal prairie, riparian.

Family	Species	Common Name	Threat Rating	Habitats of Concern and Comments
	Raphanus sativus	Cultivated radish	L	Present at low levels in numerous habitats. Widespread in disturbed sites.
	Sinapis arvensis	Charlock mustard	L	Grasslands. Primarily in disturbed sites. Impacts minor or unknown in wildlands.
	Sisymbrium irio	London rocket	M	Scrub, grasslands. Widespread. Primarily in disturbed sites. Impacts vary locally.
Chenopodiaceae	*Atriplex semibaccata*	Australian saltbush	M	Coastal grasslands, scrub, upper salt marsh. Limited distribution, but can be very invasive regionally.
	Bassia hyssopifolia	Five-hook bassia	L	Most common in disturbed sites, roads, fields, especially on alkaline soils. Can establish in undisturbed sites, but more commonly establishes in sites disturbed by human activity. Especially dominant adjacent to agricultural fields, and within abandoned fields, in desert regions, the Colorado River Valley, and the southern central valley of California.
	Salsola tragus	Prickly Russian thistle	L	Desert dunes and scrub, alkali playa. Widespread. Impacts minor in wildlands.
Convolvulaceae	*Convolvulus arvensis*	Field bindweed	WL	Only known as agricultural weed.
Dipsacaceae	*Dipsacus sativus*	Fuller's teasel	M	Grasslands, seep, bogs. Impacts regionally variable, forms dense stands on occasion.
Euphorbiaceae	*Euphorbia terracina*	Carnation spurge	M, A	Often found in waste places, roadsides, fields, pastures, but can move into relatively undisturbed sites. Has moved into the coast scrub areas of Southern California that do not appear to be disturbed.
	Ricinus communis	Castor bean	L	Coastal scrub and prairie, riparian areas. Widespread in Southern California. Impacts locally variable.
Fabaceae	*Acacia melanoxylon*	Blackwood acacia	L	Coniferous forest, chaparral, woodland, riparian. Impacts are low in most areas.
	Cytisus scoparius	Scotch broom	H	Inhabits a wide range of disturbed and undisturbed habitats. Plants establish best after soil or vegetation disturbance, such as fire or herbicide treatment.
	Medicago polymorpha	Bur clover	L	Grasslands. Widespread weed of agriculture and disturbed areas. Impacts in wildlands minor.
	Parkinsonia aculeata	Mexican palo verde	WL	Has not escaped into wildland enough to cause impacts.
	Robinia pseudoacacia	Black locust	L	Riparian areas, canyons. Severe impacts in southern states. Impacts minor in California.

Family	Species	Common Name	Threat Rating	Habitats of Concern and Comments
	Vicia villosa	Winter vetch	NL	Primarily an agricultural weed, Widespread but impacts minor in wildlands.
Geraniaceae	*Erodium botrys*	Longbeak stork's bill	WL	Present in wildlands but known impacts are negligible. Often transient.
	Erodium cicutarium	Redstem stork's bill	L	Many habitats. Widespread. Impacts minor in wildlands. High-density populations transient.
Lamiaceae	*Marrubium vulgare*	Horehound	L	Grasslands scrub, riparian areas. Widespread. Rarely in dense stands. Impacts relatively minor.
Moraceae	*Ficus carica*	Edible fig	M	Riparian woodland. Can spread rapidly. Abiotic impacts unknown. Can be very problematic locally.
Myoporaceae	*Myoporum laetum*	Myoporum	M	Central and Southern California coast, especially moist to wet habitats, including coastal scrub, riparian woodland and scrub, salt, brackish, and freshwater marshes, dunes/strand where moisture is available
Myrtaceae	*Eucalyptus camaldulensis*	Red gum	L	Riparian areas, coastal grasslands, scrub. Impacts can be much higher in coastal areas.
	Eucalyptus globulus	Tasmanian blue gum	M	Riparian areas, coastal grasslands, scrub. Impacts can be much higher in coastal areas.
Oleaceae	*Ligustrum lucidum*	Glossy privet	WL	May prove to be problematic in riparian areas.
	Olea europaea	Olive tree	L	Invades disturbed and marginal habitats such as roadsides and riparian strips. From habitats observed, Olea invades disturbed areas, such as upland areas adjacent to riparian corridors
Onagraceae	*Ludwigia hexapetala*	Uruguay water primrose	H, A	The species establishes in areas with disturbed hydrology, high nutrient loading and flooding. Spread may be facilitated by nursery cultivation/commercial use and animals. Species favors areas of shallow, stagent, nutrient rich water such as flood control channels, irrigation ditches, holding ponds, ect.
Oxalidaceae	*Oxalis corniculata*	Creeping woodsorrel	WL	Primarily a turf weed in California
Plantaginaceae	*Plantago lanceolata*	Narrowleaf plantain	L	Many habitats. Turf weed primarily. Low density and impact in wildlands.
Poaceae	*Agrostis stolonifera*	Creeping bentgrass	L	Wetlands, riparian; grown for domestic forage. Limited distribution and impacts unknown.

Family	Species	Common Name	Threat Rating	Habitats of Concern and Comments
	Arundo donax	Giant reed	H	Riparian areas, commercially grown for musical instrument reeds, structural material, etc.
	Avena barbata	Slender oat	M	Coastal scrub, grasslands, oak woodland, forest. Very widespread, but impacts more severe in desert regions.
	Avena fatua	Wild oat	M	Coastal scrub, chaparral, grasslands, woodland, forest. Very widespread, but impacts more severe in desert regions.
	Brachypodium distachyon	Purple false brome	M	Valley and foothill grassland, cismontane woodland
	Bromus diandrus	Ripgut brome	M	Dunes, scrub, grassland, woodland, forest. Very widespread, but monotypic stands uncommon.
	Bromus hordeaceus	Soft brome	L	Grasslands, sagebrush, serpentine soils, many other habitats. Very widespread, but primarily in converted annual grasslands.
	Bromus madritensis ssp. rubens	Red brome	H	Scrub, grassland, desert washes, woodlands
	Cortaderia jubata	Purple pampas grass	H	Many coastal and interior habitats
	Cortaderia selloana	Uruguayan pampas grass	H	Coastal dunes, coastal scrub, Monterey pine, riparian, grasslands, wetlands, serpentine soils. Still spreading both coastal and inland.
	Cynodon dactylon	Bermuda grass	M	Riparian scrub in Southern California. Common landscape weed, but can be very invasive in desert washes.
	Ehrharta erecta	Panic veldt grass	M	Scrub, grasslands, woodland, forest. Spreading rapidly, impacts may become more important in future.
	Festica myuros	Rat-tail fescue	M	Coastal sage scrub, chaparral. Widespread. Rarely forms monotypic stands, but locally problematic.
	Pennisetum clandestinum	Kikuyu grass	L	Present at low levels in numerous wildland habitats. Impacts unknown. Common turf weed.
	Pennisetum setaceum	Crimson fountain grass	M	Coastal dunes and scrub, chaparral, grasslands. Some horticultural cultivars sterile. Very invasive in Hawaii.
	Piptatherum miliaceum	Smilo grass	L	Coastal dunes, scrub, riparian, grassland. Expanding range. Impacts largely unknown.
Polygonaceae	*Rumex crispus*	Curly dock	L	Grasslands, vernal pool, meadows, riparian. Widespread. Impacts appear to be minor.

Family	Species	Common Name	Threat Rating	Habitats of Concern and Comments
Rosaceae	*Cotoneaster lacteus*	Parney's contoneaster	M	Can quickly come to dominate a scrub or grassland area on sandy or clay soils, and even on serpentine soils and extirpate native species. In many areas of coastal California the Cotoneaster, at 3m tall, will be the tallest plant and shade out native scrub and grasses. In forested areas seedlings will compete with seedlings from native trees.
	Rubus armeniacus	Himalayan blackberry	H	Riparian areas, marshes, oak woodlands.
Simaroubaceae	*Ailanthus altissima*	Tree of heaven	M	Riparian areas, grasslands, oak woodland. Impacts highest in riparian areas.
Solanaceae	*Nicotiana glauca*	Tree tobacco	M	Coastal scrub, grasslands, riparian woodland. Abiotic impacts unknown. Impacts vary locally. Rarely in dense stands.
Tamaricaceae	*Tamarix ramosissima*	Salt cedar	H	Desert washes, riparian areas, seeps and springs.
Tropaeolaceae	*Tropaeolum majus*	Nasturtium	WL	Impacts on abiotic processes and native plants unknown.

Inventory Categories

Each plant on the list received an overall rating of High, Moderate or Limited based on evaluation by the California Invasive Plant Council (Cal-IPC) using the criteria system. The meaning of these overall ratings is described below. In addition to the overall ratings, specific combinations of section scores that indicate significant potential for invading new ecosystems triggers an (**A)lert** designation so that land managers may watch for range expansions.

- **(H)igh**: These species have severe ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal and establishment. Most are widely distributed ecologically.
- **(M)oderate**: These species have substantial and apparent—but generally not severe—ecological impacts on physical processes, plant and animal communities, and vegetation structure. Their reproductive biology and other attributes are conducive to moderate to high rates of dispersal, though establishment is generally dependent upon ecological disturbance. Ecological amplitude and distribution may range from limited to widespread.
- **(L)imited**: These species are invasive but their ecological impacts are minor on a statewide level or there was not enough information to justify a higher score. Their reproductive biology and other attributes result in low to moderate rates of invasiveness. Ecological amplitude and distribution are generally limited, but these species may be locally persistent and problematic.
- **(W)atch (L)ist:** These species are not yet rated as invasive by Cal-IPC but are starting to raise concerns.

The criteria system generates a plant's overall rating based on an evaluation of 13 criteria, which are divided into three sections assessing Ecological Impacts, Invasive Potential, and Ecological Distribution. Evaluators assign a score of severe to no impact for each criterion. The scoring scheme is arranged in a tiered format, with individual criteria contributing to section scores that in turn generate an overall threat rating for the plant. [1]

[1] California Invasive Plant Council. *Invasive Plant Inventory.* 2013. Available at: http://www.cal-ipc.org/ip/inventory/index.php

Appendix F Avian Surveys

TECHNICAL MEMORANDUM

Focused Avian Surveys

PREPARED FOR:	Sapphos Environmental, Inc. (Ms. Marie Campbell and Dr. Pauline Roberts)
COPY TO:	N/A
PREPARED BY:	Sapphos Environmental, Inc. (Mr. John Ivanov and Ms. Lauren Dorough)
DATE:	April 2014
PROJECT NUMBER:	0700000191 / EA 187900

Executive Summary

This Memorandum for the Record (MFR) summarizes the 2013 avian use studies conducted in support of the proposed State Route (SR) 710 North Study (proposed project). The study area for the SR 710 North Study is referred to as the biological study area (BSA), which is the area within which direct impacts to biological resources may occur as a result of the proposed project (Figure 1, Biological Study Area). The BSA is an area of approximately 3,378 acres located entirely within the County of Los Angeles and generally focused between the SR 710 / Interstate 10 interchange (I-10) and Interstate 210 (I-210) freeway. The BSA's avian populations have been evaluated to determine the potential effects of the proposed project and its alternatives on avian species, including nesting raptors, and any potential special-status species as determined by occurrences, habitats, and ranges.

Surveys to assess avian use in the BSA included point counts, transects, habitat assessments for riparian birds and burrowing owl, and reconnaissance-based surveys for several state-listed or federally listed special-status species. Surveys were conducted in winter, spring, and summer 2013, ranging between January 28 and August 30, 2013.

A total of 66 avian species were recorded within the BSA as a result of avian surveys. Fifty-eight species were documented during directed point count and transect surveys, and an additional 8 species were documented incidentally during habitat assessment or reconnaissance surveys. No state or federally endangered or threatened species were observed during surveys, and habitat assessments documented only marginal habitat for special-status riparian birds and no habitat for burrowing owl. Two California Bird Species of Special Concern (SSC) were documented as transients in the BSA, the Vaux's swift and yellow warbler. In addition, 4 species included on the California Department of Fish and Wildlife's (CDFW's) Watch List, the double-crested cormorant, sharp-shinned hawk, Cooper's hawk, and California gull, were documented within the BSA. Two species included on the California Special Animals List, Allen's hummingbird and Nuttall's woodpecker, were also documented within the BSA.

Several avian species were documented nesting within or adjacent to the BSA. A pair of red-tailed hawks were observed nesting approximately 0.37 mile southwest of the Long Beach (I-710) and Santa Monica (I-10) freeway

Metro

Caltrans

junction. The nesting activity took place 500 feet outside of the BSA and no fledglings were noted at any time in or around the nest. Other documented avian nesting activity within the BSA included approximately 100 recently active cliff swallow nests underneath the Colorado Street bridge over the Arroyo Seco in the City of Pasadena, south of SR 134.

Introduction

This MFR documents the results of literature reviews, database searches, field surveys, and habitat assessments conducted to document the avian resources in the BSA for the Proposed Project. The five alternatives of the Proposed Project include a No Build Alternative, TSM/TDM Alternative, BRT Alternative, LRT Alternative, and Freeway Tunnel Alternative.

The BSA is an approximately 3,410-acre area generally focused between the SR 710 / I-10 interchange and I-210 freeway. The BSA is located on the United States Geological Survey (USGS) Pasadena, Los Angeles, El Monte, and Mt. Wilson 7.5-minute series topographic quadrangles (Figure 2, *Project Location with USGS 7.5-minute Quadrangle Index*). A range of land uses exist adjacent to the BSA, including transportation, residential, commercial, industrial, infrastructure, and recreational land uses.

The purpose of the surveys was to characterize the avian community within the BSA; document any federally listed or state-listed rare, threatened, or endangered or special-status avian species located within the BSA; and delineate any potential habitat that would support special-status species. The results of these efforts may be used to evaluate impacts to birds that might result from implementation of the proposed project, to inform project design, and to assist in the preparation of environmental analysis documents for the proposed project.

Regulatory Framework

Federal

Federal Endangered Species Act. The federal Endangered Species Act (ESA) defines and lists species, subspecies, and distinct population segments as *endangered* and *threatened* and provides regulatory protection for the listed species. The federal ESA provides a program for conservation and recovery of threatened and endangered species and ensures the conservation of designated critical habitat that the U.S. Fish and Wildlife Service (USFWS) has determined is required for the survival and recovery of listed species. Section 9 of the federal ESA prohibits the *take* of species listed by USFWS as threatened or endangered. *Take* is defined as follows: “to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in such conduct.” In recognition that take cannot always be avoided, Section 10(a) of the federal ESA includes provisions for take that is incidental to, but not the purpose of, otherwise lawful activities. Section 10(a)(1)(B) permits (incidental take permits) may be issued if take is incidental and does not jeopardize the survival and recovery of the species.

Section 7(a)(2) of the federal ESA requires that all federal agencies, including the USFWS and the Federal Highway Administration, evaluate projects with respect to any species proposed for listing or already listed as endangered or threatened and any proposed or designated critical habitat for the species. Federal agencies must undertake programs for the conservation of endangered and threatened species and are prohibited from authorizing, funding, or carrying out any action that will jeopardize a listed species or destroy or modify its critical habitat.

Migratory Bird Treaty Act. The Migratory Bird Treaty Act (MBTA) provides that it is unlawful to pursue, hunt, take, capture or kill; attempt to take, capture or kill; or possess any migratory bird, part, nest, egg or product, manufactured or not of any such bird listed in wildlife protection treaties between the United States, Great Britain, Mexico, Japan, and the former Soviet Union. The MBTA authorizes the Secretary of the Interior to issue permits for incidental take. *Migratory birds* is defined to include all members of bird families considered migratory, whether or not the species in question exhibits migratory behavior. In practice, virtually all birds native to North America are covered by the MBTA, with exceptions including quail, turkey, and grouse.

State

California Endangered Species Act, and California Fish and Game Code Sections 2080 and 2081. The California ESA (California Fish and Game Code §§ 2050 *et seq.*) prohibits the take of listed species, except as otherwise provided in State law. *Take* under the California ESA is defined as it is in the federal ESA; however, unlike the federal ESA, the California ESA also applies the take prohibitions to species that are candidates for listing, as well as listed species. State lead agencies are required to consult with the CDFW to ensure that any actions undertaken by the lead agency are not likely to jeopardize the continued existence of any state-listed species or result in destruction or degradation of required habitat. CDFW is authorized to enter into memoranda of understanding (MOUs) with individuals, public agencies, universities, zoological gardens, and scientific or educational institutions to import, export, take, or possess listed species for scientific, educational, or management purposes. Permits for incidental take of species protected pursuant to the California ESA are available under certain circumstances as described in Sections 2080 and 2081 of the California Department of Fish and Game Code described below.

Section 2080 of the State Fish and Game Code (Code) states,

No person shall import into this state [California], export out of this state, or take, possess, purchase, or sell within this state, any species, or any part or product thereof, that the commission [State Fish and Game Commission] determines to be an endangered species or threatened species, or attempt any of those acts, except as otherwise provided in this chapter [Chapter 1.5, Endangered Species], or the Native Plant Protection Act, or the California Desert Native Plants Act.

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

California Department of Fish and Game Code Sections 3503 and 3503.5. Sections 3503 and 3503.5 of the California Department of Fish and Game Code provide regulatory protection to resident and migratory birds and all birds of prey within the State of California, including the prohibition of the taking of nests and eggs, unless otherwise provided for by the Code. Specifically, these sections of the Code make it unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code.

California Department of Fish and Wildlife Fully Protected Species—California Department of Fish and Game Code Sections 3511, 4700, 5050, and 5515. The *fully protected* classification was the State's initial effort to identify and provide additional protection to those animals that were rare or faced possible extinction. Lists were created for fish, amphibians and reptiles, birds and mammals. Most of the species on these lists have subsequently been listed under the State and/or federal ESAs. Sections 3511, 4700, 5050, and 5515 of the Fish and Game Code state that fully protected species (birds, mammals, fish, reptiles, amphibians) or parts thereof may not be taken or possessed at any time and no licenses or permits may be issued for their take except for collecting these species for necessary scientific research and relocation of the bird species for the protection of livestock.

California Department of Fish and Wildlife Species of Special Concern. The CDFW defines an SSC as a species, subspecies, or distinct population of an animal (bird, mammal, fish, reptile, and amphibian) native to California that currently satisfies one or more of the following (not necessarily mutually exclusive) criteria:

- Is extirpated from the State or, in the case of birds, in its primary seasonal or breeding role
- Is listed as federally, but not State, threatened or endangered

- Meets the State definition of threatened or endangered, but has not formally been listed
- Is experiencing, or formerly experienced, serious (noncyclical) population declines or range retractions (not reversed) that, if continued or resumed, could qualify it for State threatened or endangered status
- Has naturally small populations exhibiting high susceptibility to risk from any factor(s), that if realized, could lead to declines that would qualify it for State threatened or endangered status

SSC is an administrative designation and carries no formal legal status; however, SSC should be considered during the environmental review process. The California Environmental Quality Act (CEQA) requires State agencies, local governments, and special districts to evaluate and disclose impacts from projects in the State. Section 15380 of the CEQA Guidelines clearly indicates that SSC should be included in an analysis of project impacts if they can be shown to meet the criteria of sensitivity outlined therein.

Methods

Literature and Database Search

Preparatory methods for surveys consisted of a review of applicable federal, State, and local statutes, including guidelines for appropriate methodology of directed field surveys per the appropriate regulatory oversight agencies. The scope of each investigation involved the review of available data for the BSA and adjacent areas, including a California Natural Diversity Database (CNDDB) search for special-status species within the following sixteen 7.5-minute series USGS topographic quadrangles: Pasadena, Los Angeles, El Monte, and Mt. Wilson where the proposed project and BSA are located, and the surrounding Burbank, Chilao Flat, Condor Peak, Waterman Mountain, Azusa, Baldwin Park, La Habra, Hollywood, Inglewood, South Gate, Sunland, and Whittier quadrangles (Figure 2). Due to the rapid development and urbanization of the Los Angeles Basin in the past century, species for which CNDDB records within the 16-quadrangle search area were only recorded before 1900 were not considered as potentially present.

All Avian Surveys

Avian surveys were conducted using a combination of point counts, transects, habitat assessments and reconnaissance surveys to document the frequency of occurrence, utilization, and relative abundance of avian species within the BSA. Twenty-one point count locations and four transects surveys were selected for directed surveys (Figure 3.1 and 3.2, *Point Count and Transect Survey Locations [Northern Study Area / Southern Study Area]*). In addition, supplemental habitat assessment and reconnaissance surveys were conducted to determine the potential presence of suitable habitat for special-status species within the BSA and to record species not otherwise detected during point counts or transects (Figure 4, *Habitat Assessment Locations*). No point counts or transect surveys were conducted in the areas of potential habitat for riparian birds because these areas were not identified at the time the avian surveys locations were developed, and/or site access was restricted and required an escort.

The number and location of all surveys were proportionally distributed within varying habitats throughout the BSA to cover 100 percent of suitable avian habitat. The exact location of each survey point and all transects were marked with a Garmin GPSmap 60CSx. Photographs were taken at all survey areas using a Panasonic DMC-Z58 digital camera. The avian spring bird surveys were conducted primarily during early spring, though some habitat assessments and reconnaissance began in late January and extended into late August. Surveys were conducted from January 28 through August 30, 2013, for a total of 18 days. A total of 31 hours were dedicated to avian field surveys during this period.

The avian surveys were conducted by Sapphos Environmental, Inc. biologists (Dr. Pauline Roberts, Mr. Ryan Villanueva, Mr. John Ivanov, and Mr. Thomas Kmett). The surveyors were equipped with binoculars (with 8X or 10X magnifications and an objective lens of at least 40 mm) and standardized field notebooks on which field annotations were compiled. Survey locations were chosen to provide an unobstructed view of the surrounding habitat. Special care in all surveys was taken to avoid counting birds twice. Age and sex were determined, when possible, to distinguish as many individuals from one another as possible. Surveys were not conducted under average wind speeds greater than 20 miles per hour or in the event of sustained or heavy precipitation.

All Sapphos Environmental, Inc. survey personnel were experienced in the undertaking of field surveys, as well as knowledgeable of the identification of all expected populations, including rare, threatened, and endangered species. In addition, field teams were knowledgeable of the habitat requirements for each of the target species, locations of various habitats within the BSA, and the characteristics of each target species. All survey personnel were familiar with both federal and State statutes related to common and listed species and experienced with analyzing the impacts of development to special-status species, their habitats, and communities.

Point Counts

Guidelines for the point count techniques were adapted using Bird Census Techniques, with the goal of documenting avian distribution and assessing potential habitat within the BSA.[1] Recommended guidelines for spacing point counts vary based on habitat and goals of a given survey. The BSA is highly fragmented, and natural habitats where birds are likely to occur are interspersed with highly urban (both commercial and residential) environments. Thus, point count locations were selected to effectively cover the numerous noncontiguous micro habitats in the BSA. A total of 21 point counts were selected as part of 2013 survey efforts (Table 1, *Point Count Survey Locations and Description*; Figure 3.1 and 3.2). The number and location of these points were distributed throughout the BSA, but with a greater focus on available suitable avian habitat. The exact location of each survey point was marked with a GPS device, and photographs were taken in each of the four cardinal directions (north, east, south, west) using a digital camera (Attachment B, *Point Count Photographs*). The avian spring point counts were conducted bimonthly over an 8-week period from March 26 through May 15, 2013, for a total of 13 days (Table 1). A total of approximately 14 hours were dedicated to point counts during this period.

TABLE 1
Point Count Survey Locations and Description

Survey Type	Survey	Habitat Description	Survey Dates
10-Minute Point Count	01	Commercial parking lot surrounded by large buildings, freeway junction, some medium to large trees (20 feet to 35 feet), including pines, eucalyptus.	3/26, 4/8, 4/22, 5/6/2013
10-Minute Point Count	02	Commercial and residential uses adjacent to small park with many medium to large (20 feet to 35 feet) deciduous trees and medium sized wet area, overlooking freeway junction.	3/26, 4/8, 4/22, 5/6/2013
10-Minute Point Count	03	Commercial parking lot adjacent to several medium sized (15 feet to 20 feet) trees including pines and eucalyptus. Overlooking freeway.	3/26, 4/8, 4/22, 5/6/2013
10-Minute Point Count	04	Wide residential street bordered by small (10 feet or less), medium, and large trees.	3/27, 4/8, 4/22, 5/6/2013
10-Minute Point Count	05	Commercial area with a few small trees. Adjacent to railroad tracks.	3/26, 4/8, 4/22, 5/6/2013
10-Minute Point Count	06	Commercial area with a few small trees and ornamental shrubs.	3/27, 4/8, 4/22, 5/6/2013
10-Minute Point Count	07	Residential area with a moderate number of medium sized trees	3/27, 4/8, 4/22, 5/6/2013

1 Bibby, Colin J., N.D. Burgess, and D.A. Hill. 2000. *Bird Census Techniques*. 2nd ed. New York, NY: Academic Press.

TABLE 1
Point Count Survey Locations and Description

Survey Type	Survey	Habitat Description	Survey Dates
10-Minute Point Count	08	Commercial area with several tall buildings and small trees.	3/27, 4/9, 4/22, 5/7/2013
10-Minute Point Count	09	Commercial area along railroad tracks.	3/28, 4/9, 4/23, 5/7/2013
10-Minute Point Count	10	Adjacent to I-710 freeway ramp, used vehicle storage area, and several medium-sized *Eucalyptus sp*. trees.	3/27, 4/9, 4/23, 5/7/2013
10-Minute Point Count	11	Freeway overpass adjacent to concrete drainage. Many medium to large trees.	3/27, 4/9, 4/23, 5/7/2013
10-Minute Point Count	12	Parking lot for CA State university. Many trees and shrubs along parking lot perimeter.	3/28, 4/9, 4/23, 5/7/2013
10-Minute Point Count	13	Along freeway, Hottentot fig *(Mesembryanthemum crystallinum)* with some medium-sized trees.	3/28, 4/9, 4/23, 5/7/2013
10-Minute Point Count	14	Adjacent to CA State university athletic fields. Medium-sized eucalyptus trees.	3/28, 4/9, 4/23, 5/7/2013
10-Minute Point Count	15	Commercial area adjacent to storage rental facility and golf course.	4/9, 4/23, 5/7/2013
10-Minute Point Count	16	At bottom of hillside overlooking I-710 freeway. Dominated by Mustards (*Brassica* sp.), castor bean (*Ricinus communis*), and non-native grasses.	3/28, 4/10, 4/24, 5/15/2013
10-Minute Point Count	17	Largely denuded hillside overlooking I-710 freeway. Hillside below point count covered with Mustards (*Brassica* sp.), Castor bean, and non-native grasses along a concrete drainage and adjacent to a native habitat restoration area.	3/29, 4/9, 4/24, 5/15/2013
10-Minute Point Count	18	Commercial area with large trees adjacent to a 12 acre *Eucalyptus* sp. grove.	3/29, 4/10, 4/23, 5/7/2013
10-Minute Point Count	19	Hillside overlooking I-710 freeway covered with mustards (*Brassica* sp.), castor bean, and non-native grasses along a concrete drainage.	3/28, 4/10, 4/23, 5/15/2013
10-Minute Point Count	20	Commercial area with large trees adjacent to small *Eucalyptus* sp. grove.	3/28, 4/10, 4/23, 5/15/2013
10-Minute Point Count	21	City park.	3/29, 4/10, 4/23, 5/15/2013

A qualified ornithologist (Mr. John Ivanov) completed four replicates of each of the twenty-one 10-minute, unlimited distance point counts to count birds in two main habitats: 16 points within urban or commercial areas and 5 points in open space or park-like habitats. Surveys were conducted throughout the morning hours during the activity peak of most bird species. Late-morning counts were also conducted to ensure detection of species, such as raptors, that were active later in the day. The observers collected point count number, start time, temperature, wind speed and direction, time of observation, number of individuals, species of birds observed, estimated horizontal distance and altitude (including bearing and heading), and finally, anecdotal data, such as activity, age, sex, and habitat utilization.

Transects

Four transect survey locations, ranging in length between 1,669 feet and 4,402 feet, were chosen within areas of the BSA characterized by more extensive botanical habitat to assess if the areas are potentially suitable for sensitive avian species (Table 2, *Transect Locations and Description*; Figure 3.1 and 3.2). Mr. John Ivanov surveyed each transect once over four days during the spring and early breeding season, between April 9 and May 15, 2013, for a total of 4 hours of survey effort (Table 1). The surveyor slowly walked each transect recording each bird species encountered, with particular attention paid to documenting species not recorded during the point counts. The exact location of each starting point and ending point along with the actual path taken was recorded using a GPS device. Photographs were taken at each starting point in the four cardinal directions along with any other areas of interest during the surveys (Attachment C, *Transect Photographs*). The following data were collected: date, weather, start time and end time, lengths of transect habitat, species observed and their activities of note, that is, breeding, territorial behavior, migrating, and so forth.

TABLE 2
Transect Locations and Description

Survey Type	Survey	Habitat Description	Survey Dates
Transect	T01	12 acre eucalyptus grove. (2,753 feet)	4/9/2013
Transect	T02	Hillside overlooking I-710 freeway covered with mustards (*Brassica* sp.), castor bean, and non-native grasses along a concrete drainage. (1,669 feet)	4/10/2013
Transect	T03	Hillside overlooking I-710 freeway covered with mustards (*Brassica* sp.), castor bean *(Ricinus communis*), and non-native grasses along a concrete drainage. (4,402 feet)	4/24/2013
Transect	T04	Ten acres of deciduous trees along the I-710 freeway. (2,753 feet)	5/15/2013

Habitat Assessments for Special-Status Species

Habitat assessments were used to determine the presence of the following potential habitats for special-status species within the BSA: riparian and burrowing owl habitat. The potential for coastal sage scrub habitat in the BSA was initially considered, but none was observed in the BSA. Therefore, species associated with this habitat type were not considered further.

Sapphos Environmental, Inc. used results of the literature review, including a CNDDB record search, to determine historical or recent occurrences of all special-status species within and around the BSA. When further evaluation was warranted, selected sites were visited and thoroughly walked, and representative photographs taken (Attachment D, *Riparian Habitat Assessment Photographs*; Attachment E, *Burrowing Owl Habitat Assessment Photographs*). Qualified biologists (Mr. John Ivanov and Mr. Thomas Kmett) searched for any signs indicating the presence of special-status avian species, detailed all species observed, and evaluated the potential of the site for specific sensitive species habitats (Table 3, *Habitat Assessment Locations and Description*; Figure 4). Surveys were conducted on four days between March 29 and August 30, 2013, for a total of 5 hours of survey effort.

TABLE 3
Habitat Assessment Locations and Description

Focal Species	Survey	Habitat Description	Survey Dates
Riparian Birds	Riparian Area 1	Culvert outfall area of deciduous trees, sedge grasses with a stream channel.	3/29/2013
Riparian Birds	Riparian Area 2	Flowing creek under the Arroyo Seco bridge with compacted ground and riparian trees, e. g. willow (*Salix* sp.), sycamore (*Platanus* sp).	8/30/2013
Burrowing Owl	BUOW 01	70-acre hillside overlooking I-710 covered with mustards *(Brassica* sp.), castor bean, and non-native grasses including some bare ground and a concrete drainage.	6/21/2013
Burrowing Owl	BUOW 02	Laguna Channel; located at the junction of the I-710 and I-10 freeways. An approximately 0.33 mile by 4 foot wide channel with water in an area of approximately 14 acres. Mainly bare ground with some trees.	7/30/2013
Burrowing Owl	BUOW 03	North end of I-710 freeway, between W. Mission Rd., Westmont Dr., and E. Valley Blvd. A roughly rectangular area covering 7.4 acres. Mainly non-native grass with a few trees and shrubs.	7/30/2013

Sensitive Riparian Birds Habitat Assessment. Riparian habitat assessment focused on, but was not limited to, four special-status species that are reliant on riparian habitat for breeding: western yellow-billed cuckoo, southwestern willow flycatcher, least bell's vireo, and yellow-breasted chat. Potential riparian sites, documented as a result of previous avian surveys, were revisited to evaluate if a given site met specific habitat criteria necessary for these species (Table 3; Figure 4). For western yellow-billed cuckoo, habitat criteria include (1) large blocks of riparian woodlands, particularly those composed of cottonwoods and willows; (2) sufficient patch size (10-acre average in California); and (3) presence of low, woody vegetation.[2] Habitat criteria for least Bell's vireo include (1) vegetation dominated by willows and mulefat (*Baccharis salicifolia*); (2) habitat containing dense vegetative cover within 1–2 meters of the ground suitable for nest placement; and (3) a dense, stratified canopy, the preferred habitat for foraging.[3,4] Habitat requirements for southwestern willow flycatcher include (1) mosaic of relatively dense and expansive growth of trees and shrubs, (2) areas near or adjacent to surface water or underlain by saturated soil, (3) areas with willows., tamarisk (*Tamarix* spp.), or both.[5,6] Habitat criteria for yellow-breasted chat include (1) early successional riparian habitats with well-developed shrub layer and open canopy; (2) dense thickets and tangles, such as willow, blackberry (*Rubus* spp.) and wild grape (*Vitis* spp.), for nesting strata between 1 and 3 meters in height; and (3) tall trees, such as cottonwood (*Populus* spp.) or alder (*Alnus* spp.) for song perches.[7]

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2 Halterman, M., M.J. Johnson, and J.A. Holmes. 2009. *Western Yellow-billed Cuckoo Natural History Summary and Survey Methodology*. Version 3.4. Unpublished draft.

3 Olsen, T.E., and M.V. Gray. 1989. *Characteristics of Least Bell's Vireo Nest Sites along the Santa Ynez River*. USDA Forest Service Gen. Tech. Rep. PSW-110, Washington, DC.

4 U.S. Fish and Wildlife Service. 1998. *Draft Recovery Plan for the Least Bell's Vireo*. Portland, OR: U.S. Fish and Wildlife Service.

5 U.S. Department of the Interior, Fish and Wildlife Service. 2013. "Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Southwestern Willow Flycatcher." *Federal Register* 78.

6 Sogge, M.K., D. Ahlers, and S.J. Sferra. 2010. *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher*. U.S. Geological Survey Techniques and Methods 2A-10, Reston, VA.

7 Comrack, L.A. 2008. "Yellow-breasted Chat (*Icteria virens*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, ed. W.D. Shuford and

While visiting each potential site, individuals of all special-status riparian species detected either vocally or visually were recorded. Photographs were taken throughout the site during the surveys.

Burrowing Owl Habitat Assessment. The habitat assessment surveys for burrowing owl were conducted with guidance from the CDFW's Staff Report on Burrowing Owl Mitigation in an attempt to identify potential habitat for burrowing owls within the BSA.[8]

Burrowing owl habitat can be found in annual and perennial grasslands, deserts, and scrublands characterized by low-growing vegetation. Suitable owl habitat may also include trees and shrubs if the canopy covers less than thirty (30) percent of the ground surface. Burrows are the essential component of burrowing owl habitat: both natural and artificial burrows provide protection, shelter, and nests for burrowing owls. Burrowing owls typically use burrows made by fossorial mammals, such as ground squirrels or badgers, but also may use manmade structures, such as cement culverts; cement, asphalt, or wood debris piles; or openings beneath cement or asphalt pavement.[9,10]

During the course of point count, transect, and reconnaissance surveys, surveyors took note of habitat potentially suitable for burrowing owl occupation. Three sites were tentatively identified as having potential for burrowing owl occupation and were subject to a detailed habitat assessment as described in Appendix C of CDFW's Staff Report on Burrowing Owl Mitigation.[11]

During the detailed habitat assessment, each area was thoroughly walked to search for burrowing owls and their signs, for example, potential burrows and other types of sheltered habitats, regurgitated pellets, whitewash, and feathers (Table 4; Figure 4). The assessment included a search for sign of burrowing mammals, such as California ground squirrel (*Spermophilus beecheyi*), whose abandoned burrows can be used by burrowing owls. Photographs were taken throughout the site during the surveys. In addition, surveyors visited previous CNDDB records for burrowing owl within the 16-quadrangle CNDDB search area.

Reconnaissance Surveys

Reconnaissance surveys consisted of walking and driving the BSA while assessing avian habitats for further evaluation. Avian species detected outside of survey time frames (i.e., 10-minute point count period) were also recorded incidentally during the course of all avian surveys. During reconnaissance counts, surveyors primarily focused on recording three types of observations: (1) species not observed during other survey types, (2) special-status species, and (3) raptors. Dedicated reconnaissance surveys were conducted by qualified ornithologists (Dr. Pauline Roberts and Mr. Ryan Villanueva) on January 28 and 29, 2013, throughout the BSA, for a total of 8 hours of survey effort. Additional reconnaissance efforts were conducted by Mr. John Ivanov during the course of the other avian field surveys throughout the survey period.

T. Gardali. Studies of Western Birds 1. Camarillo, CA: Western Field Ornithologists; and Sacramento, CA: California Department of Fish and Game.

8 California Department of Fish and Wildlife. 7 March 2012. *Staff Report on Burrowing Owl Mitigation*. State of California, Natural Resources Agency, Sacramento, CA. Available at: http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html

9 California Department of Fish and Wildlife. 7 March 2012. *Staff Report on Burrowing Owl Mitigation*. State of California, Natural Resources Agency, Sacramento, CA. Available at: http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html

10 Gervais, J.A., D.K. Rosenberg, and L.A. Comrack. 2008. "Burrowing Owl (*Athene cunicularia*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, ed. W.D. Shuford and T. Gardali. Studies of Western Birds 1. Camarillo, CA: Western Field Ornithologists; and Sacramento, CA: California Department of Fish and Game.

11 California Department of Fish and Wildlife. 7 March 2012. *Staff Report on Burrowing Owl Mitigation*. State of California, Natural Resources Agency, Sacramento, CA. Available at: http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html

Survey Results

Literature and Database Search

As a result of the literature review; a 16-quadrangle CNDDB record search centered on the El Monte, Los Angeles, Pasadena, and Mount Wilson topographic quadrangles (Figure 2); and a review of the topographic map, Sapphos Environmental, Inc. determined that 11 California special-status avian species were previously recorded in the area, but only 10 species were recorded within the 16-quadrangle search area after 1900 (Table 4, *Sensitive Species with CNDDB Records in the Search Area*). The sole CNDDB record for bank swallow was recorded in 1894, and the species is currently considered extirpated as a breeder in Southern California; therefore, bank swallow will not be further discussed in this MFR.[12]

[12] Schlorff, R. 1992. *Recovery Plan: Bank Swallow*. Department of Fish and Game Nongame & Mammal Section Report 93.02, Sacramento, CA.

TABLE 4
Sensitive Species with CNDDB Records in the Search Area

Species	Status Federal/State	Habitat Requirements	Potential to Occur within the BSA
Cooper's hawk	WL	Typically found in areas with dense tree stands, or patchy woodland habitat. Nests within deciduous trees in riparian areas near streams, or in conifers within second-growth conifer stands. Both nesting and foraging occur near open water or riparian vegetation. Common in urban environments.	**High.** Suitable foraging habitat throughout the BSA. Some limited nesting habitat in BSA vicinity. One individual recorded during 2013 avian surveys.
American peregrine falcon	FDEL/SDEL/ FP	Nests and roosts on protected ledges of high cliffs, usually adjacent to lakes, rivers, or marshes that support large prey populations. Also known to nest on human-made structures in urbanized environments.	**Moderate**. Pair regularly reported nesting on office building in downtown Pasadena in the last decade (AT&T building at corner of E. Colorado Blvd. and S. Marengo Ave).[13] CNDDB record from 2005 within the Pasadena Quadrangle is likely the same nest location, but has locational information suppressed due to species' sensitivity.
Western yello-billed cuckoo	C/SE	Requires dense, large tracts of riparian woodlands with well-developed understories for breeding; occurs in deciduous trees and shrubs, especially willows that are required for roost and nest sites; breeds near river bottoms and other moist habitats along slow-moving watercourses where humidity is high.	**Low.** Only two CNDDB occurrences (1912 and 1951) in 16-quad area since record-keeping began. Existing riparian habitat in BSA lacks necessary vegetative structure for breeding. May pass through BSA during migration.
Burrowing owl	SSC*	Open grasslands, agricultural and range lands, and desert habitats. Often associated with burrowing animals, specifically the California ground squirrel. Can also inhabit grass, forbs, and shrub stages of pinyon and ponderosa pine habitats.	**Low.** Lack of suitable breeding habitat (existing burrows). Potential as a winter visitor.
Black swift	SSC*	Wide ranging forager over both forest and open areas in montane habitats. Requires ledges or shallow caves, usually near or behind waterfalls and in sea caves. Flies over a variety of habitats during migration, summer resident in mountain foothill canyons	**Very Low.** No suitable foraging or breeding habitat in BSA. May pass through BSA during migration.
Southwestern willow flycatcher	FE/SE	Most often occurs in broad, open river valleys or large mountain meadows with lush growth of shrubby willows; dense willow thickets are required for nesting and roosting; low, exposed branches are used for singing posts and hunting perches	**Low**. Existing marginal riparian habitat in BSA lacks necessary vegetative structure for breeding. May pass through BSA during migration.
Least Bell's vireo	FE/SE	Found in willow thickets along permanent and semi-permanent streams; requires dense understory of riparian vegetation	**Low**. Existing marginal riparian habitat in BSA lacks necessary vegetative structure for breeding.
Coastal cactus wren	SSC	Inhabits coastal sage scrub, a natural vegetation community of low, semi-woody vegetation found only in coastal and near-coastal portions of the state. Nests almost exclusively in prickly pear and coastal cholla.	**Very Low.** Appropriate coastal sage scrub habitat not present in the BSA.
Yellow-breasted chat	SSC*	Requires dense second-growth, riparian thickets, and brush near watercourses for feeding, cover, and breeding.	**Low.** Existing marginal riparian habitat in BSA lacks necessary vegetative structure for breeding. May pass through BSA during migration.

13 Pasadena Audubon Society. Accessed 21 March 2013. Yahoo! Group Message Board. Available at: http://groups.yahoo.com/neo/groups/PasadenaAudubon/info

TABLE 4
Sensitive Species with CNDDB Records in the Search Area

Species	Status Federal/State	Habitat Requirements	Potential to Occur within the BSA
Coastal California gnatcatcher	FT	In California, obligate year round resident of coastal sage scrub, a natural vegetation community of low, semi-woody vegetation found only in coastal and near-coastal portions of the state.	**Very Low.** Appropriate coastal sage scrub habitat not present in the BSA.

C = federal candidate species
FDEL = federal delisted species
FE = federally listed as endangered
FP = fully protected
FT = federally listed as threatened
SDEL = state delisted
SE = state listed as endangered
SSC = CDFW species of special concern
WL = CDFW Watch List Species
NOTE: *= For these SSC species, the breeding season is the primary season of concern

Out of the 10 SSC that resulted from the CNDDB record search and detailed species and regional habitat research, only 7 sensitive avian species were determined to have the potential to be present or to use habitat within the BSA: Cooper's hawk, American peregrine falcon, western yellow-billed cuckoo, burrowing owl, southwestern willow flycatcher, least Bell's vireo, and yellow-breasted chat. Appropriate habitat for the 3 other special-status species for which CNDDB occurrences were found does not occur within the BSA or the general vicinity. These species are black swift, coastal cactus wren, and coastal California gnatcatcher. Due to a lack of suitable habitat, these species have a very low probability of being present in the BSA and will not be discussed further within this MFR.

All Avian Surveys

During all survey types combined in 2013, a total of 66 avian species were definitively identified (Attachment A, *Avian Compendium*). Sixteen avian species were considered to be either spring or fall migrants or winter visitors, while 50 avian species were considered resident species within the Los Angeles Basin. Fifty-nine of the total species observed were landbirds, including 4 species of raptors, while 7 of the total species were waterbirds (e.g., ducks and geese, cormorants, shorebirds, and gulls).

Point Counts

During spring point counts, a total of 1,005 individuals of 58 species were recorded during 13 days of sampling at the BSA between March 26 and May 15, 2013 (Attachment A). An additional 13 individuals could not be identified to the species level and were recorded to the closest identified level possible (e.g., unknown hummingbird species). Of the 992 individuals that could be identified to species, 1 species, the house finch, accounted for 25 percent of the observations; house finch is a native, year-round resident that breeds throughout the BSA. The next 4 avian species, in order of abundance, were white-throated swift (7.2 percent of total avian observations recorded), rock pigeon (5.6 percent), common raven (5.1 percent), and European starling (5.0 percent). White-throated swifts and common raven are native, year-round residents of the Los Angeles Basin, while rock pigeon and European starling are both introduced species native to Europe that are extremely common in urban environments.

No species federally or state-listed as endangered, threatened, or candidates for listing, were documented within the BSA as a result of point count surveys. None of the 10 potentially occurring special-status species identified were confirmed as a result of point count surveys; however, 5 additional special-status species not identified as a result of the CNDDB search were documented: double-crested cormorant (CDFW Watch List [WL]), sharp-shinned hawk (WL), California gull (WL), Vaux's swift (CDFW SSC), and Allen's hummingbird (California Special Animal; CSA),(Figure 5.1 and 5.2, *Selected Avian Observations [Northern Study Area / Southern Study Area]*).

A total of seven double-crested cormorants, including three individuals and one flock of four, were documented at four point count locations between March 26 and May 7, 2013. A single sharp-shinned hawk was observed hunting over point count 16 on March 28, 2013. A total of 13 California gulls (ranging between 1 and 5 individuals) were recorded at four point count locations between March 28 and April 23, 2013. A total of 15 Vaux's swift individuals were noted at two separate point count locations on May 7, 2013, flying high over the 10 and 710 freeways. Finally, 11 observations of 12 Allen's hummingbirds were recorded at 7 point count locations between March 29 and May 15, 2013.

Transects

As a result of spring transect surveys, a total of 310 individuals of 29 species were recorded during 4 days of sampling within the BSA between April 9 and May 15, 2013. House finch was again the dominant species observed; of the 310 individuals that could be identified to species, house finch accounted for 32 percent of the observations. The next 4 avian species in order of abundance were lesser goldfinch (9.7 percent of total avian observations recorded), bushtit (6.1 percent), yellow-rumped warbler (4.8 percent), and California towhee (3.9 percent). All five of the most frequently observed species during transects are year-round residents of the Los Angeles Basin and are considered common birds of the more botanically diverse habitats chosen as transect locations.

No species federally or state-listed as endangered, threatened, or candidate for listing were documented within the BSA as a result of transect surveys. As for point count surveys, none of the 10 potentially occurring special-status species were confirmed as a result of transects; however, 3 special-status species not identified as a result of the CNDDB surveys were documented during transects: sharp-shinned hawk (WL), Allen's hummingbird (CSA), and yellow warbler (SSC) (Figure 5.1 and 5.2).

A single sharp-shinned hawk was recorded on Transect 01 on April 9, 2013, and two yellow warblers were noted on May 15, 2013, on Transect 04 at the California State University, Los Angeles parking lot near the 710 freeway. Three observations of a total of seven Allen's hummingbirds were recorded on Transects 01, 02, and 03 between April 9 and April 24, 2013.

Habitat Assessment for Special-Status Species

Sensitive Riparian Birds Habitat Assessment. Two locations within the BSA were scrutinized for potential riparian habitat for four special status species with CNDDB records within the 16-quad search: one along Arroyo Seco Bridge and one near the southern portion of the BSA near the 710 freeway intersection with Floral Dr. in East Los Angeles (Figure 4). Surveys were conducted by Mr. John R. Ivanov on March 29 and August 30, 2013. Neither of the visited sites met the habitat criteria for the four riparian obligate, special-status bird species (western yellow-billed cuckoo, southwestern willow flycatcher, least Bell's vireo, and yellow-breasted chat), such as early successional riparian habitat that is structurally diverse with a dense understory layer. Moreover, none of the riparian obligate special-status bird species were observed within these marginal riparian habitats.

Two areas were subject to a habitat assessment for sensitive riparian avian species, one located in a wetland complex in the southern end of the project, and one along the Arroyo Seco in the northern end of the project.

Site 1, in the southern portion of the BSA, was located along the Laguna Channel stream, with vegetation including herbaceous wetland vegetation (mapped as wetland complex), as well as non-native riparian woodland and surrounded by non-native grassland and non-native riparian woodland. The non-native riparian woodland at this site was dominated by Mexican fan palm, which does not provide the structural complexity or humid microclimates required by riparian obligate birds. A small area (less than 0.1 acre) of arroyo willow occurred at Site 1, but it was too small to support breeding territories for any of the riparian birds considered. This site also included herbaceous wetland habitat, which does not provide the tree cover required by riparian birds. In general, Site 1 does not have a large enough area of structurally diverse canopy and dense understory necessary to support any of the four riparian obligate special-status species during the breeding season. The site may be used outside the breeding season.

Site 2, along the Arroyo Seco in the northern portion of the BSA, included three native-dominated plant communities, which are described individually with regards to their habitat potential for riparian birds. The largest of these is Arroyo Willow Thicket, totaling approximately 2.3 acres. This community is early-successional, and appears to be recently planted. It is dominated by arroyo willow, and includes black cottonwood and western sycamore. This area is regularly disturbed by human activity, as it is abutted by a heavily used recreational trail. The Arroyo Willow Thicket does not provide adequate breeding habitat for riparian obligate birds, due to the early successional stage of the plant community and the level of disturbance. This area may be used outside the breeding season.

The Black Cottonwood Forest, which is dominated by two species of cottonwood commonly called black cottonwood, occupies approximately 0.8 acres within the BSA near the Arroyo Seco. The plant community abuts and intergrades with the White alder grove to the south, and arroyo willow and white alder are also present within the plant community. This plant community is located along the same heavily used recreational trail as the Arroyo Willow Thickets, and does not provide suitable understory or canopy cover needed for breeding riparian obligate birds. This area may be used outside the breeding season.

The White Alder Groves plant community occupies approximately one acre within the BSA, near the Arroyo Seco. California rose, mugwort, mulefat, eupatory, German ivy, veldtgrass, and smilo grass were all present in the understory. The White Alder Groves plant community does not provide a suitable understory or a canopy cover needed for breeding riparian obligate birds. This area may be used outside the breeding season.

Burrowing Owl Habitat Assessment. During the course of focused bird surveys within the BSA, three areas were tentatively identified as having the potential to support burrowing owls. All three sites, located in the southerly section of the BSA near the I-710 freeway (Figure 4), were revisited to conduct a detailed habitat assessment. This included an assessment of potential foraging areas, burrows, and other shelter; and to document any burrowing owls or sign in the area. Surveys were conducted by Mr. John R. Ivanov and Mr. Thomas H. Kmett on June 21 and July 30, 2013. Habitat assessment produced no viable breeding locations for burrowing owl and no burrowing owls or their sign were documented.

In addition to the three areas assessed for potential burrowing owl habitat and burrowing owl sign described above, surveyors also visited two of the previously recorded CNDDB occurrences within the Proposed Project vicinity. Three CNDDB records exist for burrowing owl within the 16-quadrangle area. Two of the records, one documented 4.6 miles west of the Santa Monica (I-10) and Long Beach (I-710) freeways junction in the South Gate quadrant, and the other 0.63 mile east of the Ventura (SR 134) and San Gabriel (I-210) freeways junction in the Pasadena quadrant, were recorded on May 5, 1921, and April 17, 1895, respectively. Both sites were visited, and it was determined that neither location currently supports suitable habitat for burrowing owls (Figure 4). The third CNDDB burrowing owl record, which was not visited, is approximately 8 miles east of the Long Beach (I-710) and the Pomona (U.S. Route 60) freeways junction.

The areas assessed for potential burrowing owl habitat, were all located within areas of non-native grasslands. The habitat ranged for sparsely vegetated, to fairly thick grass, located in close proximity to highways. Upon close inspection, observers noted that very few small mammal burrows were present which would provide a prey base, and there were no burrows or other shelters suitable for use by burrowing owls.

Reconnaissance Surveys

As a result of reconnaissance surveys, eight additional species were detected that were not observed as a result of directed point count or transect surveys: Cooper’s hawk, Nuttall’s woodpecker, downy woodpecker, northern flicker, tree swallow, white-breasted nuthatch, house wren, and nutmeg manikin. Of these, the Cooper’s hawk is listed on CDFW’s WL and the Nuttall’s woodpecker is listed on CDFW’s Special Animals List (Figure 5.1 and 5.2).

Nesting activity by several species was noted incidentally during the course of all avian surveys. Two pairs of red-tailed hawks exhibited territorial and breeding behavior at two locations within or adjacent to the BSA (Figure 5.1 and 5.2). One pair, seen repeatedly at point count 16 near the southern end of the BSA, was observed mating and a potential nest location was discovered in a eucalyptus tree approximately 0.37 mile southwest of the Long Beach (I-710) and Santa Monica (I-10) freeway junction. The nesting activity took place 500 feet outside of the BSA. No fledglings were noted at any time in or around the nest despite subsequent visits to this area, so it is assumed that the nesting attempt was not successful. A second pair of red-tailed hawks was repeatedly noted as acting territorial near the Del Mar Pump Station in the northern portion of the BSA (Figure 5.1), but no nest site was documented.

Other avian nesting activity within the BSA included the documentation of approximately 100 cliff swallow nests underneath the Colorado Street bridge over the Arroyo Seco in the City of Pasadena, south of SR 134. Although the nests were not active at the time of discovery (August 30, 2013), the nests appeared to have been recently used, likely during the 2013 breeding season.

Discussion

The low avian diversity documented within the BSA during the January to August 2013 survey period is consistent with the diversity and types of avian species common in urbanized habitats, such as those of central Los Angeles County. A total of 491 avian species have been recorded in Los Angeles County as of 2006; a total of 66 species were recorded as a result of all avian surveys in the BSA.[14] The disparity in avian diversity between the BSA and Los Angeles County as a whole is unsurprising, given the fragmented and marginal habitat found in the BSA, compared with the diverse habitats found throughout Los Angeles County, which include mountainous, desert, coastal, and offshore habitats that support a more diverse assemblage of avian species. Suitable avian habitats in the BSA are primarily located along sidewalks and within freeway edges and medians. As a result of avian surveys conducted within the BSA, no wildlife concentrations or migratory corridors were documented.

At least 10 special-status avian species are reported by the CNDDB for the 16-quadrangle area including, and surrounding, the BSA (Figure 2; Table 4). Because the BSA's habitats are degraded to such a degree that they provide relatively little value for native plants or wildlife, Sapphos Environmental, Inc. determined that most of the special-status species identified by the CNDDB within the relevant quadrangles are not likely to be present due to a lack of species-specific habitat requirements and the fact that many of these species are not tolerant of disturbance or proximity to human activities that are currently present in the BSA. Of the 10 special-status species reported by the CNDDB within the 16-quadrangle search area, only 1 species, Cooper's hawk, was documented within the BSA as a result of surveys. An additional seven special status avian species not reported within the CNDDB 16-quad search were also documented within the BSA as a result of surveys. The eight special status species documented within the BSA as a result of avian surveys, as well as the six additional species historically recorded within the 16-quad search area that are considered to be have a low or medium potential to occur within the BSA (Table 4), are further described below.

Species Accounts

Double-Crested Cormorant. The double-crested cormorant is listed as a Watch List species by CDFW and is a year-long resident along the entire California coast. This species breeds within very localized colonies on coastal off-shore islands and adjacent to freshwater habitats along the coast slope and interior of the state, including the Salton Sea, which in certain years boasts the largest inland breeding population of the species in the state. For foraging, cormorants require open water to forage for schooling fish.[15] A total of seven double-crested cormorants were documented in flight over four point count locations between March 26 and May 7, 2013 (Figure 5.1 and 5.2). There are no suitable habitats for double-crested cormorant to forage or nest in within the BSA; in fact, there is only one confirmed nesting colony for this species within Los Angeles County, located along the San Gabriel River in Pico Rivera, approximately 6 miles southeast of the BSA.[16]

Sharp-Shinned Hawk. The sharp-shinned hawk is an overwintering raptor species of interest in California and is included in the CDFW Watch List. During winter and migration, sharp-shinned hawks are the most numerous *Accipiter* species in California, and can occur in almost all terrestrial habitats; however very few breeding records

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14 Garrett, K.J., and M. San Miguel. 2006. *Field List of the Birds of Los Angeles County*. Los Angeles, CA: Los Angeles Audubon Society.

15 Molina, K.C., and K.L. Garrett. 1981. *Double-crested Cormorant (Phalacrocorax auritus)*. Species account for the West Mojave Habitat Conservation Plan, Bureau of Land Management, Department of the Interior, Washington, DC.

16 Molina, K.C., and K.L. Garrett. 1981. *Double-crested Cormorant (Phalacrocorax auritus)*. Species account for the West Mojave Habitat Conservation Plan, Bureau of Land Management, Department of the Interior, Washington, DC.

in the state have been confirmed.[17] Single sharp-shinned hawks were observed at two locations within the BSA on March 28, 2013 and April 9, 2013; due to the proximity of the two observations, these observations may represent a single individual sharp-shinned hawk (Figure 5.2). This species would not be expected to nest within the BSA, but could utilize habitats within the BSA for roosting or foraging.

Cooper's Hawk. The Cooper's hawk is an uncommon, but permanent resident in southern California. The species prefers breeding in broken woodlands, especially riparian woodlands in canyons and floodplains.[18] Although Cooper's hawk is considered a Watch listed species by CDFW, its numbers and range have increased in many areas in the past decade especially in the form of breeding birds colonizing urban and suburban areas.[19] No Cooper's hawks were detected as a result of point count or transect surveys; however the species was recorded incidentally on two occasions during reconnaissance surveys. Cooper's hawks would be expected to use the scattered woodlands within the BSA for foraging or roosting, but the type of riparian woodland required for nesting is generally absent from the BSA. The only CNDDB occurrence for the species in the 16-quad search area was a nesting pair in the Sante Fe Flood Control Basin in Irwindale, at the intersection of the 210 and 605 freeways, approximately 10 miles east of the BSA.

California Gull. The California gull is on CDFW's Watch List, and is a common winter visitor to southern California, particularly near coastal environments; the species non-breeding habitat is the most diverse of any other of the state's gulls.[20] A total of 13 California gull observations were made during point counts in early to late spring 2013, but all observations are classified as fly-overs. Los Angeles County is outside of this species' breeding range, thus occurrences of this species are expected to be transient in nature as ostensibly no resources are being used within the BSA.

Yellow-Billed Cuckoo. The migratory yellow-billed cuckoo is listed as an endangered species pursuant to the California ESA and is a candidate for listing under the federal ESA. The yellow-billed cuckoo requires riparian woodland habitat composed of willow and cottonwood with a dense understory for breeding. The bird's declining population is a result of riparian habitat loss due to agricultural clearing, flood control, and urbanization.[21]

No yellow-billed cuckoos were observed as a result of avian surveys within the BSA in 2013. Marginally suitable breeding habitat, consisting of isolated willow and cottonwood trees and a few dispersed saplings is available below the Arroyo Seco Bridge and the 710 freeway near Floral Dr. within the BSA, but both locations are insufficient to support a breeding population of yellow-billed cuckoo. These marginal habitats are sufficient only to support brief migratory visits by individuals of this species. Due to their small and declining population, the yellow-billed cuckoo is an uncommon migrant in Southern California and would not be expected to be noted on an annual basis within the Los Angeles basin. The closest documented breeding location for this species is the Santa Clara River near Santa Clarita, Los Angeles County, where a small population (<5 pairs) has bred periodically.[22]

Burrowing Owl. The burrowing owl is listed as a species of special concern by CDFW, with the breeding season indicated as the season of concern.[23] The burrowing owl is a year-long resident throughout much of southern

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17 Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis.

18 Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis.

19 Curtis, O.E., and R.N. Rosenfield. 2006. "Cooper's Hawk (*Accipiter cooperii*)." In *The birds of North America*, ed. A. Poole. Ithaca, NY: Cornell Laboratory of Ornithology.

20 Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis.

21 Laymon, S.A., and M.D. Halterman. 1987. "Can the Western Subspecies of the Yellow-Billed Cuckoo Be Saved from Extinction?" *Western Birds* 18:19–25.

22 Laymon, S. A. 1998. "Yellow-billed Cuckoo (Coccycus americanus)." In *The Riparian Bird Conservation Plan: A Strategy for Reversing the Decline of Riparian-Associated Birds in California*. California Partners in Flight. Available at: http://www.prbo.org/calpif/htmldocs/riparian_v-2.html

23 California Department of Fish and Game. 2008. *Fully Protected Animals*. Sacramento, CA. Available at: http://www.dfg.ca.gov/wildlife/species/t_e_spp/fully_pro.html

California, with an influx of owls in the winter months due to retreat from higher elevations and more northerly latitudes.[24,25] In the past, burrowing owls have nested in small numbers throughout southern Los Angeles County south of the San Gabriel Mountains; however, due to rapid urbanization, burrowing owls have been either nearly extirpated or drastically reduced within coastal California counties, including Los Angeles County.[26,27] Burrowing owls populations have sharply declined in California due to the loss of open and semi-open habitats; their largest numbers now occur in the Imperial Valley, where greater than 70 percent of the statewide population is located.[28,29] The habitat assessment produced no viable breeding locations for this species within the BSA.

Vaux's Swift. The Vaux's swift is listed as a CDFW SSC, with the breeding season being the particular season of concern for this species. Vaux's swift breed in northern and central California, with breeding activities closely tied to distribution of redwood trees.[30] The loss of potential nest and roost sites are the primary threats to this species. Los Angeles County is outside of the species' breeding range; however migrating Vaux's swift would be expected to pass through southern California in spring (April to May) and then again in fall (September to early October).[31] A total of (15) Vaux's swift individuals were documented flying high over two separate point count locations within the BSA on May 7th 2013. Vaux's swift may use appropriate habitats within the BSA to roost or forage during fall or spring migration.

Allen's Hummingbird. The Allen's hummingbird is listed on the CDFW's Special Animals List. Within Southern California, two subspecies exist: the migratory *Selasphorus sasin sasin* and the sedentary *S.s. sedentarius*.[32] The migratory Allen's hummingbird is a common summer resident (January-July) and migrant along the majority of the California coast, with breeders common in a variety of habitats, including coastal scrub, valley foothill hardwood, valley foothill riparian, closed-cone pine-cypress, urban, and redwood habitats.[33] The BSA is likely outside the narrow coastal breeding range of the migratory species, which winters in Central Mexico, but *S.s. sasin* would be expected to be a common migrant throughout the BSA. The sedentary subspecies, *S.s. sendentarius*, on the other hand, may be observed throughout the year in Los Angeles County, where it has recently expanded its breeding

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24 Garrett, Kimball, and Jon Dunn. 1981. *Birds of Southern California: Status and Distribution*. Los Angeles, CA: The Artesian Press.

25 Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis.

26 California Department of Fish and Wildlife. 7 March 2012. *Staff Report on Burrowing Owl Mitigation*. State of California, Natural Resources Agency, Sacramento, CA. Available at: http://www.dfg.ca.gov/wildlife/nongame/survey_monitor.html

27 Gervais, J.A., D.K. Rosenberg, and L.A. Comrack. 2008. "Burrowing Owl (*Athene cunicularia*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, ed. W.D. Shuford and T. Gardali. Studies of Western Birds 1. Camarillo, CA: Western Field Ornithologists; and Sacramento, CA: California Department of Fish and Game.

28 Santa Cruz Predatory Bird Research Group. 10 January 2006. *California Burrowing Owl Consortium*. Available at: http://www2.ucsc.edu/scpbrg/statemap.htm

29 Gervais, J.A., D.K. Rosenberg, and L.A. Comrack. 2008. "Burrowing Owl (*Athene cunicularia*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, ed. W.D. Shuford and T. Gardali. Studies of Western Birds 1. Camarillo, CA: Western Field Ornithologists; and Sacramento, CA: California Department of Fish and Game.

30 Hunter, J.E. 2008. "Vaux's swift (*Chaetura vauxi*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, ed. W.D. Shuford and T. Gardali. Studies of Western Birds 1. Camarillo, CA: Western Field Ornithologists; and Sacramento, CA: California Department of Fish and Game.

31 Garrett, Kimball, and Jon Dunn. 1981. *Birds of Southern California: Status and Distribution*. Los Angeles, CA: The Artesian Press.

32 Clark, C.J., and D.E. Mitchell. 2013. "Allen's hummingbird (*Selasphorus sasin*)." In *The Birds of North America Online*, ed. A. Poole. Ithaca, NY: Cornell Lab of Ornithology. Available at: http://bna.birds.cornell.edu/bnaproxy.birds.cornell.edu/bna/species/501

33 Green, M. n.d. "Allen's Hummingbird." California Wildlife Habitat Relationships (CWHR) System. California Department of Fish and Wildlife. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1909&inline=1

range to include parts of the San Gabriel Valley, where the BSA is located.[34] Allen's hummingbirds were commonly recorded on both the point count and transect surveys between March and May 2013.

Nuttall's Woodpecker. The Nuttall's woodpecker is listed on the CDFW's Special Animals List. Nuttall's woodpecker is a common resident of low-elevation riparian deciduous and oak habitats. This species excavates nesting cavities in dead (occasionally live) trunks or limbs of willow, sycamore, cottonwood, or alders within riparian habitat, while the species forages in both oak and riparian deciduous habitats.[35] A single Nuttall's woodpecker was recorded within riparian habitat beneath the Arroyo Seco bridge during reconnaissance surveys in August 2013. This species could use riparian deciduous or oak habitats within the BSA for foraging, as well as nesting, given the presence of appropriate nesting substrates.

Peregrine Falcon. The American Peregrine falcon was federally delisted on August 25, 1999, due to recovery (64 FR 46542–46558) and state delisted on August 6, 2009 (California Fish and Game Commission 2009); however the species is still fully protected by CDFW Code, Section 3511(b)(1), which prohibits take or possession "at any time" of the raptor species, without special permits.

In California, the peregrine falcon has been an uncommon breeder, migrant, and visitor; however, since the 1970s, the breeding population has dramatically increased, and active nest sites are known from 40 counties, spanning the length of California.[36]

Peregrine falcons were not observed as a result of directed point count or transect surveys. The known peregrine falcon nesting location in downtown Pasadena (Table 1), located approximately 0.25 mile from the BSA, was visited in early spring 2013, and no falcons were detected. Additionally, all appropriate peregrine habitat in the BSA (e.g. tall buildings with a prey base nearby) was scrutinized during surveys and while travelling between surveys, with no resulting peregrine falcon sightings.

Peregrine falcon breeding pairs exhibit high fidelity to established nesting territories, and in California often stay in the general vicinity of their territory year round.[37] With a pair periodically nesting in downtown Pasadena, it is not anticipated that peregrine falcons would nest within the BSA, despite the availability of suitable nesting locations, such as tall buildings.

Southwestern Willow Flycatcher. The migratory southwestern willow flycatcher is listed as an endangered species pursuant to both the federal and California ESAs. Southwestern willow flycatcher populations declined in the 20th century as a result of riparian habitat loss and modification from human activities, including dam construction and operation, groundwater pumping, water diversions, and flood control.[38] The southwestern willow flycatcher requires riparian deciduous shrubs or trees, such as willow or alder, for breeding.[39]

No southwestern willow flycatchers were detected as a result of avian surveys within the BSA in 2013. Marginally suitable breeding habitat, consisting of isolated willow and cottonwood trees and a few dispersed saplings is available below the Arroyo Seco Bridge and the 710 freeway near Floral Dr. within the BSA, but both locations are

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34 Clark, C.J., and D.E. Mitchell. 2013. "Allen's hummingbird (*Selasphorus sasin*)." In *The Birds of North America Online*, ed. A. Poole. Ithaca, NY: Cornell Lab of Ornithology. Available at: http://bna.birds.cornell.edu/bnaproxy.birds.cornell.edu/bna/species/501

35 Harvey, T., and C. Polite. n.d. "Nuttall's Woodpecker." California Wildlife Habitat Relationships (CWHR) System. California Department of Fish and Wildlife. Available at: https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=1927&inline=1

36 Comrack, L.A., and R.J. Logsdon. 2008. *Status Review of the American Peregrine Falcon (Falco peregrinus anatum) in California*. California Department of Fish and Game, Wildlife Branch, Nongame Wildlife Program Report 2008-06, Sacramento, CA.

37 Comrack, L.A., and R.J. Logsdon. 2008. *Status Review of the American Peregrine Falcon (Falco peregrinus anatum) in California*. California Department of Fish and Game, Wildlife Branch, Nongame Wildlife Program Report 2008-06, Sacramento, CA.

38 Sogge, M.K., D. Ahlers, and S.J. Sferra. 2010. *A Natural History Summary and Survey Protocol for the Southwestern Willow Flycatcher*. U.S. Geological Survey Techniques and Methods 2A-10, Reston, VA.

39 Craig, D., and P. L. Williams. 1998. "Willow Flycatcher (*Empidonax traillii*)." In *The Riparian Bird Conservation Plan: A Strategy for Reversing the Decline of Riparian-Associated Birds in California*. California Partners in Flight. Available at: http://www.prbo.org/calpif/htmldocs/riparian_v-2.html

insufficient to support a breeding population of southwestern willow flycatcher. This is supported by the fact that there have been no documented nesting records for this species within the 16-quad CNDDB search area since 1906. The marginal riparian habitats present within the BSA are sufficient only to support brief migratory visits by individuals of this species. The willow flycatcher is a fairly regular migrant and is expected to be noted on an annual basis within the Los Angeles basin. The suitable habitat present within the BSA is marginal, and southwestern willow flycatcher would be expected to be present only on an irregular basis.

Least Bell's Vireo. The migratory least Bell's vireo is listed as an endangered species pursuant to both the federal and California ESAs. This subspecies is a riparian obligate during the breeding season and is often associated with early successional riparian habitat that is structurally diverse.[40] Least Bell's vireo was once widespread throughout the Central Valley and other low elevation riverine areas of California. The widespread loss of riparian habitat and brood parasitism by the brown-headed cowbird are the major causes of the decline of this species.[41] The breeding population in California has increased dramatically because of brown-headed cowbird trapping efforts in breeding areas, and the species is thought to be expanding their current range. [42]

A records search of nesting least Bell's vireo found that the nearest breeding locations in Los Angeles County occur along the Santa Clara River, Big Tujunga Wash (Hansen Dam), Los Angeles River (Sepulveda Basin), San Gabriel River, and Rio Hondo (Whittier Narrows). No least Bell's vireos were detected as a result of avian surveys within the BSA in 2013. Marginally suitable breeding habitat, consisting of isolated willow and cottonwood trees and a few dispersed saplings is available below the Arroyo Seco Bridge and the I-710 freeway near Floral Dr. within the BSA, but both locations are insufficient to support a breeding population of least Bell's vireo. The marginal riparian habitats present within the BSA are likely sufficient to support only brief migratory visits by individuals of this species.

Yellow Warbler. The yellow warbler is listed as a California SSC by CDFW, with the primary concern being on its breeding grounds. The species prefers riparian woodlands found in lowlands and foothill canyons for breeding, but can also be found nesting in dry montane chaparral and in the shrubby understory of montane coniferous forests.[43] The current breeding range for this species in California cover much of the state, with the exception of the Central Valley and Colorado and Mojave deserts. [44] Breeding takes place from April to late July[45], with peak spring migration occurring in May, and fall migration passing through from late August to late September.[46] Similar to other riparian obligate species, the yellow warbler population in California has declined due to habitat destruction and deterioration, as well as brood parasitism by brown-headed cowbirds.[47]

Two individual yellow warblers were observed during transect surveys within the BSA in 2013 (Figure 5.1 and 5.2). Marginally suitable breeding habitat, consisting of isolated willow and cottonwood trees and a few dispersed saplings is available near the Arroyo Seco, and near the I-710 freeway near Floral Dr. within the BSA. Although the habitat at these two locations contains some of the vegetative species and structural attributes preferred by yellow warblers for nesting, the fragmented nature of the habitat patches, as well as the high rate of human disturbance surrounding them, would most likely preclude this species from nesting within the BSA. The yellow

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40 U.S. Fish and Wildlife Service. 1998. *Draft Recovery Plan for the Least Bell's Vireo*. Portland, OR: U.S. Fish and Wildlife Service.

41 Garrett, Kimball, and Jon Dunn. 1981. *Birds of Southern California: Status and Distribution*. Los Angeles, CA: The Artesian Press.

42 U.S. Fish and Wildlife Service. 1998. *Draft Recovery Plan for the Least Bell's Vireo*. Portland, OR: U.S. Fish and Wildlife Service.

43 Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis.

44 Heath, S.K. 2008. "Yellow Warbler (*Dendroica petechial*)." In *California Bird Species of Special Concern: A Ranked Assessment of Species, Subspecies, and Distinct Populations of Birds of Immediate Conservation Concern in California*, ed. W.D. Shuford and T. Gardali. Studies of Western Birds 1. Camarillo, CA: Western Field Ornithologists; and Sacramento, CA: California Department of Fish and Game.

45 Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis.

46 Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis.

47 Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis.

warbler is a common migrant throughout southern California,[48] and the marginal riparian habitats present within the BSA are likely to support migratory visits by individuals of this species.

Yellow-Breasted Chat. The yellow-breasted chat is listed as a California SSC by CDFW, with the primary concern being on its breeding grounds. As a riparian obligate in the breeding season, yellow-breasted chats require dense riparian thickets of willows, vines and brush tangles found along watercourses.[49] Similar habitats are favored during migration, which in California peaks in early April to mid-May in spring and November to early December in fall. Yellow-breasted chats are considered a rare to very uncommon and local breeder from Ventura County to San Diego County.[50]

No yellow-breasted chats were observed as a result of avian surveys within the BSA in 2013. Marginally suitable breeding habitat, consisting of isolated willow and cottonwood trees and a few dispersed saplings is available below the Arroyo Seco Bridge and the I-710 freeway near Floral Dr. within the BSA, but both riparian locations are insufficient to support a breeding population of yellow-breasted chat. As a rare to uncommon transient in southern California during migration,[51] the marginal riparian habitats present within the BSA are likely to support only brief migratory visits by individuals of this species.

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48 Garrett, Kimball, and Jon Dunn. 1981. *Birds of Southern California: Status and Distribution*. Los Angeles, CA: The Artesian Press.

49 Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis.

50 Small, A. 1994. *California Birds: Their Status and Distribution*. Vista, CA: Ibis.

51 Garrett, Kimball, and Jon Dunn. 1981. *Birds of Southern California: Status and Distribution*. Los Angeles, CA: The Artesian Press.

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REPORT FIGURES

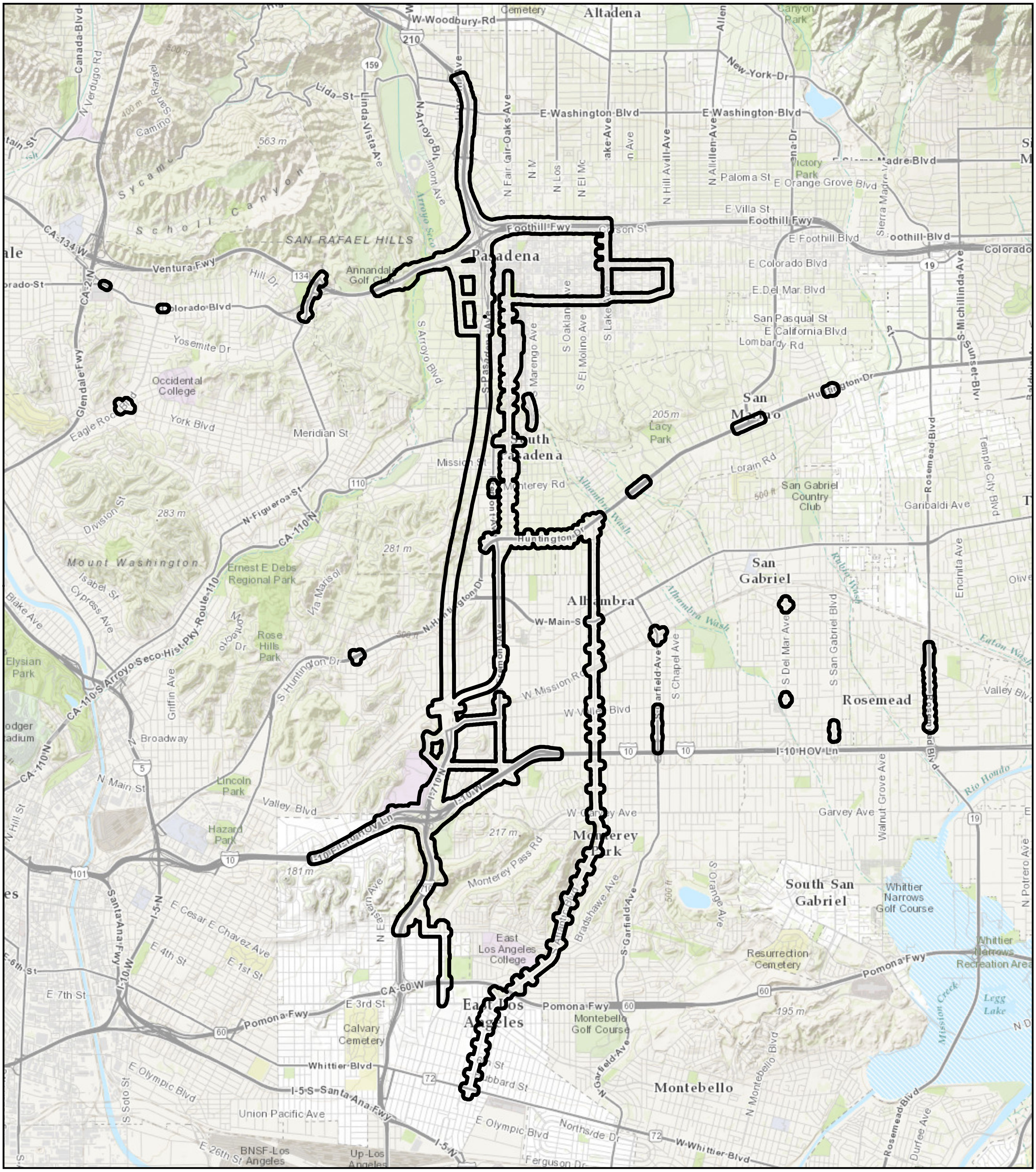

FIGURE 1

LEGEND

Biological Study Area

0 0.25 0.5 1 1.5

Miles

SR 710 North Study

Biological Study Area

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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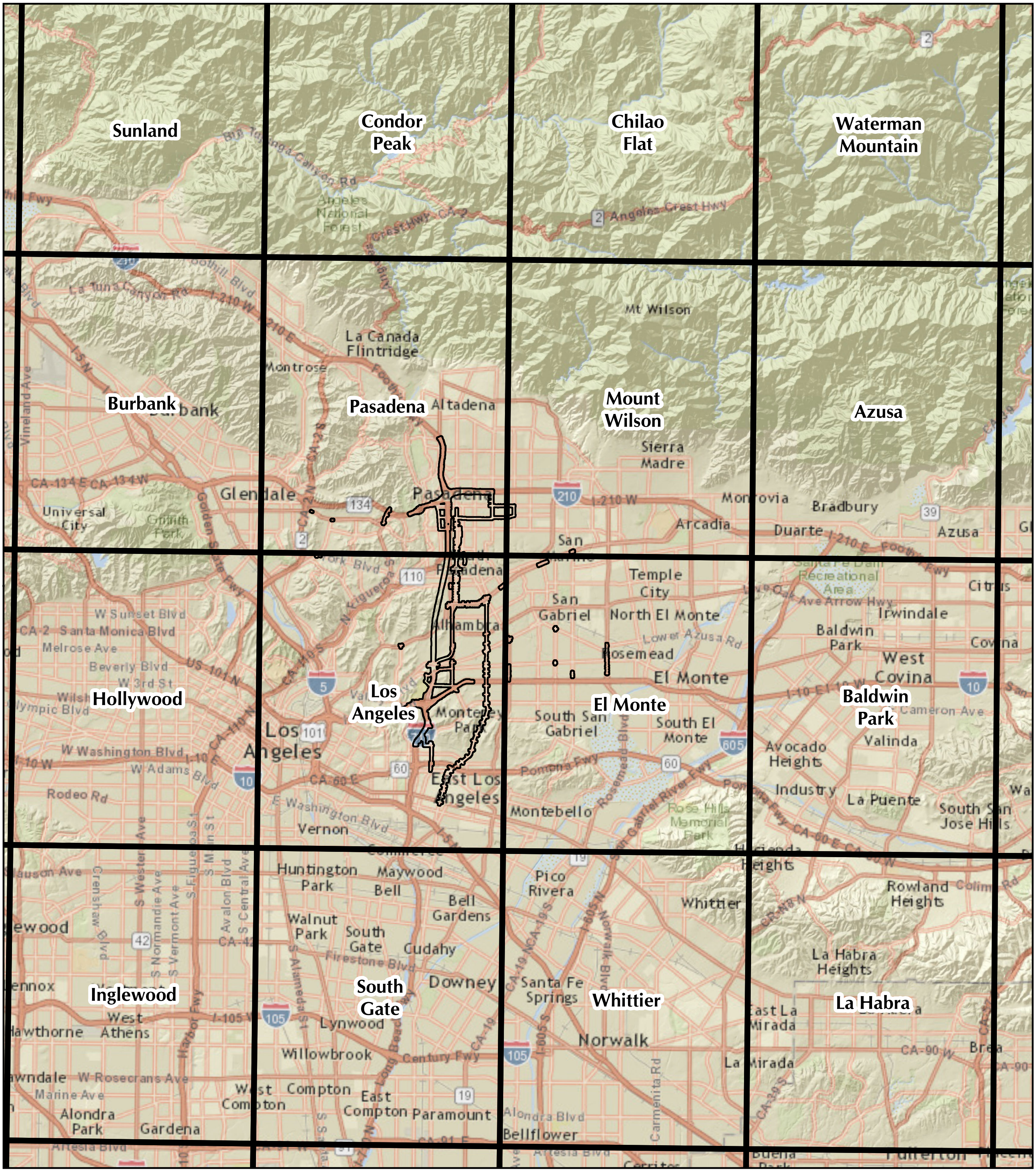

FIGURE 2

LEGEND

Biological Study Area

USGS 7.5-minute Quadrangles

N

0 0.5 1 2 3 4 5

Miles

SR 710 North Study

Project Location with USGS 7.5-minute Quadrangle Index

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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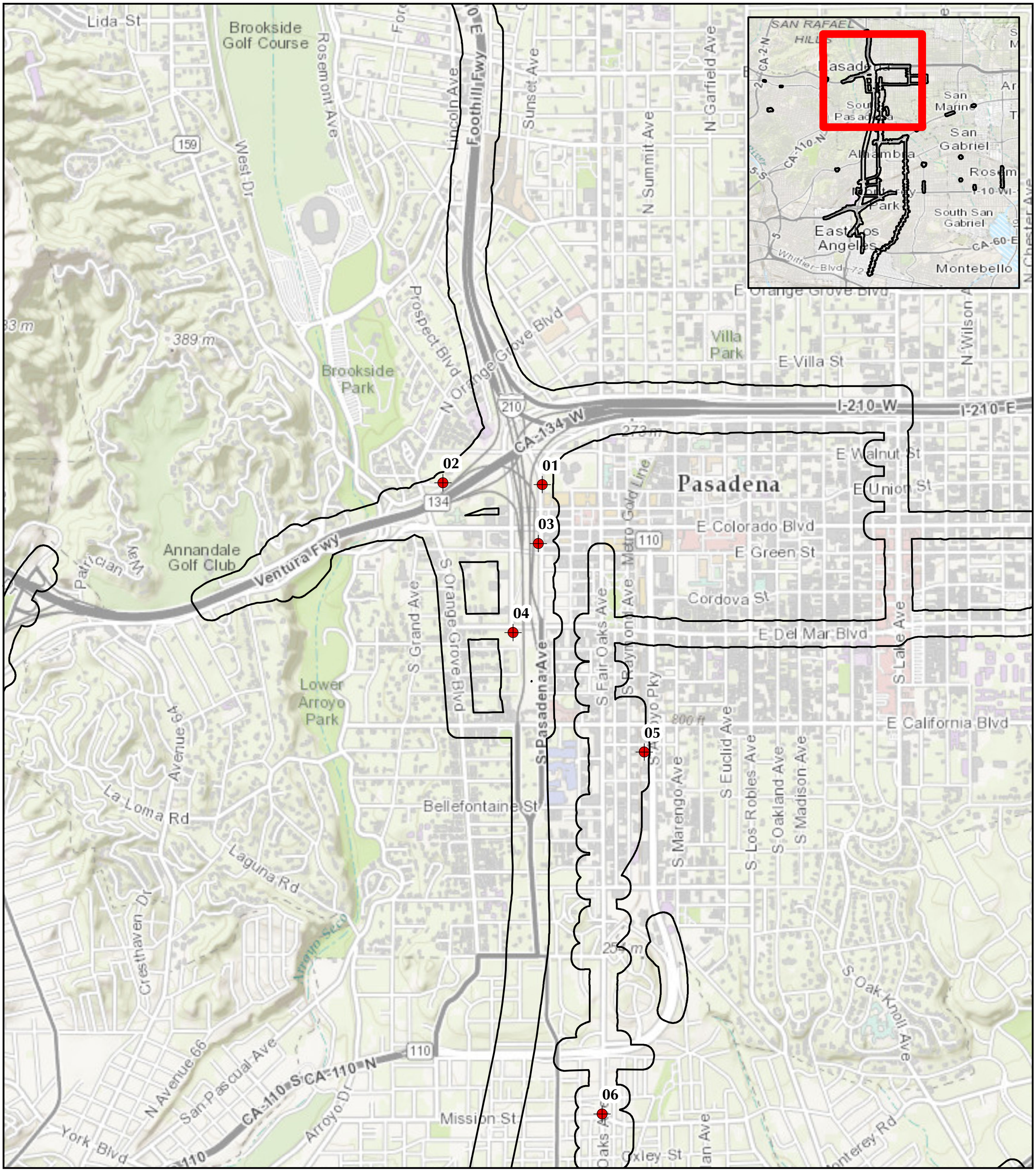

FIGURE 3.1

LEGEND

- Point Count Locations
- Biological Study Area

0 0.25 0.5

Miles

SR 710 North Study

Point Count and Transect Survey Locations

(Northern Study Area)

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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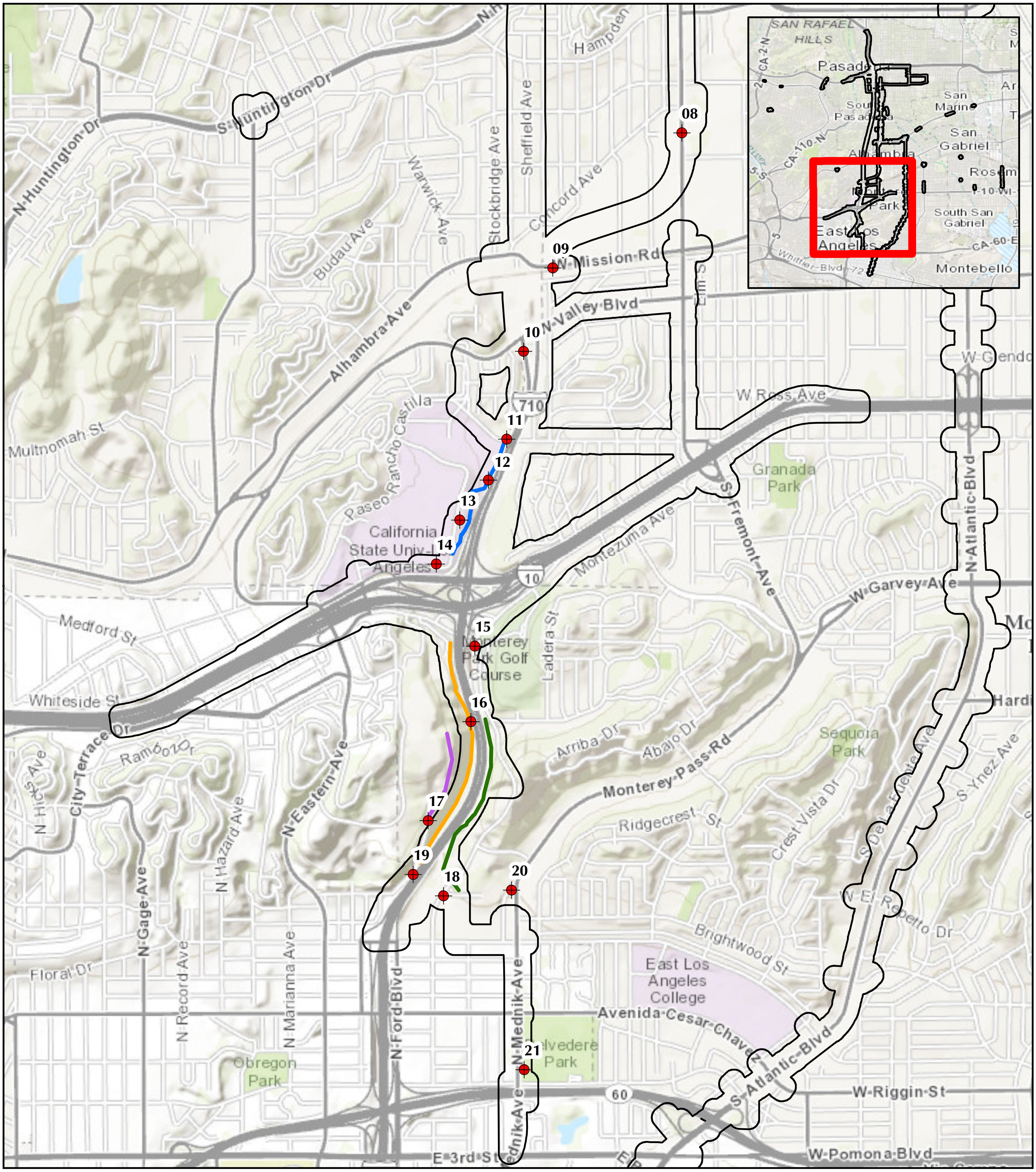

FIGURE 3.2

LEGEND

- Point Count Locations
- Transect 1
- Transect 2
- Transect 3
- Transect 4
- Biological Study Area

N

0 0.25 0.5

Miles

SR 710 North Study

Point Count and Transect Survey Locations (Southern Study Area)

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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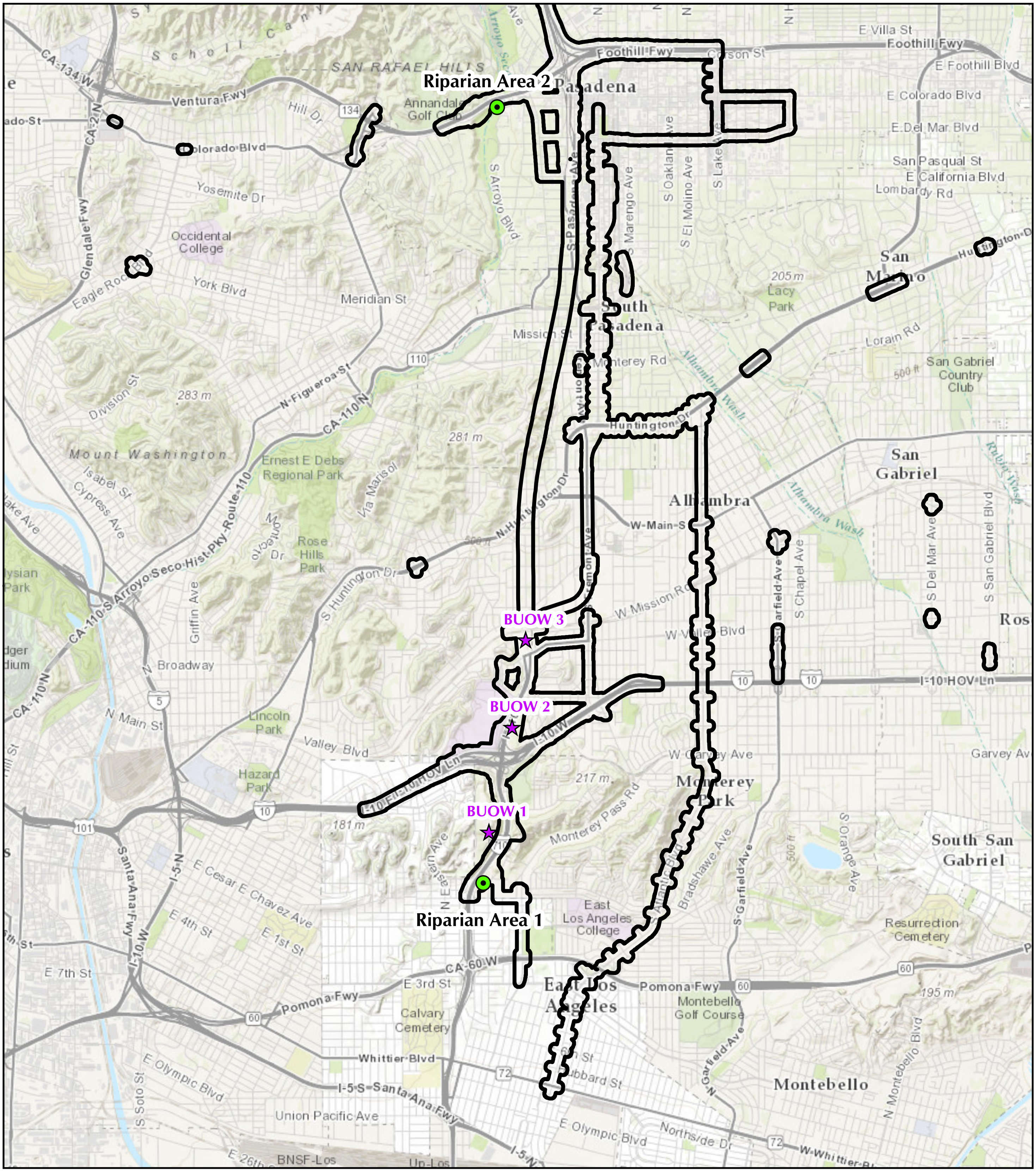

LEGEND

★ Burrowing Owl Habitat Assessment

● Riparian Bird Habitat Assessment

▭ Biological Study Area

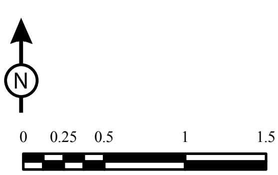

FIGURE 4

SR 710 North Study

Habitat Assessment Locations

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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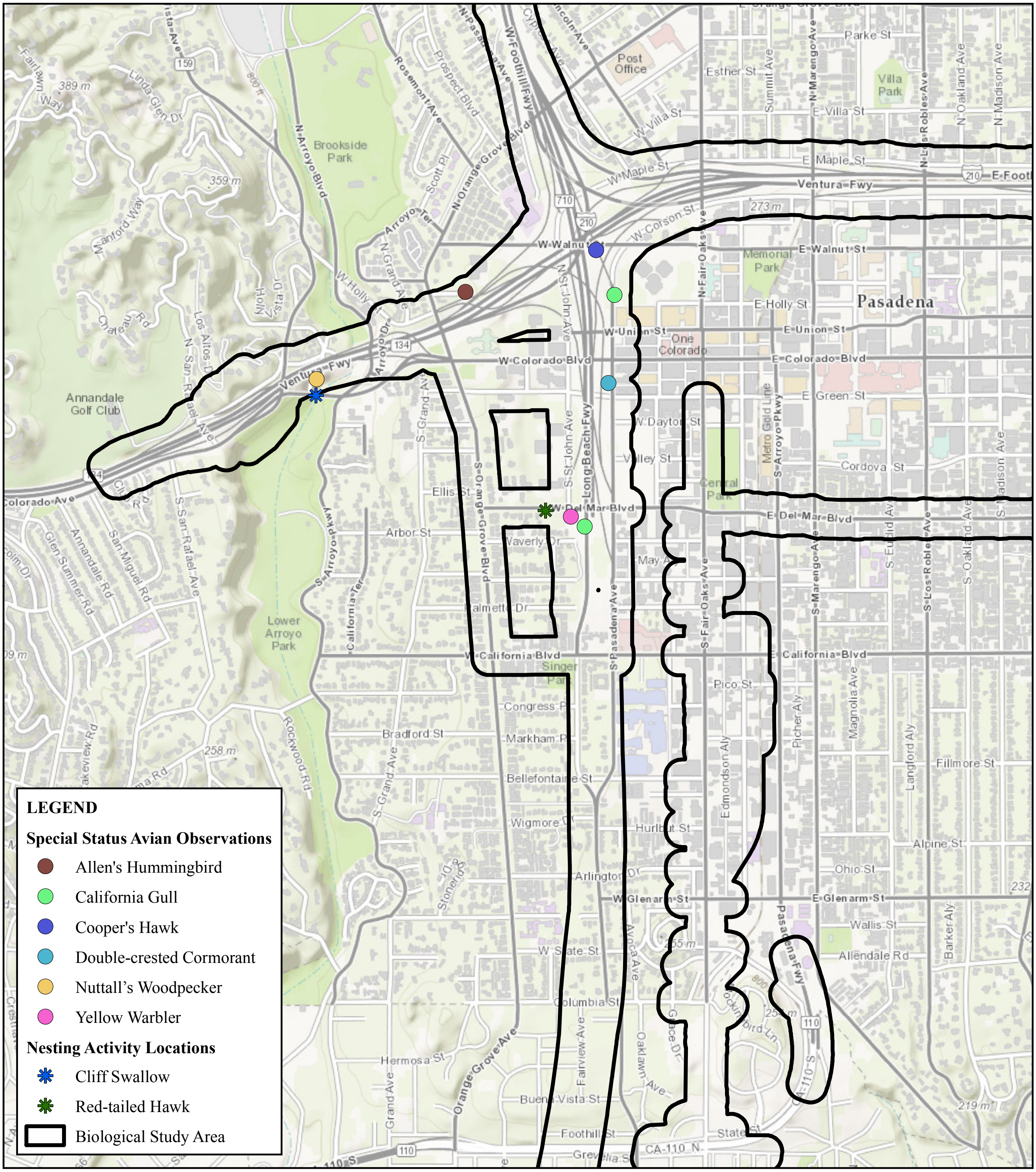

FIGURE 5.1

SR 710 North Study

Selected Avian Observations

(Northern Study Area)

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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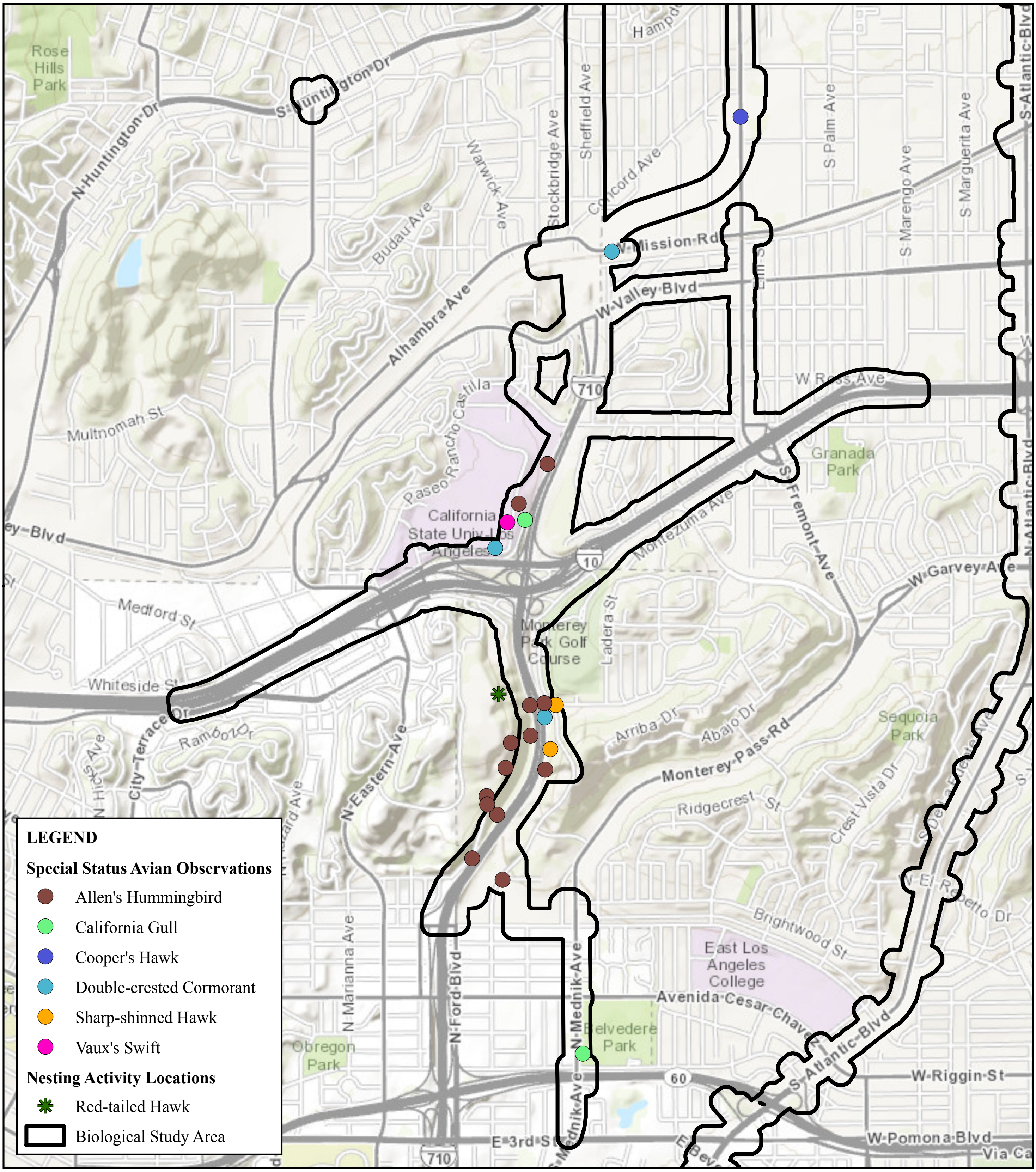
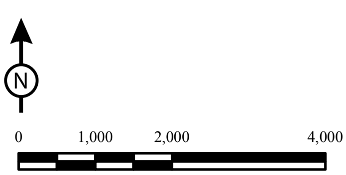


FIGURE 5.2



SR 710 North Study

Selected Avian Observations (Southern Study Area)

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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ATTACHMENT A
AVIFAUNAL COMPENDIUM

ATTACHMENT A
AVIFAUNAL COMPENDIUM

Table A-1
Avian Species Observed Within the Biological Survey Area

Family/Species	Special Status	Residency Status	Detection Type: Point Count	Detection Type: Transect	Detection Type: Reconnaissance
BIRDS					
Anatidae – Waterfowl					
Canada goose *Branta canadensis*		Migrant (winter), some localized breeding	2		
Mallard *Anas platyrhynchos*		Resident	11	3	
Phalacrocoracidae – Cormorants and Shags					
Double-crested cormorant *Phalacrocorax auritus*	WL	Resident	7		
Accipitridae – Hawks, Kites, Eagles					
Sharp-shinned hawk *Accipiter striatus*	WL	Migrant (winter)	1	1	
Cooper's hawk *Accipiter cooperii*	WL	Resident			X
Red-shouldered hawk *Buteo lineatus*		Resident	2		
Red-tailed hawk *Buteo jamaicensis*		Resident	12	3	X
Charadriidae – Plovers					
Killdeer *Charadrius vociferus*		Resident	3		
Laridae – Gulls and Terns					
Ring-billed gull *Larus delawarensis*		Migrant (winter)	1		
Western gull *Larus occidentalis*		Resident	1		
California gull *Larus californicus*	WL	Migrant (winter)	13		
Columbidae – Pigeons and Doves					
Rock pigeon *Columba livia*		Resident*	56	2	X
Band-tailed pigeon *Patagioenas fasciata*		Resident	48		X
Eurasian collared-dove *Streptopelia decaocto*		Resident*	2		
Mourning dove *Zenaida macroura*		Resident	32	10	X
Apodidae – Swifts					
Vaux's swift *Chaetura vauxi*	SSC	Migrant	15		
White-throated swift *Aeronautes saxatalis*		Resident	71	1	X
Trochilidae – Hummingbirds					
Anna's hummingbird *Calypte anna*		Resident	4	3	X
Allen's hummingbird *Selasphorus sasin sedentarius*	CSA	Resident (subspecies)	12	7	
Alcedinidae – River Kingfishers					
Belted kingfisher *Megaceryle alcyon*		Resident	1		
Picidae – Woodpeckers					
Acorn woodpecker *Melanerpes formicivorus*		Resident	1		X

Family/Species	Special Status	Residency Status	Detection Type: Point Count	Transect	Reconnaissance
Nuttall's woodpecker *Picoides nuttallii*	CSA	Resident			X
Downy woodpecker *Picoides pubescens*		Resident			X
Northern flicker *Coaptes auratus*		Resident			X
Psittacidae – African and New World Parrots					
Red-crowned parrot *Amazona viridigenalis*		Resident*	44		X
Tyrannidae – Tyrant Flycatchers					
Black phoebe *Sayornis nigricans*		Resident	8	3	X
Ash-throated flycatcher *Myiarchus cinerascens*		Migrant (Summer)	1		
Cassin's kingbird *Tyrannus vociferans*		Resident	3	1	
Western kingbird *Tyrannus verticalis*		Migrant (Summer)	6	4	
Corvidae – Crows and Jays					
Western scrub-jay *Aphelocoma californica*		Resident	6	2	X
American crow *Corvus brachyrhynchos*		Resident	32		X
Common raven *Corvus corax*		Resident	51	7	
Hirundinidae – Swallows					
Tree swallow *Tachycineta bicolor*		Resident			X
Northern rough-winged swallow *Stelgidopteryx serripennis*		Migrant (summer)	41	5	
Cliff swallow *Petrochelidon pyrrhonota*		Migrant (summer)	4		X
Barn swallow *Hirundo rustica*		Migrant (summer)	2	1	
Aegithalidae – Bushtits					
Bushtit *Psaltriparus minimus*		Resident	22	19	X
Sittidae – Nuthatches					
White-breasted nuthatch *Sitta carolinensis*		Resident			X
Troglodytidae – Wrens					
House wren *Troglodytes aedon*		Resident			X
Bewick's wren *Thryomanes bewickii*		Resident	2		
Turdidae – Thrushes					
Western bluebird *Sialia mexicana*		Resident	2		
American robin *Turdus migratorius*		Resident	1		
Mimidae – Thrushes					
Northern mockingbird *Mimus polyglottos*		Resident	25	4	X
Sturnidae – Starlings					
European starling *Sturnus vulgaris*		Resident*	50	10	X
Bombycillidae – Waxwings					
Cedar waxwing *Bombycilla cedrorum*		Migrant (winter)	33		

Family/Species	Special Status	Residency Status	Detection Type		
			Point Count	Transect	Reconnaissance
Ptiliogonatidae– Silky Flycatchers					
Phainopepla *Phainopepla nitens*		Resident	7		
Parulidae – Wood Warblers					
Orange-crowned warbler *Oreothlypis celata*		Resident	1	1	X
Common yellowthroat *Geothlypis trichas*		Resident	1	2	
Yellow warbler *Setophaga petechia*	SSC	Migrant (summer)		2	X
Yellow-rumped warbler *Setophaga coronate*		Resident	23	15	X
Townsend's warbler *Setophaga townsendi*		Migrant (winter)	1		
Wilson's warbler *Cardellina pusilla*		Resident†	1		
Emberizidae – Buntings and Sparrows					
Spotted towhee *Pipilo maculatus*		Resident	2	1	
California towhee *Melozone crissalis*		Resident	18	12	X
Song sparrow *Melospiza melodia*		Resident	18	10	
White-crowned sparrow *Zonotrichia leucophrys*		Migrant (winter)	1		
Cardinalidae – Cardinals, Grosbeaks, and Allies					
Western tanager *Piranga ludoviciana*		Resident	4		
Black-headed grosbeak *Pheucticus melanocephalus*		Migrant (summer)	3		
Icteridae – Blackbirds					
Brewer's blackbird *Euphagus cyanocephalus*		Resident	6		
Brown-headed cowbird *Molothrus ater*		Resident	1		
Hooded oriole *Icterus cucullatus*		Migrant (summer)	10	2	
Fringillidae – Finches					
House finch *Carpodacus mexicanus*		Resident	247	139	X
Lesser goldfinch *Spinus psaltria*		Resident	4	30	X
American goldfinch *Spinus tristis*		Resident	3	10	X
Passeridae – Old World Sparrows					
House sparrow *Passer domesticus*		Resident*	13		
Estrildidae – Waxbills					
Nutmeg manikin *Lonchura punctulata*		Resident*			X

[a] C = federal candidate species
CSA = California Special Animal. Those species included on the CDFW Special Animals list (2011) due to identification as sensitive by other governmental agencies and/or non-governmental conservation organizations besides USFWS and CDFW.
FDEL = federal delisted species
FE = federally listed as endangered

ATTACHMENT B
POINT COUNT PHOTOGRAPHS

POINT COUNT LOCATION # 1
Looking East: (March 26, 2013)

POINT COUNT LOCATION # 1
Looking North: (March 26, 2013)

ATTACHMENT B
Point Count Photographs

POINT COUNT LOCATION # 1
Looking South: (March 26, 2013)

POINT COUNT LOCATION # 1
Looking West: (March 26, 2013)

POINT COUNT LOCATION # 2
Looking East: (March 26, 2013)

POINT COUNT LOCATION # 2
Looking North: (March 26, 2013)

ATTACHMENT B
Point Count Photographs

POINT COUNT LOCATION # 2
Looking South: (March 26, 2013)

POINT COUNT LOCATION # 2
Looking West: (March 26, 2013)

POINT COUNT LOCATION # 3
Looking East: (March 26, 2013)

POINT COUNT LOCATION # 3
Looking North: (March 26, 2013)

POINT COUNT LOCATION # 3
Looking South: (March 26, 2013)

POINT COUNT LOCATION # 3
Looking West: (March 26, 2013)

POINT COUNT LOCATION # 4
Looking East: (March 27, 2013)

POINT COUNT LOCATION # 4
Looking North: (March 27, 2013)

POINT COUNT LOCATION # 4
Looking South: (March 27, 2013)

POINT COUNT LOCATION # 4
Looking West: (March 27, 2013)

POINT COUNT LOCATION # 5
Looking East: (March 26, 2013)

POINT COUNT LOCATION # 5
Looking North: (March 26, 2013)

ATTACHMENT B
Point Count Photographs

POINT COUNT LOCATION # 5
Looking South: (March 26, 2013)

POINT COUNT LOCATION # 5
Looking West: (March 26, 2013)

POINT COUNT LOCATION # 6
Looking East: (March 27, 2013)

POINT COUNT LOCATION # 6
Looking North: (March 27, 2013)

ATTACHMENT B
Point Count Photographs

POINT COUNT LOCATION # 6
Looking South: (March 27, 2013)

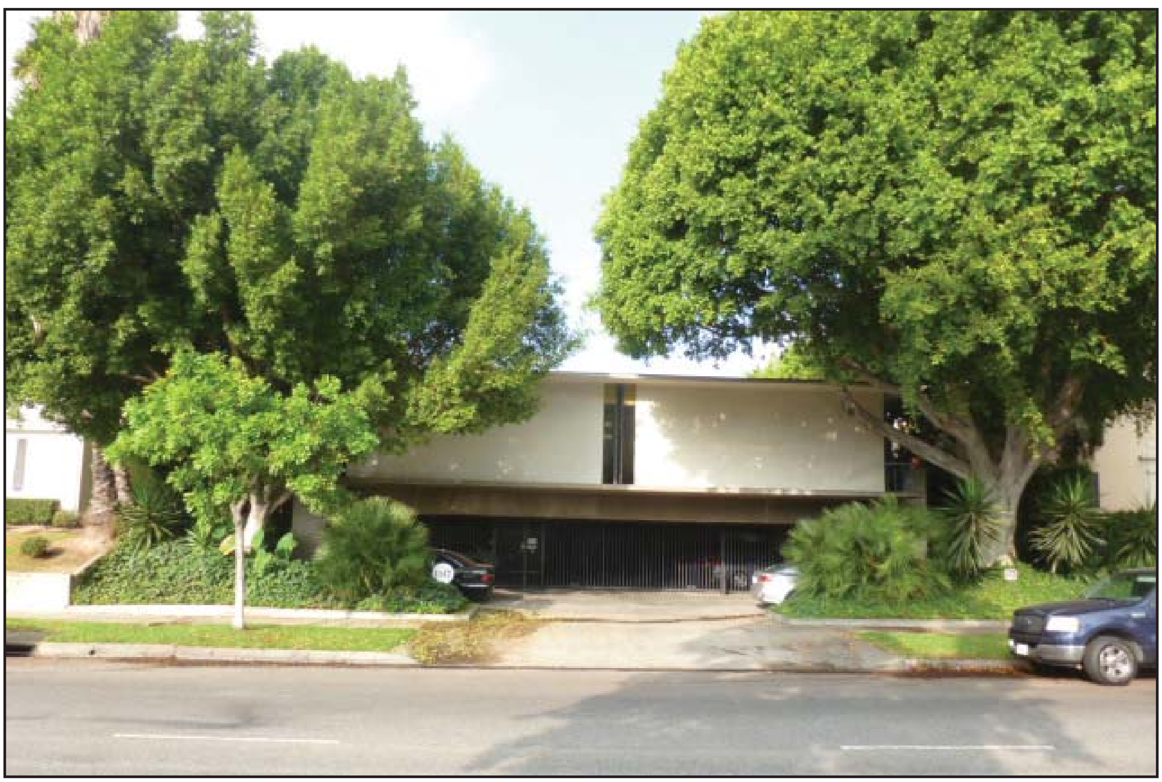
POINT COUNT LOCATION # 6
Looking West: (March 27, 2013)

ATTACHMENT B
Point Count Photographs

POINT COUNT LOCATION # 7
Looking East: (August 1, 2013)

POINT COUNT LOCATION # 7
Looking North: (August 1, 2013)

POINT COUNT LOCATION # 7
Looking South: (August 1, 2013)



POINT COUNT LOCATION # 7
Looking West: (August 1, 2013)

POINT COUNT LOCATION # 8
Looking East: (March 27, 2013)

POINT COUNT LOCATION # 8
Looking North: (March 27, 2013)

POINT COUNT LOCATION # 8
Looking South: (March 27, 2013)

POINT COUNT LOCATION # 8
Looking West: (March 27, 2013)

POINT COUNT LOCATION # 9
Looking East: (March 28, 2013)

POINT COUNT LOCATION # 9
Looking North: (March 28, 2013)

POINT COUNT LOCATION # 9
Looking South: (March 28, 2013)

POINT COUNT LOCATION # 9
Looking West: (March 28, 2013)

POINT COUNT LOCATION # 10
Looking East: (March 27, 2013)

POINT COUNT LOCATION # 10
Looking North: (March 27, 2013)

ATTACHMENT B
Point Count Photographs

POINT COUNT LOCATION # 10
Looking South: (March 27, 2013)

POINT COUNT LOCATION # 10
Looking West: (March 27, 2013)

POINT COUNT LOCATION # 11
Looking East: (March 27, 2013)

POINT COUNT LOCATION # 11
Looking North: (March 27, 2013)

POINT COUNT LOCATION # 11
Looking South: (March 27, 2013)

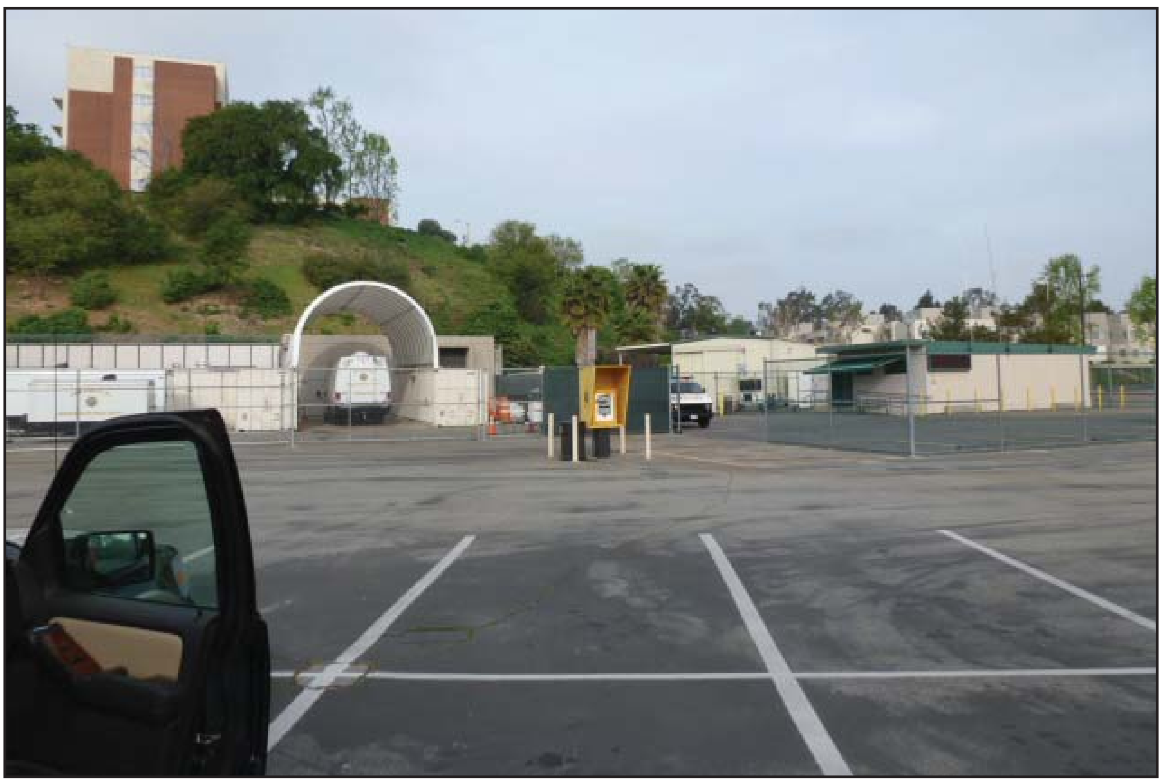
POINT COUNT LOCATION # 11
Looking West: (March 27, 2013)

ATTACHMENT B
Point Count Photographs

POINT COUNT LOCATION # 12
Looking East: (March 28, 2013)

POINT COUNT LOCATION # 12
Looking North: (March 28, 2013)

POINT COUNT LOCATION # 12
Looking South: (March 28, 2013)



POINT COUNT LOCATION # 12
Looking West: (March 28, 2013)

POINT COUNT LOCATION # 13
Looking East: (March 28, 2013)

POINT COUNT LOCATION # 13
Looking North: (March 28, 2013)

POINT COUNT LOCATION # 13
Looking South: (March 28, 2013)

POINT COUNT LOCATION # 13
Looking West: (March 28, 2013)

ATTACHMENT B
Point Count Photographs

POINT COUNT LOCATION # 14
Looking East: (March 29, 2013)

POINT COUNT LOCATION # 14
Looking North: (March 29, 2013)

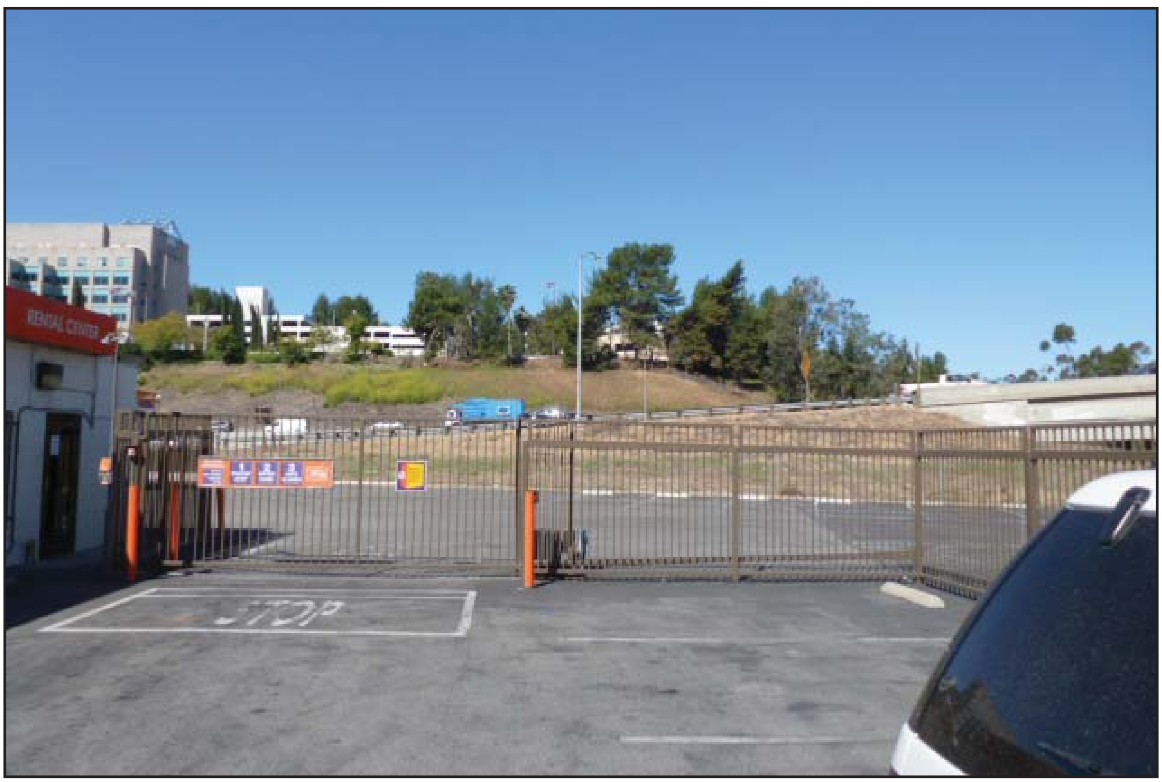
POINT COUNT LOCATION # 14
Looking South: (March 29, 2013)

POINT COUNT LOCATION # 14
Looking West: (March 29, 2013)

POINT COUNT LOCATION # 15
Looking East: (April 9, 2013)

POINT COUNT LOCATION # 15
Looking North: (April 9, 2013)

POINT COUNT LOCATION # 15
Looking South: (April 9, 2013)

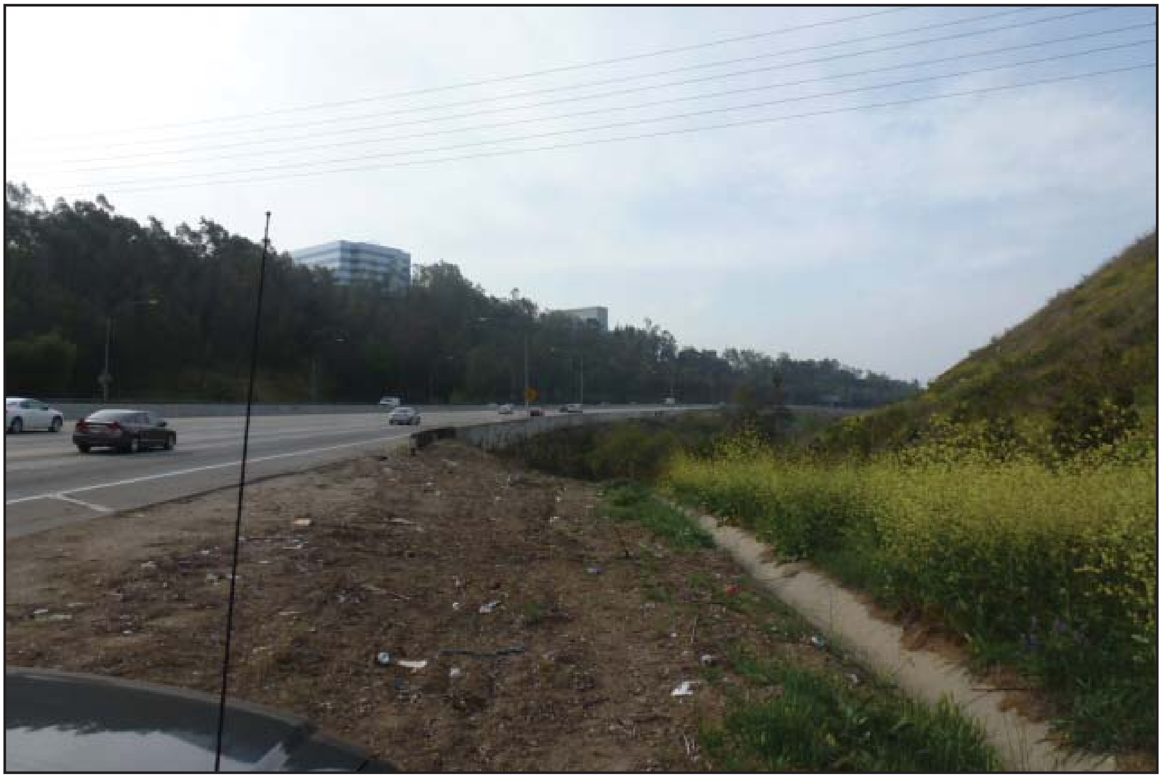


POINT COUNT LOCATION # 15
Looking West: (April 9, 2013)

ATTACHMENT B
Point Count Photographs

POINT COUNT LOCATION # 16
Looking East: (March 28, 2013)

POINT COUNT LOCATION # 16
Looking North: (March 28, 2013)



POINT COUNT LOCATION # 16
Looking South: (March 28, 2013)

POINT COUNT LOCATION # 16
Looking Wes: (March 28, 2013)t

ATTACHMENT B
Point Count Photographs

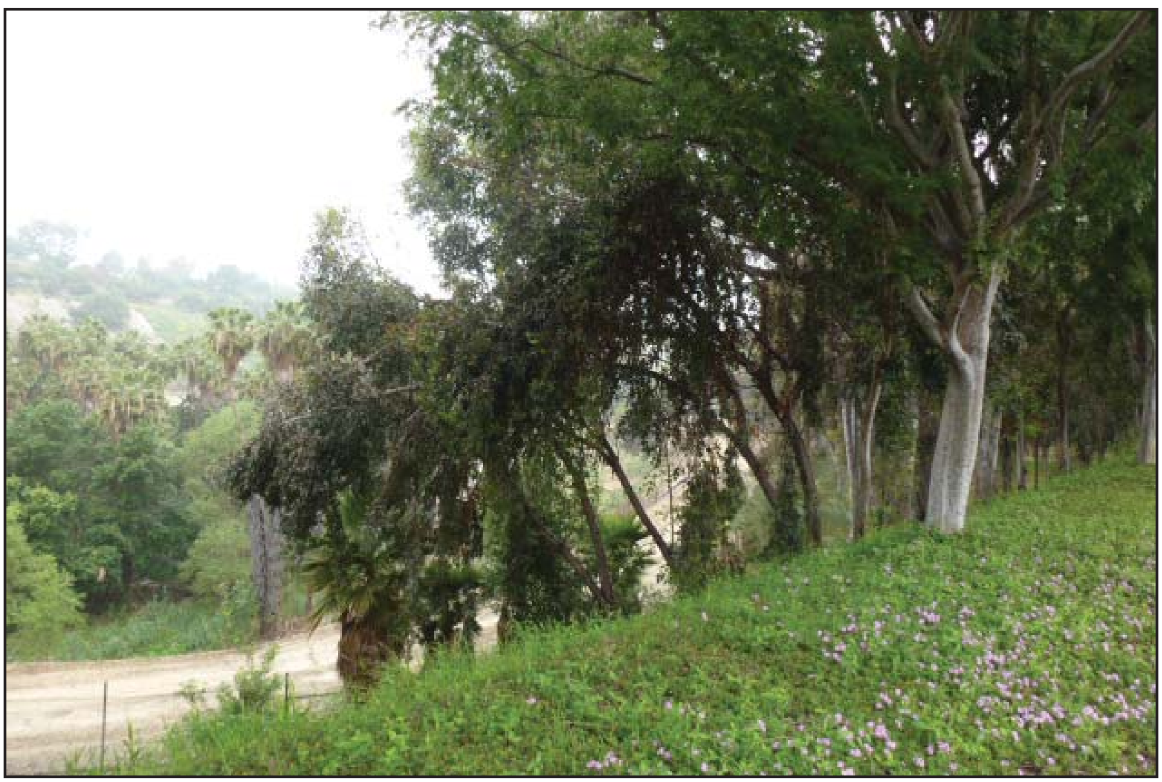
POINT COUNT LOCATION # 17
Looking East: (March 29, 2013)

POINT COUNT LOCATION # 17
Looking North: (March 29, 2013)

POINT COUNT LOCATION # 17
Looking South: (March 29, 2013)

POINT COUNT LOCATION # 17
Looking West: (March 29, 2013)

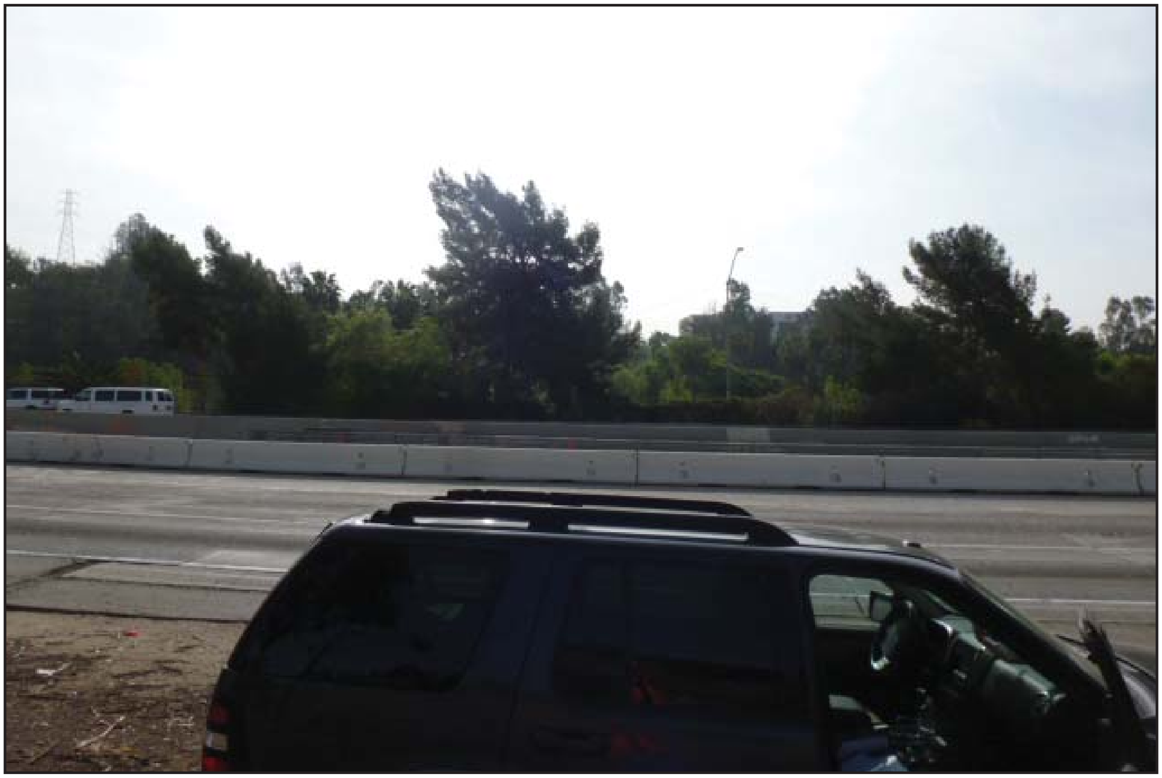
POINT COUNT LOCATION # 18
Looking East: (March 29, 2013)



POINT COUNT LOCATION # 18
Looking North: (March 29, 2013)

POINT COUNT LOCATION # 18
Looking South: (March 29, 2013)

POINT COUNT LOCATION # 18
Looking West: (March 29, 2013)



POINT COUNT LOCATION # 19
Looking East: (March 28, 2013)

POINT COUNT LOCATION # 19
Looking North: (March 28, 2013)

POINT COUNT LOCATION # 19
Looking South: (March 28, 2013)

POINT COUNT LOCATION # 19
Looking West: (March 28, 2013)

POINT COUNT LOCATION # 20
Looking East: (March 28, 2013)

POINT COUNT LOCATION # 20
Looking North: (March 28, 2013)

POINT COUNT LOCATION # 20
Looking South: (March 28, 2013)

POINT COUNT LOCATION # 20
Looking Wes: (March 28, 2013)t

ATTACHMENT B
Point Count Photographs

POINT COUNT LOCATION # 21
Looking East: (March 29, 2013)

POINT COUNT LOCATION # 21
Looking North: (March 29, 2013)

ATTACHMENT B
Point Count Photographs

POINT COUNT LOCATION # 21
Looking South: (March 29, 2013)

POINT COUNT LOCATION # 21
Looking West: (March 29, 2013)

ATTACHMENT C
TRANSECT PHOTOGRAPHS

TRANSECT 1
Looking East: (July 3, 2013)

TRANSECT 1
Looking Northwest: (March 29, 2013)

TRANSECT 1
Looking South: (July 3, 2013)

ATTACHMENT C
Transect Photographs

TRANSECT 2
Looking East Towards 710 Freeway: (March 29, 2013)

TRANSECT 2
Looking North Towards 710 Freeway: (March 29, 2013)

TRANSECT 2
Looking South: (March 29, 2013)

ATTACHMENT C
Transect Photographs

TRANSECT 3
Looking East: (June 20, 2013)

TRANSECT 3
Looking North Along 710 Freeway: (March 29, 2013)

TRANSECT 3
Looking South Along 710 Freeway: (March 29, 2013)

TRANSECT 4
Looking East: (April 9, 2013)

TRANSECT 4
Looking South: (October 2, 2013)

TRANSECT 4
Looking West: (October 2, 2013)

ATTACHMENT D
RIPARIAN HABITAT ASSESSMENT PHOTOGRAPHS

RIPARIAN AREA 1
Looking East: (August 26, 2013)

RIPARIAN AREA 1
Looking North: (March 29, 2013)

RIPARIAN AREA 1
Looking South: (March 29, 2013)

ATTACHMENT D
Riparian Habitat Assessment Photographs

RIPARIAN AREA 1
Looking West: (March 29, 2013)

RIPARIAN AREA 1
Standing Water: (August 26, 2013)

RIPARIAN AREA 1
Standing Water: (August 26, 2013)

ATTACHMENT D
Riparian Habitat Assessment Photographs

RIPARIAN AREA 2
Arroyo Seco Bridge Looking North: (September 25, 2013)

RIPARIAN AREA 2
Arroyo Seco Bridge Looking North: (August 30, 2013)

RIPARIAN AREA 2
Arroyo Seco Bridge Looking North: (September 25, 2013)

RIPARIAN AREA 2
Arroyo Seco Bridge Looking South: (August 30, 2013)

RIPARIAN AREA 2
Arroyo Seco Bridge Looking South: (September 25, 2013)

RIPARIAN AREA 2
Under Arroyo Seco Bridge: (September 25, 2013)

ATTACHMENT E
BURROWING OWL HABITAT ASSESSMENT PHOTOGRAPHS

AREA 1
Looking East Towards 710 Freeway: (June 21, 2013)

AREA 1
Looking East Towards 710 Freeway: (June 21, 2013)

AREA 1
Looking North Towards 710 Freeway: (June 21, 2013)

ATTACHMENT E
Burrowing Owl Habitat Assessment Photographs

AREA 1
Looking South Towards 710 Freeway: (June 21, 2013)

AREA 1
Looking South Towards 710 Freeway: (June 21, 2013)

AREA 1
Looking West Away From 710 Freeway: (June 21, 2013)

AREA 2
Laguna Channel Looking North: (August 12, 2013)

AREA 2
Laguna Channel Looking North: (August 12, 2013)

AREA 2
Laguna Channel Looking Eas: (August 12, 2013)t

ATTACHMENT E
Burrowing Owl Habitat Assessment Photographs

AREA 2
Laguna Channel Looking North: (August 12, 2013)

AREA 2
Laguna Channel Looking West: (August 12, 2013)

AREA 2
Laguna Channel Looking West: (August 12, 2013)

AREA 3
Looking East: (October 1, 2013)

AREA 3
Looking North: (October 1, 2013)

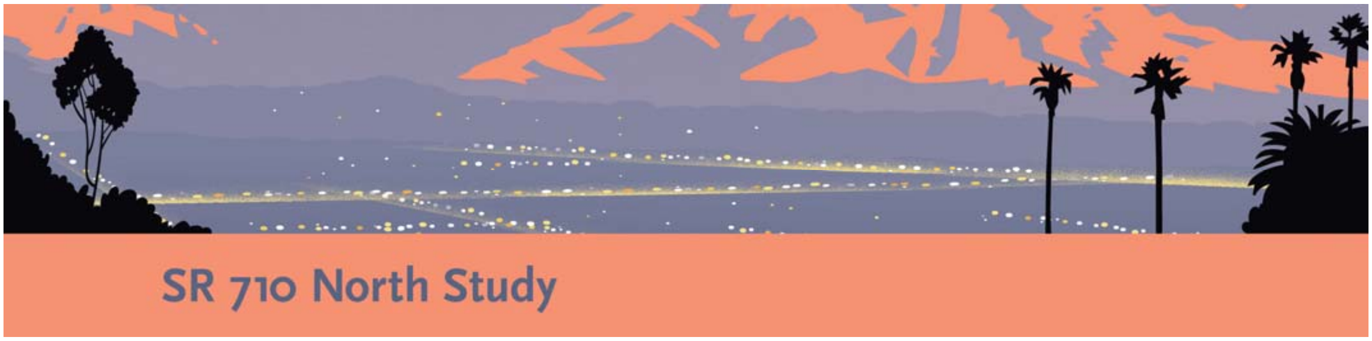
AREA 3
Looking South: (October 1, 2013)

AREA 3
Looking West: (July 31, 2013)

AREA 3
Looking West: (July 31, 2013)

AREA 3
Looking Wes: (October 2, 2013)

Appendix G Bat Surveys



TECHNICAL MEMORANDUM

Focused Bat Surveys for the State Route 710 North Study

PREPARED FOR: Ms. Marie Campbell and Dr. Pauline Roberts

COPY TO:

PREPARED BY: Ms. Amariah Lebsock, Mr. David Lee, and Ms. Lauren Dorough

DATE: April 2014

PROJECT NUMBER: 428908

Executive Summary

This Memorandum for the Record (MFR) documents the focused bat surveys conducted in support of the State Route (SR) 710 North Study (Proposed Project) in Los Angeles County, California. Daytime habitat assessments, including roost surveys, were conducted on August 28 and September 30, 2013; nighttime passive acoustic surveys were conducted September 4–6, 2013; and visual bat use and active acoustic surveys were conducted September 4 and 10, 2013.

Daytime surveys to assess habitat by visually searching for potential bat roosts were completed at the 14 bridges that may be impacted (widened or demolished) as part of the Proposed Project. No bats, bat signs, or potential roosting sites were found at any of the 14 bridges during daytime surveys. Five of the bridges were determined to have the potential to support bat roosts. No bats, bat sign, or potential roosting sites were directly observed at any bridges. Due to the potential presence of roost sites, focused nighttime surveys were conducted at those five designated bridges. In addition, two potential foraging and roosting sites in close proximity to the five designated bridges were actively monitored at night. These two additional survey locations were used to help determine if there are more optimal foraging and roosting areas than the bridges in the vicinity.

Anabat SD2 detectors were used to record bat calls during nighttime acoustic surveys in order to determine the relative level of bat call activity and identify species that may use the area for roosting or foraging. Bat call sequences were recorded at all five bridges. Two nights of passive data, collected using three detectors, resulted in a total of 4,680 detector-minutes (78 detector-hours) of passive data, which were subsequently analyzed to identify bat species by call type. Of the 329 recordings made, 19 contained bat call sequences, for a detection rate of 3.17 bat calls per detector-night (19 bat call sequences ÷ 6 detector-nights). Two species were positively identified from the recordings: Mexican free-tailed bat (*Tadarida brasiliensis*) and western pipistrelle (*Pipistrellus hesperus*).

Numerous bats were detected foraging during active acoustic monitoring at the Monterey Park Golf Course, a potential foraging site located approximately 579 feet east of the four bridges that cross Ramona Blvd (N710-E&W10 Connector OC, Ramona Blvd UC [L], Ramona Blvd UC [R], and Ramona Street UC [E10-S710]: Bridge IDs 1-4). Numerous bats were also actively and visually detected foraging at the Del Mar Pump Station, located 230 feet south of the Del Mar Blvd OC Bridge (Bridge ID 5). No bats, bat signs, or bat roosts were visually observed at any of the 14 bridges; however, nighttime survey data indicated that bats are using areas in proximity to these bridges

for foraging purposes.

Introduction

A large percentage of bridges are used by bats. Many species rely on these structures for roosting, and therefore, bats should always be considered in the environmental assessment process for all work proposed on or near bridges, with appropriate bat focused surveys conducted.[1,2] This MFR documents the methods and results of focused bat surveys conducted in support of the Proposed Project. Focused bat surveys were conducted to evaluate habitat (roosts) and use at 14 bridges that may be widened or demolished during construction of the Proposed Project (Figure 1.1 through 1.3, *Fourteen Bridges Proposed for Construction*). The general areas where surveys were conducted are defined as follows:

- Six bridges (Bridge IDs 1–4 and 6–7) and foraging habitat near the junction of I-10 and SR 710 in Monterey Park
- Six bridges (Bridge IDs 5 and 9–13) and foraging habitat near the junction of I-210 and SR 134 in Pasadena
- Hellman Avenue Bridge (Bridge ID 8) in Los Angeles
- Garfield Avenue Bridge (Bridge ID 14) in Alhambra

Because bridges are frequently used by bats as roosting sites, and indeed many species depend on bridge structures, focused surveys at bridges that may be structurally altered is important for the evaluation of environmental impacts pursuant to the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA). Only one bat species listed pursuant to the federal Endangered Species Act (ESA) or California ESA occurs in California.[3] The federally endangered lesser long-nosed bat (*Leptonycteris yerbabuenae*) can occur rarely as a summer migrant in the southwestern U.S., most likely in the Sonoran Desert. In addition, one species was recently listed as a state candidate threatened species, the Townsend's big-eared bat (*Corynorhinus townsendii*). There are several species that are designated as Sensitive by the Bureau of Land Management (BLM) and/or the U.S. Forest Service, and also a number of species that are considered Species of Special Concern by the California Department of Fish and Wildlife (CDFW). CEQA affords protections to bats through the requirement to avoid significant effects on the environment.

Sapphos Environmental, Inc. biologists (Mr. David Lee, Ms. Amariah Lebsock, and Ms. Lauren Dorough; see Attachment A, *Resumes of Bat Biologists*) conducted a literature review, database search, daytime roost search, and nighttime acoustic surveys to locate potential bat roosts, identify potential bat species, and assess relative bat activity levels. Nighttime acoustic surveys take advantage of bat echolocation, a specialized adaptation common in bats in North America. All bats in the suborder Microchiroptera use echolocation to navigate, locate prey, and socially interact. Echolocation is achieved by emitting ultrasonic sound waves through the nose and mouth, and then interpreting the reflected sound waves to locate objects in the surrounding environment. The echolocation calls emitted by bats can be recorded by acoustic detectors and subsequently analyzed to determine relative activity levels and identify species.

Anabat detectors record ultrasonic sounds for the entire duration in which the sound is being emitted. Anabat detectors are useful for identifying relative bat activity levels and are able to measure the characteristic frequency, bandwidth, slope, duration, and time between calls. Although many bat calls are difficult to assign reliably, the combination of the above characteristics serves to separate one species from another. When provided with a clean bat call sequence of sufficient length, and not just a feeding buzz, the Anabat system can provide the necessary data to identify certain bat species due to their specific call signatures.

[1] Erickson, G. A., E.D. Pierson, et al. 2002. *Bat and Bridges Technical Bulletin (Hitchhiker Guide to Bat Roosts)*. Sacramento, CA: California Department of Transportation.

[2] Hundt, L. 2012. *Bat Surveys: Good Practice Guidelines*. 2nd Edition. London: Bat Conservation Trust. ISBN-13: 9781872745985.

[3] Constantine, D.G. 1998. "Range Extensions of Ten Species of Bats in California." *Bull. Southern California Acad. Sci*., 97(2), 49–75.

Methods

For the Proposed Project, daytime roost searches and nighttime visual and acoustic surveys are sufficient for identifying bat activity within the area. The appropriate level of nighttime surveys was decided based on the results of the daytime habitat assessment. If diagnostic bat signs, such as guano, urine staining, and/or roosting bats are detected as a result of the daytime habitat assessment, active acoustic and visual nighttime bat emergence and re-entry surveys would be necessary at all bridges where bat sign was observed, in addition to passive acoustic monitoring. However, if no bat signs are detected during the daytime habitat assessment, passive acoustic monitoring at the bridges with the highest potential to support roosting bats coupled with active monitoring at nearby potential roosting or foraging grounds is an adequate way to assess if bats are present or absent from the area and, if present, which species there are and what the relative level of bat activity is.[4]

All survey personnel were experienced in the undertaking of field surveys for common and special-status bat species, as well as knowledgeable of the identification and ecology of both resident and migratory bat species. All survey personnel were familiar with both federal and state statutes related to listed and sensitive bat species and their collection, in addition to being experienced with analyzing the impacts of development on special-status bat species, their habitats, and communities. Surveyors had in-depth knowledge and familiarity with the bat species of the area, including rare, threatened, and endangered species. In addition, the field team was knowledgeable of the habitat requirements for resident and migratory bat species.

Pre-Survey Effort

Literature Review and Records Search. A literature review and a California Natural Diversity Database (CNDDB) record search within the 16 U.S. Geological Survey (USGS) 7.5-minute series quadrangles were conducted: El Monte, Los Angeles, Pasadena, Mount Wilson, Burbank, Chilao Flat, Condor Peak, Waterman Mountain, Azusa, Baldwin Park, La Habra, Hollywood, Inglewood, South Gate, Sunland, and Whittier, California. The literature review encompassed bat species habitat requirement research, best standard bat survey practices review, and species profiling review.

Daytime Habitat Assessment. On August 28, 2013, three qualified bat biologists (Mr. David Lee, Ms. Amariah Lebsock, and Ms. Lauren Dorough) conducted initial bat use and habitat assessments on 13 structures proposed for widening or demolition (Table 1, *Bridges Proposed for Construction*; Figure 1.1 and 1.2). Subsequent to the initial field surveys, additional project refinements and associated potential impact areas were identified. Specifically, the proposed widening of the Garfield Avenue Bridge spanning a fenced section of the Southern Pacific Railroad which is owned and operated by Union Pacific Railroad, located in the City of Alhambra, was identified for the Transportation System Management/Transportation Demand Management (TSM/TDM) Alternative. A daytime assessment of the Garfield Avenue Bridge was conducted on September 30, 2013, but biologists were unable to visually inspect the underside due to access limitations (Figure 1.3). (Note: For the purposes of this report, the 14 bridges proposed for construction are referenced by the assigned Bridge ID number [Table 1], and further bridge details can be referenced through Table 1 by Bridge ID.)

TABLE 1
Bridges Proposed For Construction

Bridge ID	Post Mile	Bridge Number	Bridge Name	City	Proposed Impacts	Nighttime Surveys Conducted
1	LA-021.42	53 1447G	N710-E&W10 Connector OC	Monterey Park	Widen*	X
2	LA-026.38	53 1459L	Ramona Blvd UC	Monterey Park	Widen	X
3	LA-026.38	53 1459R	Ramona Blvd UC	Monterey Park	Widen*	X
4	LA-021.33	53 1459G	Ramona Street UC (E10-S710)	Monterey Park	Widen*	X

4 Hundt, L. 2012. *Bat Surveys: Good Practice Guidelines*. 2nd Edition. London: Bat Conservation Trust. ISBN-13: 9781872745985.

TABLE 1
Bridges Proposed For Construction

Bridge ID	Post Mile	Bridge Number	Bridge Name	City	Proposed Impacts	Nighttime Surveys Conducted
5	LA-T032.11	53 2262	Del Mar Blvd OC	Pasadena	Remove	X
6	LA-021.35	53 1445L	Route 710/10 Separation	Monterey Park	Widen	
7	LA-021.35	53 1445R	Route 710/10 Separation	Monterey Park	Widen*	
8	LA-R027.11	53 1708	Hellman Avenue OC	Los Angeles	Remove	
9	LA-R032.37	53 2263	Green Street OC	Pasadena	Remove	
10	LA-R032.45	53 2264	Colorado Blvd OC	Pasadena	Remove*	
11	LA-R032.51	53 2537	Union Street OC	Pasadena	Remove*	
12	N/A	N/A	St. John pedestrian / parking lot entrance bridge just west of bridge 53-2265	Pasadena	Remove*	
13	LA-R013.23	53 2265	St. John Ave / E134-S710 OC	Pasadena	Remove*	

a Notes: Bridge ID is used to simplify the bridge naming references throughout this document. *=No longer proposed to be impacted, as of October 1, 2013.

Expansion joints, openings and gaps at abutments, crevices and openings along spans, and any other visible crevices were examined using 8x magnifying binoculars and a handheld floodlight. Photographs were taken at each of the 14 bridges from the ground below the bridge (where accessible) using a digital single-lens reflex camera with a mounted flash to document the structural elements that typically provide roosting locations, and then analyzed for evidence of bats or bat activity, such as urine stains and guano deposits. The underside of each bridge was inspected over its entire visible length, where possible. Bridge survey forms which were adapted from the California Department of Transportation were completed for each bridge (Appendix B, *Survey Forms*).[5]

Nighttime Acoustic and Visual Surveys and Analysis. As a result of the initial habitat assessment, five bridges (Bridge IDs 1-5) and two foraging sites were selected out of the 14 bridges for the focused nighttime survey effort. These five bridges were selected for passive nighttime surveys because of the suitable bat habitat at or near each bridge. All five of the bridges are in proximity to dependable water sources that likely provide high-quality feeding sites for bats in the vicinity. Bridge ID 5 is located approximately 230 feet from the Del Mar Pump Station wetland, and Bridge IDs 1-4 are located approximately 550 feet from the Monterey Park Golf Course water features. In addition, these five bridges also contain substantial nearby vegetation and nighttime lighting, which attract insects that are bat prey items. Given those specific factors, Sapphos Environmental, Inc. determined that the likelihood of detecting bats at these bridges and at the two foraging sites was high.

Passive Monitoring. Passive monitoring entails properly setting all bat detectors for the surveys, and leaving them in predetermined locations (survey locations were determined during the daytime habitat assessment) to collect data throughout the night. These acoustic data can be used to determine bat absence or presence, relative bat activity levels over time and during temperature changes, as well as species identification.

On September 4, 5, and 6, 2013, Sapphos Environmental, Inc. conducted nighttime acoustic surveys using three broadband frequency-dividing Anabat SD2 bat detectors (Titley Electronics, Ballina, NSW, Australia). All bat detectors were set with a data division ratio of 8. Ultrasonic events (bat calls) were stored as files on compact flash cards located within the detector for later analysis. The detectors were programmed to continuously record

[5] California Department of Transportation, and California State University Sacramento Foundation. 29 December 2004. *California Bat Mitigation Techniques, Solutions, and Effectiveness*. Prepared by: D. Johnston, G. Tatarian, and E. Pierson. Sacramento, CA.

bat echolocation calls throughout the two-night survey period beginning one hour prior to sunset, and ending one hour following sunrise (26:30 total hours).

Bat detectors were set up to collect bat call data at the five bridges proposed for construction that had the highest likelihood of housing bat activity (Bridge IDs 1-5). One bat detector was deployed on the southern bank in the center of the four bridges that run across Ramona Blvd in the city of Monterey Park (Bridge IDs 1–4) (Figure 2.1–2.2, *Nighttime Survey Locations*). A single bat detector was used to survey Bridge IDs 1–4 because the four bridges are tightly grouped in a row and a single bat detector could easily pick up bat call data across the complex. The second and third bat detectors were deployed at both ends of Bridge ID 5 in Pasadena (Figure 2.2).

In order to compare the level of bat activity and species diversity at the bridges proposed for construction, Sapphos Environmental, Inc. conducted passive monitoring at a nearby reference site: the Colorado Street Bridge in Pasadena. The Colorado Street Bridge is within the Proposed Project's Biological Study Area but is not being considered for construction; however, because it houses known bat populations, it was surveyed for comparative analysis purposes. Therefore, a fourth bat detector was deployed at the east end of the Colorado Street Bridge (Figure 2.2).

The level of bat activity on a given night is variable, is largely dependent on abiotic factors, and will typically decrease at low ambient temperatures and during periods of high wind speeds.[6,7,8,9,10] Therefore, Sapphos Environmental, Inc. biologists also used 2 Lascar EL-USB-2-LCD temperature data loggers to measure and record ambient temperatures continually throughout the passive monitoring effort.

Active Monitoring. Active monitoring entails proactively searching for bat activity using handheld detectors and spot lights during the typical time of bat emergence. The purpose of this type of survey method is to determine where bats are coming from and/or exiting to (i.e., to determine whether bats are utilizing a bridge for roosting), as well as to observe bat behavior and to better determine species diversity within a given study area.

On September 4, 2013, Sapphos Environmental, Inc. biologists conducted nighttime visual and active surveys at and in proximity to Bridge IDs 1–4 in Monterey Park (Figure 2.1). In addition to performing active monitoring using two handheld Anabat SD2 bat detectors, the biologists examined the surrounding areas, including a nearby golf course (Monterey Park Golf Course), for potential foraging and roosting sites. Sunset was at 7:15 p.m., and nighttime visual and active monitoring took place from 7:02 p.m. to 9:15 p.m.

On September 10, 2013, Sapphos Environmental, Inc. biologists conducted nighttime visual surveys at the wetland associated with the Del Mar Pump Station, directly south of Bridge ID 5 within the Proposed Project boundary (Figure 2.2). In addition, the surveyors conducted active nighttime surveys using two handheld Anabat SD2 bat detectors. Active monitoring surveys took place from 7:25 p.m. to 9:08 p.m.

Sapphos Environmental, Inc. biologists also measured the nightly average temperature, average wind speed, and maximum wind speed using a handheld anemometer (Kestrel pocket weather meter) during each active nighttime monitoring session in order to ensure that surveys were being conducted during conditions that were conducive to bat activity.

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[6] Erickson, J.L., and S.D. West. 2002. "The Influence of Regional Climate and Nightly Weather Conditions on Activity Patterns of Insectivorous Bats." *Acta Chiropterologica*, *4*: 17–24.

[7] Fiedler, J.K. 2004. "Assessment of Bat Mortality and Activity at Buffalo Mountain Windfarm, Eastern Tennessee." MS Thesis, University of Tennessee, Knoxville, TN.

[8] Arnett, E.B., W. Kent Brown, Wallace P. Erickson, Jenny K. Fiedler, Brenda L. Hamilton, Travis H. Henry, Aaftab Jain, Gregory D. Johnson, Jessica Kerns, Rolf R. Koford, Charles P. Nicholson, Timothy J. O'Connell, Martin D. Piorkowski, and Roger D. Tankersley Jr. 2008. "Patterns of Fatality of Bats at Wind Energy Facilities in North America." *Journal of Wildlife Management*, *72*: 61–78.

[9] Baerwald, E.F. 2008. "Variation in the Activity and Fatality of Migratory Bats at Wind Energy Facilities in Southern Alberta: Causes and Consequences." MS thesis, University of Calgary, Calgary, Alberta, Canada.

[10] Cryan, P.M., and A.C. Brown. 2007. "Migration of Bats Past a Remote Island Offers Clues toward the Problem of Bat Fatalities at Wind Turbines." *Biological Conservation*, *139*: 1–11.

Acoustic Analysis. Bat call files were analyzed using AnalookW, Version 3.8n.[11] The frequency display was set to a logarithmic scale from 5,000 to 100,000 Hertz (Hz). The time per tick, or magnification, was set to 25 milliseconds (F6) or 10 milliseconds (F7), depending on the setting for the library species used to match the bat call. Wind, rain, insect, and other miscellaneous noises were identified and removed from analysis.

Files with bat calls were viewed in the uncompressed mode to determine the presence of multiple bats, which can complicate species identification. Bat calls were also reviewed to determine if they were simple bat calls (clean bat calls that were free of noise and echoes which could obscure the underlying data) or if they were echoes, specular reflections, or harmonics. Echoes can occur whenever a recording is made near a surface, such as a rock face, or water; echoes can contribute noise to the data which can lead to misidentification and at times can make the data appear as though there are multiple bats, when in reality there is just one. Specular reflections are a subset of echoes and can occur whenever a recording is made near smooth surfaces, such as a calm body of water; these reflections duplicate the original bat call and make it appear as though there is a second bat in the recording when there is only one. Harmonics naturally occur with any vibrating object, such as a bat emitting an ultrasonic call, and multiple frequencies make up a harmonic series. Harmonic series can be used as a tool to identify bat species since some species emit their loudest calls in the fundamental frequency, while other species emit their loudest calls in the second harmonic. Bat calls were characterized based on the call type, characteristic frequency, bandwidth, slope, frequency distribution over time, regularity, duration, and time between calls.

The identification of call types must be completed before identification of species, since a single species' entire repertoire of calls can span across a range of characteristic frequencies and slopes, and the misidentification of a call type can lead to a misidentification of species. Basic call types include search calls, attack calls, feeding buzzes, and social calls. Calls can be made in environments with high acoustic clutter, such as forested areas, and in low-clutter environments with flat geography and no vegetation or structures. The amount of clutter affects the characteristics of bat calls and must be taken into account when placing acoustic detectors and interpreting recordings.

The characteristic frequency, bandwidth (difference between the highest frequency and lowest frequency recorded), and slope are the primary diagnostic tools used to identify species. The shape or recorded frequency distribution over time and the regularity (or irregularity) of the call are often useful in identifying genus, such as *Lasiurus*. The duration or length of the bat call is a secondary characteristic, but can still be useful in eliminating species from a list of potential candidates. The time between calls was also used as a tool to identify bat species. Bat calls are typically emitted as the bat exhales during the downward wing movement. In addition, larger bats with larger wings require a longer period between wing beats. Therefore, the time between wing beats can be used to determine the size of a bat and narrow down the list of potential species for identification. Furthermore, only call sequences with clear diagnostic bat calls were included for species identification. Identification was completed using the bat call library from the Anabat Systems Manual;[12] the bat call library distributed at the 2009 Anabat Techniques Workshop;[13] the bat call library generated at the 2009 workshop based on visual confirmation of species recorded during the workshop; the bat call library distributed at the 2011 AnalookW Advanced Analysis Course;[14] and the bat call library confirmed by visual identification during the September 4 and 10, 2013, field surveys conducted for the proposed SR 710 North Study.

For the purposes of species identification using acoustic data, species classified as present, include those which were identified from unique acoustic signatures in the calls recorded at the Proposed Project property. Species were classified as potentially present if identification to the species level could not be made based on the recorded call, but instead the frequency category matched a group of species with similar calls, which are called

[11] Corben, Chris. 16 January 2011. *AnalookW*. Version 3.8n. Brisbane, Australia: Titley Scientific.

[12] Corben, Chris, and Michael J. O'Farrell. 1999. *Anabat Systems Manual*. 2nd Edition. Las Vegas, NV: O'Farrell Biological Consulting.

[13] Corben, Chris, and Kim Livengood. April 2009. Anabat Techniques Workshop, Starr Ranch Sanctuary, Trabuco Canyon, Orange County, CA.

[14] Corben, Chris, Kim Livengood, and Cori Lausen. January 2011. AnalookW Advanced Analysis Course, California Department of Fish and Game, Sacramento, CA.

phonic groups (e.g., Q25, Q40). Noise files were defined as recordings which included ambient sounds produced by wind, automobiles, or insects, but also included recordings that did not contain sufficient data to categorize them as bat call sequences suitable for identification. Noise files were discarded from the overall analysis.

Results

Pre-Survey Effort

Literature Review and Records Search. As a result of the literature review and records search, one State Candidate Threatened species, Townsend's big-eared bat, was identified to have the potential to occur in the BSA. In total, 19 bat species were considered potentially present in the BSA (Table 2, *Bat Species Potentially Present*). Four of these species did not have any special status. The remaining 14 were special-status but not listed or candidates for listing pursuant to the California or Federal ESA. The statuses of these bats included California Species of Special Concern, BLM Sensitive, and CDFW Special Animals List (due to threat levels identified by the Western Bat Working Group).

The lesser long-nosed bat was considered absent from the BSA due to the lack of suitable foraging habitat. This species feeds exclusively on nectar and fruits of cactus and agave species. Lesser long-nosed bat is known to occur rarely in California, but the CNDDB does not contain any records.[15]

TABLE 2
Bat Species with the Potential to Be Present in the BSA

Species	Status	Roosting Patterns	Habitat Requirements	Detected at Reference Site
Pallid bat *Antrozous pallidus**	CSC, BLM, CSAL	1	Primarily inhabits desert regions, but also can be found in oak and pine forests, open farmlands, and urban environments. Roost sites vary between rock crevices and outcrops, buildings, bridges, mines, and caves.	No
Big brown bat *Eptesicus fuscus*	None	1	Has been recorded in virtually every North American vegetation type. It is common to abundant in most of its range, the big brown bat is uncommon in hot desert habitats, and is absent only from the highest alpine meadows and talus slopes.	Yes
Fringed myotis *Myotis thysanodes**	BLM, CSAL	2	Occupies desert-scrub to fir-pine habitats, and prefers oak and pinyon woodlands. Most commonly roost in caves, mines, and buildings.	No
Hoary bat *Lasiurus cinereus**	CSAL	4	**OCCUPIES DIVERSE FOREST HABITATS WITH A MIXTURE OF FOREST AND SMALL OPEN AREAS THAT PROVIDE EDGES.**	**POTENTIALLY PRESENT**
California myotis *Myotis californicus*	None	2	Primarily occurs in desert scrub habitats, oak and ponderosa pine woodlands. Commonly roosts in loose bark, crevices of old snags, tree crevices, small maternity colonies in cliff crevices, buildings, and bridges	Potentially present
Long-legged myotis *Myotis volans**	CSAL	2	Occupies wooded habitats from pinyon- juniper to coniferous forests, usually at elevations of 4,000 to 9,000 feet. Roosts in tree cavities or under loose bark, rock crevices, cliffs, and buildings	Potentially present
Western pipistrelle *Parastrellus hesperus*	None	3	Inhabits deserts, woodlands, and shrublands. Roosts in boulders, cracks, and crevices of rock faces.	Yes
Yuma myotis *Myotis yumanensis*	BLM, CSAL	1	Inhabits juniper and riparian woodlands to desert regions in proximity to open water. Roost in caves, attics, buildings, mines, and bridges.	Potentially present

[15] Constantine, D.G. 1998. "Range Extensions of Ten Species of Bats in California." *Bull. Southern California Acad. Sci.*, 97(2), 49–75.

TABLE 2
Bat Species with the Potential to Be Present in the BSA

Species	Status	Roosting Patterns	Habitat Requirements	Detected at Reference Site
Big free-tailed bat *Nyctinomops macrotis**	CSC, CSAL	4	Occupies dry areas, pine forests and urban areas.	No
Silver-haired bat *Lasionycteris noctivagans**	CSAL	3	Prefer temperate, northern hardwoods in proximity to ponds or streams. Roost in hollow snags and bird nests, and sometimes buildings.	No
Western mastiff bat *Eumops perotis**	CSC, BLM, CSAL	4	Inhabits dry desert washes, flood plains, chaparral, oak woodland, open ponderosa pine forest, grassland, montane meadows, and agricultural areas. Roosts in cliffs, rock slabs, bounders, and buildings.	No
Pocketed free-tailed bat *Nyctinomops femorosaccus**	CSC, CSAL	4	Inhabits desert shrubs and pine-oak forests. Roosts in crevices of rugged cliffs, high rocky outcrops and slope, and sometimes buildings and under roof tiles.	Potentially present
Mexican free-tailed bat *Tadarida brasiliensis*	None	1	Inhabits desert communities, pinyon-juniper woodland and pine-oak forests at elevations from sea level to 9,000 feet or more. Roosts in limestone caves, abandoned mines, under bridges, and in buildings, and hollow trees.	Yes
Western yellow bat *Lasiurus xanthinus**	CSC, CSAL	4	Inhabits extremely arid areas to dry areas, including savannas, secluded woodlands, and croplands. Roosts primarily in trees.	No
Western red bat *Lasiurus blossevellii*	CSC, CSAL	4	Inhabits forest and woodland communities from sea level up through mixed conifer forests. Roosts primarily in trees. Forages in habitats including grasslands, shrublands, open woodlands and forests, and croplands.	Yes
Western small-footed myotis *Myotis ciliolabrum*	BLM, CSAL	2	Roosts primarily in caves and trees, and is extremely sensitive to the disturbance of roosting sites and will abandon the maternity roost if disturbed.	Potentially present
Little brown bat *Myotis lucifugus*	CSAL	2	Primarily occupies relatively arid woodland habitats and brushy uplands near water at elevations from sea level to 8,900 feet; roosts primarily in caves, buildings, mines, and crevices.	Potentially present
Long-eared myotis *Myotis evotis*	BLM, CSAL	2	Conifer forest, hardwood forest, mixed forest, grassland/herbaceous, shrubland/chaparral, conifer woodland, hardwood woodland, mixed woodland. Roosts in buildings, caves, hollow trees, and mines.	No
Townsend's big-eared bat *Corynorhinus townsendii*	SCT, CSC, BLM, CSAL	2	Cliff, desert,conifer forest, hardwood forest, mixed forest, grassland/herbaceous, old field, savanna, shrubland/chaparral, conifer woodland, hardwood woodland, mixed woodland. Roosts in caves and mine tunnels.	No

KEY: * = CNDDB record in the search area.

Potentially present = Call data could not be identified to species level due to insufficient data, but was narrowed down to species frequency category (phonic group), and was considered potentially present based on this analysis.

Conservation Status

BLM = Bureau of Land Management Sensitive Species. CSA = California Special Animal. CSC = California Species of Special Concern. CSAL = CDFW Special Animals List. SCT = State Candidate Threatened.

Bridge Roosting Patterns

1 = Uses bridges frequently

TABLE 2
Bat Species with the Potential to Be Present in the BSA

Species	Status	Roosting Patterns	Habitat Requirements	Detected at Reference Site

2 = Uses bridges sometimes

3 = Uses bridges rarely

4 = Not known to use bridges

SOURCES:

Roosting Patterns adapted from: California Department of Transportation, and California State University Sacramento Foundation. 29 December 2004. *California Bat Mitigation Techniques, Solutions, and Effectiveness*. Prepared by: D. Johnston, G. Tatarian, and E. Pierson. Sacramento, CA.

Habitat Requirements: Bat Conservation International: http://batcon.org/index.php/all-about-bats/species-profiles.html. Avila-Flores, R., and M. B. Fenton. 2005. Use of spatial features by foraging insectivorous bats in a large urban landscape. *Journal of Mammalogy* 86: 1193-1204.

Barbour, R.W. and W.H. Davis. 1969. *Bats of America*. The University Press of Kentucky, Lexington, Kentucky.

Of the seven species of special concern with CNDDB records in the search area, the pallid bat was identified as the species most likely to be present and utilizing the bridges that may be impacted by the Proposed Project. The pallid bat is a locally common yearlong resident of Southern California and is extremely sensitive to the disturbance of roosting sites and will abandon the maternity roost if disturbed.[16] Recent extensive urban developments have greatly reduced foraging habitat for the pallid bat.[17] The other six species of special concern are not known to utilize bridges for roosting (with the exception of Townsend's big-eared bat, which is known to sometimes roost in bridges) and therefore have a low probability of utilizing the bridges that may be impacted for roosting.[18,19,20]

As a result of the literature review, it was determined that the Proposed Project property has the potential to support 12 (both special-status and non-special-status) bat species that are relatively common locally. Ten of these use bridges frequently or sometimes for roosting (Mexican free-tailed bat, Yuma myotis, big brown bat, pallid bat, California myotis, western small-footed myotis, little brown bat, fringed myotis, long-eared myotis, and long-legged myotis: Table 2). Silver-haired bats and western pipistrelles rarely use bridges for roosting, but their habitat requirements are extremely variable, and they are frequently found in vegetated areas within urban environments.[21,22,23] Therefore, these species were anticipated to be detected in the vicinity of the project area during nighttime surveys.

Daytime Habitat Assessment. As a result of the daytime habitat assessments and evaluation of photographs taken during the assessments, biologists determined that five of the 14 bridges (36 percent) (Bridge IDs 1–5) proposed for widening or demolition were determined to have the potential to support bat use and therefore

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[16] Krull, D. 1989. Activity patterns and the use of space in the pallid bat, Antrozous pallidus. Bat Research News 30: 70.

[17] Avila-Flores, R., and M. B. Fenton. 2005. Use of spatial features by foraging insectivorous bats in a large urban landscape. Journal of Mammalogy 86: 1193-1204.

[18] Keeley, B.W., and M.D. Tuttle. 1996. Texas bats and bridges project. Texas Department of Transportation, Austin, Texas, 16 pp.

[19] Barbour, R.W. and W.H. Davis. 1969. Bats of America. The University Press of Kentucky, Lexington, Kentucky.

[20] California Department of Transportation, and California State University Sacramento Foundation. 29 December 2004. *California Bat Mitigation Techniques, Solutions, and Effectiveness*. Prepared by: D. Johnston, G. Tatarian, and E. Pierson. Sacramento, CA.

[21] Avila-Flores, R., and M. B. Fenton. 2005. Use of spatial features by foraging insectivorous bats in a large urban landscape. Journal of Mammalogy 86: 1193-1204.

[22] California Department of Transportation, and California State University Sacramento Foundation. 29 December 2004. *California Bat Mitigation Techniques, Solutions, and Effectiveness*. Prepared by: D. Johnston, G. Tatarian, and E. Pierson. Sacramento, CA.

[23] Bat Conservation International: http://www.batcon.org/index.php/all-about-bats/species-profiles.html?task=detail&species=1937&country=43&state=all&family=all&start=40

warranted nighttime visual and acoustic surveys (Table 1; Attachment C, *Site Photographs*: Photos 1–14). Cracks and crevices of various lengths and widths were identified and observed on all 14 bridges, as well as drainage holes, all providing potential roosting areas. However, no definitive bat signs were observed, such as urine stains, guano, or actual roosts (Attachment C, Photos 15–18). In addition, daytime habitat assessments recorded visual observations of birds, primarily rock pigeons (*Columba livia*), occupying some of the bridge structures that potentially would have been used as bat roosts. Because bats typically prefer roosting in areas where disturbance factors are low, roosts in the same areas as nesting diurnal species, such as rock pigeons are uncommon. Prominent signs of bird activity, including bird droppings and nest materials, were also recorded (Attachment C, Photos 18–20). Visual assessment of the underside of Bridge ID 14 was not possible due to access constraint. Observations of the bridge from available above-bridge access points provided no evidence of bat use, however confirmation would require visual surveys of the underside at a future date.

The biologists identified two primary areas in the vicinity of the project impact zone and in proximity to five of the bridges proposed for construction that contained potentially suitable foraging habitat, including reliable surface waters and illumination that would attract insect prey, and confirmed the presence of abundant flying insects during nighttime surveys. The Del Mar Pump Station, an area within the project impact zone that is immediately adjacent to Bridge ID 5, was determined likely to provide suitable bat foraging habitat, and therefore was surveyed at night (Figure 2.2; Attachment C, Photo 21). The Monterey Park Golf Course, which is approximately 175 meters (580 feet) east of four bridges that are proposed for widening (Bridge IDs 1–4), was also determined to be likely to provide suitable foraging and roosting habitat, and therefore also required nighttime surveys (Attachment C, Photo 22). In addition, a daytime habitat assessment was conducted at the Colorado Street Bridge on September 4, 2013, which served as a reference site due to the known presences of bat species. The Colorado Street Bridge has suitable habitat beneath the bridge for foraging, as well as on the bridge structure itself for roosting (Attachment C, Photo 23).

Nighttime Acoustic and Visual Surveys and Analysis. Nighttime surveys indicated that the bridges within the Proposed Project area did not support roosting bat populations at the time of the surveys. However, two species (western pipistrelle and Mexican free-tailed bat) were both visually and acoustically confirmed foraging near Bridge IDs 1–5.

Passive Monitoring. On September 4, 5, and 6, 2013, Sapphos Environmental, Inc. bat biologists conducted passive acoustic surveys on the five bridges previously discussed to determine relative bat activity levels, species identification, and whether the structures support active bat roosts (Attachment D, *Field Notes*).

Of the total 329 files recorded, 310 were discarded as noise files. There were 19 recordings positively identified as containing bat sequences, of which 7 contained enough information to confirm species identification (Table 3, *Passive Monitoring–Confirmed Species in the Proposed Project Vicinity).*

TABLE 3
Passive Monitoring
Confirmed Species in the Proposed Project Vicinity

Species	Status	Population Status	No. of Calls	Bridge
Mexican free-tailed bat	No listing	Migratory	1	Bridge ID 5
Western pipistrelle	No listing	Resident	6	Bridge IDs 1-5

There were 12 recordings that were confirmed to belong to bats, however, due to insufficient data sequences, these recordings could not be confirmed to species. However, based on acoustic analysis they were narrowed down to phonic category, and it was determined that the 12 recordings represent at least two, but up to seven, different bat species (Table 4, *Potential Bat Species Recorded in the Project Vicinity Based on Species Frequency Categories*).

TABLE 4
Potential Bat Species Recorded In The Project Vicinity Based On Species Frequency Categories

Common Name	Genus and Species	Status	Population Status	Frequency Category
Pocketed free-tailed bat	(*Nyctinomops femorosaccus*)	CSC	Migratory	Q25
Hoary bat	*Lasiurus cinereus*	CSAL	Migratory	Q25
Mexican free-tailed bat	*Tadarida brasiliensis*	None	Migratory	Q25
Silver-haired bat	*Lasionycteris noctivagans*	CSAL	Migratory	Q25
Big brown bat	*Eptesicus fuscus*	None	Migratory	Q25
Western red bat	*Lasiurus blossevillii*	CSC	Resident	*
Western small-footed myotis	*Myotis ciliolabrum*	BLM	Resident	40k
Long-legged myotis	*Myotis volans*	CSAL	Resident	40k
Little brown bat	*Myotis lucifugus*	CSAL	Migratory	40k
Western pipistrelle (+)	*Parastrellus Hesperus*	None	Resident	45k
California myotis	*Myotis californicus*	None	Resident	50k myotis
Yuma myotis	*Myotis yumanensis*	BLM	Resident	50k myotis

[a] KEY:

BLM = Bureau of Land Management Sensitive Species

CSC = California Species of Special Concern

CSAL = CDFW Special Animals List

+ = Acoustically recorded and visually observed during surveys.

* = Could display calls similar to a 50k myotis in high clutter environments.

At the reference site, the Colorado Street Bridge, during the same two-night (September 4-6, 2013) passive survey period, the single bat detector (2 nights x 1 detector = 2 detector nights) recorded a total of 1,579 recordings. Bat call sequences were recorded in 477 of the files, resulting in a detection rate of 238.5 bat calls recorded per detector-night (477 bat call sequences ÷ 2 detector nights). This detection rate was substantially higher than the 3.17 calls per night observed at the five bridges proposed for construction, at which no roosting bats were observed.

The mean temperature at the underside of Bridge IDs 1-4 was 76.2° Fahrenheit (F) during the nights of the survey (Attachment B). The mean temperature at the underside of the Del Mar Bridge OC during the survey period was 73.3° F, both of which are well within the range of temperatures within which bats are active.

Relative Activity Patterns. As previously stated, there is a strong correlation between bat activity and weather conditions. During the 2-night survey period, bat activity was highest when the temperatures were between 73-79°F. The mean temperature across the survey effort was 78.1°F, which is well within the range of bat activity. Bat activity was low and relatively spread out across the nighttime survey period.

The phonic group with the highest number of recorded calls belonged to the Q25 category (58%), which potentially could be identified as any of the following species: pocketed free-tailed bat, hoary bat, Mexican free-tailed bat, silver-haired bat, and big brown bat. The next most common species was the western pipistrelle (32%), followed by the Mexican free-tailed bat (5%) and the 50kHz myotis phonic group (5%) which potentially could be identified as California myotis or Yuma myotis.

Species Categorization. Specific species identification is problematic with any type of acoustic detection because certain species have similar acoustic signatures. Furthermore, when multiple bats are calling in proximity to each other, they will often adjust the frequency of their calls to distinguish themselves from other bats, thereby altering their characteristic acoustic signature. Examples of ambiguous species include the California myotis and the yuma myotis, which share similar characteristic frequencies and slopes. A complete sequence of calls or a visual confirmation is required to identify these species with certainty. Therefore, these species are typically identified as 50kHz myotis (50kMyo), referencing the characteristic frequency of 50,000 Hz, and the genus that typically calls at this frequency. Other ambiguous species may be labeled as 40kHz myotis, Q25, and so forth. There were 12 species within two frequency categories as a result of the nighttime surveys, including the reference site (Table 4, *Potential bat Species Recorded in the Project Vicinity Based on Species Frequency Categories*). The bats are listed in order of their characteristic frequency, from low-frequency bats to high-frequency bats.

Active Monitoring

Monterey Park Golf Course. On September 4, 2013, 2 Anabat detectors were used to collect active data at potential foraging areas in proximity to Bridge IDs 1-4. No bat activity was recorded at the bridges, but the nearby Monterey Park Golf Course recorded high levels of bat activity. Only one species, Mexican free-tailed bat, was positively identified, and it was determined that there were multiple individuals foraging during the 40 minute period of recorded activity. There were a number of recordings that did not have sufficient data, and therefore could not be positively identified. The insufficient recordings were all bat calls within the Mexican free-tailed bat range of frequency (Q25), but were conservatively removed from analysis.

The temperature at the beginning of the survey was 85.4° F and was 80.8° F at the end. The mean wind speed (taken while the surveyors were on-site) was 0.6 miles per hour, and the maximum wind speed was 2 miles per hour. These conditions were typical for the area for the time of year and are conducive to bat activity.

Del Mar Pump Station. On September 10, 2013, two Anabat detectors were used to collect active data at the Del Mar Pump Station located approximately 70 meters (230 feet) south of Bridge ID 5. Three western pipistrelles were visually observed foraging and were acoustically recorded for approximately 20 minutes beginning at 7:42 p.m. This area provides suitable bat foraging habitat including a pool of standing water, and thriving vegetation, which in turn attracts insects, which then attract bats.

The temperature at the beginning of the survey was 67° F and was 65.2° F at the end. The mean wind speed (taken while the surveyors were on-site) was 0.6 miles per hour, and the maximum wind speed was 1.8 miles per hour. These conditions were typical for the area for the time of year and are conducive to bat activity.

Discussion

Based on the absence of observed roosts and/or bat use at the 14 bridges surveyed, it is considered unlikely that these bridges currently serve as bat roosting habitat. Although the bridge structures themselves did not indicate any signs of roosting (such as urine staining or guano), 19 bat calls were recorded at Bridge IDs 1-5. Of all the night-surveyed bridges, these were considered to have the best nearby foraging opportunities, as evidenced by the standing surface waters and bright lighting, both of which attract large of number of insects, which were also observed. These resources likely attract bats to forage near Bridge IDs 1-5, and explain the relatively high activity recorded.

Visual inspection of the underside of Bridge ID 14 was not possible due to access constraints. Observations of the bridge from available above-bridge access points provided no evidence of bat use; however surveys of the underside of this bridge would be required to verify that assessment.

The relative level of bat activity detected at Bridge IDs 1-5 was extremely low compared to the nearby reference site (Colorado Street Bridge), which due to the suitable habitat and bridge structure was assumed to house a resident roosting bat population. Bridges 1-5 contributed only 1.3 percent of the bat call activity at all of the night-surveyed bridges (including the reference site), therefore it is highly unlikely that Bridges 1-5 support roosting bats. Sapphos Environmental, Inc. believes that bats are not currently roosting at Bridge IDs 1-5 at this time, due to a lack of bat sign and the low volume of recorded bat calls. All call data obtained from those bridges were likely the vocalizations of foraging and socializing bats in the area.

Although bats were not detected utilizing any of the bridges for roosting, surveyors did visually observe and acoustically detect bats foraging during active surveys at the nearby Monterey Park Golf Course, which is approximately 579 feet west of Bridge IDs 1-4. Due to consistent nightly irrigation on the greens, coupled with the large and abundant night lighting that illuminates the driving range throughout typical bat emergence and active periods, bat activity was expected in this area. In addition, bats were actively (acoustically and visually) surveyed and detected at the Del Mar Pump Station, located approximately 230 feet south of Bridge ID 5. The Del Mar Pump Station provides a dependable water source year round, and it is likely that resident bats in the area rely on this source for nighttime foraging. As bat calls were recorded on all three passive monitoring detectors that were set at Bridge IDs 1-5, but the visual survey data suggested that the bridges did not have active roosts, it was considered likely that the bats were foraging near the bridges and may have been roosting nearby.

The bats that were observed at the Del Mar Pump Station may be roosting in the eucalyptus trees growing less than 75 feet from the Pump Station, or in parking garages or nearby buildings. The bats that were detected at the Monterey Park Golf Course are likely roosting in the grove of coniferous trees on the driving range. The trees and structures where resident bats are likely roosting near the five nighttime-surveyed bridges are not associated with high disturbance factors and therefore provide better roosting sites compared to those found at the Bridge IDs 1-5. Bat deterring factors relating to these bridges include constant traffic vibrations, noise, and vehicular winds.

Should there be any questions regarding the information contained in this MFR, please contact Mr. David Lee, Ms. Amariah Lebsock, or Ms. Lauren Dorough at (626) 683-3547.

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REPORT FIGURES

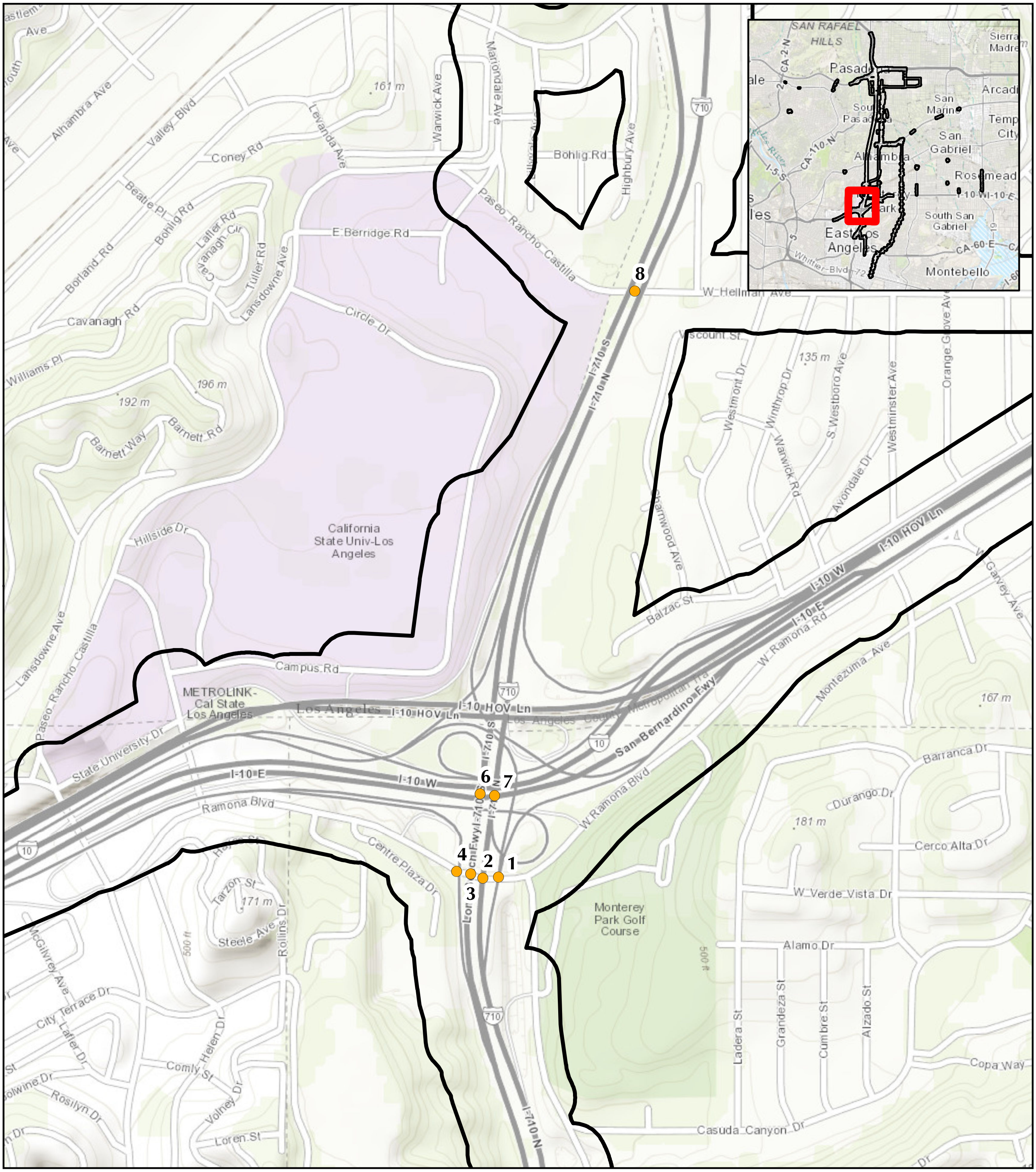

FIGURE 1.1

LEGEND

Fourteen Bridges Proposed for Construction

Biological Study Area

0 125 250 500 750 1,000
Feet

SR 710 North Study

Fourteen Bridges Proposed for Construction
(Southern Study Area)

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)
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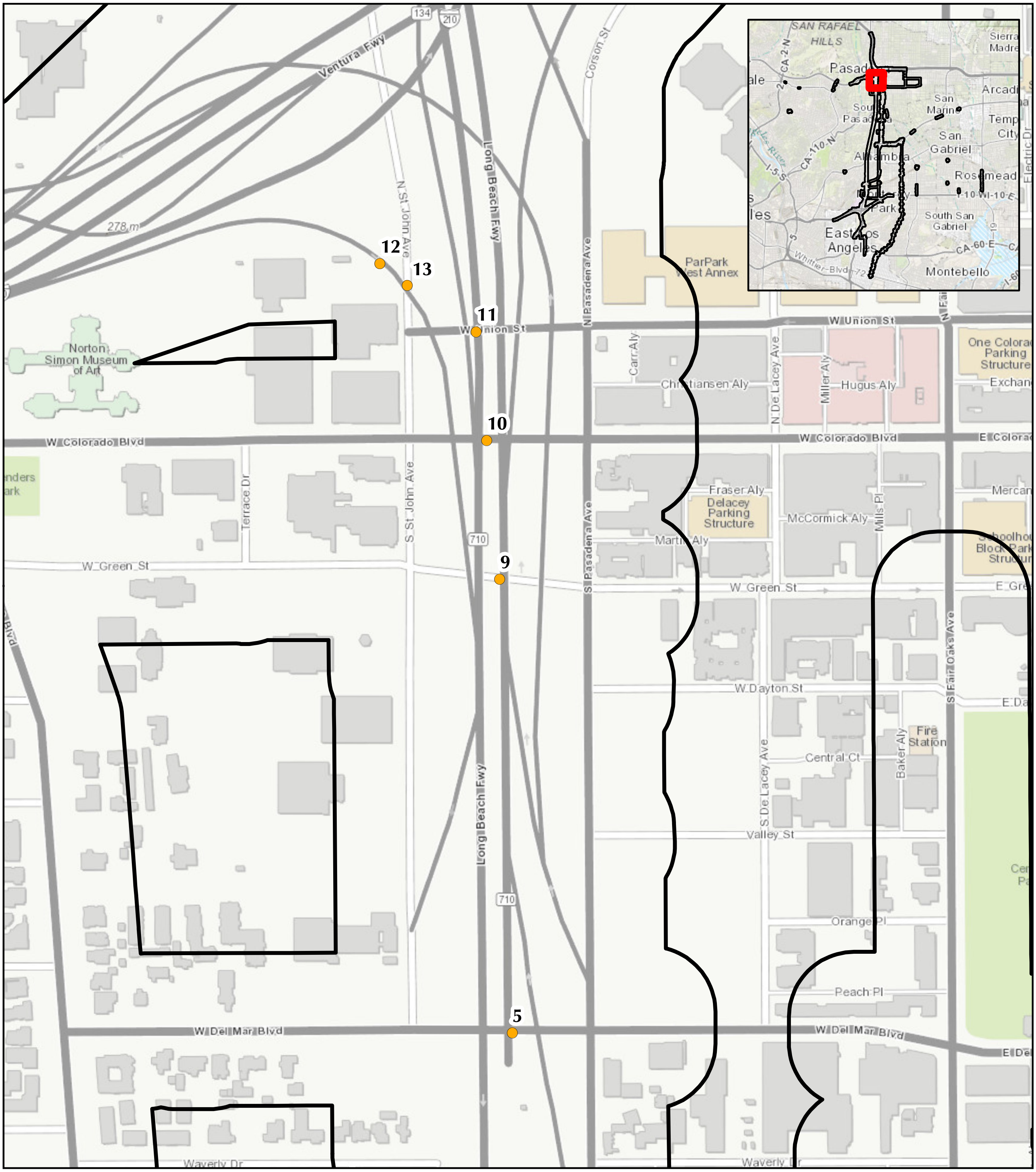

FIGURE 1.2

LEGEND

Fourteen Bridges Proposed for Construction

Biological Study Area

0 125 250 500
Feet

SR 710 North Study

Fourteen Bridges Proposed for Construction
(Northern Study Area)

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)
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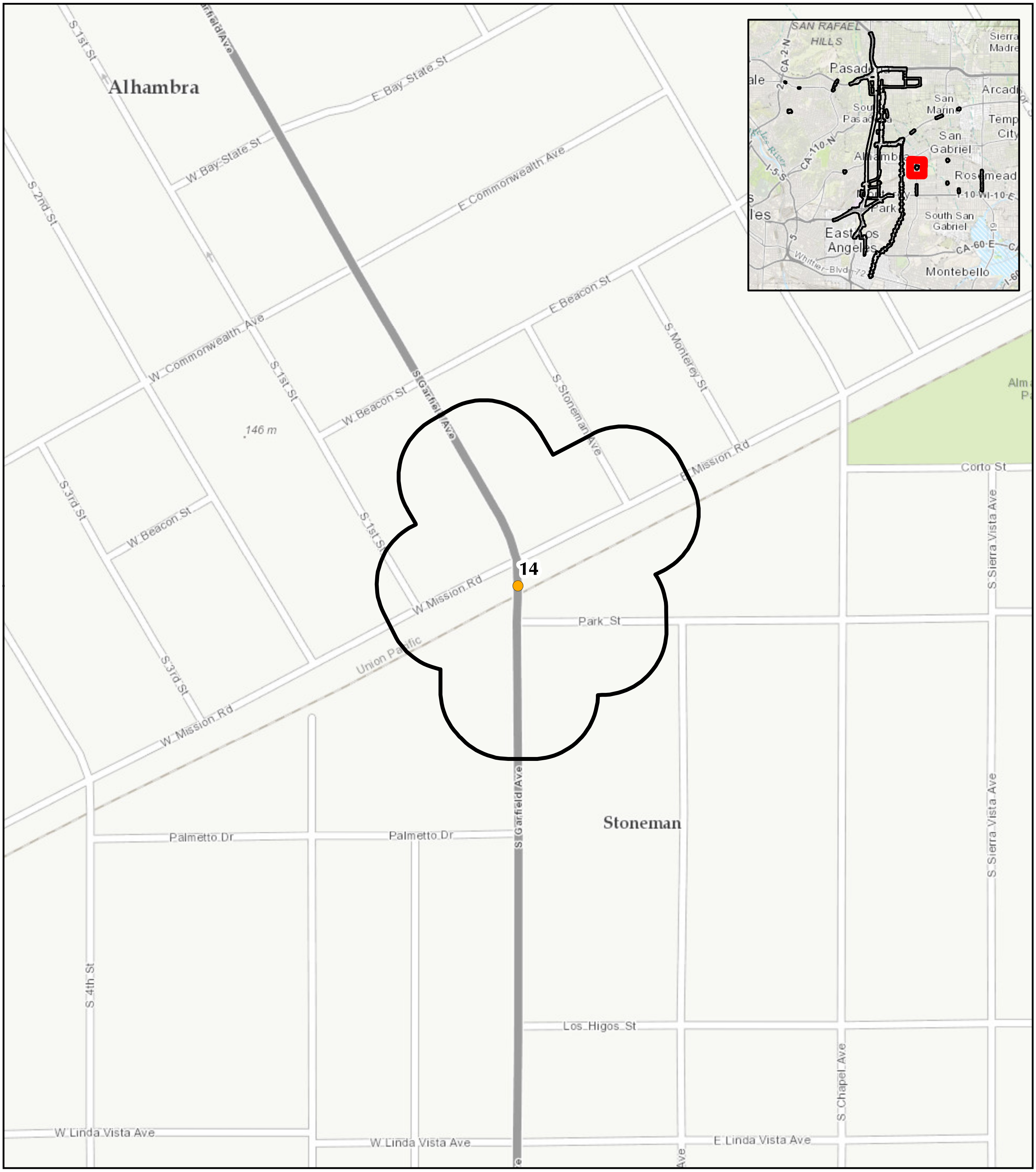

FIGURE 1.3

LEGEND

Fourteen Bridges Proposed for Construction

Biological Study Area

0 125 250 500

Feet

SR 710 North Study

Fourteen Bridges Proposed for Construction
(Eastern Study Area)

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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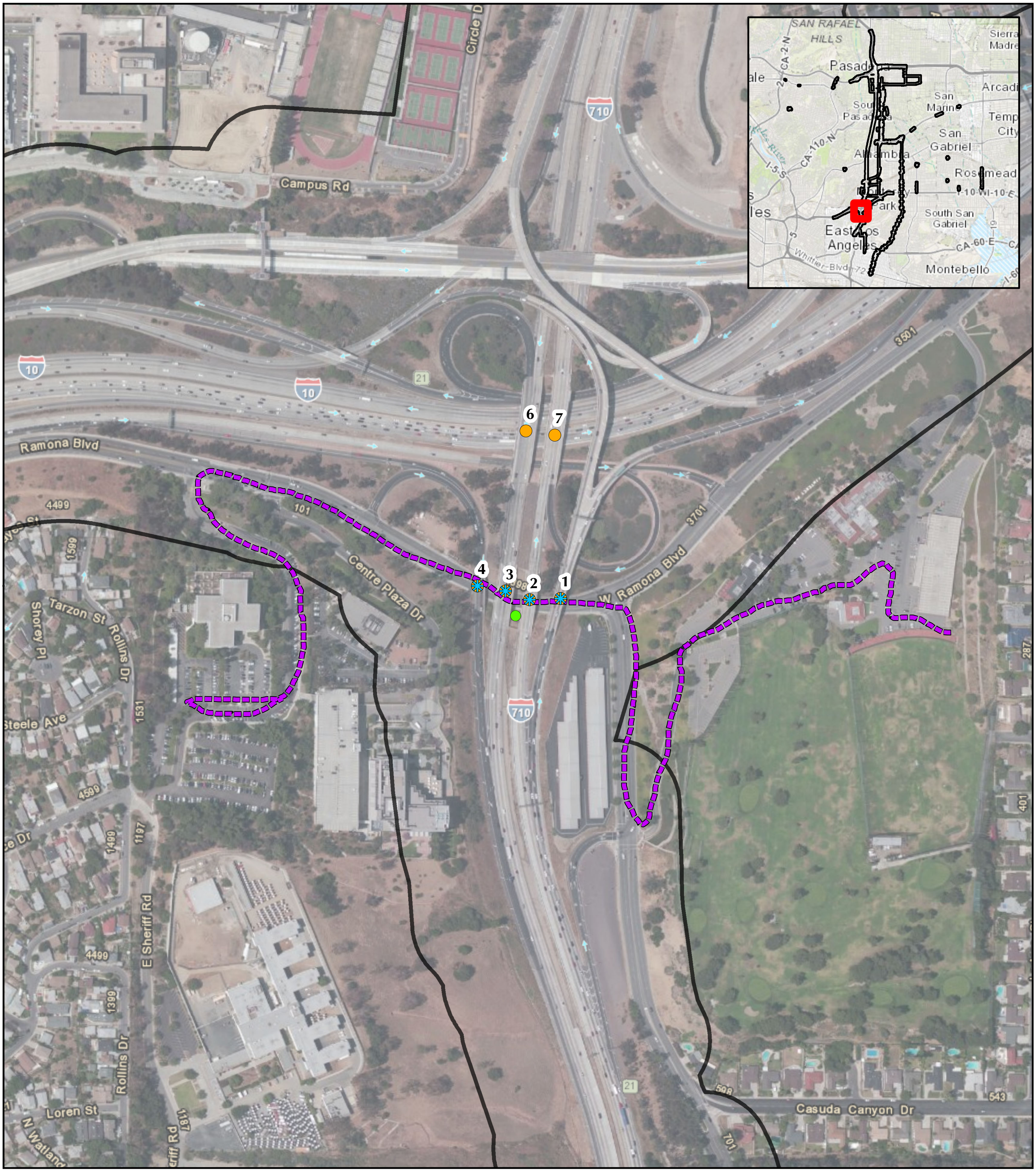

LEGEND

- Passive Monitoring
- Surveyed Bridges
- Fourteen Bridges Proposed for Construction
- Active Monitoring
- Biological Study Area

0 125 250 500
Feet

FIGURE 2.1

SR 710 North Study
Nighttime Survey Locations
(Monterey Park Survey Area)
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)
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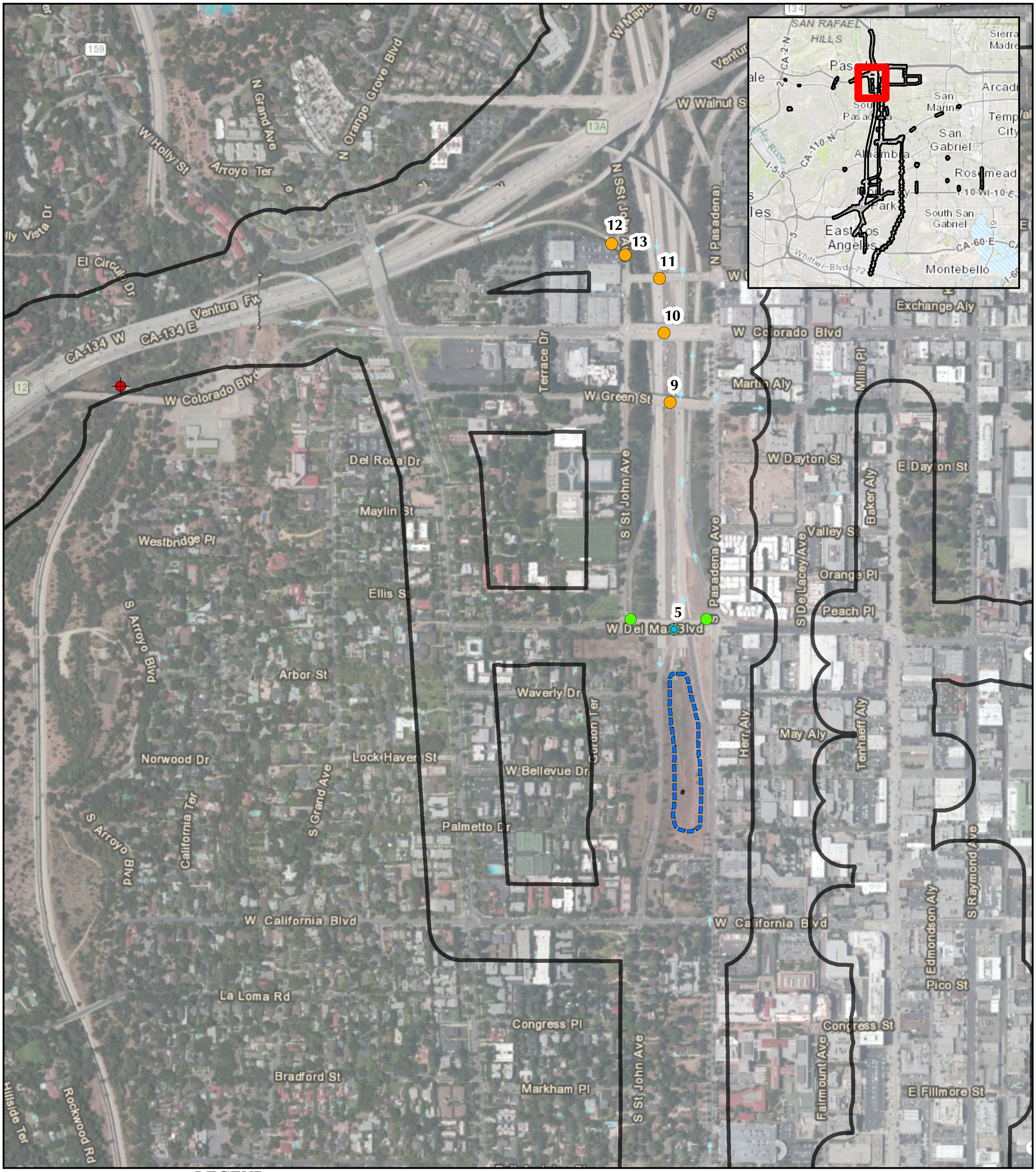


LEGEND

Passive Monitoring

Reference Site

Surveyed Bridges

Fourteen Bridges Proposed for Construction

Del Mar Pump Station Active Monitoring

Biological Study Area

N

0 125 250 500 750 1,000
Feet

FIGURE 2.2

SR 710 North Study

Nighttime Survey Locations
(Pasadena/Del Mar Survey Area)

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)
Q:\1282\SR_710\ArcProjects\MFR_Bats\NighttimeSurveyLocations_Pasadena.mxd (10/24/2014)

ATTACHMENT A
SURVEY FORMS AND PHOTOGRAPHS

ATTACHMENT A
SURVEY FORMS AND PHOTOGRAPHS

Project: 1282-002, State Route 710 North Study

Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date/Time: August 28, 2013 / 9:15 am
Sunset: 7:24 pm

Bridge Name: Ramona East Bridge
Function/Feature Crossed: Ramona Street, extends to cross 10 freeway/on-ramp from 710 to 10 East
Bridge Number: 53 1447G
Year Built: 1960
County/Route: Los Angeles County / N710 – E&W 10 Connector OC
Span: 18
Width: 10.3
Vertical Clearance: 4.57
Bridge Type: Concrete Slab

Average Air Temperature: N/A
Average Roost Temperature: No roost found
Average Wind Speed: N/A
Average Roost Wind Speed: No roost found

Habitat Type: Disturbed/weeds/dirt/concrete
Disturbance Factors: Traffic, vibration, noise

Stain Length: No stains found
Stain Type: No stains found
Stain Location: No stains found

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Notes: Drainage holes & crevices along edges possible roosting locations, stains (likely bird) present but bat use unlikely. Golf course within 0.25 miles may provide foraging/roosting habitat. No other open water available nearby.

PHOTO 1
N710-E & W10 Connector OC Bridge, facing north: (August 29, 2013)

PHOTO 2

N710-E&W10 Connector OC Bridge, bird sign: (August 29, 2013)

Project: 1282-002, State Route 710 North Study

Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date/Time: August 28, 2013 / 9:20 am
Sunset: 7:24 pm

Bridge Name: Ramona Middle East Bridge
Function/Feature Crossed: Ramona Street, connects 710 past 10 freeway
Bridge Number: 53 1459R
Year Built: 1960
County/Route: Los Angeles County / Ramona Boulevard UC
Span: 3
Width: 13.0
Vertical Clearance: 6.73
Bridge Type: Concrete Slab

Average Air Temperature: N/A
Average Roost Temperature: No roost found
Average Wind Speed: N/A
Average Roost Wind Speed: No roost found

Habitat Type: Disturbed/weeds/dirt/concrete
Disturbance Factors: Traffic, vibration, noise

Stain Length: No stains found
Stain Type: No stains found
Stain Location: No stains found

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Notes: Drainage holes only likely roosting location. Golf course within 0.25 miles may provide foraging/roosting habitat. No other open water available nearby.

PHOTO 3
Ramona Blvd UC Bridge (L), facing north

Project: 1282-002, State Route 710 North Study

Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date/Time: August 28, 2013 / 9:30 am
Sunset: 7:24 pm

Bridge Name: Ramona Middle West Bridge
Function/Feature Crossed: Ramona Street, extends to continue 710 past 10 freeway
Bridge Number: 53 1459L
Year Built: 1960
County/Route: Los Angeles County / Ramona Boulevard UC
Span: 3
Width: 16.7
Vertical Clearance: 7.92
Bridge Type: Concrete Slab

Average Air Temperature: N/A
Average Roost Temperature: No roost found
Average Wind Speed: N/A
Average Roost Wind Speed: No roost found

Habitat Type: Disturbed, wee, dirt, concrete
Disturbance Factors: Traffic, vibrations, noise

Stain Length: No stains found
Stain Type: No stains found
Stain Location: No stains found

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Notes: Drainage holes represent only likely roosting location; some in use by birds. Golf course within 0.25 miles may provide foraging/roosting habitat. No other open water available nearby.

PHOTO 4
Ramona Blvd UC Bridge (R), facing north: (August 29, 2013)

ATTACHMENT A
SURVEY FORMS AND PHOTOGRAPHS

Project: 1282-002, State Route 710 North Study

Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date/Time: August 28, 2013 / 9:40 am
Sunset: 7:24 pm

Bridge Name: Ramona West Bridge
Function/Feature Crossed: Ramona Street, extends 710 to 10 West
Bridge Number: 53 1459 G
Year Built: 1960
County/Route: Los Angeles County / Ramona Street UC (E10-S710)
Span: 3
Width: 11.5
Vertical Clearance: 5.05
Bridge Type: Concrete Slab

Average Air Temperature: N/A
Average Roost Temperature: No roost found
Average Wind Speed: N/A
Average Roost Wind Speed: No roost found

Habitat Type: Disturbed, weeds, dirt, concrete
Disturbance Factors: Traffic, vibration, noise

Stain Length: No stains found
Stain Type: No stains found
Stain Location: No stains found

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Notes: Drainage holes, crevice runs along center of bridge, crevices along edges. Golf course within 0.25 miles may provide foraging/roosting habitat. No other open water available nearby.

PHOTO 5
Ramona West Bridge, Facing North

PHOTO 6
Ramona Street UC (E10-S710) Bridge, northwest abutment: (August 28, 2013)

PHOTO 7
Ramona Street UC (E10-S710) Bridge, bird nest in the southwest drainage hole: (August 28, 2013)

Project: 1282-002, State Route 710 North Study

Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date/Time: August 28, 2013 / 10:05 am
Sunset: 7:24 pm

Bridge Name: 710 over 10 E
Function/Feature Crossed:
Bridge Number: 53 1445 L
Year Built: 1960
County/Route: Los Angeles County / Route 710/10 Separation
Span: 6
Width: 17.9
Vertical Clearance: 4.72
Bridge Type: Concrete Slab

Average Air Temperature: N/A
Average Roost Temperature: No roost found
Average Wind Speed: N/A
Average Roost Wind Speed: No roost found

Habitat Type: Disturbed, crosses over major freeway
Disturbance Factors: Traffic, vibration, noise, wind from traffic

Stain Length: No stains found
Stain Type: No stains found
Stain Location: No stains found

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Notes: Drainage holes & crevices in portions of spans (some definitely large enough for bat use) over 10 freeway, support beam crevices. Definite pigeon presence. Bat use possible but unlikely due to level of freeway traffic. Golf course within 0.25 miles may provide foraging/roosting habitat. No other open water available nearby.

PHOTO 8
Route 710/10 Separation Bridge (R), facing north: (August 28, 2013)

PHOTO 9
Route 710/10 Separation Bridge (R), south span, the bridge's largest crevice: (August 28, 2013)

Project: 1282-002, State Route 710 North Study

Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date/Time: August 28, 2013 / 10:10 am
Sunset: 7:24 pm

Bridge Name: 710 over 10 W
Function/Feature Crossed:
Bridge Number: 53 1445 R
Year Built: 1960
County/Route: Los Angeles County / Route 710/10 Separation
Span: 6
Width: 16.7
Vertical Clearance: 4.57
Bridge Type: Concrete Slab

Average Air Temperature: N/A
Average Roost Temperature: No roost found
Average Wind Speed: N/A
Average Roost Wind Speed: No roost found

Habitat Type: Disturbed, directly over major freeway
Disturbance Factors: Traffic, vibration, noise, wind from traffic

Stain Length: No stains found
Stain Type: No stains found
Stain Location: No stains found

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Notes: Drainage holes & crevices in portions of spans (some definitely large enough for bat use) over 10 freeway, support beam crevices. Definite pigeon presence. Bat use possible but unlikely due to level of freeway traffic. Golf course within 0.25 miles may provide foraging/roosting habitat. No other open water available nearby.

PHOTO 10
Route 710/10 Separation Bridge (L), facing south: (August 28, 2013)

PHOTO 11
Route 710/10 Separation Bridge (L), rock pigeon resident and west side detail: (August 28, 2013)

Project: 1282-002, State Route 710 North Study

Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date/Time: August 28, 2013 / 10:48 am
Sunset: 7:24 pm

Bridge Name: Hellman Street Bridge
Function/Feature Crossed: 710 freeway
Bridge Number: 53 1708
Year Built: 1966
County/Route: Los Angeles County / Hellman Avenue OC
Span: 4
Width: 19.5
Vertical Clearance: 5
Bridge Type: Concrete Slab

Average Air Temperature: N/A
Average Roost Temperature: No roost found
Average Wind Speed: N/A
Average Roost Wind Speed: No roost found

Habitat Type: Disturbed, over major freeway, ice plant
Disturbance Factors: Traffic, vibration, noise

Stain Length: No stains found
Stain Type: No stains found
Stain Location: No stains found

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Notes: Drainage holes present, possible roosting availability in crevices but unlikely, very clean bridge, very few stains, crevices are not deep enough for bats. Above ground portion of Laguna Channel nearby (~0.15 miles away) may provide foraging habitat.

PHOTO 12
Hellman Avenue OC Bridge, facing west: (August 28, 2013)

Project: 1282-002, State Route 710 North Study

Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date: August 28, 2013
Sunset: 7:24 pm

Bridge Name: Del Mar Bridge
Function/Feature Crossed: 210 Freeway
Bridge Number: 53 2262
Year Built: 1975
County/Route: Los Angeles County / Del Mar Boulevard OC
Span: 2
Width: 31.1
Vertical Clearance: 5.2
Bridge Type: Concrete Slab

Average Air Temperature: N/A
Average Roost Temperature: No roost found
Average Wind Speed: N/A
Average Roost Wind Speed: No roost found

Habitat Type: Disturbed, some planted native plants over freeway, well-vegetated freeway edges
Disturbance Factors: Traffic, vibration, noise

Stain Length: No stains found
Stain Type: No stains found
Stain Location: No stains found

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Notes: Drainage holes, and possibly crevice that runs along center of bridge may provide roosting habitat. Pretty clean in general. Lights along underside may attract insects or deter bats from roosting. Possibly good foraging habitat. Arroyo Seco habitat area nearby (~0.5 miles) may provide good foraging habitat.

PHOTO 13
Del Mar Blvd OC Bridge, facing west: (August 29, 2013)

PHOTO 14
Del Mar OC Bridge, edge span detail on the north side: (August 28, 2013)

Project: 1282-002, State Route 710 North Study

Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date: August 28, 2013
Sunset: 7:24 pm

Bridge Name: Colorado Blvd
Function/Feature Crossed: 210 Freeway
Bridge Number: 53 2264
Year Built: 1975
County/Route: Los Angeles County / Colorado Boulevard OC
Span: 2
Width: 33.2
Vertical Clearance: 5.56
Bridge Type: Concrete Slab

Average Air Temperature: N/A
Average Roost Temperature: No roost found
Average Wind Speed: N/A
Average Roost Wind Speed: No roost found

Habitat Type: Disturbed, weeds, vines
Disturbance Factors: Traffic, vibration, noise

Stain Length: No stains found
Stain Type: No stains found
Stain Location: No stains found

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Notes: Drainage holes and small crevices may provide roosting habitat, access to these points not likely. Lights underneath bridge may attract insects, may be foraging bridge. Arroyo Seco habitat area nearby (~0.5 miles) may provide good foraging habitat.

PHOTO 15
Colorado Blvd OC Bridge, facing east: (August 28, 2013)

Project: 1282-002, State Route 710 North Study

Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date: August 28, 2013
Sunset: 7:24 pm

Bridge Name: Green Street
Function/Feature Crossed: 210 Freeway
Bridge Number: 53 2263
Year Built: 1975
County/Route: Los Angeles County / Green Street OC
Span: 1975
Width: 2
Vertical Clearance: 6.43
Bridge Type: Concrete Slab

Average Air Temperature: N/A
Average Roost Temperature: No roost found
Average Wind Speed: N/A
Average Roost Wind Speed: No roost found

Habitat Type: Disturbed, weedy, vine vegetation beneath bridge
Disturbance Factors: Traffic, vibration, noise

Stain Length: No stains found
Stain Type: No stains found
Stain Location: No stains found

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Notes: Bridge is fairly clean. Drainage holes very close to ground, not easily accessible for bats, crevices fairly shallow. Arroyo Seco habitat area nearby (~0.5 miles) may provide good foraging habitat.

PHOTO 16
Green Street OC Bridge, facing east: (August 29, 2013)

Project: 1282-002, State Route 710 North Study

Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date: August 28, 2013
Sunset: 7:24 pm

Bridge Name: Union Street Bridge
Function/Feature Crossed: 210 Freeway
Bridge Number: 53 2537
Year Built: 1975
County/Route: Los Angeles County / Union Street OC
Span: 4
Width: 17.1
Vertical Clearance: 5.28
Bridge Type: Concrete Slab

Average Air Temperature: N/A
Average Roost Temperature: No roost found
Average Wind Speed: N/A
Average Roost Wind Speed: No roost found

Habitat Type: Disturbed, ice plant, weedy vegetation
Disturbance Factors: Traffic, vibration, noise

Stain Length: No stains found
Stain Type: No stains found
Stain Location: No stains found

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Notes: Vines growing underneath bridge; drainage holes and minor crevices to provide roosting habitat present. Arroyo Seco habitat area nearby (~0.5 miles) may provide good foraging habitat.

PHOTO 17
Union Street OC Bridge, facing northeast: (August 28, 2013)

Project: 1282-002, State Route 710 North Study

Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date: August 28, 2013
Sunset: 7:24 pm

Bridge Name: St. John Bridge
Function/Feature Crossed: 210 Freeway ramp
Bridge Number: 53 2265
Year Built: 1975
County/Route: Los Angeles County / St. John Avenue/E 134-S710 OC
Span: 1
Width: 16.5
Vertical Clearance: 5.69
Bridge Type: Concrete Slab

Average Air Temperature: N/A
Average Roost Temperature: No roost found
Average Wind Speed: N/A
Average Roost Wind Speed: No roost found

Habitat Type: Disturbed, directly over freeway on-ramp. Non-native vegetation along freeway edge.
Disturbance Factors: Traffic, vibration, noise

Stain Length: No stains found
Stain Type: No stains found
Stain Location: No stains found

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Notes: Significant ivy cover. Minimal availability of roosting features. Arroyo Seco habitat area nearby (~0.5 miles) may provide good foraging habitat.

PHOTO 18
St. John Avenue / E134-S710 OC Bridge, facing south: (August 28, 2013)

Project: 1282-002, State Route 710 North Study

Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date: August 28, 2013
Sunset: 7:24 pm

Bridge Name: St. John Pedestrian Bridge
Function/Feature Crossed: 210 Freeway on-ramp
Bridge Number: N/A
Year Built: N/A
County/Route: N/A
Span: N/A
Width: N/A
Vertical Clearance: N/A

Average Air Temperature: N/A
Average Roost Temperature: No roost found
Average Wind Speed: N/A
Average Roost Wind Speed: No roost found
Bridge Type: Concrete Slab

Habitat Type: Disturbed, directly over on-ramp, ornamental vegetation
Disturbance Factors: Traffic, vibration, noise

Stain Length: No stains found
Stain Type: No stains found
Stain Location: No stains found

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Notes: Significant ivy cover. Minimal availability of roosting features. Arroyo Seco habitat area nearby (~0.5 miles) may provide good foraging habitat.

PHOTO 19
St. John Pedestrian Bridge, facing southeast: (August 29, 2013)

Project: 1282-002, State Route 710 North Study

ACTIVE SURVEY
Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date/Time: September 4, 2013 / Nighttime 5:20 pm
Sunset: 7:14 pm

Bridge Name: Ramona Bridges
Function/Feature Crossed: Ramona Street, extends to cross 10 freeway/on-ramp from 710 to 10 East
Bridge Number: N/A
Year Built: N/A
County/Route: Los Angeles County / N710 – E& W 10 Connector OC
Span: N/A
Width: N/A
Vertical Clearance: N/A

Average Air Temperature: 85.4°F under and around Ramona bridges; 80.8°F at golf course
Average Roost Temperature: N/A
Average Wind Speed: 0.6 m/s under and around Ramona bridges and at golf course
Average Roost Wind Speed: N/A

Habitat Type:
Disturbance Factors: Traffic, vibration, noise

Stain Length: N/A
Stain Type: N/A
Stain Location: N/A

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Note: bat seen flying at golf course at end of night. Towards top of golf course, 40 minutes of bat calls heard. No bat activity observed at children's court located southwest of bridges.

81112 bat detector placed in dirt atop hill between 4 bridges 1111x1111 ~5:20 facing north

PHOTO 21
Del Mar Pump Station, suitable foraging habitat: (August 21, 2013)

Project: 1282-002, State Route 710 North Study

PASSIVE SURVEY
Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date/Time: September 10, 2013 / Nighttime 4:20 pm on north side of bridge on east side of freeway facing towards bridge, 4:40 pm in bush on north side of bridge facing south towards bridge
Sunset: 7:06 pm

Bridge Name: Del Mar East & West
Function/Feature Crossed:
Bridge Number: N/A
Year Built: N/A
County/Route: Los Angeles County
Span: N/A
Width: N/A
Vertical Clearance: N/A

Average Air Temperature:
Average Roost Temperature: N/A
Average Wind Speed:
Average Roost Wind Speed: N/A

Habitat Type:
Disturbance Factors: Traffic, vibration, noise

Stain Length: N/A
Stain Type: N/A
Stain Location: N/A

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Project: 1282-002, State Route 710 North Study

ACTIVE SURVEY
Surveyors: Lauren Dorough, Amariah Lebsock, David Lee
Date/Time: September 10, 2013 / Nighttime 7:15 pm, 7:25 pm, 7:43 pm, survey stopped at 9:08 pm.
Sunset: 7:06 pm

Bridge Name: Del Mar Pump Station
Function/Feature Crossed: N/A
Bridge Number: N/A
Year Built: N/A
County/Route: Los Angeles County
Span: N/A
Width: N/A
Vertical Clearance: N/A

Average Air Temperature: 67°F up top; 65.2°F down by water
Average Roost Temperature: N/A
Average Wind Speed: 1.5 m/s up top; 0.6 m/s down by water
Average Roost Wind Speed: N/A

Habitat Type:
Disturbance Factors:

Stain Length: N/A
Stain Type: N/A
Stain Location: N/A

Guano Amount/Description: N/A
Guano Location: N/A

Species Known: None

Species Likely: None

Type of Roost (Day, Night, Other): N/A

Features Used (Expansion Joints, Bents, Piles, Arches, etc.) and Location: N/A

Note:
Up top: At 7:43 pm 1st set of calls; got a visual on the bat. David says pipistrelle. Fast-paced high-pitch multiple feeding buzzes. Pump station wooden structure: no evident bat use.

Down by water: noise at 9 pm may be wood rat.

PHOTO 20
Monterey Park Golf Course, suitable foraging habitat: (October 5, 2013)

ATTACHMENT B
FIELD NOTES

Amariah's field Notes

710 Gap · 28 Aug. 2013 Bats · Pg 1/6
AAL, DKL, LRD Day time

① Bridge 1 ~~#2~~ - Nest

↳ Ramona East Bridge

- Bird droppings - photo 1

· Photo 2 - DKL

- Photo 3 - Drainage holes, North South pic 11-12

* Bird stains - (likely no bat stains

Photos:
↳ - 5729 - 5741 (DKL)

* Abundance of noise, + vibrations,

② Bridge 2 - Ramona Middle East Bridge

· photos: 5742-5759, AAL pic #9 - 10 North South

- V. ~~few~~ few crevices. No staining

* Bird nests seen in drainage holes

③ Bridge 3 - Ramona Middle West Bridge

· photos: 5760 - 5777

· Essentially same as Bridge 2. V. few crevices. No obvious bat signs

AAL · Pic #7 - 8 - facing North south

Amariah Lebsock's Field Notes, Bridge Assessment, Page 1/6
August 28, 2013

Pg. 2/6

(4) Ramona West Bridge

- Same style as Ramona East Bridge
- photos: 5778-5792
- Bird (swifts) staining
- AAL - Photo 4 facing North

Except there is an additional lengthwise crack

- AAL Photos 5+6 4 bridges facing East

Photos 13-15 facing west - 4 bridges

Amariah Lebsock's Field Notes, Bridge Assessment, Page 2/6
August 28, 2013

3/6

5809

~~Photos Pass~~

5 710 over 10 East (Bridge Ramona Extension of Middle East)

- photo 16 +17 AAL, DKL: 5793-5809
- Heavy traffic, noise, vibrations, wind
- Abundance of pigeon droppings
    - pigeon visuals
    - pigeon feathers

6 ~~710~~ Extension of Ramona ~~East~~ Middwest Bridge

- DKL Photos: 5810 - 5830
- AAL photos: 18-19+20 DKL field shot
- Same disturbances + lack of bat signs as Bridge 5.

~~DKL~~

Amariah Lebsock's Field Notes, Bridge Assessment, Page 3/6
August 28, 2013

4/6

7 Hellman St Bridge (Cal St LA)

- DKL photos: 5831-5839
- AAL photos: 21, 22, 23

* Clean bridge, no stains
- possible bird nest in one of the drainage holes

8 Delmar Bridge

- DKL photos: 5840-5847
- AAL photos: 24, 25

* Note: large crack in middle - lengthwise - no visual on bat sign.
- Lights under bridge
- Noise, heavy traffic, vibration, wind

* potential foraging (lights + H_2O source + vegetation)

Amariah Lebsock's Field Notes, Bridge Assessment, Page 4/6
August 28, 2013

5/6

⑨ Green Street Bridge
- DKL photos: 5848 - 5856
- AAL photos: 26, + 27
- Clean, high traffic, noise, vibration, wind
- No bat signs

⑩ Colorado Street Bridge
- DKL photos: 5857 - 5866
- AAL photos: 28 + 29
* Lights under bridge
- No stains, fairly clean

⑪ Union Bridge
- DKL photos: 5867 - 5878
- AAL photos: 30 (signs) + 31
- Veg/vines growing on underside of bridge

Amariah Lebsock's Field Notes, Bridge Assessment, Page 5/6
August 28, 2013

6/6

(2) St. John Bridge
- DKL photos: 5879 - 5887
- DKL iphone: 1 ~~po~~facing South
*substantial ivy/veg growing under/on bridge.

(13) St. John Pedestrian Bridge
- DKL photos: 5888-5892
- DKL iphone: 1 facing SE

Survey locations:
- ~~2~~ at 4 bridges in south
- 3 Detectors @ Delmar Bridge

5:30 leave office. Sept. 4 Sept. 6
- Set up Wed. night. Pick up Fri. a.m.

Sept. 9 Sept. 11
- Set up Mon. night. Pick up Wed. am
- Min. of 3 hrs. in field. ~6 hrs total

Amariah Lebsock's Field Notes, Bridge Assessment, Page 6/6
August 28, 2013

4 Sept. 2013 AAL, DKL, LRD

Reference Site ID:

- Colorado St. Bridge (suicide)

photos 5893-5897, AAL pics 1-4

- Standing H_2O north of dam.
- Nice natural native veg beneath
- placed 1 detector: 4 Sept. 2013 3:58pm

- Del Mar Bridge West, ID:
- Time set: 4:20pm
- Also placed data logger
- AAL pic 5

- Del Mar Bridge East ID 81393
- Time Set: 4:42 pm
- AAL pic 6

- Ramona ID 81112
- Time Set: 5:26pm
- AAL pic 7

Amariah Lebsock's Field Notes, Night Surveys, Page 1/2
September 4, 2013

Amariah's Field Notes

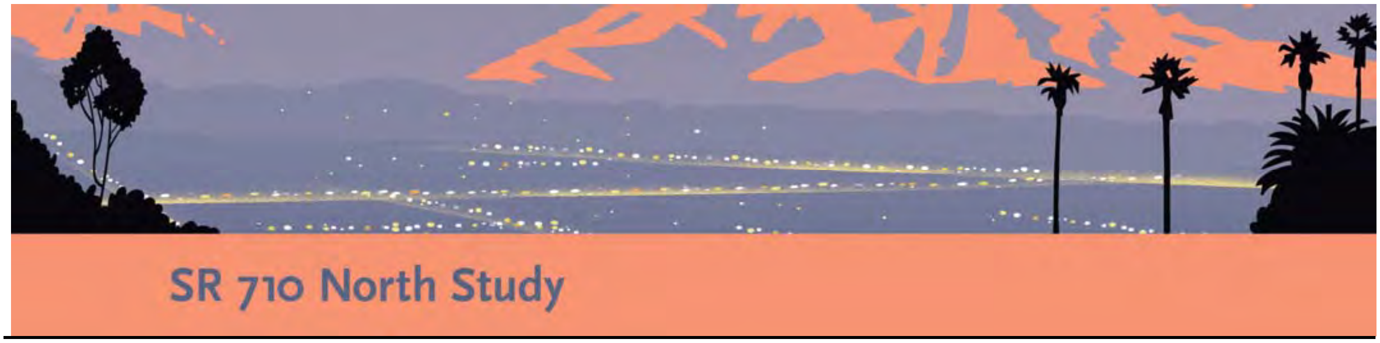
Active monitors AAL + LRD

Set: 7:02 pm -

- AAL ID: SN 80260
- 1st bat at 8:15 at 1st golf course landing / parking lot
- Substantial bat activity at driving range (2nd landing)
- Bat calls received through 9 pm
- Note: last bat call w/ this detector was obtained in residential neighborhood where we parked. We got a visual + likely a call recorded (~ 9:05 pm). Bat was large in size!

Amariah Lebsock's Field Notes, Night Surveys, Page 2/2
September 4, 2013

Appendix I Jurisdictional Delineation Report: U.S. Army Corps of Engineers



Jurisdictional Delineation Report: U.S. Army Corps of Engineers Jurisdiction

Prepared for

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Metro
Los Angeles County
Metropolitan Transportation Authority

October 2014

EXECUTIVE SUMMARY

This Jurisdictional Delineation Report was prepared to support the State Route 710 North Study (SR 710 North Study) or "Proposed Project," located in Los Angeles County, California. The Proposed Project would include proposed transportation improvements to improve mobility and relieve congestion in east/northeast Los Angeles and the western San Gabriel Valley. This report identifies the location and extent of drainages, wetlands, and riparian areas under the potential jurisdiction of the U.S. Army Corps of Engineers (Corps). A separate report has been prepared to address waters, wetlands, and riparian habitats subject to the jurisdiction of the California Department of Fish and Wildlife (CDFW) and/or Regional Water Quality Control Board (RWQCB). Acreage of waters subject to the jurisdiction of the Corps under Section 404 of the Clean Water Act are specifically identified in this report. The report may be used to support a request for a Corps jurisdictional determination and support environmental permitting for any impacts to jurisdictional areas that may result from the implementation of the Proposed Project. The report may also be used to support evaluation of the environmental impacts of the Proposed Project, by alternative, pursuant to the requirements of the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA), and in the preparation of related environmental documents.

The waters and associated habitats were evaluated within the Biological Study Area (BSA) for the Proposed Project, which included an approximately 200-ft buffer around all areas under consideration to be included in the limits of disturbance as of July 2013, which is much larger (3,410.4 acres) than the area where ground-disturbing impacts may occur (approximately 570 acres for all alternatives combined). A total of 27 potential drainages and wetlands were evaluated for the Proposed Project; areas potentially subject to Corps jurisdiction were identified and delineated, including one wetland abutting a jurisdictional stream (0.44 acres). Two areas of non-wetland riparian vegetation were identified adjacent to jurisdictional streams, totaling 4.91 acres. Non-jurisdictional features, such as v-ditches that carry ephemeral storm water or nuisance flows, totaled 5.37 linear mi within the BSA. In all, the BSA included 4.87 acres of waters potentially subject to Corps jurisdiction.

Contents

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Tables

Figures

Acronyms and Abbreviations

ATM	Active Traffic Management
BRT	Bus Rapid Transit Alternative
BSA	Biological Study Area
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
Code	California Fish and Game Code
Corps	U.S. Army Corps of Engineers
ft	foot
FTIP	Federal Transportation Improvement Program
GPS	global positioning system
I	Interstate
IEN	Information Exchange Network
in	inch
LRT	Light Rail Transit Alternative
LRTP	Long Range Transportation Plan
Metro	Los Angeles County Metropolitan Transportation Authority
mi	mile
mph	miles per hour
MSA	Metropolitan Statistical Area
msl	mean sea level
NEPA	National Environmental Policy Act
NWI	National Wetlands Inventory
O&M	operations and maintenance
OHWM	ordinary high water mark
ROW	right of way
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SCAG	Southern California Association of Governments
SR	State Route
TAP	Transit Access Pass
TNW	Traditional Navigable Water
TSM/TDM	Transportation System Management/Transportation Demand Management Alternative
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

1.0 INTRODUCTION

1.1 Project Description

The California Department of Transportation (Caltrans), in cooperation with the Los Angeles County Metropolitan Transportation Authority (Metro), proposes transportation improvements to improve mobility and relieve congestion in the area between State Route 2 (SR 2) and Interstates 5, 10, 210, and 605 (I-5, I-10, I-210, and I-605, respectively) in east/northeast Los Angeles and the western San Gabriel Valley (Figure 1, *Project Location*). The study area for the State Route 710 (SR 710) North Study is approximately 100 square miles and generally bounded by I-210 on the north, I-605 on the east, I-10 on the south, and I-5 and SR 2 on the west. Caltrans is the Lead Agency under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

The lack of continuous north-south transportation facilities in the study area has the following consequences, which have been identified as the elements of need for the project:

- Degradation of the overall efficiency of the larger regional transportation system
- Congestion on freeways in the study area
- Congestion on the local streets in the study area
- Poor transit operations within the study area

The purpose of the proposed action is to effectively and efficiently accommodate regional and local north-south travel demands in the study area of the western San Gabriel Valley and east/northeast Los Angeles, including the following considerations:

- Improve efficiency of the existing regional freeway and transit networks
- Reduce congestion on local arterials adversely affected due to accommodating regional traffic volumes
- Minimize environmental impacts related to mobile sources

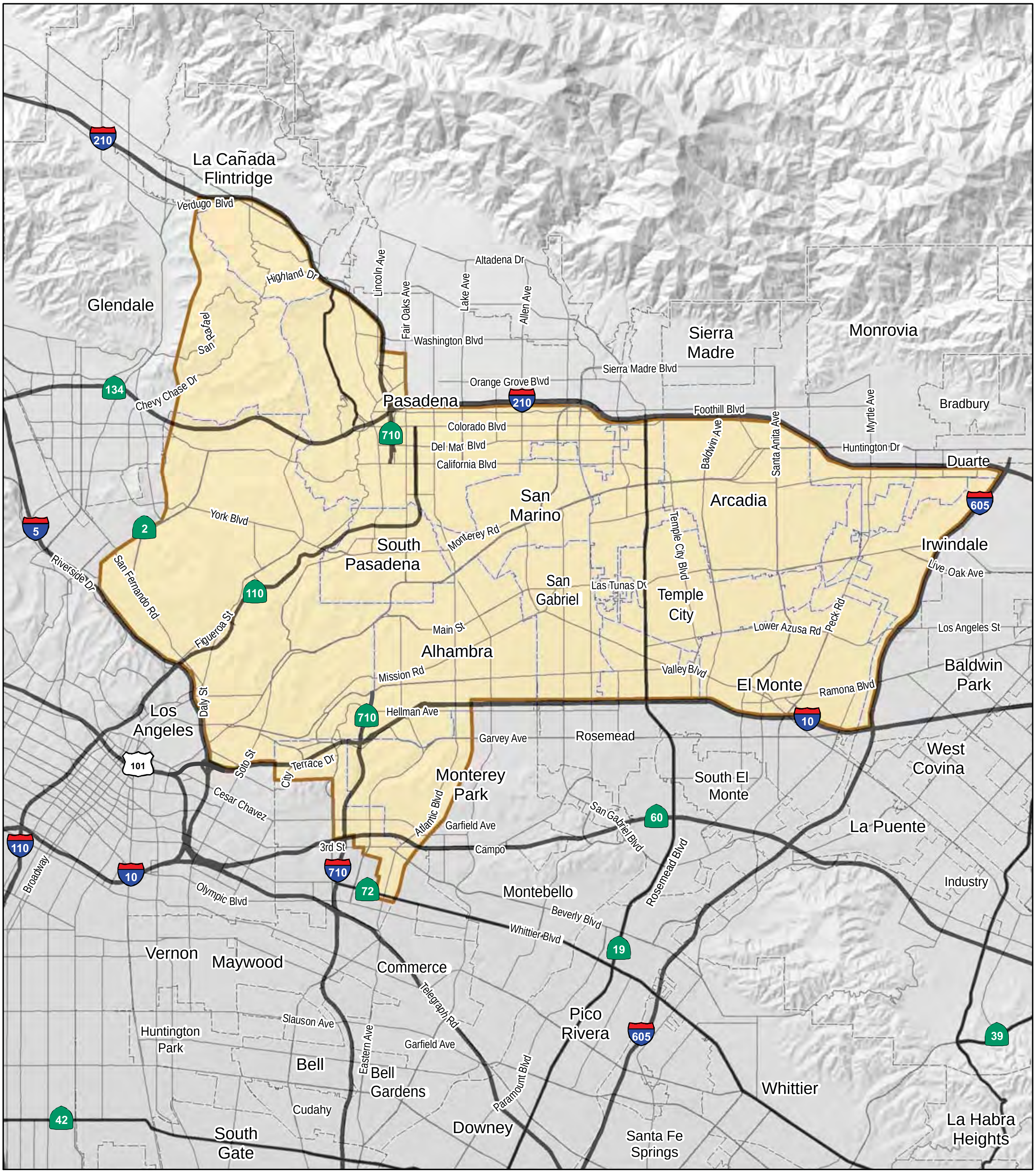
The proposed alternatives for the project include:

- the No Build Alternative
- the Transportation System Management/Transportation Demand Management (TSM/TDM) Alternative,
- the Bus Rapid Transit (BRT) Alternative
- the Light Rail Transit (LRT) Alternative
- the Freeway Tunnel Alternative

Components of the TSM/TDM Alternative will also be included with the BRT, LRT and Freeway Tunnel Alternatives.

The No Build Alternative includes projects/planned improvements through 2035 that are contained in the Federal Transportation Improvement Program (FTIP), as listed in the Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Measure R and the funded portion of Metro's 2009 Long Range Transportation Plan (LRTP). The No Build Alternative does not include any planned improvements to the SR 710 Corridor.

The TSM/TDM Alternative consists of strategies and improvements to increase efficiency and capacity for all modes in the transportation system with lower capital cost investments and/or lower potential impacts. The TSM/TDM Alternative is designed to maximize the efficiency of the existing transportation system by improving capacity and reducing the effects of bottlenecks and chokepoints. TSM strategies include Intelligent



LEGEND

SR 710 North Study Area

FIGURE 1

N

0 1.25 2.5

MILES

SR 710 North Study

Project Location

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (2008); LSA (2013)

I:\CHM1105\G\P&N\Project Location.cdr (10/27/14)

Transportation Systems (ITS), local street and intersection improvements, and Active Traffic Management (ATM). The TDM strategies include expanded bus service, bus service improvements, and bicycle improvements.

The BRT Alternative would provide high-speed, high-frequency bus service through a combination of new, dedicated, and existing bus lanes, and mixed-flow traffic lanes to key destinations between East Los Angeles and Pasadena.

The LRT Alternative would include passenger rail operated along a dedicated guide way, similar to other Metro light rail lines. The LRT Alternative would begin on Mednik Avenue adjacent to the existing East Los Angeles Civic Center Station on the Metro Gold Line and end at Raymond Avenue adjacent to the existing Fillmore Station on the Metro Gold Line.

The Freeway Tunnel Alternative would start at the existing southern stub of SR 710 in Alhambra, just north of I-10, and connect to the existing northern stub of SR 710, south of the I-210/SR 134 interchange in Pasadena.

Five operational variations for the Freeway Tunnel Alternative include:

- the freeway tunnel alternative without tolls
- freeway tunnel alternative with trucks excluded
- freeway tunnel alternative with tolls
- the freeway tunnel alternative with tolls and trucks excluded
- the freeway tunnel alternative with toll and express bus.

1.2 Scope of the Jurisdictional Delineation Report

This report was prepared to identify the location and extent of drainage features under the potential jurisdiction of the Corps in the BSA (Figure 2, *Topographic Map with USGS 7.5-minute Quadrangle Index*). This report may be used to support a request for jurisdictional determination from the Corps and support environmental permitting for any impacts to jurisdictional areas that may result from the implementation of the Proposed Project. The report may also be used to support evaluation of the environmental impacts of the Proposed Project, by alternative, pursuant to the requirements of NEPA and CEQA, and in the preparation of related environmental documents.

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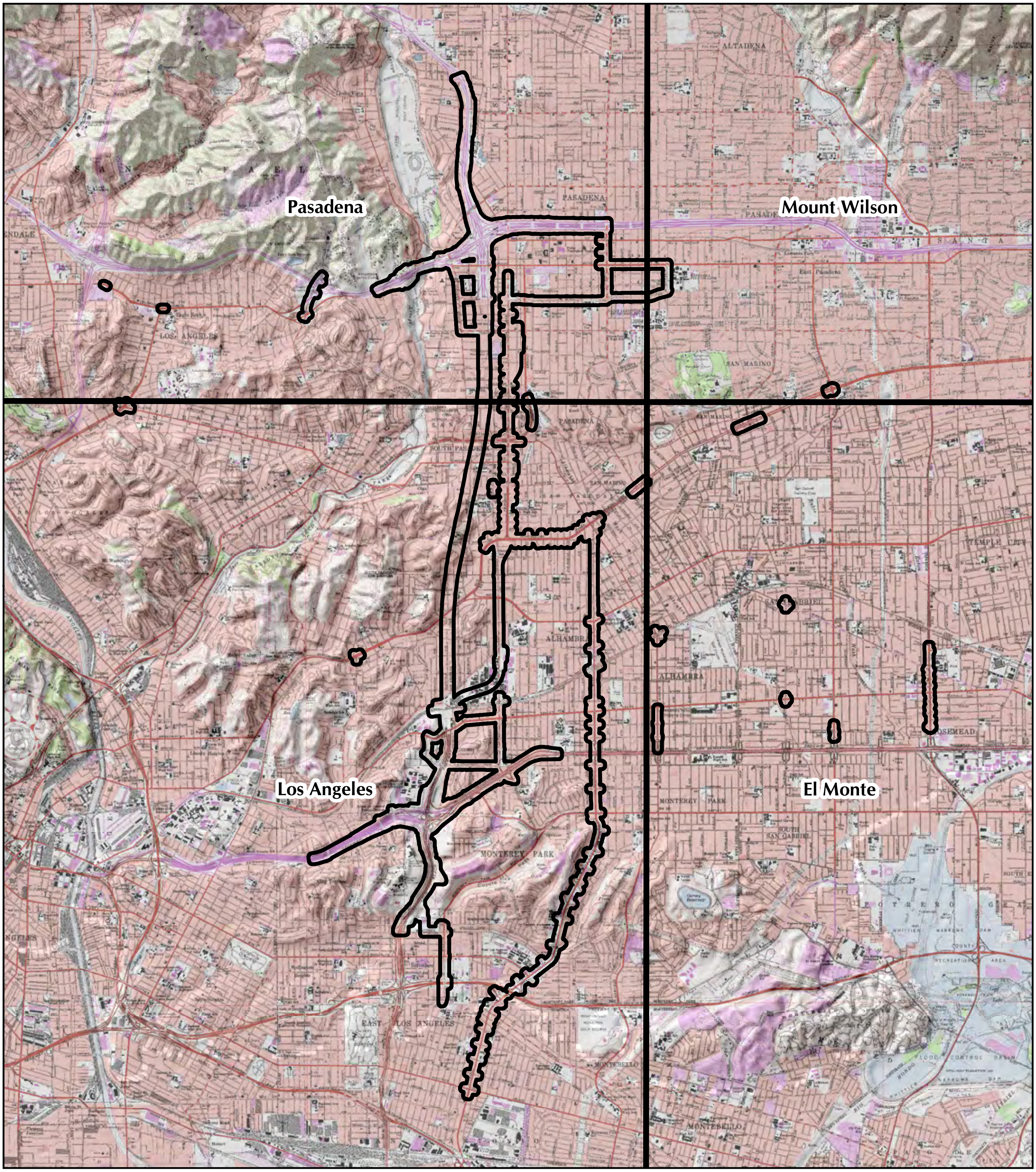

FIGURE 2

LEGEND

7.5-minute Index

Biological Study Area

N

0 0.25 0.5 1 1.5

Miles

SR 710 North Study

Topographic Map with USGS 7.5-minute Quadrangle Index

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

Q:\1282\SR_710\ArcProjects\JD Report\ACOE\TopoQuad_revised.mxd (10/24/2014)

2.0 REGULATORY FRAMEWORK

This section describes the regulatory basis for administering and permitting impacts to drainages and wetlands by the Corps. The jurisdiction of agencies of the State of California (i.e. CDFW and the RWQCB) over drainages, wetlands and riparian habitats is addressed in a separate report. Any proposed project that may impact these features must evaluate such impacts pursuant to the environmental analysis requirements of NEPA and CEQA and obtain the necessary permits and agreements required by the agency or agencies with jurisdiction over features impacted by the project.

2.1 Rivers and Harbors Appropriation Act of 1899

Authorization from the Corps must be obtained for construction of a structure in or over any navigable water of the U.S., pursuant to Section 10 of the Rivers and Harbors Appropriation Act of 1899. Authorization is also needed for structures built near a navigable water if they would affect the course, location, or condition of the water body, as through re-channelization, disposal of fill, etc. No navigable waters occur within the BSA; therefore, project activities would not require authorizations pursuant to the Rivers and Harbors Act of 1899. The tidal portion of the Los Angeles River, located more than 18 miles outside the BSA, is the nearest such waterway.

2.2 Clean Water Act, Section 404

The Corps regulates discharges of dredged or fill material into waters of the U.S. pursuant to Section 404 of the federal Clean Water Act, requiring a Dredge and Fill Permit for such activities. Discharge of fill includes any activities that would convert waters of the U.S. to dry land or alter the bottom profile. In practice, regulated activities include, but are not limited to, grading, pouring concrete, sod placement, placing riprap, and stockpiling excavated material. Waters of the U.S. are defined in 40 CFR 230.3(s) to include:

(1) All waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide;
(2) All interstate waters including interstate wetlands;
(3) All other waters such as intrastate lakes, rivers, streams (including intermittent streams), mudflats, sandflats, wetlands, sloughs, prairie potholes, wet meadows, playa lakes, or natural ponds, the use, degradation or destruction of which could affect interstate or foreign commerce including any such waters:

   a) Which are or could be used by interstate or foreign travelers for recreational or other purposes; or
   b) From which fish or shellfish are or could be taken and sold in interstate or foreign commerce; or
   c) Which are used or could be used for industrial purposes by industries in interstate commerce;

(4) All impoundments of waters otherwise defined as waters of the U.S. under this definition;
(5) Tributaries of waters identified in paragraphs (s)(1) through (4) of this section;
(6) The territorial sea;
(7) Wetlands adjacent to waters (other than waters that are themselves wetlands) identified in paragraphs (s)(1) through (6) of this section; waste treatment systems, including treatment ponds or lagoons designed to meet the requirements of CWA (other than cooling ponds as defined in 40 CFR 423.11(m) which also meet the criteria of this definition) are not waters of the U.S.

The primary criterion used to identify the limits of jurisdictional waters is the presence of an ordinary high water mark (OHWM), although adjacent or abutting areas that meet the Corps' criteria for wetlands are also jurisdictional. Substantial refinements to the interpretation of the Corps' and EPA's jurisdiction pursuant to the CWA resulted from the U.S. Supreme Court's 2006 Rapanos decision (see Section 2.1.3).

2.3 Rapanos Decision

In 2006, the U.S. Supreme Court considered Corps jurisdiction of waters of the U.S. in the consolidated cases of *Rapanos v. United States* and *Carabell v. United States* (126 S. Ct. 2208). The findings of these cases are referred to as the Rapanos decision, which has shaped interpretation of the Corps' and EPA's jurisdiction under the CWA. In the Rapanos decision, the Supreme Court did not publish a single majority opinion, but instead published a plurality opinion representing four justice) and a separate concurring opinion with distinct lines of reasoning. Although the majority did not reach a consensus, the agencies' regulatory jurisdiction exists if the standard of either opinion is met (because either would represent a majority of justices).

The plurality opinion concluded that the agencies' regulatory authority should be limited to "relatively permanent, standing or continuously flowing bodies of water" connected to traditional navigable waters, and to "wetlands with a continuous surface connection to" such relatively permanent waters. The other concurring opinion emphasized the importance of the wetlands' effects on the chemical, physical, and biological integrity of downstream waters. This opinion was the basis for the agencies' establishment of the "significant nexus" analysis, to determine when certain types of waters may be jurisdictional, based on an assessment of the ecological effects of an upstream water body on the chemical, physical or biological integrity of a downstream traditional navigable water.

In 2008, the Corps and EPA released guidance for identifying waters subject to the agencies' jurisdiction.[1] In the guidance, the ramifications of the Rapanos decision for Corps and EPA jurisdiction were discussed, and jurisdiction for various types of water bodies described. In summary, the agencies will always assert jurisdiction over waters of these types:

- Traditional navigable waters
- Wetland adjacent to traditional navigable waters
- Non-navigable tributaries of traditional navigable waters that are relatively permanent where the tributaries typically flow year-round or have continuous flow at least seasonally (typically defined as three months)
- Wetlands that directly abut such tributaries.

The agencies will determine jurisdiction of the following types of waters on a case-by-case basis, following individual analysis to determine whether there is a significant nexus to (e.g., they affect the chemical, physical, or biological integrity of) a traditional navigable water:

- Non-navigable tributaries that are not relatively permanent
- Wetlands adjacent to non-navigable tributaries that are not relatively permanent
- Wetlands adjacent to but that do not directly abut a relatively permanent non-navigable tributary

The agencies will generally not assert jurisdiction over water features that are:

- Swales or other erosional features (e.g., gullies, small washes characterized by low volume, infrequent, or short duration flow)
- Ditches (including roadside ditches) excavated wholly in and draining only uplands, and that do not carry a relatively permanent flow of water

2.4 Executive Order Number 11990

Executive Order Number 11990 was issued in May 1977, as a furtherance of NEPA providing protection of wetlands. Pursuant to the Executive Order, all new construction should be designed to the greatest extent

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[1] U.S. Army Corps of Engineers. December 2008. *Clean Water Act Jurisdiction Following the U.S. Supreme Court's Decision in Rapanos v. United States and Carabell v. United States*. Available at: http://www.Corps.army.mil/Portals/2/docs/civilworks/regulatory/cwa_guide/cwa_juris_2dec08.pdf

possible to avoid long- and short-term adverse impacts that would lead to the destruction or the modification of wetlands, in order to preserve and enhance the natural and beneficial values of wetlands.

3.0 METHODS

3.1 Biological Study Area and Limits of Disturbance

The BSA discussed in this report is inclusive of, and substantially larger than, all areas that may be directly impacted by implementation of the Proposed Project (Figure 2). The BSA was created to include an approximately 200-ft buffer around all of the areas under consideration to be included in the limits of disturbance as of July 2013. The BSA, at 3,410.4 acres, is much larger than the anticipated area where ground-disturbing permanent and temporary impacts may occur (approximately 570 acres for all alternatives combined). In some cases, the edge of the BSA is approximately 0.5 mi from the nearest permanent or temporary impact areas. All potential drainage features within the BSA were evaluated in the literature review, field surveys, and identification of potential jurisdictional areas conducted for this report.

3.2 Literature and Historical Map Review

The first step in the assessment process involved a review of the following literature, coordination, and maps, including the following resources:

- Aerial photographs of the Proposed Project property (1 inch [in] equals 250 feet; 1:3,000)
- California Interagency Watershed Map of 1999 (Calwater 2.2, updated May 2004)[2]
- General Soil Survey of the U.S.A. (U.S. Department of Agriculture – Natural Resources Conservation Service; USDA-NRCS)[3]
- Google Earth version 7.1.1.1888
- National Hydrography Dataset[4]
- Los Angeles Department of Water and Power Urban Water Management Plan[5]
- Los Angeles Department of Public Works, Los Angeles County Storm Drain System[6]
- National Flood Insurance Program Flood Insurance Rate Maps for Los Angeles County[7]
- U.S. Army Corps of Engineers, Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)[8]
- U.S. Fish and Wildlife Service National Wetlands Inventory (NWI)[9]
- U.S. Geological Survey (USGS) maps for the El Monte, Los Angeles, Mount Wilson, and Pasadena quadrangles[10,11,12,13,14,15,16]

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[2] California Department of Forestry and Fire Protection. Updated May 2004. The California Interagency Watershed Map of 1999 (Calwater 2.2). Available at: http://gis.ca.gov/BrowseCatalog.epl

[3] U.S. Department of Agriculture. 2013. *Natural Resources Conservation Science, Soil Survey*. Available at: http://soils.usda.gov/survey/nscd/description.html

[4] U.S. Geological Survey. 2011. USGS National Hydrography Dataset. Available at: http://egis3.lacounty.gov/dataportal/2011/05/09/rivers-streams-water-conveyance-pipelines-aqueducts/

[5] Los Angeles Department of Water and Power. 2010. *Urban Water Management Plan*. Available at: www.ladwp.com

[6] Los Angeles Department of Public Works. n.d. Los Angeles County Storm Drain System. Available at: http://dpw.lacounty.gov/fcd/stormdrain/index.cfm#map

[7] Federal Emergency Management Agency. 2013. FEMA Map Service Center. Available at: https://msc.fema.gov/webapp/wcs/stores/servlet/mapstore/homepage/MapSearch.html

[8] U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS.

[9] U.S. Fish and Wildlife Service. 2013. National Wetlands Inventory mapper. Available at: http://www.fws.gov/wetlands/Wetlands-Mapper.html

[10] U.S. Geological Survey. 2012. Los Angeles 7.5-Minute Topographic Map. Reston, VA.

[11] U.S. Geological Survey. 1966. Los Angeles 7.5-Minute Topographic Map. Denver, CO.

[12] U.S. Geological Survey. 1953. Alhambra Topographic Map. Denver, CO.

Historical topographic maps and historical aerial photographs were reviewed to identify known drainages and wetlands within the BSA, and to identify connections to traditional navigable waters subject to Corps jurisdiction. Database information sources included the NWI, National Hydrography Dataset, and Los Angeles County Storm Drain System. All potential drainages and wetlands identified during the literature and historical map review were examined using geographic information system software (ESRI ArcGIS, Version 10.2) and Google Earth to identify any visible features, including ditches or vegetation.

Aerial imagery and topographic maps were reviewed to identify additional areas where the topography or image indicated the potential presence of any drainages not identified during the historical map and literature review. The resulting global positioning system (GPS) positions were then exported to GPS units, and printed on aerial maps for use during field verification efforts.

3.3 Field Surveys

All areas with potential drainage features or wetlands, or associated riparian vegetation were investigated during field surveys. Qualified Sapphos Environmental, Inc. biologists with experience identifying jurisdictional drainages and experience identifying plants and classifying plant communities conducted the field investigations throughout the BSA between April and October 2013. The surveys were conducted by Mr. Ryan Villanueva, Dr. Jolene Moroney, and Ms. Margaret Schaap, with assistance from Mr. Brian Bielfelt, Ms. Lauren Dorough, Mr. Adam Furman, Mr. John Ivanov, Mr. Thomas Kmett, Ms. Shelby Petro, and Mr. Jordan Zylstra. Field surveys were conducted on April 9; July 3 and 30; August 21, 26, and 30; September 24; and October 2, 4, 14, and 18, 2013. The surveyors identified non-wetland waters based on observation of OHWM, field conditions and connections to waters of the U.S. and their tributaries. The surveyors also identified and delineated wetlands on the basis of vegetation, soils, and hydrology; identified riparian plant communities; and searched for OHWMs and connections between drainages within the BSA and waters of the U.S.

3.3.1 Identification and Delineation of Non-Wetland Waters

Sapphos Environmental, Inc. used a combination of literature and database review, followed by field verification, to delineate non-wetland waters by identifying the OHWM. The OHWM is defined as "that line on the shore established by the fluctuation of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation, the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas."[17] Additional guidance was issued by the Corps in 2005 to clarify the meaning of "or other appropriate means that consider the characteristics of the surrounding areas." The Corps further states that the following characteristics should be considered: wracking; vegetation matted down, bent, or absent; sediment sorting; leaf litter disturbed or washed away; scour; deposition; multiple observed flow events; bed and banks; water staining; and changes in plant communities.[18]

The field delineations were conducted according to the Corps' region-specific guidance for the Arid West.[19] The OHWM was identified based on a combination of geomorphic and vegetation indicators characteristic of the channel types that occur in the Arid West region. Aerial photographs were first examined to evaluate the

[13] U.S. Geological Survey. 1926. Alhambra Topographic Map. Denver, CO.

[14] U.S. Geological Survey. 2012. El Monte 7.5-Minute Topographic Map. Reston, VA.

[15] U.S. Geological Survey. 2012. Mount Wilson 7.5-Minute Topographic Map. Reston, VA.

[16] U.S. Geological Survey. 2012. Pasadena 7.5-Minute Topographic Map. Reston, VA.

[17] 33 *Code of Federal Regulations* 328.3(e).

[18] U.S. Army Corps of Engineers. 2005. *Regulatory Guidance Letter 05-05*. Available at: http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl05-05.pdf

[19] Lichvar, R., and S. McColley. August 2008. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual*. Hanover, NH: U.S. Army Corps of Engineers Engineer Research and Development Center.

presence of active floodplain and potential drainages, as evidenced by geomorphic and/or vegetation features differing from the surrounding area, and by any anthropogenic features (e.g., constructed channels or ditches). Additional background data sources, such as topographic maps, soil maps, and a plant community map, were also examined. Based on these resources, a preliminary delineation map of active floodplain areas and drainages was created, which was then subject to field verification. Stream gage data were not available to assist with the delineation. Field verification of natural and anthropogenically altered channels entailed walking the area in a systematic manner to differentiate between low terrace, active floodplain, and low flow channel areas. For natural channels, the field surveys focused on identifying transitions between the low terrace, active floodplain, and low flow channel areas. For both natural and altered channels, indicators of OHWM were identified. Covered and confined sections of drainages (e.g., under highways) were not walked, but were assumed to follow a straight-line path between the inlet and outlet unless database information indicated otherwise. GPS units were used to record the locations of features during the field survey efforts.

Regarding the treatment of culverted belowground sections of drainages that would be considered waters of the U.S. in the absence of the anthropogenic modification of the channel in question, the Corps has no written or formal policy. Culverts do not sever the jurisdictional status between upstream and downstream waters, but the waters flowing through such culverts have already been subject to permanent impacts. For new impacts to these waters, the Corps reserves the right to assert jurisdiction, and each district typically follows a consistent pattern. The Los Angeles District generally does not assert regulatory authority over culverted drainages as waters of the U.S., but does consider such drainages important in establishing the jurisdictional status of upstream waters.

The results of the field verification were transferred to digital format using GIS software, for subsequent use in analyses.

3.3.2 Identification and Delineation of Wetlands

At potential wetlands located within the BSA, surveyors followed the methods established by the Corps in the 1987 *Corps of Engineers Wetland Delineation Manual*, and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*.[20,21] Within potential wetlands, two qualified wetland delineators and two qualified biologists recorded vegetation, soil, and hydrology data as outlined in the standard *Wetland Delineation Data Form – Arid West* (Attachment A, *Wetland Delineation Forms*)(Data Forms). Each sampling point was classified as wetland or non-wetland based on the presence of hydrophytic plants, hydric soil, and wetland hydrology. Wetland boundaries and sampling locations were recorded using an Ashtech GPS unit with sub-meter accuracy.

3.3.2.1 Wetland Vegetation

Hydrophytic vegetation classification was determined based on visual estimates of percent cover in plots at each soil test pit. Plant species observed at potential wetlands were identified using *The Jepson Manual: Vascular Plants of California*[22]and a wetland floral compendium compiled (Attachment B, *Wetland Floral Compendium*). Based on their wetland indicator status, plant species were categorized based on their tendency to occur in wetlands or uplands (Table 3.3.2-1, *Wetland Indicator Vegetation Classes*).

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

[21] U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS.

[22] Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, eds. 2012. *The Jepson Manual: Vascular Plants of California*. 2nd ed. Berkeley: University of California Press.

TABLE 3.3.2.1-1
Wetland Indicator Vegetation Classes

Indicator Status	Designation	Probability to Occur in Wetlands
Obligate Wetland (OBL)	Hydrophyte	Almost always occur in wetlands (>99% probability)
Facultative Wetland (FACW)	Hydrophyte	Usually occur in wetlands (approx. 67–99%)
Facultative (FAC)	Hydrophyte	Equally likely to occur in wetlands/non-wetlands (approx. 34–66%)
Facultative Upland (FACU)	Nonhydrophyte	Usually occurs in non-wetlands (approx. 67-99%)
Obligate Upland (UPL)	Nonhydrophyte	Almost always occurs in non-wetlands (>99%)

SOURCE: Lichvar, R.W. 2013. *The National Wetland Plant List: 2013 Wetland Ratings.* Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory.

3.3.2.2 Soils

Soils were sampled by digging soil test pits in pairs or trios of one upland and one wetland pit (and if needed a supplemental pit) to determine the boundaries of the wetland. The position of each sampling location was recorded using a GPS unit. Soil test pits were combined with vegetation sampling points where deemed necessary. At each sampling location the soil texture, matrix, and redoximorphic features—spots of different colors within the dominant color of the layer—were documented. The soil from each pit was examined for hydric soil indicators; low chroma, iron or manganese concentrations, organic layers, gleization, sulfuric odor, and so forth, as listed on the Data Form as primary hydric soil indicators. The soil pits were dug to a depth of approximately 20 in whenever possible. The depth, color of the soil, texture of the soil, and presence of redoximorphic features were recorded at each pit. The soil color was determined from moist soil samples using the Munsell Soil Color Charts.[23] The Pocket Guide to Hydric Soil Field Indicators was used to assess the hydric soils at each pit.[24]

3.4 Feature Classification

Drainage features observed within the BSA were classified according to one or more of the following types, some of which have specific regulatory definitions. The feature classes described below are not exhaustive, and additional feature classes or subdivisions within those described here may be useful in identifying and determining jurisdictional status of drainages.

3.4.1 Ditch

Ditches are relatively small features that convey water from one place to another in upland areas, as defined by the Corps.[25] Ditches generally do not carry a permanent flow of water, typically consisting of surface runoff from sources such as precipitation events, irrigation, or nuisance flows from surface use, and are not jurisdictional under the Clean Water Act when they are excavated wholly in and draining upland habitat.[26] Ditches typically lack an OHWM and riparian vegetation, can be concrete or earthen, are generally ephemeral, and many are manmade to convey runoff in upland habitats. Concrete ditches with a v-shaped cross section are often constructed around roadways to channel and direct short-term flows away from road surfaces. These ditches typically have little or no vegetation, and are regularly cleared and maintained to preserve their functionality. The Corps generally does not assert jurisdiction over ditches, although it may do so on a case-by-case basis.

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[23] Munsell Color. 2012. *Munsell Soil Color Book*: *Munsell Soil-Color Charts*. Grand Rapids, MI.

[24] Wetland Training Institute, Inc. 2013. *2013 Pocket Guide to Hydric Soil Field Indicators, Based on Field Indicators of Hydric Soils in the United States (version 7.0 with updates)*. Glenwood, NM.

[25] U.S. Army Corps of Engineers. 2007. *US Army Corps of Engineers Regulatory Guidance Letter No. 07-02*. Available at: http://www.Corps.army.mil/Portals/2/docs/civilworks/RGLS/rgl07-02.pdf

[26] Lichvar, R., and S. McColley. August 2008. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual*. Hanover, NH: U.S. Army Corps of Engineers Engineer Research and Development Center.

3.4.2 Stream

The Corps typically asserts jurisdiction over streams, which can be permanently or intermittently flowing. A stream, up to the OHWM and any adjacent or abutting wetland, is jurisdictional for the Corps if it is considered a Traditional Navigable Water (TNW) or a tributary to a TNW.[27]

3.4.3 Detention Basin

A detention basin is an earthen depression that has been built on or adjacent to tributaries of flood-control drainages, or streams, in order to manage storm water. Detention basins are designed to retain water for a period of time, thus protecting against flooding downstream. Because detention basins are associated with a watercourse, the jurisdiction within a detention basin is dependent on the jurisdiction of the watercourse, and the presence of riparian vegetation or wetlands. In some cases, detention basins are created in uplands as part of compliance with Section 402 of the CWA, and are not subject to Section 404 of the CWA. However, this report focuses on field observations and final determinations of jurisdiction will be made by the regulatory agencies based on all available information.

3.4.4 Wetlands

Wetlands are areas that are inundated or saturated by water at sufficient frequency and duration to support vegetation adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, and similar areas.[28] The Corps maintains jurisdiction over wetlands that abut or are adjacent to all TNWs and their tributaries. In order to be non-jurisdictional for the Corps, isolated wetlands must lack a significant nexus to a TNW as described in the Rapanos Guidance, not abut or be adjacent to a TNW or tributary, and have no interstate commerce connection.[29]

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[27] Lichvar, R., and S. McColley. August 2008. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual*. Hanover, NH: U.S. Army Corps of Engineers Engineer Research and Development Center.

[28] U.S. Army Corps of Engineers. 2007. *US Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook*. Available at: http://www.Corps.army.mil/Portals/2/docs/civilworks/regulatory/cwa_guide/jd_guidebook_051207final.pdf

[29] U.S. Army Corps of Engineers. 2007. *US Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook*. Available at: http://www.Corps.army.mil/Portals/2/docs/civilworks/regulatory/cwa_guide/jd_guidebook_051207final.pdf

4.0 Results

4.1 Literature and Historical Map Review

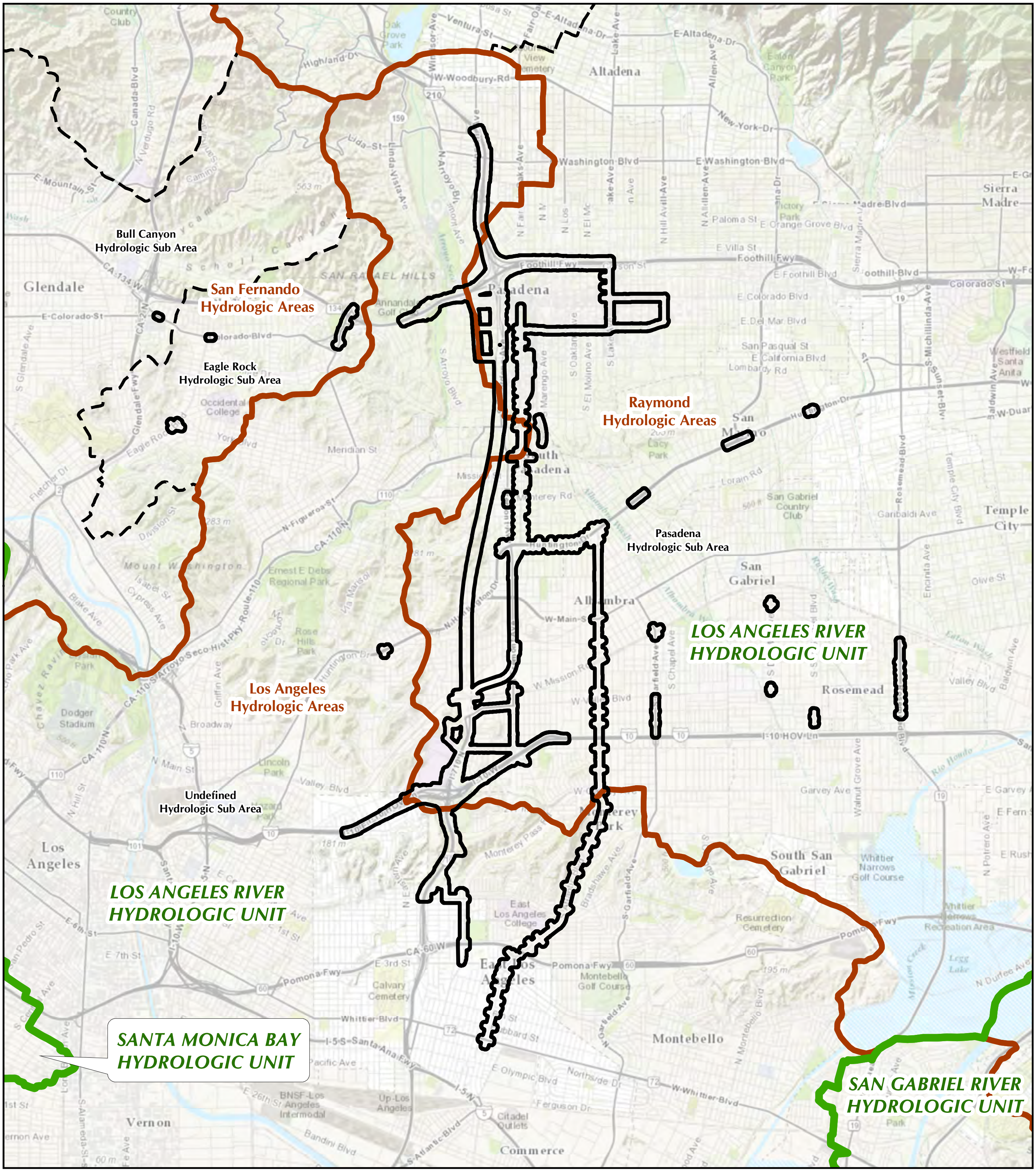
4.1.1 Watershed Context

The Proposed Project and associated BSA include approximately 3,410 acres ranging in elevation from a low point of approximately 57 m above mean sea level (msl) in the south to 309 m at the northern end (187 to 1,014 ft), and is depicted on four USGS topographic 7.5-minute quadrangles (Figure 2). The entire BSA is contained within the watershed of the Los Angeles River. This watershed, called the Los Angeles River Hydrologic Unit (HUC 18070105), drains a 2,152-square-kilometer (831-square-mile) area (Figure 3, *Regional Watershed Hydrologic Units in Relation to the Biological Study Area*). The California Interagency Watershed Map further divides the Los Angeles River Hydrologic Unit into areas and subareas, four of which overlap with the BSA (Table 4.1.1-1, *Hydrologic Areas within the BSA*). The watershed includes more than 40 cities and unincorporated communities and has a population of approximately 9 million. The Los Angeles River has been heavily altered and was channelized beginning in the 1930s, primarily to contain heavy seasonal flooding and thus ensure public safety and facilitate urban development. The Los Angeles River is designated as a traditional navigable waterway for approximately 51 miles upstream from the Pacific Ocean, and this stretch is under the jurisdiction of the Corps.[30]

TABLE 4.1.1-1
Hydrologic Areas Within The BSA

Hydrologic Unit	Hydrologic Area	Hydrologic Sub Area (if defined)	Acres
Los Angeles River	Los Angeles	—	939.5
	San Fernando	Bull Canyon	5.4
	Raymond	Pasadena	2,402.7
	San Fernando	Eagle Rock	62.5

[30] Blumenfeld, Jared, U.S. Environmental Protection Agency, Region IX. 6. July 2010. Letter to Colonel Mark Toy, U.S. Army Corps of Engineers, Los Angeles District, Los Angeles, CA.



LEGEND

- Biological Study Area
- Hydrologic Units
- Hydrologic Areas
- Hydrologic Sub Areas

N

0 0.25 0.5 1 1.5 2
Miles

FIGURE 3

SR 710 North Study

Regional Watershed Hydrologic Units
in Relation to the Biological Study Area

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013); California InterAgency Watershed Map (1999)

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4.1.2 Regional Soils

Nine soil types were identified as occurring within the BSA based on Los Angeles County Department of Public Works soils database, which in turn is based on soil surveys conducted in 1903 and 1919 by the U.S. Department of Agriculture (USDA) Bureau of Soils.[31] The soils in the BSA have not been mapped by NRCS and therefore the soils data may not match the standards or definitions used by NRCS. However, NRCS's database contains soil series descriptions for soils with names that match those in the BSA, and these descriptions were used as to indicate the potential for hydric conditions to occur in those soils. A list of hydric soils is also maintained by NRCS, which is only applicable to areas mapped by NRCS, but which was used to inform the evaluation of material observed in soil test pits dug in areas identified as potential wetlands (Table 4.1.2-1, *Soil Types Occurring within the BSA*; Figure 4, *Regional Soil Types in the Biological Study Area*).[32,33,34] Of the soils within the BSA, only the Upper Los Angeles River soil series lacked a description in the current NRCS soil series database (Attachment C, Soils Information).

TABLE 4.1.2-1
Soils Types Occurring within the BSA

Soil Type	Acres
Altamont Clay Loam	548.3
Chino Silt Loam	48.7
Hanford Fine Sandy Loam	56.0
Hanford Gravelly Sandy Loam	41.8
Ramona Loam	1,526.7
Ramona Sandy Loam	906.5
Upper Los Angeles River	49.0
Yolo Clay Loam	136.1
Yolo Loam	97.0

In the absence of NRCS site-specific information about whether hydric soils were present, the soil series were not used directly to draw conclusions about the presence or absence of hydric soils within the BSA. Field identification of hydric soils was guided by visible indicators of hydric conditions[35] and the Corps' recommendations for the Arid West region.[36]

4.1.3 Wetlands and Waters

Blue-line drainages and other potential water features were identified from USGS topographic maps and Los Angeles County hydrological data sources within the BSA (Attachment D, *Potential Corps Jurisdictional Features Map.*). These potential features included both aboveground surface waters and some belowground sections in culverts that connect aboveground sections. All blue-line features were subject to field verification. The culverted underground drainage sections were mapped based on Los Angeles County Storm Drain Mapper information to establish connectivity, but they were not included in the quantified jurisdictional waters of the U.S. in this report.

[31] Los Angeles County Department of Public Works, Water Resources Division. 2004. Soils Database. Available from: http://ladpw.org/wrd/publication/, at: http://egis3.lacounty.gov/dataportal/2011/01/27/soil-types/

[32] Los Angeles County Department of Public Works. January 2006. Hydrology Manual. Alhambra, CA Available at: http://ladpw.org/wrd/publication/

[33] Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions. Available at: http://soils.usda.gov/technical/classification/osd/index.html. Lincoln, NE.

[34] Natural Resources Conservation Service, 2010. *Field Indicators of Hydric Soils in the United States, Version 7.0.* Ed. L.M. Vasilas, G.W. Hurt, C.V. Noble.

[35] Natural Resources Conservation Service, 2010. *Field Indicators of Hydric Soils in the United States, Version 7.0.* Ed. L.M. Vasilas, G.W. Hurt, C.V. Noble.

[36] U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS.

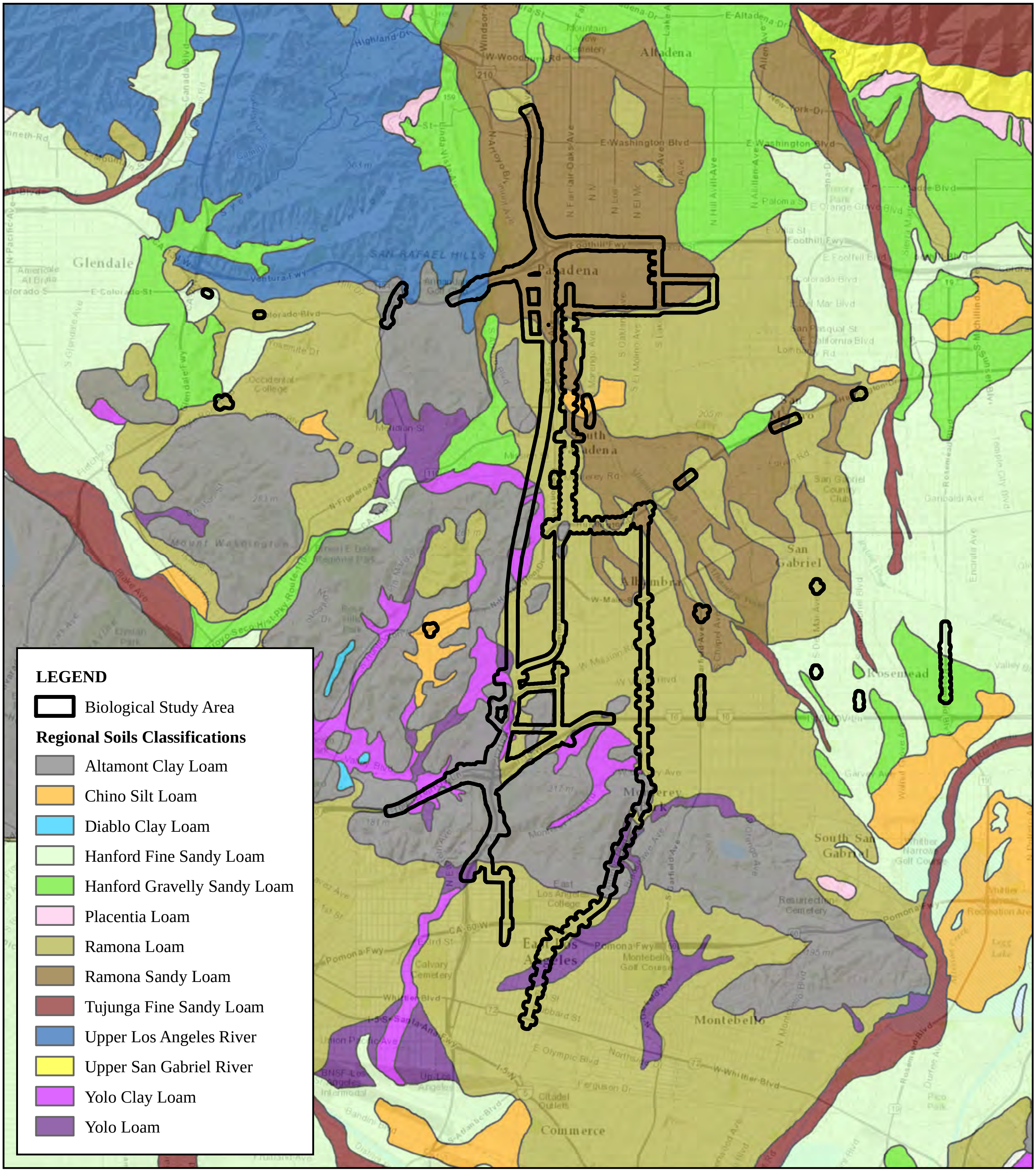

FIGURE 4

SR 710 North Study

Regional Soil Types in the Biological Study Area

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013); Los Angeles County Department of Public Works (08/2013)

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Two named drainages, the Arroyo Seco and the Laguna Channel, also sometimes referred to as the Dorchester Channel, were identified within the BSA as a result of the literature and historical map review. Both are natural drainages that have been partly or completely channelized in the vicinity of the Proposed Project. The USGS topographic maps identify and show both of these features as draining into the Los Angeles River.[37] The NWI database identified waters in the BSA only along the courses of the Arroyo Seco and the Laguna Channel.

Arroyo Seco

The Arroyo Seco passes through the northwestern portion of the BSA in the City of Pasadena, where it is crossed by the existing SR 134 via a concrete span and, just south and outside the BSA, by the Colorado Street Bridge. It then continues southward and eventually drains into the Los Angeles River, to which it is a major tributary. Part of the Arroyo Seco where it passes through the BSA has been the subject of a restoration project, which created new low-flow side channels and riparian habitat in the 1990s.[38] Since the project was implemented, riparian habitats have matured and developed in the project area, affecting some functions and values of the Arroyo Seco.

Laguna Channel

The course of the Laguna Channel runs both above and below ground within the BSA, as depicted on USGS topographic maps, crossing under the SR 710 and I-710 several times. In early maps from the 1920s through the 1950s, the Laguna Channel followed a meandering and presumably mostly natural course originating near South Pasadena and subsequently feeding through the hills near the border of the unincorporated community of City Terrace and the City of Monterey Park, and then draining into the Los Angeles River. Heavy modification of the channel occurred between the publication of the 1953 and 1966 maps, in association with construction of the SR 710, which approximates the original course of the Laguna Channel, and the I-10 freeway. It is first named on the 1966 7.5-minute USGS quadrangle map as the Laguna Channel, and an alternate spelling, Luguna Channel, is presented on the 2012 map. The name Laguna Channel is used in this report following the 1966 nomenclature. Segments of the Laguna Channel are also visible on the L.A. County Storm Drain maps, including portions that are subterranean. These segments are labeled storm drain BI 0065, also given the name of Dorchester Avenue Channel. The Laguna Channel and the Dorchester Avenue Channel, or Dorchester Channel, are the same drainage feature.

The Laguna Channel as a named drainage on USGS topographic maps begins in the middle of the BSA along the open rectangular channel, but its upstream inputs are not apparent either on the USGS topographic maps or recent aerial imagery. Based on the L.A. County Storm Drain database, the Laguna Channel receives flow from three underground channels converging within the BSA (Figure 5, *Underground Upstream Inputs to the Laguna Channel*).[39]

[37] U.S. Geological Survey. 2012. Los Angeles Topographic Quadrangle. Reston, VA.

[38] City of Pasadena. 2003. *Arroyo Seco Master Plans: Central Arroyo Master Plan*. Pasadena, CA. Available at: http://www.ci.pasadena.ca.us/PublicWorks/CAMP/

[39] Los Angeles Department of Public Works. n.d. Los Angeles County Storm Drain System. Available at: http://dpw.lacounty.gov/fcd/stormdrain/index.cfm#map

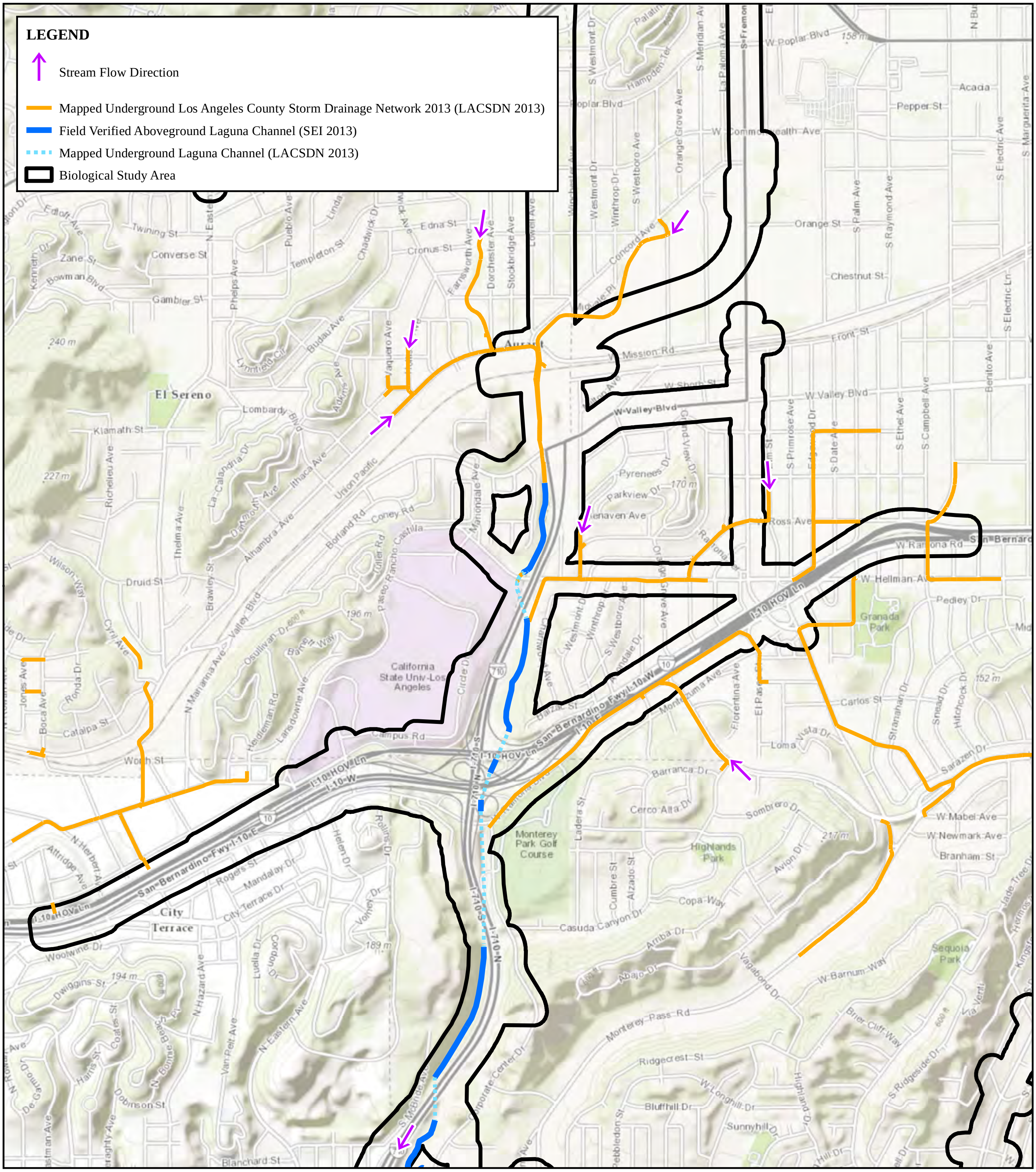

FIGURE 5

N

0 400 800 1,600 2,400
Feet

SR 710 North Study

Underground Upstream Inputs to the Laguna Channel

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (11/2013)

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4.1.4 Weather and Climate

The Los Angeles Basin, where the Proposed Project is located, is characterized by a Mediterranean climate with hot summers and cool winters. Average annual rainfall totals 17.5 in, most of which falls between October and April, with February as the rainiest month, on average, as reflected in the totals at the Burbank Airport weather station (station 23152).[40] Because of the large seasonal variation in rainfall, hydrology indicators, and to a lesser extent hydrophytic vegetation indicators, of wetlands may be reduced during the dry season. As a result, wetland delineations conducted during the dry season may result in negative indications for hydrology and short-lived annual hydrophytic vegetation, compared to delineations conducted during the wet season. However, wetland delineators should take the short- and long-term rainfall history, as well as seasonal variations, into consideration during the delineation. OHWM changes more slowly over time, and thus is less sensitive to fluctuations in rainfall. These general patterns are complicated in some features with large flow inputs originating from municipal water sources (e.g. lawn watering) which would be expected to show a flat or opposite seasonal pattern compared to the seasonal patterns of rainfall and storm water runoff.

The year 2013 was an extremely dry one, with only 3.5 in of rain recorded during the calendar year.[41] Because the field surveys were conducted in an unusually dry year, water levels would have been lower than normal. Although a preliminary field visit was conducted in April, at the tail end of the wet season, the wetland delineations were conducted in August and October, in the middle to late dry season. As a result, hydrophytic vegetation and hydrology indicators in the potential wetlands were likely less apparent than in years of average or high rainfall.

During the field delineations, the biologists took these factors into consideration. Specifically, perennial vegetation that reflects long-term conditions was considered a better indicator than annual vegetation, and the biologists considered the possibility that hydrology indicators may be missing or absent. The one indicator that does not vary seasonally is hydric soils, but the two areas delineated both lacked hydric soil indicators, due to occasional soil disturbance and the apparently relatively recent origins of the wetlands. However, results of the field surveys did not suggest that the delineations were compromised by the field conditions: of the 20 wetland test plots, hydrology and hydrophytic vegetation indicators matched in all but three cases (i.e., both were indicative of wetlands, or both were indicative of uplands). At sampling point DM-3, hydrophytic vegetation was present, but not hydrology. At sampling points LAG-8 and LAG-13 (Attachment A), wetland hydrology was present, but hydrophytic vegetation was determined to be absent.

4.2 Field Survey Results

Based on the results of the map and literature review, 27 water features were identified within the BSA and subject to field visits to assess current conditions and potential jurisdictional status (Table 4.2-1, *Water Features within the BSA*). All features were mapped and photographed during the field surveys (Attachment D; Attachment E, *Potential Non-Jurisdictional Features Map*; Appendix F, *Representative Site Photographs*). Each feature was assigned a unique number used for reference throughout this document (Table 4.2-1, Attachment C, Attachment D). Two streams potentially subject to Corps jurisdiction were identified, including the Arroyo Seco (Features 5-A and 5-B) and the Laguna Channel (Features 11-A though 11-F). Two wetlands were delineated and mapped based on surface hydrology, soil conditions and the presence or absence of hydrophytic vegetation (Attachment A; Attachment B).

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40 National Oceanic and Atmospheric Administration, National Climate Data Center. 2014. Weather history for Burbank station number 23152. Available at: http://www.ncdc.noaa.gov/data-access/land-based-station-data

41 National Oceanic and Atmospheric Administration, National Climate Data Center. 2014. Weather history for Burbank station number 23152. Available at: http://www.ncdc.noaa.gov/data-access/land-based-station-data

TABLE 4.2-1
Drainages and Wetland Features within the BSA*

Feature Description					Corps CWA 404 Jurisdictional Area (acres)	
No.	**Type**	**Description**	**OHWM[A] width (ft)**	**Length (ft)**	**Non-Wetland**	**Wetland**
1	Ditch	4 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not flow into or have any connection to a TNW or TNW tributary.	—	1,077	—	—
2	Ditch	4 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not flow into or have any connection to a TNW or TNW tributary.	—	1,231	—	—
3	Ditch	4 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not flow into or have any connection to a TNW or TNW tributary.	—	509	—	—
4	Ditch	Unnamed surface drainage. 5 ft wide; drains hillside runoff; unvegetated; does not flow into or have any connection to a TNW or TNW tributary.	—	915	—	—
5-A	Stream	Arroyo Seco, 80 ft wide; earthen lined; blue-line; riparian vegetation; no flowing water during survey; standing water at 1 ft depth on 10/4/13; drains to Los Angeles River.	80	1,076	1.98	—
5-B	Stream	Arroyo Seco alternate channel; 10 ft wide; earthen lined; drains waters diverted from main channel of Arroyo Seco; flowing water present during visit on 10/4/13; originates from culvert at the northern end; flows into Arroyo Seco main channel.	10	287	0.07	—
6	Riparian non-wetland habitat	Along both sides of the Arroyo Seco, adjacent to Features 5-A and 5-B; comprised of arroyo willow thickets, white alder groves, and black cottonwood forest.	—	—	—	—
7	Ditch	4 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not flow into or have any connection to a TNW or TNW tributary.	—	1,894	—	—
8	Wetland	At Del Mar Pump Station; up to 90 ft wide; earthen bottom, riparian vegetation present immediately around the pump station; isolated; does not flow into or have any connection to a TNW or TNW tributary, or apparent significant nexus.	—	—	—	—
9	Ditch	8 ft wide, concrete lined cobble ditch, unvegetated, drains commercial runoff, does not flow into or have any connection to a TNW or TNW tributary.	—	89	—	—
10	Ditch	8 ft wide; concrete lined ditch; drains hillside runoff; unvegetated; does not flow into or have any connection to a TNW or TNW tributary.	—	1,308	—	—
11-A	Stream,	Laguna Channel; 20 ft wide, concrete lined channel and rock lined channel; blue line; mostly unvegetated; drains surface water runoff, water flowing during all site visits, drains south into the Los Angeles River.	20	1,419	0.65	—
12	Ditch	4 ft wide, concrete lined v-ditch, unvegetated, drains road and hillside runoff, does not flow into or have any connection to a TNW or TNW tributary.	—	920		

TABLE 4.2-1
Drainages and Wetland Features within the BSA*

Feature Description					Corps CWA 404 Jurisdictional Area (acres)	
No.	**Type**	**Description**	**OHWM[A] width (ft)**	**Length (ft)**	**Non-Wetland**	**Wetland**
13	Ditch	5 to 8 ft wide; concrete-lined v-ditch, drains hillside runoff; unvegetated; does not flow into or have any connection to a TNW or TNW tributary.	—	983	—	—
11-B	Stream	Laguna Channel; OHWM 10-24 ft wide; concrete bottom and riprap sides; drains south into the Los Angeles River.	10-24	1,740	0.57	
14	Detention Basin	Surrounds the Laguna Channel (Feature 11-B); earthen bottom; no OHWM, riparian or wetland characteristics; terminus of ditch Feature 13; named the Laguna Regulating Basin.	—	—	—	—
11-C	Stream	Laguna Channel; 12 ft wide; concrete lined channel below grade; drains south into the Los Angeles River.	12	189	0.05	
11-D	Stream	Laguna Channel; 12 ft wide; concrete lined open rectangular channel below grade; drains south into the Los Angeles River.	12	170	0.05	
15	Ditch	4 ft wide; concrete lined v-ditch; unvegetated, drains hillside runoff, does not flow into or have any connection to a TNW or TNW tributary.	—	717	—	—
16	Ditch	3 ft wide; concrete lined v-ditch; unvegetated; drains hillside runoff; does not flow into or have any connection to a TNW or TNW tributary.	—	528	—	—
17	Ditch	3 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not flow into or have any connection to a TNW or TNW tributary.	—	867	—	—
18	Ditch	Unnamed surface drainage; 5 to 25 ft wide; concrete and earthen lined ditch; native and non-native vegetation; originates from commercial runoff and precipitation events; also received flows from Feature 19; water flowing during site visit (10/2/13); flows into the Laguna Channel occasionally.	—	1,754	—	—
19	Ditch	Unnamed surface drainage; 4 ft wide; three separate, roughly parallel sections; concrete and earthen lined v-ditch; mostly unvegetated; drains hillside runoff into Feature 18, and then into the Laguna Channel.	—	882	—	—
11-E	Stream	Laguna Channel; 18 ft wide; concrete lined open rectangular channel below grade; drains south into the Los Angeles River.	18	2,104	0.87	—
20	Ditch	Unnamed surface drainage. 2 to 8 ft wide; concrete lined ditches; drains hillside runoff; unvegetated; flows drain into 12 ft wide concrete box channel; does not flow into or have any connection to a TNW or TNW tributary.	—	11,027	—	—
21	Ditch	5 to 25 ft wide; concrete lined ditches; drains hillside runoff; unvegetated; does not flow into or have any connection to a TNW or TNW tributary.	—	1,100	—	—
11-F	Stream	Laguna Channel: 6 ft wide; earthen bottom; drains south into the Los Angeles River; abutted by wetland (Feature 22) and riparian non-wetland woodland (Feature 23); surrounded by detention basin (Feature 24).	6	1,387	0.19	—

TABLE 4.2-1
Drainages and Wetland Features within the BSA*

Feature Description					Corps CWA 404 Jurisdictional Area (acres)	
No.	**Type**	**Description**	**OHWM[A] width (ft)**	**Length (ft)**	**Non-Wetland**	**Wetland**
22	Wetland	Abuts Laguna Channel (Feature 11-F), riparian vegetation; surrounded by detention basin (Feature 24).	—	—	—	0.44
23	Riparian non-wetland habitat	Riparian area comprised of non-native woodland and giant reed; abuts Features 11-F and 22.	—	—	—	—
24	Detention Basin	Earthen bottom; no OHWM, riparian or wetland characteristics; surrounds Features 11-F, 22 and 23.	—	—	—	—
25	Ditch	3 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not flow into or have any connection to a TNW or TNW tributary.	—	202	—	—
26	Ditch	3 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not flow into or have any connection to a TNW or TNW tributary.	—	645	—	—
27	Ditch	Unnamed surface drainage; 3 ft wide; drains hillside runoff; unvegetated; does not flow into or have any connection to a TNW or TNW tributary.	—	1,736	—	—
				Total	**4.43**	**0.44**

[A] Features classified as ditches and detention basins did not exhibit an OHWM or riparian vegetation.
*Feature numbers 6 and 23 are not used because they were used to label features that only have the potential to be considered jurisdictional by CDFW and/or the RWQCB. Because the scope of this report is limited to the potential jurisdiction of the Corps, these features are not described in this report.
KEY: Corps = U.S. Army Corps of Engineers, CWA 404 = Clean Water Act Section 404, ft = feet, OHWM = Ordinary high water mark, TNW = Traditional navigable water

The wetland at the Del Mar Pump Station (Feature 8) was tentatively identified as isolated and therefore not subject to Corps jurisdiction, because no connection to waters of the U.S. or their tributaries was observed, nor a significant nexus per the Rapanos guidance. In addition, the wetland is excavated wholly in uplands, and depends on water actively pumped onto the site. Therefore, it may be appropriately classified as a man-induced wetland as described in the 1987 Manual. The other wetland (Feature 22) abuts the Laguna Channel and would be subject to Corps jurisdiction because it is connected to downstream waters of the U.S.

During the field visits, large sections of potential features depicted on both the NWI and L.A. County Storm Drain maps were observed to be partly or entirely subterranean within the BSA, including large sections of the Laguna Channel. In cases where a single drainage included both aboveground and belowground portions within the BSA, each aboveground portion was assigned a unique feature number for ease of discussion. Feature numbers were assigned to drainages generally in numeric order from north to south. Streams with multiple distinct separate aboveground segments were assigned one number for the entire stream, and a letter for each segment. Covered belowground (i.e., culverted) segments were not assigned feature numbers or letters.

4.2.1 Corps Jurisdiction

Two drainages, the Arroyo Seco and the Laguna Channel, both blue-line drainages that drain directly into the Los Angeles River, were identified as meeting Corps criteria for jurisdiction.

Arroyo Seco

The Arroyo Seco carries relatively permanent waters, but is often dry at the end of summer (a small area of ponded water was observed on October 2, 2013). The main channel of the Arroyo Seco as it passes through the BSA is an earthen-bottom stream with an 80-ft wide OHWM (Feature 5-A). Water is diverted from upstream through a culvert that drains into a relatively small (10-ft wide at OHWM) earthen bottom side channel on the west side of the main Arroyo Seco (Feature 5-B). The Arroyo Seco is subject to Corps jurisdiction because it has relatively permanent waters that flow into the Los Angeles River, a traditional navigable waterway. The total acreage of the Arroyo Seco likely subject to Corps jurisdiction within the BSA is 2.04 acres.

Laguna Channel

The Laguna Channel is a channelized blue-line drainage that includes both above- and belowground portions within the BSA (Features 11-A to 11-F). Within the BSA, most of the length of the Laguna Channel consists of concrete rectangular channel; one abutting wetland (Feature 22) and two associated detention basins (Features 14 and 24) were also recorded. One of the detention basins (Feature 14) had small amounts of opportunistic vegetation both above and below the OHWM (e.g., Mexican fan palm; *Washingtonia robusta*), but there were no wetland indicators at this site or riparian habitat. The other detention basin (Feature 24) encompassed the main Laguna Channel (Feature 11-F), a small wetland buffering the channel itself (Feature 22), and riparian non-wetland habitat (Feature 23). At these locations, only the channel and wetland were considered jurisdictional; neither detention basin was identified as jurisdictional due to the lack of wetland indicators, lack of relatively permanent waters, and lack of OHWM. The riparian non-wetland habitat was located above the stream's OHWM and would therefore not be subject to Corps jurisdiction. The total acreage of aboveground portions of the Laguna Channel likely subject to Corps jurisdiction is approximately 2.82 acres (2.38 acres of non-wetland stream and 0.44 acres of wetlands). Although the Corps typically does not assert regulatory authority over subsurface flows, it does specify that culverts do not affect the jurisdictional status of the associated water bodies.[42]

The wetland (Feature 22) associated with the Laguna Channel was located on both sides of the stream (Feature 11-F) as an abutting wetland configuration; wetland plants and hydrology were contiguous with the main stream channel (Figure 6, *Laguna Channel and Abutting Wetland*). Survey personnel noted that the soils in the wetland contained large amounts of fill material, including bricks and rock. The first appearance of the wetland on the 1966 USGS topographic map suggests, but does not confirm, that the wetland and surrounding detention basin may have originated after 1955 (the latest USGS topographic map on which it does not appear). Soils in the wetland were significantly disturbed, due to vegetation clearing and/or soil-moving activities, likely to maintain the contours of the basin containing the stream and wetland. Based on field observations, the soils and vegetation were characterized as significantly disturbed. Due to the presence of fill material (red bricks and varied debris) from an unknown location, it is assumed the soils originated from an upland location. The sites with positive indicators of vegetation and hydrology lacked hydric soil indicators in the areas classified as wetland and upland within the detention basin. The problematic situation was classified as "Other," which reflects both the disturbed soils and the relatively recent wetland origins. Because a problematic situation was identified, hydric soil indicators are not necessary to establish the area as a wetland; hydrology and vegetation indicators are sufficient. Given the observation of hydrological indicators (high water table and saturated soils) at the end of the dry season when the survey was conducted, it is anticipated that if the soils were left undisturbed and the current hydrological regime persists, visible indicators of hydric soils would develop over time.

The total area of wetland and non-wetland areas meeting the criteria for Corps jurisdiction in the BSA was 4.86 acres, of which 0.44 acres were wetlands and 4.43 acre of non-wetland waters of the U.S.

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[42] U.S. Army Corps of Engineers. 2007. *US Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook*. Available at: http://www.Corps.army.mil/Portals/2/docs/civilworks/regulatory/cwa_guide/jd_guidebook_051207final.pdf

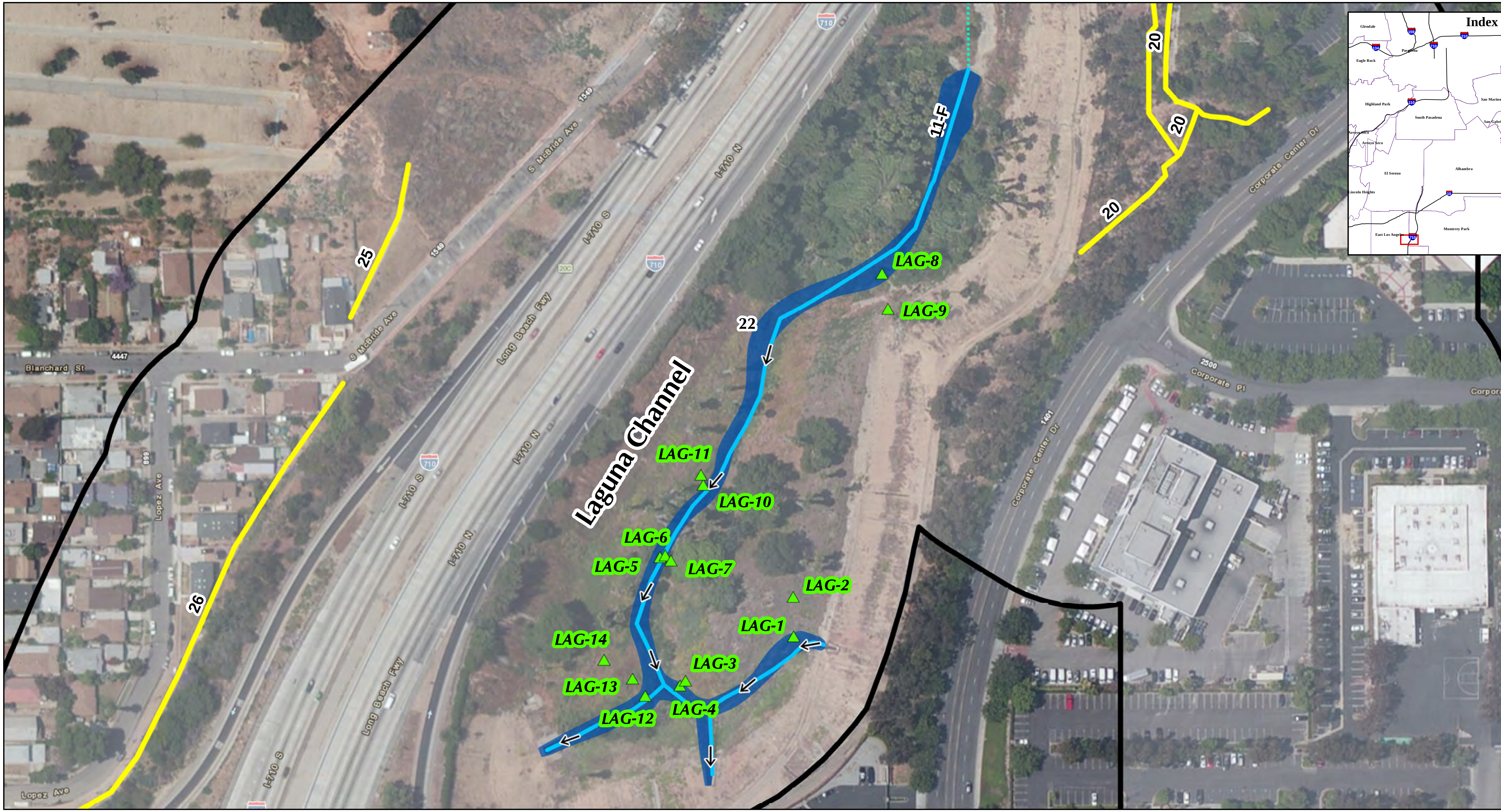

FIGURE 6

N

0 50 100 200 300
Feet

LEGEND

Stream Flow Direction

Non-Jurisdictional

Non-Jurisdictional Underground

Soil Test Pit

Biological Study Area

Corps Jurisdiction

Non-Wetland (Feature 11-F)

Wetland (Feature 22)

SR 710 North Study

Laguna Channel and Abutting Wetland

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)

Q:\1282\SR_710\ArcProjects\JD Report\ACOE\Laguna_Channel_Wetland_Areas.mxd (10/24/2014)

4.2.2 Non-Jurisdictional Features

One 1.09-acre wetland at the Del Mar Pump Station (Feature 8) was identified as not subject to Corps jurisdiction because it is excavated wholly in uplands. Additionally, it appeared to be isolated, draining into the groundwater without a connection or significant nexus to waters of the U.S.

A total of 19 aboveground ditch features totaling 28,378 ft (5.4 mi) in combined length were identified within the BSA, most were not included in any database or map resource. All of these ditches were determined to carry ephemeral flows in response to precipitation events or nuisance flows; none were identified as having a significant nexus to the biological, chemical, or physical integrity of downstream TNWs; and none were identified as potentially jurisdictional during the field surveys. All of these ditches are of a type over which the Corps does not typically assert jurisdiction, as they are excavated in uplands, they drain only uplands, and they do not carry relatively permanent flows.[43]

Features 1–4 and 27 are simple roadside ditches that do not carry relatively permanent flows.

Features 7, 9–10, 12–13, 15–19, and 25–26 drain areas such as parking lots and residential areas, in some cases in a ditch network, and do not solely parallel a road; all drain uplands and none carry relatively permanent flows.

Features 6 and 23 are riparian areas located adjacent to existing Corps jurisdictional waters. Feature 6 is located adjacent to the Arroyo Seco, and Feature 23 is located adjacent to the Laguna Channel. Both features receive water from their adjacent jurisdictional features. Both features are of a type over which the Corps does not typically assert jurisdiction.

Feature 18 is a ditch feature which runs downhill from north to south. Feature 19 is a ditch feature with three distinct, roughly parallel, sections on a hillside with each section running downhill from west to east. All sections of Feature 19 flow into to Feature 18; both features drain only uplands and do not carry relatively permanent flows. Features 18 and 19 were identified on the NWI as riverine and freshwater pond, but the observed conditions do not support that assessment. During a visit conducted on October 2, 2013, water was observed in the southernmost section of Feature 19 that originated from commercial runoff at the top of the hill, as well as from a 0.1-inch recent precipitation event. The flows drained into Feature 18, which runs along the base of the hill, and then drained directly into, without ponding, the Laguna Channel where it emerges from a belowground section to flow through a rectangular channel (Feature 11-E). No typical indicators (hydrology, hydric soils or vegetation) suggested that the area within the NWI-identified pond feature differed from nearby areas outside the NWI area.

Features 20 and 21 are networks of interconnected concrete-lined ditches draining hillside runoff; they are excavated wholly in and drain only uplands, and do not carry relatively permanent flows. Feature 20 drains into a 12-ft-wide concrete box channel that may connect underground to the storm drain system; however, it is not identified in any data source reviewed for this report.

[43] U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS.

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ATTACHMENT A
WETLAND DELINEATION FORMS

Attachment A
Wetland Delineation Forms

Routine on-site delineations were conducted at two sites with potential wetlands. The sites are named for their associations with the storm water pumping station near Del Mar Avenue in the City of Pasadena, and for the Laguna Channel stream in the City of Alhambra. In all, 20 points were sampled for hydrophytic vegetation, hydric soils and hydrology. Data were recorded in the format provided in the Arid West Regional Supplement[1], included in the following pages.

Site	Sampling Point (Data Sheet Name)	Wetland or Upland
Del Mar Pump Station, City of Pasadena	DM-1 (A,B)	Wetland
	DM-2	Wetland
	DM-3	Upland
	DM-4	Upland
	DM-5	Upland
Laguna Channel near Floral Drive, City of Alhambra	LAG-1	Wetland
	LAG-2	Upland
	LAG-3	Wetland
	LAG-4	Upland
	LAG-5	Wetland
	LAG-6	Wetland
	LAG-7	Upland
	LAG-8	Upland
	LAG-9	Wetland
	LAG-10	Wetland
	LAG-11	Upland
	LAG-12	Wetland
	LAG-13	Upland
	LAG-14	Upland

[1] U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study, Del Mar pump station City/County: Pasadena, Los Angeles Sampling Date: 21 Aug., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: DM-1(A,B)

Investigator(s): JRM, MES, BJB, LRD Section, Township, Range: San Pascual Land Grant

Landform (hillslope, terrace, etc.): basin in highway median Local relief (concave, convex, none): concave Slope (%): 0-1%

Subregion (LRR): C Lat: UTM North 3778272 Long: UTM Easting 393519 Datum: NAD83

Soil Map Unit Name: Not NRCS mapped. LA County map: Ramona sandy loam NWI classification: none

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

Are Vegetation ✓, Soil ✓, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

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

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

Hydrophytic Vegetation Present?	Yes ✓	No ____
Hydric Soil Present?	Yes ✓	No ____
Wetland Hydrology Present?	Yes ✓	No ____

Is the Sampled Area within a Wetland? **Yes ✓ No ____**

Remarks:

Pumping station at north end of the median pumps water into the area. Vegetation recently cleared/mowed. Aerials back to 2005 show occasional mowing and soil disturbances.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
= Total Cover	0		
Herb Stratum (Plot size: ____)			
1. Distichlis spicata	43	Dom	FAC
2. Echinochloa crus-galli	28	Dom	FACW
3. Typha latifolia	9		OBL
4. Polygonum aviculare	8		FACW
5. Setaria pumila	8		FAC
6. Paspalum dilatatum	5		FAC
7.			
8.			
= Total Cover	101		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 2 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	9	x 1 =	9
FACW species	28	x 2 =	56
FAC species	16	x 3 =	48
FACU species		x 4 =	
UPL species		x 5 =	
Column Totals:	53 (A)		113 (B)

Prevalence Index = B/A = 2.1

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes ✓ No ____**

Remarks:

SOIL

Sampling Point: DM-1(A,B)

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 to 3	7.5 YR 2.5/1	100					Clay loam	Dense roots
3 to 8	7.5 YR 2.5/1	100					Clay loam	Loose roots
8 to 18	7.5 YR 2.5/1	90	10 YR 4/4	10	C	M	Clay loam	Inclusions are yellower than matrix, are not redox.
								Water filling pit, dug second pit.
								First pit is DM-1A, second pit is DM-1B.
0 to 6	10 YR 2/1	100					Sandy loam	
6 to 15	5 Y 3/1	100					Sandy loam	
15 to 20	5Y 3/1	95	2.5 YR 4/6	5	C	M	Sandy clay loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ______

Remarks:

Sampling point is on a level surface at the bottom of a basin in highway median. Water is actively pumped into the site, observed flooded for at least 3 days in March 2013. Hydric conditions believed to occur regularly (based on observations of water source, vegetation and hydrology), but disturbances (mowing and soil relocations) likely inhibit development of visible hydric soil indicators. If soils left undisturbed, they would likely develop visible indicators of hydric condition over time. Historic information provided in the report. Pit depth limited by hard soil, but no deeper indicators possible, based on profiles to 18/20" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ✓ No ______ Depth (inches): 2

Saturation Present? (includes capillary fringe) Yes ✓ No ______ Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ______

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

Remarks:

Water pooled on surface 24 inches from soil pit.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study, Del Mar pump station City/County: Pasadena, Los Angeles Sampling Date: 21 Aug., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: DM-2

Investigator(s): JRM, MES, BJB, LRD Section, Township, Range: San Pascual Land Grant

Landform (hillslope, terrace, etc.): basin in highway median Local relief (concave, convex, none): concave Slope (%): 0 to 1%

Subregion (LRR): C Lat: UTM North 3778049 Long: UTM Easting 393537 Datum: NAD83

Soil Map Unit Name: Not NRCS mapped. LA County map: Ramona sandy loam NWI classification: none

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

Are Vegetation ✓, Soil ✓, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

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

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

Hydrophytic Vegetation Present?	Yes ✓	No ___
Hydric Soil Present?	Yes ✓	No ___
Wetland Hydrology Present?	Yes ✓	No ___

Is the Sampled Area within a Wetland? Yes ✓ No ___

Remarks:

Pumping station at north end of the median pumps water into the area. Vegetation recently cleared/mowed. Aerials back to 2005 show occasional mowing and soil disturbances.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover	0		
Herb Stratum (Plot size: ___)			
1. Festuca perennis	63	Dom	FAC
2. Plantago lanceolata	30	Dom	FAC
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	93		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 9 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species	93	x 3 = 279
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	93 (A)	279 (B)

Prevalence Index = B/A = 3.0

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

Bare (unvegetated) ground is 7% leaf litter cover and 2% mineral soil.

SOIL

Sampling Point: DM-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 12	10 YR 3/4	100					Clay loam	Soil too hard to dig past 12" depth

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ **No** ___

Remarks:

Sampling point is on a level surface at the bottom of a basin in highway median. Water is actively pumped into the site, observed flooded for at least 3 days in March 2013. Hydric conditions believed to occur regularly, but disturbances (mowing and soil relocations) inhibit development of visible hydric soil indicators. If soils left undisturbed, they would develop visible indicators of hydric condition over time. Historic information provided in the report. Pit depth limited by hard soil, but no deeper indicators possible, based on profile to 12" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______

Water Table Present? Yes ___ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ **No** ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study, Del Mar pump station City/County: Pasadena, Los Angeles Sampling Date: 21 Aug., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: DM-3

Investigator(s): JRM, MES, BJB, LRD Section, Township, Range: San Pascual Land Grant

Landform (hillslope, terrace, etc.): basin in highway median Local relief (concave, convex, none): concave Slope (%): 40-45

Subregion (LRR): C Lat: UTM North 3778264 Long: UTM Easting 393549 Datum: NAD83

Soil Map Unit Name: Not NRCS mapped. LA County map: Ramona sandy loam NWI classification: none

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

Are Vegetation ✓, Soil ✓, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

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

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

	Yes	No
Hydrophytic Vegetation Present?	✓	
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks:

Site is a basin in highway median with evidence of recent vegetation clearing/mowing. This sample point is located on the sloping side of basin above the flat bottom.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
= Total Cover	0		
Herb Stratum (Plot size: ____)			
1. Bromus madritensis	35	Dom	UPL
2. Festuca perennis	4	Dom	FAC
3. Plantago lanceolata	1	Dom	FAC
4.			
5.			
6.			
7.			
8.			
= Total Cover	40		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 60 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 67% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species		x 2 =	
FAC species	5	x 3 =	15
FACU species		x 4 =	
UPL species	35	x 5 =	175
Column Totals:	40 (A)		190 (B)

Prevalence Index = B/A = 4.75

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

__ Prevalence Index is ≤3.0[1]

__ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

Unvegetated ground is 12% mineral and 48% leaf litter.

SOIL

Sampling Point: DM-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 to 6	7.5 YR 2.5/1	100					Sandy loam	
6 to 16	10 YR 5/6	100					Silty clay loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? Yes ______ No ✓

Remarks:

Pit depth limited by hard soil, but no deeper indicators possible, based on profile to 16" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ______ No ✓

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

Remarks:

No hydrology indicators.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study, Del Mar pump station City/County: Pasadena, Los Angeles Sampling Date: 21 Aug., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: DM-4

Investigator(s): JRM, MES, BJB, LRD Section, Township, Range: San Pascual Land Grant

Landform (hillslope, terrace, etc.): basin in highway median Local relief (concave, convex, none): concave Slope (%): 40

Subregion (LRR): C Lat: UTM North 3778050 Long: UTM Easting 393555 Datum: NAD83

Soil Map Unit Name: Not NRCS mapped. LA County map: Ramona sandy loam NWI classification: no data

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

Are Vegetation ✓, Soil ✓, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

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

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

Hydrophytic Vegetation Present?	Yes ____	No ✓
Hydric Soil Present?	Yes ____	No ✓
Wetland Hydrology Present?	Yes ____	No ✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks:

Site is basin in highway median. Evidence of recent vegetation clearing/mowing. This sampling point was on the slope above flat bottom.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: ____)			
1. Ailanthus altissima	17	Dom	FACU
2. Ulmus parvifolia	3	Dom	UPL
3.			
4.			
5.			
= Total Cover	20		
Herb Stratum (Plot size: ____)			
1. Bromus madritensis	43	Dom	UPL
2. Avena sp.	5	Dom	UPL
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	48		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 52 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species	17	x 4 = 68
UPL species	51	x 5 = 255
Column Totals:	68 (A)	323 (B)

Prevalence Index = B/A = 4.75

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

Unvegetated ground is 2% leaf litter and 50% bare mineral soil.

SOIL

Sampling Point: DM-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 18	10 YR 3/4	100					Clay loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

Pit depth limited by hard soil, but no deeper indicators possible, based on profile to 18" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

No hydrology indicators.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study, Del Mar pump station City/County: Pasadena, Los Angeles Sampling Date: 21 Aug., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: DM-5

Investigator(s): JRM, MES, BJB, LRD Section, Township, Range: San Pascual Land Grant

Landform (hillslope, terrace, etc.): basin in highway median Local relief (concave, convex, none): concave Slope (%): 3-5

Subregion (LRR): C Lat: UTM North 3777979 Long: UTM Easting 393539 Datum: NAD83

Soil Map Unit Name: Not NRCS mapped. LA County map: Ramona sandy loam NWI classification: none

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

Are Vegetation ✓, Soil ✓, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

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

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

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

Remarks:

Site is a drainage basin in highway median. Evidence of recent vegetation clearing/mowing. This sampling point is at the upper (north) end of the basin.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ___)			
1. Avena sp.	53	Dom	UPL
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	53 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 47 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species		x 4 =
UPL species	53	x 5 = 265
Column Totals:	(A)	(B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** ✓

Remarks:

Unvegetated area is 23% mineral soil and 24% leaf litter.

SOIL

Sampling Point: DM-5

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

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0 to 12	10 YR 2/2	100						Soil too hard to dig deeper.

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: __________

Depth (inches): __________

Hydric Soil Present? Yes ____ No ✓

Remarks:

Pit depth limited by hard soil, but no deeper indicators possible, based on profile to 12" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ____ No ✓ Depth (inches): ______
Water Table Present? Yes ____ No ✓ Depth (inches): ______
Saturation Present? (includes capillary fringe) Yes ____ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ____ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-1

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM North 3767843 Long: UTM Easting 392221 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cnty : Ramona loam, Altamont clay loam, Yolo lo NWI classification: PEMCx

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

Are Vegetation ✓, Soil ✓, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

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

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

	Yes	No
Hydrophytic Vegetation Present?	✓	
Hydric Soil Present?	✓	
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ✓ No ___

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through three culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover	0		
Herb Stratum (Plot size: 5.9 m diam)			
1. Typha domingensis	76	Dom	OBL
2. Persicaria lapathifolia	24	Dom	FACW
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover	0		

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	76	x 1 = 76
FACW species	24	x 2 = 48
FAC species		x 3 =
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	100 (A)	124 (B)

Prevalence Index = B/A = 1.24

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: LAG-1

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0 to 4	2.5 Y 3/1	100					Sandy clay loam	
4 to 18	2.5 Y 4/3	100					Silty clay loam	Water table at 4 inches
								Can't dig pit deeper due to bricks and other fill.

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ___

Remarks:

Problematic soils condition Other. Soil is significantly disturbed, appears to be scraped occasionally, possibly to maintain contours of the basin containing the wetland and keep exit channels clear. Also, basin/wetland likely of relatively recent origin: probably dates to between 1953 and 1966 when adjacent highway was built and Laguna stream channel greatly altered (information in the report). Landform is concave, and presence of saturated conditions in October before Nov-Feb main rainy season suggests soil is usually saturated for several months. Veg. and hydrology both have positive indicators.
Soil contains bricks and other fill. Pit depth limited by hard soil and fill, but no deeper indicators possible, based on profile to 18" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ___	No ✓	Depth (inches): ___
Water Table Present?	Yes ✓	No ___	Depth (inches): 4
Saturation Present? (includes capillary fringe)	Yes ✓	No ___	Depth (inches): 0

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-2

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM N 3767858 Long: UTM E 392221 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cnty : Ramona loam, Altamont clay loam, Yolo lo NWI classification: PSS/EMAd

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

Are Vegetation ✓, Soil ✓, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

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

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

Hydrophytic Vegetation Present?	Yes ___	No ✓
Hydric Soil Present?	Yes ___	No ✓
Wetland Hydrology Present?	Yes ___	No ✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through the culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
	0 = Total Cover		
Herb Stratum (Plot size: ___)			
1. Bromus diandrus	41	Dom	UPL
2. Festuca perennis (Lolium perenne)	20	Dom	FAC
3. Bromus madritensis	9		UPL
4. Raphanus sativus	5		UPL
5. Hirschfeldia incana	3		UPL
6. Carduus pycnocephalus	2		UPL
7. Salsola tragus	1		FACU
8.			
	81 = Total Cover		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
	0 = Total Cover		

% Bare Ground in Herb Stratum 19 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species	20	x 3 = 60
FACU species	1	x 4 = 4
UPL species	60	x 5 = 300
Column Totals:	81 (A)	364 (B)

Prevalence Index = B/A = 4.5

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: LAG-2

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0 to 12	7.5 YR 4/2	100					Sandy loam	Too much fill and hard soil to dig deeper

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ____________

Depth (inches): ____________

Hydric Soil Present? **Yes** ______ **No** ✓

Remarks:

Pit depth limited by hard soil and fill, but no deeper indicators possible, based on profile to 12" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ____________

Water Table Present? Yes ______ No ✓ Depth (inches): ____________

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ____________

Wetland Hydrology Present? **Yes** ______ **No** ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-3

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM North 3767827 Long: UTM Easting 392181 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cty : Ramona loam, Altamont clay loam, Yolo loa NWI classification: PEMCx

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

Are Vegetation ✓, Soil ✓, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

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

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

Hydrophytic Vegetation Present?	Yes ✓	No ____
Hydric Soil Present?	Yes ✓	No ____
Wetland Hydrology Present?	Yes ✓	No ____

Is the Sampled Area within a Wetland? Yes ✓ No ____

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through three culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

Stratum	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
= Total Cover	0		
Herb Stratum (Plot size: 1.9 m diam)			
1. Echinochloa colona	95	Dom	Fac
2. Typha domingensis	5		Obl
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	100		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover	0		

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

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 100% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	5	x 1 = 5
FACW species		x 2 =
FAC species	95	x 3 = 285
FACU species		x 4 =
UPL species		x 5 =
Column Totals:	100 (A)	290 (B)

Prevalence Index = B/A = 2.9

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: LAG-3

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-12	2.5 Y 3/1	100					Sandy Loam	
12-18	Gley2 2.5/1	100					Sandy Loam	Too many bricks and fill to dig pit deeper.

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ___

Remarks:

Problematic soils condition Other. Soil is significantly disturbed, appears to be scraped occasionally, possibly to maintain contours of the basin containing the wetland and keep exit channels clear. Also, basin/wetland likely of relatively recent origin: probably dates to between 1953 and 1966 when adjacent highway was built and Laguna stream channel greatly altered. Landform is concave, and presence of saturated conditions in October before Nov-Feb main rainy season suggests soil is usually saturated for several months. Veg. and hydrology both have positive indicators.
Soil contains bricks and other fill. Pit depth limited by hard soil/fill, but no deeper indicators possible, based on profile to 18" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

	Yes	No	Depth (inches)
Surface Water Present?		✓	
Water Table Present?	✓		8
Saturation Present? (includes capillary fringe)	✓		3

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-4

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM North 3767825 Long: UTM Easting 392178 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cty : Ramona loam, Altamont clay loam, Yolo loa NWI classification: PSS/EMAd

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

Are Vegetation ✓, Soil ✓, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

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

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

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? **Yes** ___ **No** ✓

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through three culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover	0		
Herb Stratum (Plot size: 10m diam)			
1. Carduus pycnocephalus	60	Dom	Upl
2. Bromus diandrus	10		Upl
3. Ricinus communis	10		FacU
4.			
5.			
6.			
7.			
8.			
= Total Cover	80		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 20 % Cover of Biotic Crust 0

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species	10	x 4 = 40
UPL species	70	x 5 = 350
Column Totals:	80 (A)	390 (B)

Prevalence Index = B/A = 4.9

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ___ **No** ✓

Remarks:

SOIL

Sampling Point: LAG-4

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-12	10 YR 4/3	100					silty clay loam	Too much bricks and fill to dig soil pit deeper.

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✓

Remarks:

Pit depth limited by fill, but no deeper indicators possible, based on profile to 12" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ______ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-5

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM N 3767874 Long: UTM E 392171 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cty : Ramona loam, Altamont clay loam, Yolo loa NWI classification: PEMCx

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

Are Vegetation ✓, Soil ✓, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

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

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

Hydrophytic Vegetation Present?	Yes ✓	No ___
Hydric Soil Present?	Yes ✓	No ___
Wetland Hydrology Present?	Yes ✓	No ___

Is the Sampled Area within a Wetland? Yes ✓ No ___

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through three culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: 3 m diam)			
1. Ricinus communis	27	Dom	FacU
2. Washingtonia robusta	7	Dom	FacW
3.			
4.			
5.			
= Total Cover	34		
Herb Stratum (Plot size: 3m diam)			
1. Echinochloa colona	17	Dom	Fac
2. Xanthium strumarium	10	Dom	Fac
3. Cyperus eragrostis	7	Dom	FacW
4. Melilotus albus	7	Dom	Upl
5. Artemisia douglasiana	3	Dom	Fac
6.			
7.			
8.			
= Total Cover	44		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 56 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.4% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	14	x 2 =	28
FAC species	30	x 3 =	90
FACU species	27	x 4 =	108
UPL species	7	x 5 =	35
Column Totals:	78 (A)		261 (B)

Prevalence Index = B/A = 3.346

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: LAG-5

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5 YR 4/2	100					sand	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ **No** ______

Remarks:

Problematic soils condition Other. Soil is significantly disturbed, appears to be scraped occasionally, possibly to maintain contours of the basin containing the wetland and keep exit channels clear. Also, basin/wetland likely of relatively recent origin: probably dates to between 1953 and 1966 when adjacent highway was built and Laguna stream channel greatly altered (information in the report). Landform is concave, and presence of saturated conditions in October before Nov-Feb main rainy season suggests soil is usually saturated for several months. Veg. and hydrology both have positive indicators.
Soil contains bricks and other fill. Pit depth limited by hard soil and fill, but no deeper indicators possible, based on profile to 18" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present?	Yes ______	No ✓	Depth (inches): ______
Water Table Present?	Yes ✓	No ______	Depth (inches): 6
Saturation Present? (includes capillary fringe)	Yes ✓	No ______	Depth (inches): 5

Wetland Hydrology Present? Yes ✓ **No** ______

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-6

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM North 3767874 Long: UTM Easting 392173 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cty : Ramona loam, Altamont clay loam, Yolo loa NWI classification: PEMCx

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

Are Vegetation ✓, Soil ✓, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

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

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

Hydrophytic Vegetation Present?	Yes ✓	No ___
Hydric Soil Present?	Yes ✓	No ___
Wetland Hydrology Present?	Yes ✓	No ___

Is the Sampled Area within a Wetland? Yes ✓ No ___

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through three culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: 3m diam)			
1. Ricinus communis	27	Dom	FacU
2. Washingtonia robusta	7	Dom	FacW
3.			
4.			
5.			
= Total Cover	34		
Herb Stratum (Plot size: 3m diam)			
1. Echinochloa colona	17	Dom	Fac
2. Xanthium strumarium	10	Dom	Fac
3. Cyperus eragrostis	7	Dom	FacW
4. Melilotus albus	7	Dom	Upl
5. Artemisia douglasiana	3	Dom	Fac
6.			
7.			
8.			
= Total Cover	44		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 56 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 7 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 71.4% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	14	x 2 =	28
FAC species	30	x 3 =	90
FACU species	27	x 4 =	108
UPL species	7	x 5 =	35
Column Totals:	78 (A)		261 (B)

Prevalence Index = B/A = 3.346

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: LAG-6

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	7.5 YR 4/4	100					Sandy Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ______

Remarks:

Problematic soils condition Other. Soil is significantly disturbed, appears to be scraped occasionally, possibly to maintain contours of the basin containing the wetland and keep exit channels clear. Also, basin/wetland likely of relatively recent origin: probably dates to between 1953 and 1966 when adjacent highway was built and Laguna stream channel greatly altered (information in the report). Landform is concave, and presence of saturated conditions in October before Nov-Feb main rainy season suggests soil is usually saturated for several months. Veg. and hydrology both have positive indicators.
Soil contains bricks and other fill. Pit depth limited by hard soil/fill, but no deeper indicators possible, based on profile to 18" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ✓ No ______

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-7

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM North 3767872 Long: UTM Easting 392176 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cty : Ramona loam, Altamont clay loam, Yolo loa NWI classification: PSS/EMAd

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

Are Vegetation ✓, Soil ✓, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

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

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

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ____ No ✓

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through three culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 10m diam)			
1. Bromus diandrus	60	Dom	Upl
2. Raphanus sativus	5		Upl
3. Carduus pycnocephalus	2		Upl
4. Lactuca serriola	2		FacU
5.			
6.			
7.			
8.			
= Total Cover	69		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 31 % Cover of Biotic Crust ____

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species	2	x 4 = 8
UPL species	67	x 5 = 335
Column Totals:	69 (A)	343 (B)

Prevalence Index = B/A = 4.97

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ____ No ✓

Remarks:

SOIL

Sampling Point: LAG-7

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

Depth	Matrix		Redox Features				Texture	Remarks
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]		
0-18	7.5 YR 3/2	100					sandy loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ______ No ✓

Remarks:

Pit depth limited by hard soil/fill, but no deeper indicators possible, based on profile to 18" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ______

Water Table Present? Yes ______ No ______ Depth (inches): ______

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

Wetland Hydrology Present? Yes ______ No ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-8

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM North 3767979 Long: UTM Easting 392256 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cty : Ramona loam, Altamont clay loam, Yolo loa NWI classification: PEOAx

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

Are Vegetation ✓, Soil ✓, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

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

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

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through three culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ___)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover			
Herb Stratum (Plot size: 10m diam)			
1. Arundo donax	35	Dom	FacW
2. Melilotus albus	25	Dom	Upl
3. Festuca perennis (Lolium perenne)	10		Fac
4. Avena barbata	6		Upl
5. Bromus diandrus	6		Upl
6. Erigeron canadensis	1		Upl
7.			
8.			
= Total Cover	83		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 17 % Cover of Biotic Crust ___

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 50 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	35	x 2 =	70
FAC species	10	x 3 =	30
FACU species		x 4 =	
UPL species	38	x 5 =	190
Column Totals:	83 (A)		290 (B)

Prevalence Index = B/A = 3.5

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: LAG-8

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox Features %	Type[1]	Loc[2]	Texture	Remarks
0-16	5 YR 3/2	100					loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? Yes ___ No ✓

Remarks:

Pit depth limited by hard soil and fill, but no deeper indicators possible, based on profile to 16" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ___

Water Table Present? Yes ___ No ✓ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ___

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-9

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM North 3767966 Long: UTM Easting 392258 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cnty : Ramona loam, Altamont clay loam, Yolo lo NWI classification: PFOAx

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

Are Vegetation ✓, Soil ✓, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

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

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

	Yes	No
Hydrophytic Vegetation Present?	✓	
Hydric Soil Present?	✓	
Wetland Hydrology Present?	✓	

Is the Sampled Area within a Wetland? Yes ✓ No ___

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through three culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: 2.5m diam)			
1. Ricinus communis	20	Dom	FacU
2.			
3.			
4.			
5.			
= Total Cover	20		
Herb Stratum (Plot size: 2.5m diam)			
1. Persicaria lapathifolia	20	Dom	FacW
2. Arundo donax	12	Dom	FacW
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	32		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 68 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species		x 1 =	
FACW species	32	x 2 =	64
FAC species		x 3 =	
FACU species	20	x 4 =	80
UPL species		x 5 =	
Column Totals:	52 (A)		144 (B)

Prevalence Index = B/A = 2.77

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ___

Remarks:

SOIL

Sampling Point: LAG-9

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/3	100					Sandy Loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ______

Remarks:

Problematic soils condition Other. Soil is significantly disturbed, appears to be scraped occasionally, possibly to maintain contours of the basin containing the wetland and keep exit channels clear. Also, basin/wetland likely of relatively recent origin: probably dates to between 1953 and 1966 when adjacent highway was built and Laguna stream channel greatly altered (information in the report). Landform is concave, and presence of saturated conditions in October before Nov-Feb main rainy season suggests soil is usually saturated for several months. Veg. and hydrology both have positive indicators.
Soil contains bricks and other fill. Pit depth limited by hard soil/fill, but no deeper indicators possible, based on profile to 18" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ______ No ✓ Depth (inches): ______

Water Table Present? Yes ______ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ______ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ______

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-10

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM North 3767900 Long: UTM Easting 392188 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cty : Ramona loam, Altamont clay loam, Yolo loa NWI classification: PEMCx

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

Are Vegetation ✓, Soil ✓, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

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

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

Hydrophytic Vegetation Present?	Yes ✓	No ____
Hydric Soil Present?	Yes ✓	No ____
Wetland Hydrology Present?	Yes ✓	No ____

Is the Sampled Area within a Wetland? Yes ✓ No ____

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through three culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

Stratum / Species	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ____)			
1.			
2.			
3.			
4.			
= Total Cover	0		
Sapling/Shrub Stratum (Plot size: 4m diam)			
1. Ricinus communis	33	Dom	FacU
2. Washingtonia robusta	3	Dom	FacW
3.			
4.			
5.			
= Total Cover	36		
Herb Stratum (Plot size: 4m diam)			
1. Digitonia ischaemum	13	Dom	FacU
2. Melilotus albus	10	Dom	Upl
3. Persicaria lapathifolia	8	Dom	FacW
4. Typha domingensis	10	Dom	Obl
5. Xanthium strumarium	5	Dom	Fac
6. Cyperus eragrostis	5	Dom	FacW
7.			
8.			
= Total Cover	51		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
= Total Cover	0		

% Bare Ground in Herb Stratum 49 % Cover of Biotic Crust 0

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 5 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 62.5% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species	10	x 1 = 10
FACW species	16	x 2 = 32
FAC species	5	x 3 = 15
FACU species	46	x 4 = 184
UPL species	10	x 5 = 50
Column Totals:	85 (A)	291 (B)

Prevalence Index = B/A = 3.4

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ✓ No ____

Remarks:

SOIL

Sampling Point: LAG-10

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-8	7.5 YR 3/2	100					clay	
8-18	Gley1 2.5/N	100					sandy loam	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ___

Depth (inches): ___

Hydric Soil Present? **Yes** ✓ **No** ___

Remarks:

Problematic soils condition Other. Soil is significantly disturbed, appears to be scraped occasionally, possibly to maintain contours of the basin containing the wetland and keep exit channels clear. Also, basin/wetland likely of relatively recent origin: probably dates to between 1953 and 1966 when adjacent highway was built and Laguna stream channel greatly altered (information in the report). Landform is concave, and presence of saturated conditions in October before Nov-Feb main rainy season suggests soil is usually saturated for several months. Veg. and hydrology both have positive indicators.
Soil contains bricks and other fill. Pit depth limited by hard soil/fill, but no deeper indicators possible, based on profile to 18" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? **Yes** ✓ **No** ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-11

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM North 3767904 Long: UTM Easting 392187 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cty : Ramona loam, Altamont clay loam, Yolo loa NWI classification: PSS/EMAd

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

Are Vegetation ✓, Soil ✓, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

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

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

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through three culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
5.			
= Total Cover	0		
Herb Stratum (Plot size: 10m diam)			
1. Hirschfeldia incana	50	Dom	Upl
2. Lactuca serriola	30	Dom	FacU
3. Carduus pycnocephalus	15		Upl
4. Raphanus sativus	10		Upl
5. Glebionis coronarium	10		Upl
6.			
7.			
8.			
= Total Cover	115		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover	0		

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

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species	30	x 4 = 120
UPL species	85	x 5 = 425
Column Totals:	115 (A)	570 (B)

Prevalence Index = B/A = 5.0

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: LAG-11

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-16	7.5 YR 3/2	100					silty clay	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? **Yes** ______ **No** ✓

Remarks:

Pit depth limited by hard soil and fill, but no deeper indicators possible, based on profile to 16" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ______ No ______ Depth (inches): ______

Water Table Present? Yes ______ No ______ Depth (inches): ______

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

Wetland Hydrology Present? **Yes** ______ **No** ✓

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-12

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM North 3767822 Long: UTM Easting 392165 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cty : Ramona loam, Altamont clay loam, Yolo loa NWI classification: PEMCx

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

Are Vegetation ✓, Soil ✓, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ____

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

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

Hydrophytic Vegetation Present?	Yes ✓	No ____
Hydric Soil Present?	Yes ✓	No ____
Wetland Hydrology Present?	Yes ✓	No ____

Is the Sampled Area within a Wetland? **Yes** ✓ **No** ____

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through three culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: ____)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	0 = Total Cover		
Sapling/Shrub Stratum (Plot size: ____)			
1. Ricinus communis	50	Dom	FacU
2. Salix lasiolepis	20	Dom	FacW
3.			
4.			
5.			
	70 = Total Cover		
Herb Stratum (Plot size: ____)			
1. Typha domingensis	30	Dom	Obl
2.			
3.			
4.			
5.			
6.			
7.			
8.			
	30 = Total Cover		
Woody Vine Stratum (Plot size: ____)			
1.			
2.			
	0 = Total Cover		

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

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 66.7% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	30	x 1 =	30
FACW species	20	x 2 =	40
FAC species		x 3 =	
FACU species	50	x 4 =	200
UPL species		x 5 =	
Column Totals:	100 (A)		270 (B)

Prevalence Index = B/A = 2.7

Hydrophytic Vegetation Indicators:

✓ Dominance Test is >50%

✓ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** ✓ **No** ____

Remarks:

SOIL

Sampling Point: LAG-12

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/2	100					clay	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ✓ No ___

Remarks:

Problematic soils condition Other. Soil is significantly disturbed, appears to be scraped occasionally, possibly to maintain contours of the basin containing the wetland and keep exit channels clear. Also, basin/wetland likely of relatively recent origin: probably dates to between 1953 and 1966 when adjacent highway was built and Laguna stream channel greatly altered (information in the report). Landform is concave, and presence of saturated conditions in October before Nov-Feb main rainy season suggests soil is usually saturated for several months. Veg. and hydrology both have positive indicators.
Soil contains bricks and other fill. Pit depth limited by hard soil and fill, but no deeper indicators possible, based on profile to 18" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

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

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-13

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM North 3767828 Long: UTM Easting 392161 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cty : Ramona loam, Altamont clay loam, Yolo loa NWI classification: PSS/EMAd

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

Are Vegetation ✓, Soil ✓, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

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

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

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

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through three culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

Stratum	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: 10m diam)			
1. Salix exigua	24	Dom	FacW
2. Ricinus communis	20	Dom	FacU
3.			
4.			
5.			
= Total Cover	44		
Herb Stratum (Plot size: 10m diam)			
1. Hirschfeldia incana	22	Dom	Upl
2. Melilotus alba	3	Dom	Upl
3.			
4.			
5.			
6.			
7.			
8.			
= Total Cover	25		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 75 % Cover of Biotic Crust ___

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species	24	x 2 = 48
FAC species		x 3 =
FACU species	20	x 4 = 80
UPL species	25	x 5 = 125
Column Totals:	69 (A)	253 (B)

Prevalence Index = B/A = 3.7

Hydrophytic Vegetation Indicators:

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

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: LAG-13

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	2.5 YR 3/2	100					clay	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

Pit depth limited by hard soil and fill, but no deeper indicators possible, based on profile to 18" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______

Water Table Present? Yes ___ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ✓ No ___

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

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: SR 710 North Study / Laguna basin at Floral Dr. City/County: Alhambra, Los Angeles Sampling Date: 18 Oct., 2013

Applicant/Owner: Caltrans State: CA Sampling Point: LAG-14

Investigator(s): Jolene Moroney, Ryan Villanueva, John Ivanov Section, Township, Range: T 1 S R 12 W Sec 32

Landform (hillslope, terrace, etc.): basin Local relief (concave, convex, none): concave Slope (%): 0 to 3

Subregion (LRR): C Lat: UTM North 3767835 Long: UTM Easting 392150 Datum: NAD 83

Soil Map Unit Name: Not NRCS mapped. LA Cty : Ramona loam, Altamont clay loam, Yolo loa NWI classification: ESS/EMAd

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

Are Vegetation ✓, Soil ✓, or Hydrology ___ significantly disturbed? Are "Normal Circumstances" present? Yes ✓ No ___

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

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

	Yes	No
Hydrophytic Vegetation Present?		✓
Hydric Soil Present?		✓
Wetland Hydrology Present?		✓

Is the Sampled Area within a Wetland? Yes ___ No ✓

Remarks:

The area is along a stream in an excavated basin. Water enters the basin through two culverts, at the north and east sides. Water exits through three culverts at the south end. Soil includes substantial non-woody debris, including bricks.

VEGETATION – Use scientific names of plants.

	Absolute % Cover	Dominant Species?	Indicator Status
Tree Stratum (Plot size: ___)			
1.			
2.			
3.			
4.			
= Total Cover			
Sapling/Shrub Stratum (Plot size: 10m diam)			
1. Ricinus communis	4	Dom	FacU
2.			
3.			
4.			
5.			
= Total Cover	4		
Herb Stratum (Plot size: 10m transect)			
1. Hirschfeldia incana	59	Dom	Upl
2. Glebionis coronarium	15		Upl
3. Carduus pycnocephalus	12		Upl
4. Raphanus sativus	10		Upl
5.			
6.			
7.			
8.			
= Total Cover	96		
Woody Vine Stratum (Plot size: ___)			
1.			
2.			
= Total Cover			

% Bare Ground in Herb Stratum 4 % Cover of Biotic Crust ___

Dominance Test worksheet:

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

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

Percent of Dominant Species That Are OBL, FACW, or FAC: 0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:
OBL species		x 1 =
FACW species		x 2 =
FAC species		x 3 =
FACU species	4	x 4 = 16
UPL species	96	x 5 = 480
Column Totals:	100 (A)	496 (B)

Prevalence Index = B/A = 5

Hydrophytic Vegetation Indicators:

___ Dominance Test is >50%

___ Prevalence Index is ≤3.0[1]

___ Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes ___ No ✓

Remarks:

SOIL

Sampling Point: LAG-14

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

Depth (inches)	Matrix Color (moist)	Matrix %	Redox Features Color (moist)	Redox %	Type[1]	Loc[2]	Texture	Remarks
0-18	10 YR 3/2	100					Clay	

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

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

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

Indicators for Problematic Hydric Soils[3]:

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

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

Restrictive Layer (if present):

Type: ______

Depth (inches): ______

Hydric Soil Present? Yes ___ No ✓

Remarks:

Pit depth limited by hard soil and fill, but no deeper indicators possible, based on profile to 18" and indicators for this region.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

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

Secondary Indicators (2 or more required)

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

Field Observations:

Surface Water Present? Yes ___ No ✓ Depth (inches): ______

Water Table Present? Yes ___ No ✓ Depth (inches): ______

Saturation Present? (includes capillary fringe) Yes ___ No ✓ Depth (inches): ______

Wetland Hydrology Present? Yes ___ No ✓

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

Remarks:

ATTACHMENT B
WETLAND FLORAL COMPENDIUM

Wetland Floral Compendium

*Non-native
^Not found at Del Mar Pump Station
†Not found at Laguna Wetland

PLANTS

<u>**Dicots**</u>	<u>**Wetland Indicator Status**</u>
Adoxaceae – Muskroot family	
^*Sambucus nigra* ssp. *caerulea*	FAC
Blue elderberry	
Amaranthaceae – Amaranth Family	
*****†*Amaranthus retroflexus*	FACU
Redroot amaranth	
Anacardiaceae - Sumac Family	
^*Malosma laurina*	UPL
Laurel sumac	
**^Schinus molle*	FACU
Peruvian peppertree	
Apiaceae – Parsley Family	
**^Foeniculum vulgare*	UPL
Sweet fennel	
Asteraceae – Sunflower Family	
^*Artemisia douglasiana*	FAC
Mugwort	
^*Baccharis salicifolia*	FAC
Mule fat	
**^Carduus pycnocephalus*	UPL
Italian plumeless thistle	
**^Centaurea melitensis*	UPL
Tocalote	
*^*Cirsium vulgare*	FACU
Bull thistle	
^*Erigeron canadensis*	UPL
Canadian horseweed	
*^*Glebionis coronarium*	UPL
Crown daisy	
^*Helianthus annuus*	FACU
Common sunflower	
**^Lactuca serriola*	FACU
Prickly lettuce	

Pseudognaphalium luteoalbum	FAC
Jersey cudweed	
*^*Sonchus oleraceus*	UPL
Common sowthistle	
^*Stephanomeria virgata*	UPL
Rod wirelettuce	
^*Xanthium strumarium*	FAC
Rough cocklebur	
Brassicaceae – Mustard Family	
^*Hirschfeldia incana*	UPL
Shortpod mustard	
^*Nasturtium officinale*	OBL
Water cress	
*^*Raphanus sativus*	UPL
Cultivated radish	
Chenopodiaceae – Goosefoot Family	
**Salsola tragus*	FACU
Russian thistle	
Convolvulaceae – Morning Glory Family	
**Ipomoea hederacea var. integriuscula*	FACU
Ivy leaf morning glory	
Euphorbiaceae – Spurge family	
*^*Ricinus communis*	FACU
Castor bean	
Fabaceae – Legume Family	
*†*Medicago orbicularis*	FACU
Button clover	
*†*Melilotus alba*	FACU
White sweetclover	
Juglandaceae – Walnut Family	
^*Juglans californica*	FAC
Southern California walnut	
Lemnaceae – Duckweed Family	
Lemna sp.	OBL
Duckweed	
Plantaginaceae – Plaintain family	
**Plantago lanceolata*	FAC
Narrowleaf plantain	

Polygonaceae – Buckwheat Family	
Persicaria lapathifolia	FACW
Curlytop knotweed	
**Polygonum aviculare*	FACW
Prostrate knotweed	
******Rumex crispus*	FAC
Curly dock	
Rosaceae – Rose family	
Heteromeles arbutifolia	UPL
Toyon	
Salicaceae – Willow Family	
^Populus trichocarpa	FAC
Black cottonwood	
^*Salix exigua*	FACW
Narrowleaf willow	
^*Salix gooddingii*	FACW
Goodding's willow	
Salix lasiolepis	FACW
Arroyo willow	
Simaroubaceae – Simarouba family	
**Ailanthus altissima*	FACU
Tree of heaven	
Solanaceae – Nightshade Family	
^*Solanum douglasii*	FAC
Greenspot nightshade	
Ulmaceae – Elm Family	
**Ulmus parvifolia*	UPL
Chinese elm	
Vitaceae – Grape Family	
*^*Parthenocissus vitacea*	FAC
Virginia creeper	

<u>Monocots</u>	**<u>Wetland Indicator Status</u>**
Arecaceae – Palm Family	
^Phoenix canariensis	FACU
Canary Island palm	
*^*Washingtonia robusta*	FACW
Mexican fan palm	

Cyperaceae – Sedge Family

Cyperus eragrostis	FACW
Tall flatsedge	
*^*Cyperus involucratus*	FACW
Umbrella plant	
Cyperus erythrorhizos	OBL
Red root flatsedge	
Eleocharis macrostachya	FACW
Common spikerush	

Poaceae – Grass Family

**^Arundo donax*	FACW
Giant reed	
**Avena barbata*	UPL
Slender wild oat	
**Bromus diandrus*	UPL
Ripgut brome	
**Bromus madritensis* ssp. *rubens*	UPL
Red brome	
**^Digitaria ischaemum*	FACU
Smooth crab grass	
Distichlis spicata	FAC
Salt grass	
*^*Echinochloa colona* FAC	
Jungle rice	
**†Echinochloa crus-galli*	FACW
Barnyard grass	
**Festuca perennis*	FAC
Perennial ryegrass	
†Paspalum dilatatum	FAC
Dallis grass	
**^Polypogon monspeliensis*	FACW
Annual rabbitsfoot grass	
†Setaria parviflora	FAC
Knotroot bristle grass	
†Setaria pumila	FAC
Yellow bristlegrass	

Typhaceae – Cattail family

Typha domingensis	OBL
Southern cattail	
Typha latifolia	OBL
Broadleaf cattail	

ATTACHMENT C

SOILS INFORMATION

Soils Information

The soil series descriptions summarized below were obtained from the USDA Natural Resources Conservation Service, Official Soil Series Descriptions. It is important to note that the NRCS focuses on agricultural uses and has not officially mapped the soils in the BSA. The soils map used for the Proposed Project was obtained from the LA County Soils Database. However, all but one of the soils mapped in the BSA match the names of soils with NRCS official series descriptions; those descriptions are provided here. Because the NRCS official soil series descriptions were created based on soils mapped by NRCS, they may not be applicable to the soils in the BSA, which have not been formally mapped by NRCS. Further, soils in much of the BSA have been highly disturbed by urban development and surface soils may consist of fill from unknown locations.

Altamont:

The Altamont series is a fine, smectitic, thermic Aridic Haploxerert. Altamont soils consist of deep, well drained soils that formed in material weathered from fine-grained sandstone and shale. These soils are on gently sloping to very steep uplands. Clay content is 35 to 60 percent. The soil has cracks at least 0.4 in wide to a depth of 20 in that open in April or May and close in November or December. After soil cracks swell shut when soil is wetted, the permeability is slow.

Drainage and permeability: Altamont soils are well drained, with medium to very high runoff.

Chino

The Chino series is a fine-loamy mixed, superactive, thermic Aquic Haploxerol. Chino soils are located in basins and floodplains at elevations from near sea level to 3,100 ft. They formed in alluvium derived from granitic rocks. These soils have gray, calcareous, silt loam A horizons and gray and light gray, calcareous silty clay loam C horizons. Usually the soils are moist from November through May at depths of 4 to 12 inches, and dry for the rest of the year. Except where drained, the soils are saturated within 40 to 60 inches of the surface from about February to May, except that noncalcareous soils only some pedons are saturated.

Drainage and permeability: Chino soils are poorly to somewhat poorly drained. Runoff is slow to very slow. Permeability is moderately slow.

Hanford

The Hanford series is a coarse-loamy, mixed, superactive, nonacid, thermic Typic Xerothent. Hanford soils are located on stream bottoms, floodplains, and alluvial fans, at elevations of 150 to 3,500 ft, on slopes ranging from 0 to 15 percent. They formed in deep, moderately coarse textured alluvium from granite and other quartz bearing rocks of similar texture. Soil from depths of 8 to 24 in is usually dry from late April or May until November or early December, and is usually most in some or all parts of these depths for the rest of the year. Clay content usually averages 6 to 18 percent. Organic matter is less than 1 percent and decreases regularly with increasing depth.

Drainage and permeability: Hanford soils are well drained, with negligible to low runoff, and moderately rapid permeability.

Ramona

The Ramona series is a fine-loamy, mixed, thermic Typic Haploxeralf. The soils are located on terraces and fans at elevations between 250 and 3,500 ft, on nearly level to moderately steep slopes. Ramona soils formed in alluvium derived mostly from granitic and related rock sources. Between 5 and 15 inches depth, the soil is usually most in some or all parts from November or early December until late April or May, and dry for the rest of the year. The A and B horizons have more than 15 percent combined coarse and very coarse sand and 5 to 25 percent fine rock fragments of 2 to 5 mm size. The C horizon is generally more coarse than the A and B horizons, and may be comprised of coarse sand, fine gravel, and/or rock fragments larger than 5 mm.

Drainage and permeability: Ramona soils are well-drained, with slow to rapid runoff and moderately slow permeability.

5. Upper Los Angeles River

There is no official soil series description for this soil name.

6. Yolo

The Yolo series is a fine-silty, mixed, superactive, nonacid, thermic Mollic Xerofluvent. The soils are located on nearly level to moderately sloping alluvial fans, at elevations of near sea level to 2,400 ft. The soils forms in fine-loamy alluvium derived from sedimentary formations. Some or all parts of the soil at depths of 4 to 12 inches become moist in November and remain moist until May, but are dry for the rest of the year. Organic matter is approximately 1.5 to 3 percent in the A horizon.

Drainage and permeability: Well-drained, with slow to medium runoff and moderate permeability.

ATTACHMENT D
POTENTIAL CORPS JURISDICTIONAL FEATURES MAP

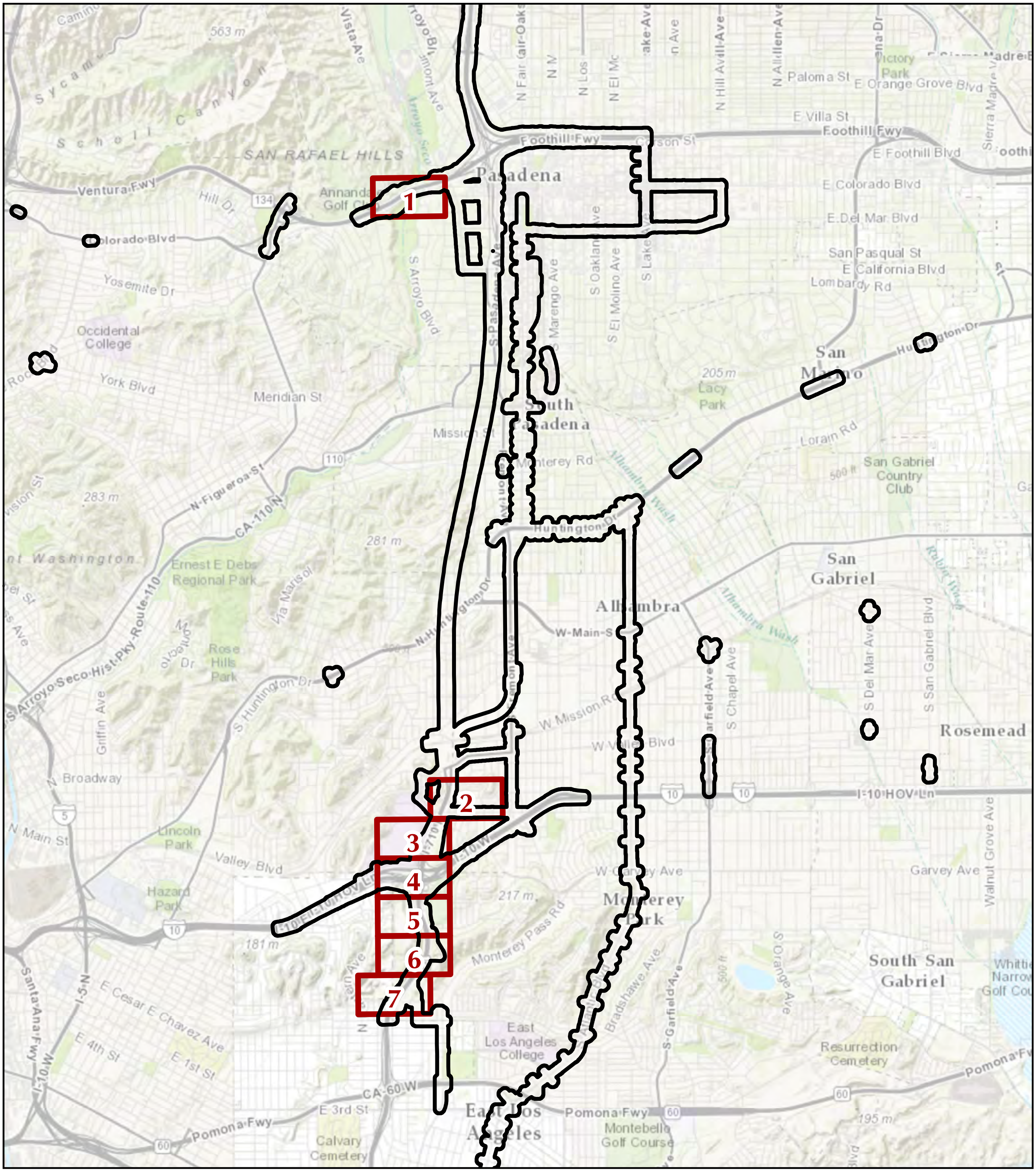

FIGURE D-0

LEGEND

Biological Study Area

Extent Boxes

0 0.25 0.5 1 1.5

Miles

SR 710 North Study

Extent Indicators for Potential Jurisdictional Features Map

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013); California InterAgency Watershed Map (1999)

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LEGEND

Stream Flow Direction

Soil Test Pit

Biological Study Area

Corps Jurisdiction

Non-Wetland

Wetland

0 50 100 200 300

Feet

FIGURE D-1

Page 1 of 7

SR 710 North Study

Potential Corps Jurisdictional Features Map

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)

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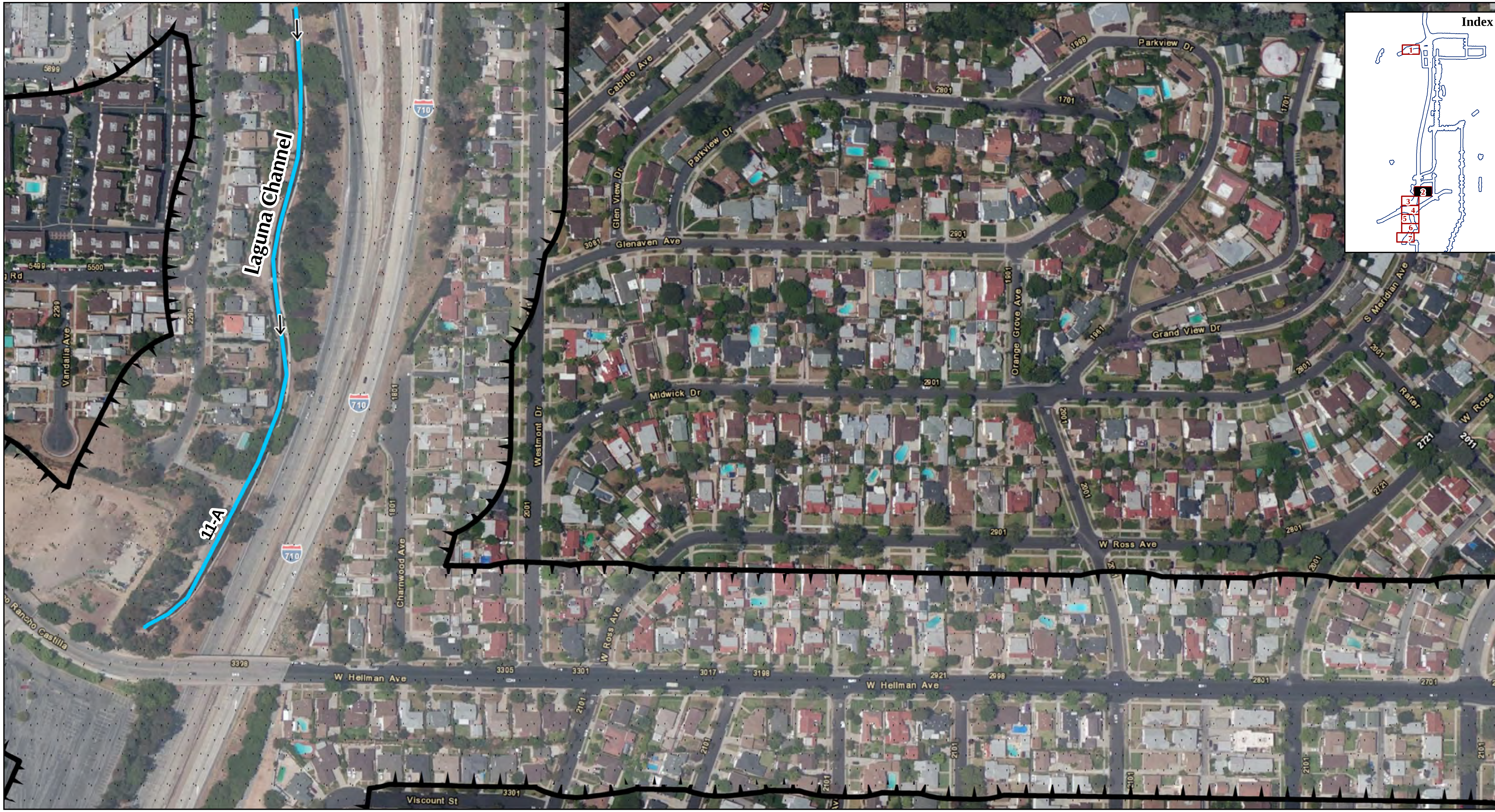


LEGEND

Stream Flow Direction

Soil Test Pit

Biological Study Area

Corps Jurisdiction

Non-Wetland

Wetland

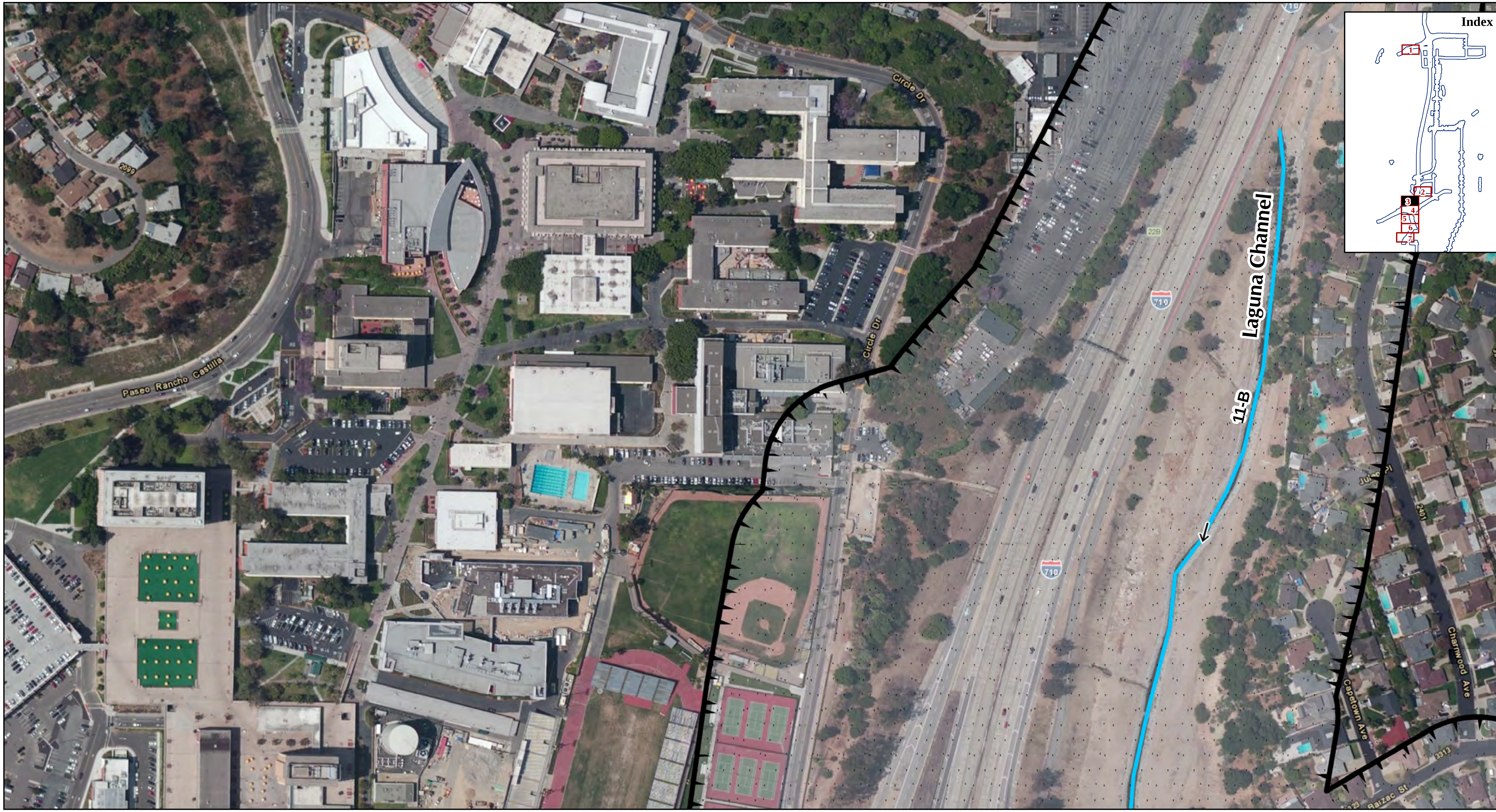
0 50 100 200 300

Feet

FIGURE D-2
Page 2 of 7

SR 710 North Study
Potential Corps Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
Q:\1282\SR_710\ArcProjects\JD Report\ACOE\ACOE_JD_PotentialDrainages_DDM.mxd (10/24/2014)



LEGEND

Stream Flow Direction

Soil Test Pit

Biological Study Area

Corps Jurisdiction

Non-Wetland

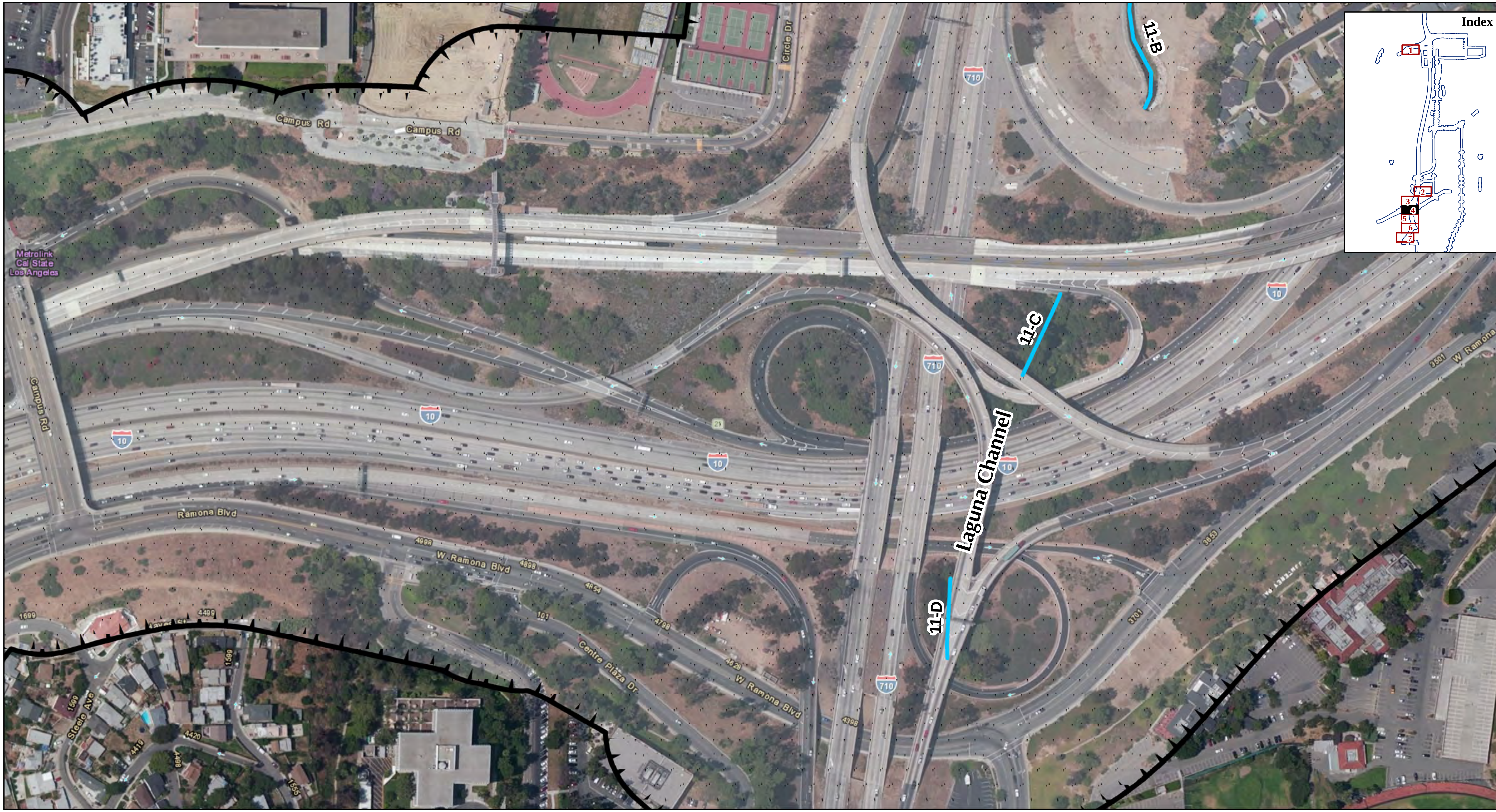
Wetland

0 50 100 200 300
Feet

FIGURE D-3
Page 3 of 7

SR 710 North Study
Potential Corps Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
Q:\1282\SR_710\ArcProjects\JD Report\ACOE\ACOE_JD_PotentialDrainages_DDM.mxd (10/24/2014)



LEGEND

Stream Flow Direction

Soil Test Pit

Biological Study Area

Corps Jurisdiction

Non-Wetland

Wetland

0 50 100 200 300
Feet

FIGURE D-4
Page 4 of 7

SR 710 North Study
Potential Corps Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
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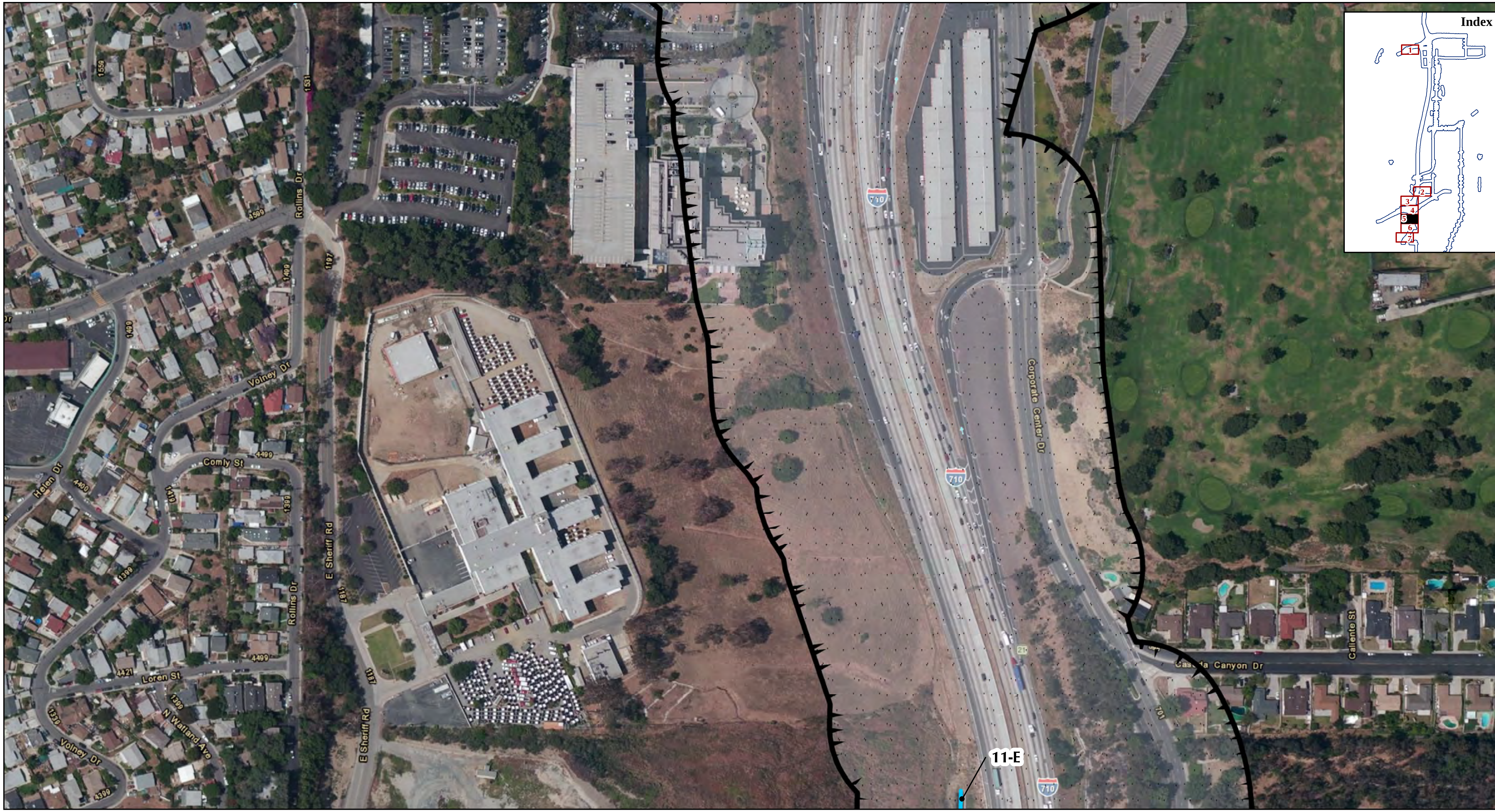

FIGURE D-5
Page 5 of 7

LEGEND

Stream Flow Direction

Soil Test Pit

Biological Study Area

Corps Jurisdiction

Non-Wetland

Wetland

0 50 100 200 300
Feet

SR 710 North Study
Potential Corps Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
Q:\1282\SR_710\ArcProjects\JD Report\ACOE\ACOE_JD_PotentialDrainages_DDM.mxd (10/24/2014)

LEGEND

Stream Flow Direction

Soil Test Pit

Biological Study Area

Corps Jurisdiction

Non-Wetland

Wetland

0 50 100 200 300
Feet

FIGURE D-6
Page 6 of 7

SR 710 North Study
Potential Corps Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
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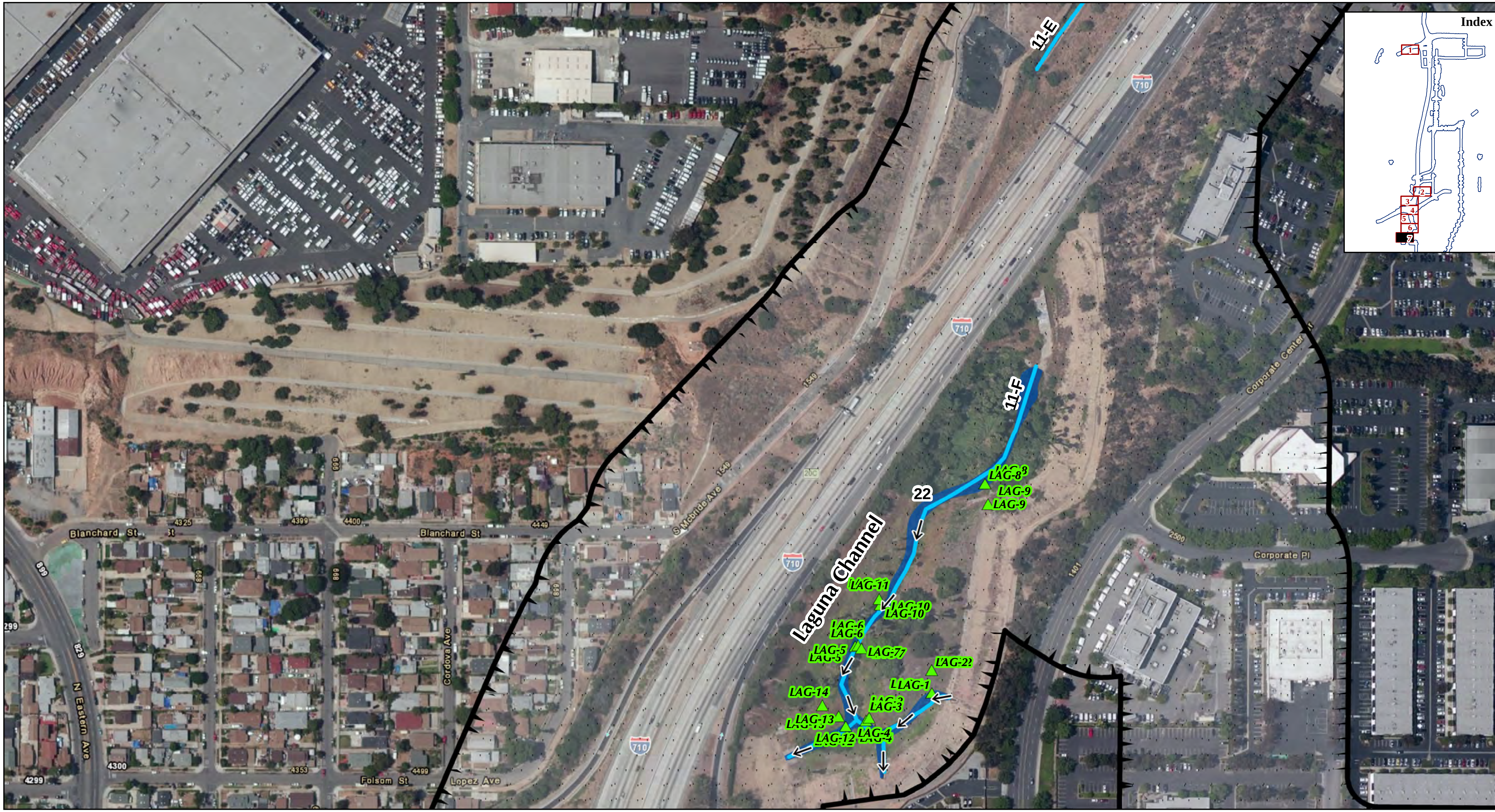

LEGEND

Stream Flow Direction

Soil Test Pit

Biological Study Area

Corps Jurisdiction

Non-Wetland

Wetland

0 50 100 200 300

Feet

FIGURE D-7

Page 7 of 7

SR 710 North Study

Potential Corps Jurisdictional Features Map

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)

Q:\1282\SR_710\ArcProjects\JD Report\ACOE\ACOE_JD_PotentialDrainages_DDM.mxd (10/24/2014)

ATTACHMENT E
POTENTIAL NON-JURISDICTIONAL FEATURES MAP

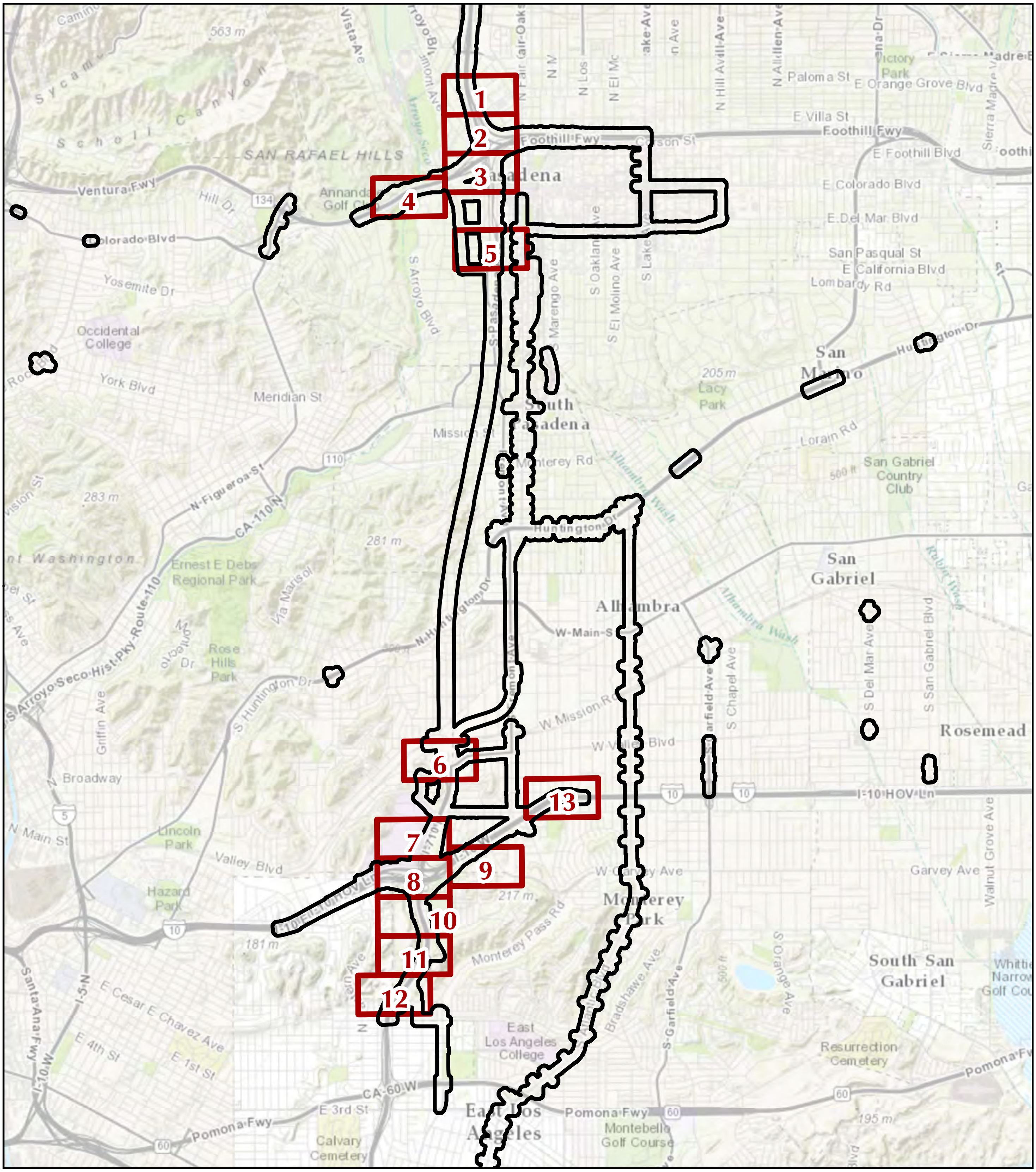

FIGURE E-0

LEGEND

Biological Study Area

Extent Boxes

0 0.25 0.5 1 1.5

Miles

SR 710 North Study

Extent Indicators for Potential
Non-Jurisdictional Features Map

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013); California InterAgency Watershed Map (1999)

Q:\1282\SR_710\ArcProjects\JD Report\ACOE\ACOE_NonJD_PotentialDrainages_Index.mxd (10/24/2014)

FIGURE E-1
Page 1 of 13

LEGEND

- Soil Test Pit
- Non-Jurisdictional
- Biological Study Area
- Wetland Complex
- Detention Basin

Riparian Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- White Alder Groves

N

0 50 100 200 300
Feet

SR 710 North Study
Potential Non-Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
Q:\1282\SR_710\ArcProjects\JD Report\ACOE\ACOE_NonJD_PotentialDrainages_DDM.mxd (10/24/2014)

FIGURE E-2
Page 2 of 13

N

0 50 100 200 300
Feet

LEGEND

- Soil Test Pit
- Non-Jurisdictional
- Biological Study Area
- Wetland Complex
- Detention Basin

Riparian Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- White Alder Groves

SR 710 North Study
Potential Non-Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
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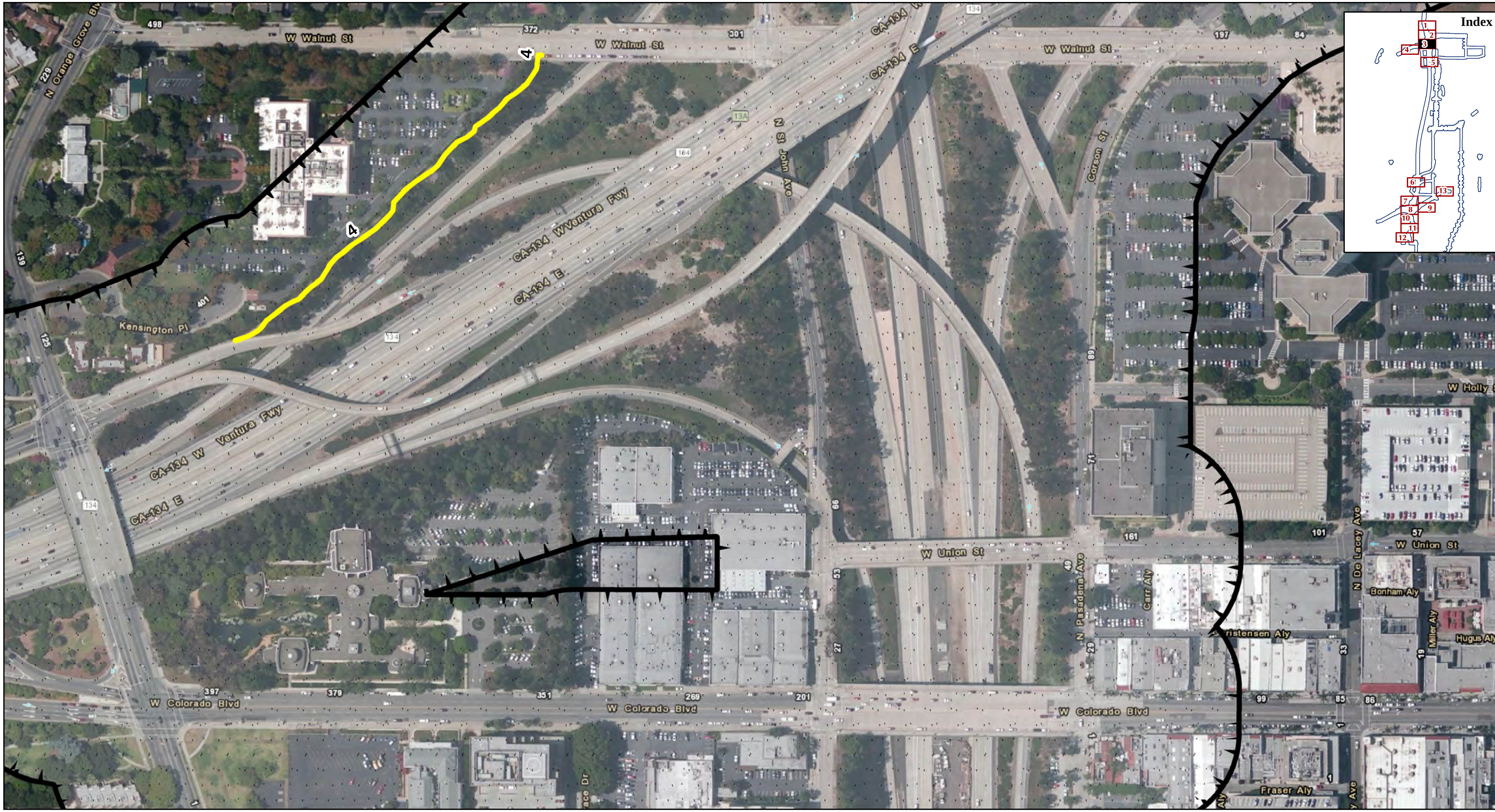

FIGURE E-3
Page 3 of 13

LEGEND

- Soil Test Pit
- Non-Jurisdictional
- Biological Study Area
- Wetland Complex
- Detention Basin

Riparian Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- White Alder Groves

0 50 100 200 300
Feet

SR 710 North Study
Potential Non-Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
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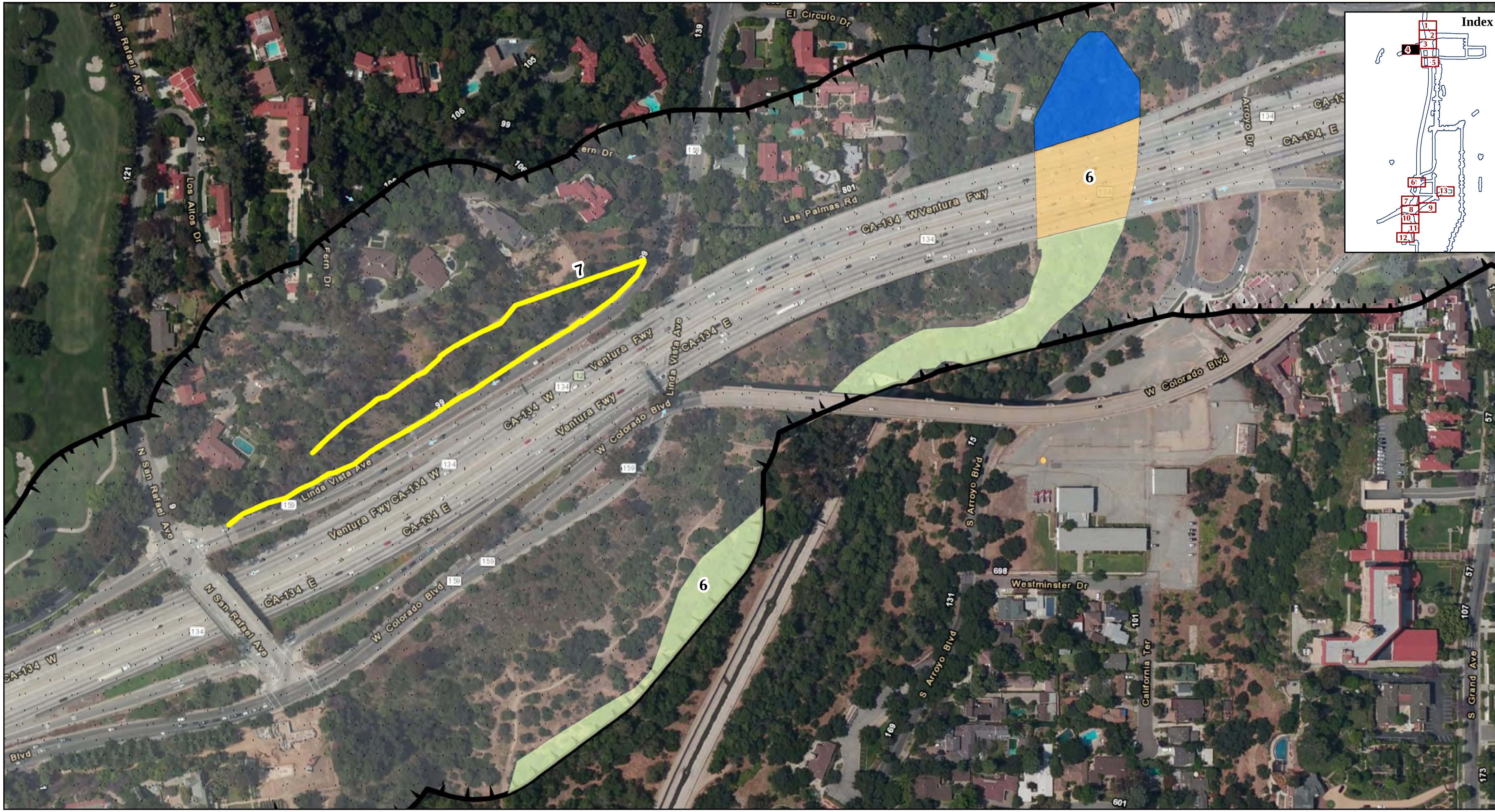

FIGURE E-4
Page 4 of 13

N

0 50 100 200 300
Feet

LEGEND

- Soil Test Pit
- Non-Jurisdictional
- Biological Study Area
- Wetland Complex
- Detention Basin

Riparian Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- White Alder Groves

SR 710 North Study
Potential Non-Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
Q:\1282\SR_710\ArcProjects\JD Report\ACOE\ACOE_NonJD_PotentialDrainages_DDM.mxd (10/24/2014)

FIGURE E-5
Page 5 of 13

LEGEND

- Soil Test Pit
- Non-Jurisdictional
- Biological Study Area
- Wetland Complex
- Detention Basin

Riparian Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- White Alder Groves

0 50 100 200 300
Feet

SR 710 North Study
Potential Non-Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
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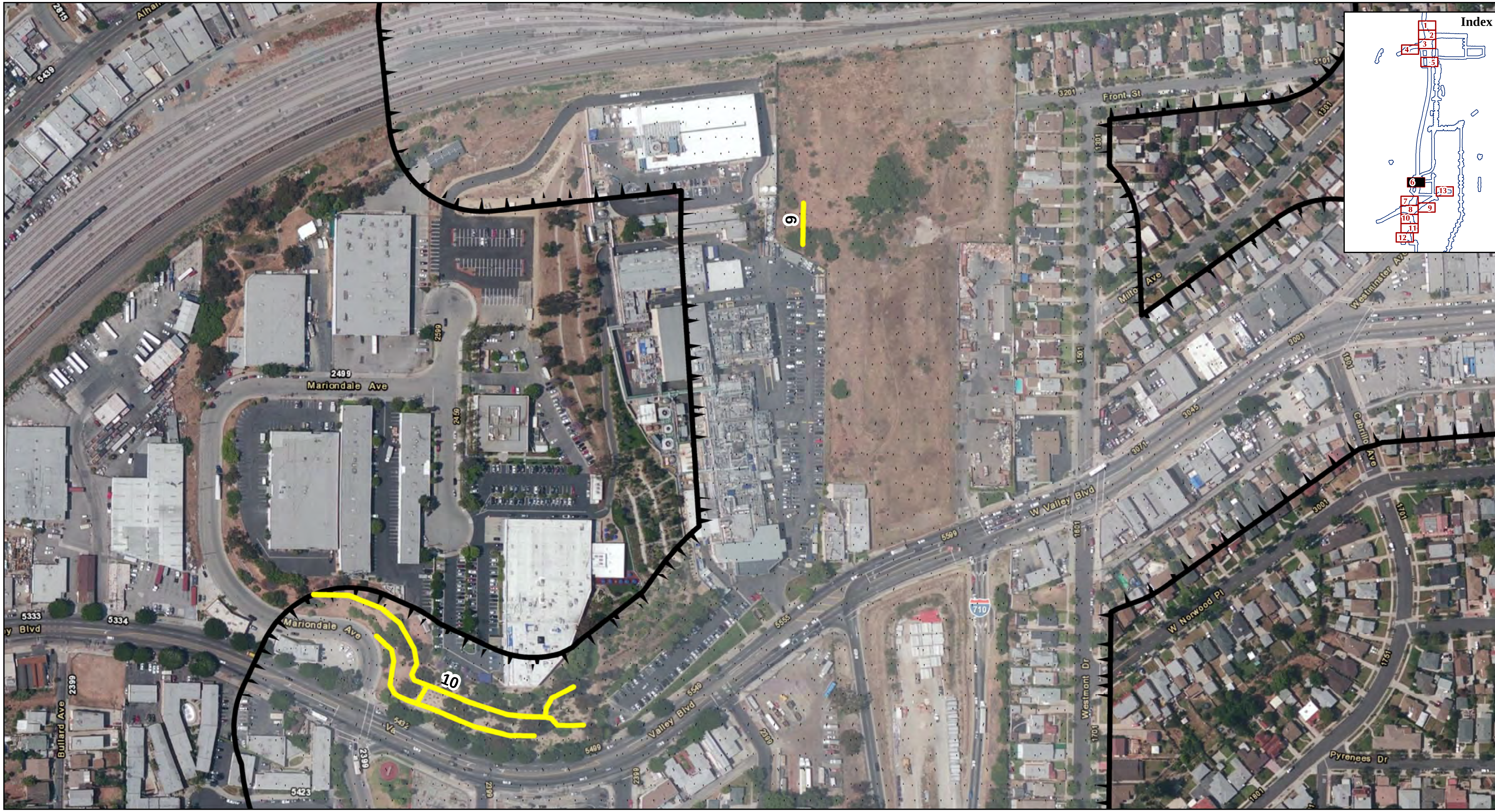

FIGURE E-6
Page 6 of 13

LEGEND

- Soil Test Pit
- Non-Jurisdictional
- Biological Study Area
- Wetland Complex
- Detention Basin

Riparian Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- White Alder Groves

0 50 100 200 300
Feet

SR 710 North Study
Potential Non-Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
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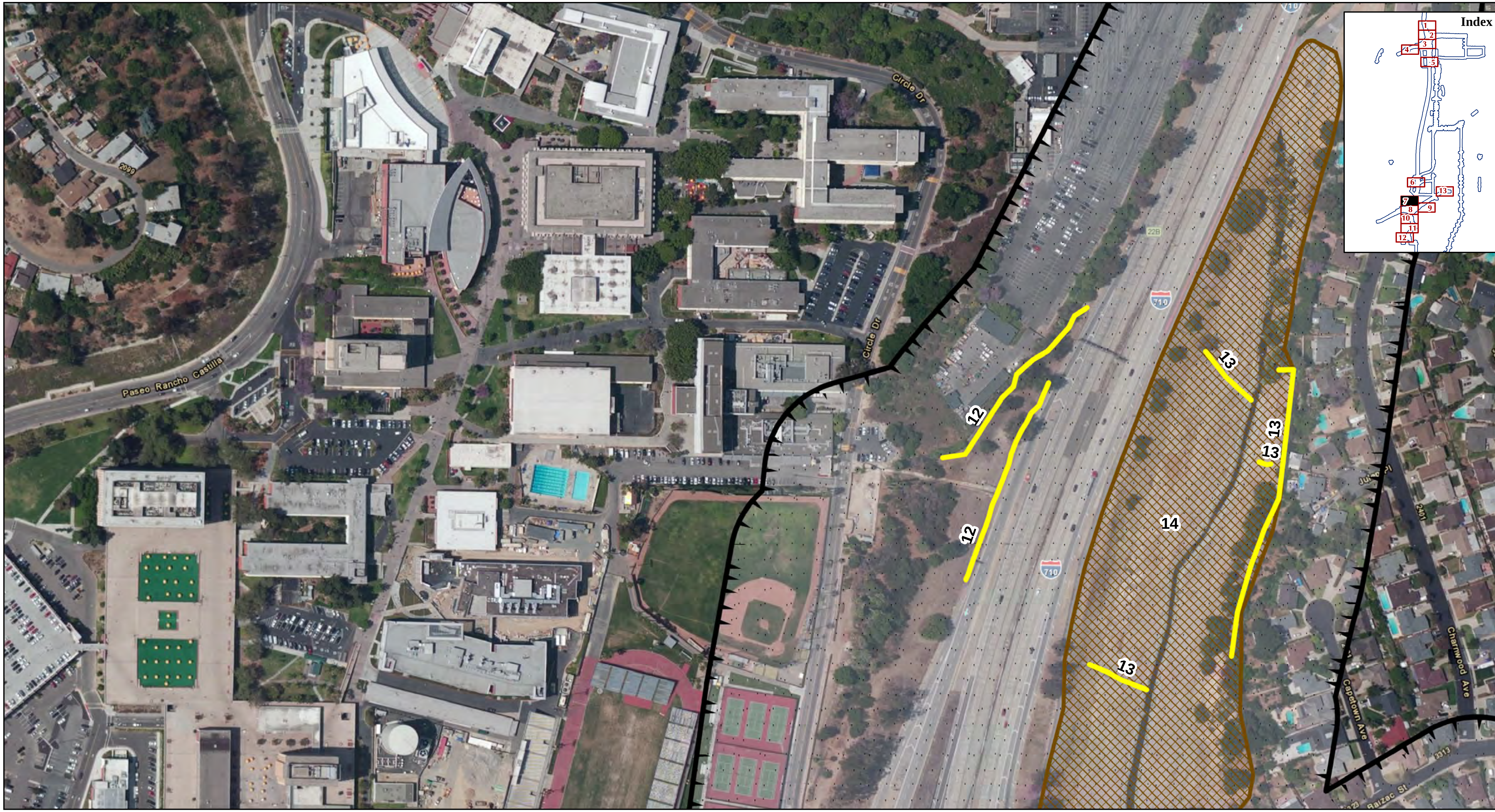

FIGURE E-7

LEGEND

- Soil Test Pit
- Non-Jurisdictional
- Biological Study Area
- Wetland Complex
- Detention Basin

Riparian Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- White Alder Groves

N

0 50 100 200 300
Feet

SR 710 North Study
Potential Non-Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
Q:\1282\SR_710\ArcProjects\JD Report\ACOE\ACOE_NonJD_PotentialDrainages_DDM.mxd (10/24/2014)

FIGURE E-8
Page 8 of 13

LEGEND

- Soil Test Pit
- Non-Jurisdictional
- Biological Study Area
- Wetland Complex
- Detention Basin

Riparian Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- White Alder Groves

0 50 100 200 300
Feet

SR 710 North Study
Potential Non-Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
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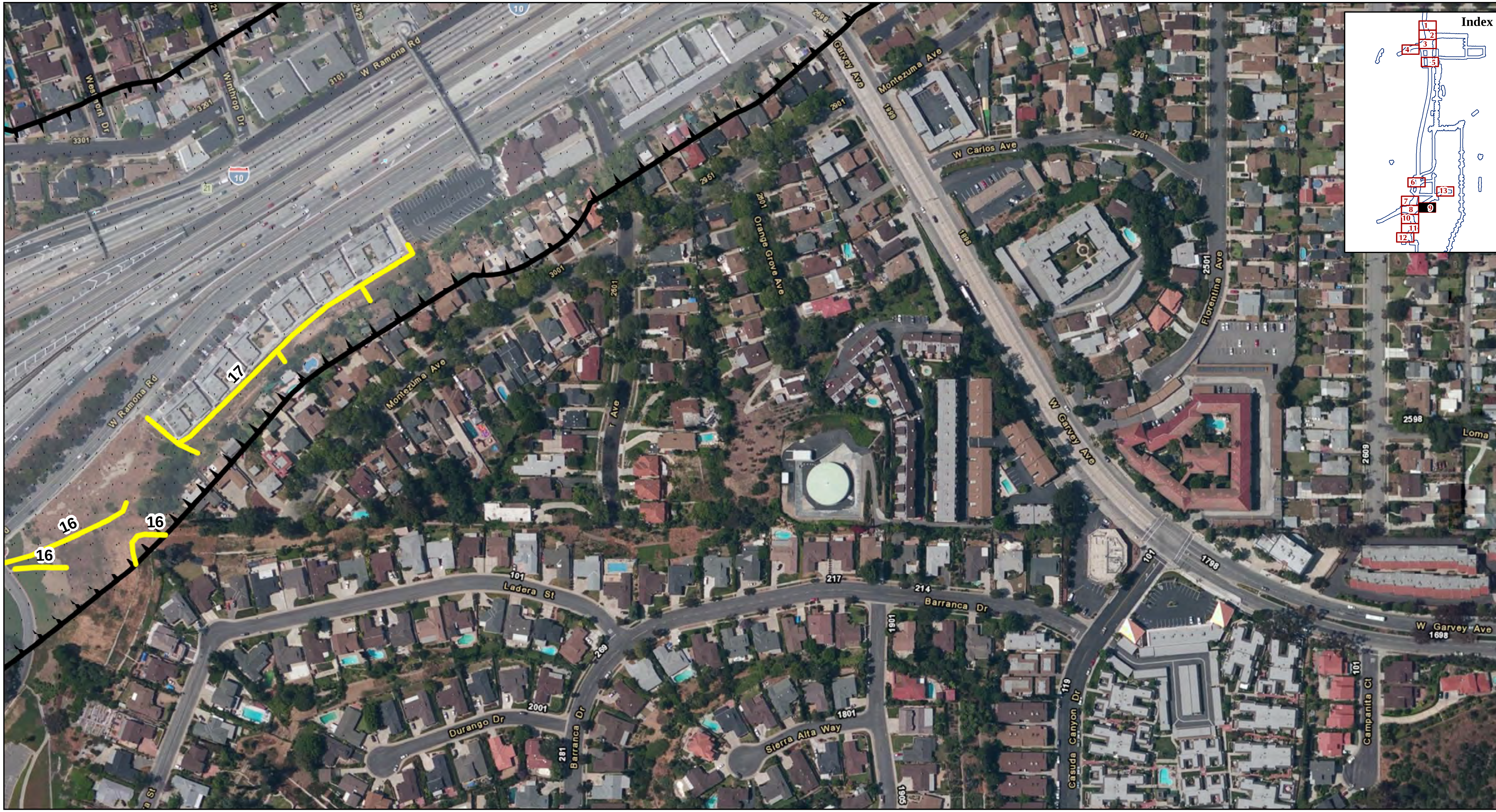

FIGURE E-9
Page 9 of 13

LEGEND

- Soil Test Pit
- Non-Jurisdictional
- Biological Study Area
- Wetland Complex
- Detention Basin

Riparian Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- White Alder Groves

0 50 100 200 300
Feet

SR 710 North Study
Potential Non-Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
Q:\1282\SR_710\ArcProjects\JD Report\ACOE\ACOE_NonJD_PotentialDrainages_DDM.mxd (10/24/2014)

FIGURE E-10
Page 10 of 13

LEGEND

- Soil Test Pit
- Non-Jurisdictional
- Biological Study Area
- Wetland Complex
- Detention Basin

Riparian Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- White Alder Groves

N

0 50 100 200 300
Feet

SR 710 North Study
Potential Non-Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
Q:\1282\SR_710\ArcProjects\JD Report\ACOE\ACOE_NonJD_PotentialDrainages_DDM.mxd (10/24/2014)

FIGURE E-11
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LEGEND

- Soil Test Pit
- Non-Jurisdictional
- Biological Study Area
- Wetland Complex
- Detention Basin

Riparian Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- White Alder Groves

N

0 50 100 200 300
Feet

SR 710 North Study
Potential Non-Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
Q:\1282\SR_710\ArcProjects\JD Report\ACOE\ACOE_NonJD_PotentialDrainages_DDM.mxd (10/24/2014)

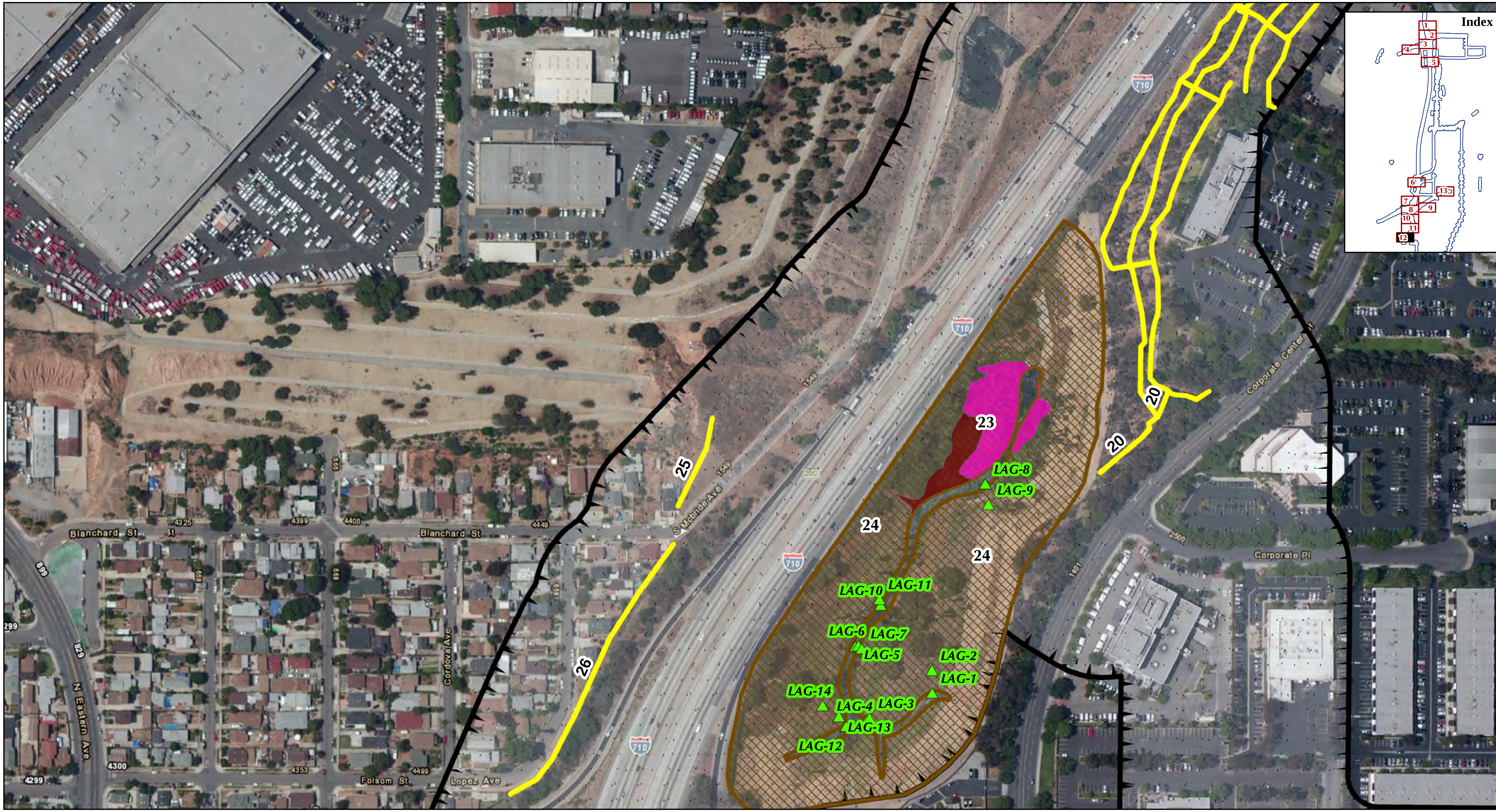

FIGURE E-12
Page 12 of 13

LEGEND

- Soil Test Pit
- Non-Jurisdictional
- Biological Study Area
- Wetland Complex
- Detention Basin

Riparian Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- White Alder Groves

N

0 50 100 200 300
Feet

SR 710 North Study
Potential Non-Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
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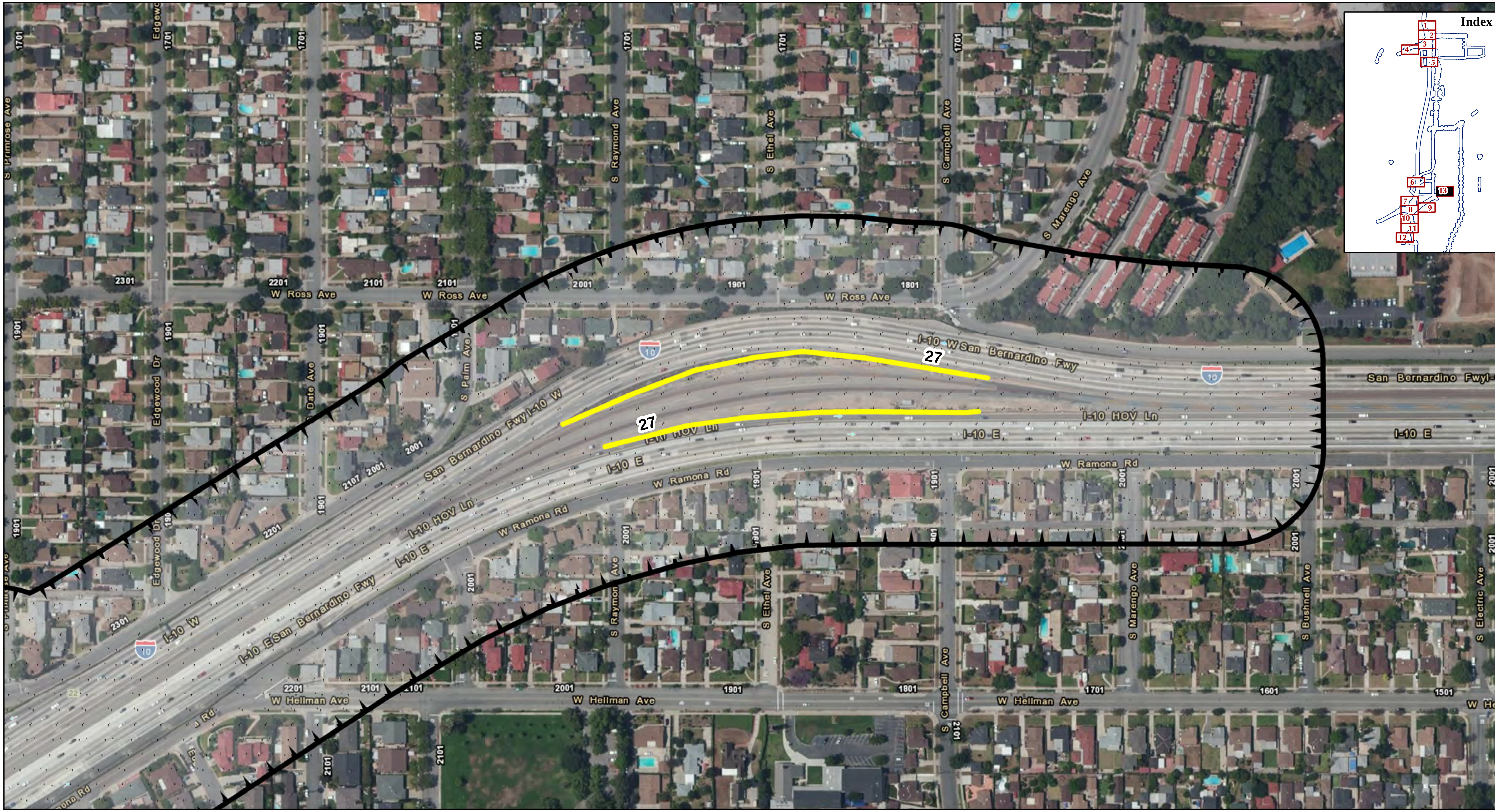

FIGURE E-13
Page 13 of 13

LEGEND

- Soil Test Pit
- Non-Jurisdictional
- Biological Study Area
- Wetland Complex
- Detention Basin

Riparian Communities

- Arroyo Willow Thicket
- Black Cottonwood Forest
- Giant Reed Breaks
- Non-Native Riparian Woodland
- White Alder Groves

0 50 100 200 300
Feet

SR 710 North Study
Potential Non-Jurisdictional Features Map
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
Q:\1282\SR_710\ArcProjects\JD Report\ACOE\ACOE_NonJD_PotentialDrainages_DDM.mxd (10/24/2014)

ATTACHMENT F
REPRESENTATIVE SITE PHOTOGRAPHS

Photo A of Feature 5
Arroyo Seco concrete lined channel, just south of Colorado Street Bridge, facing north

Photo B of Feature 5
Arroyo Seco north of SR 134 bridge, facing south

Photo C of Feature 5
Arroyo Seco under SR 134 bridge, facing north

Photo D of Feature 5
Arroyo Seco under SR 134 bridge, facing south

Photo A of Feature 6
Flowing stream with riparian vegetation, south of SR 134, west of Arroyo Seco, facing east

Photo B of Feature 6
Flowing stream with riparian vegetation, south of SR 134, west of Arroyo Seco, facing south

Photo C of Feature 6
Flowing stream with riparian vegetation, south of SR 134, west of Arroyo Seco, facing west

Photo D of Feature 6
Stream terminus, south of SR 134, west of Arroyo Seco, facing northwest

Photo A of Feature 8
Del Mar Pump Station storm water collecting area, facing south, photo taken in April

Photo B of Feature 8
Del Mar Pump Station storm water collecting area, facing north, photo taken in August

Photo C of Feature 8
Del Mar Pump Station, facing west, photo taken in August

Photo D of Feature 8
Del Mar Pump Station storm water collecting area, facing east, photo taken in August

Photo A of Feature 9
Concrete lined ditch near northern SR 710 terminus, facing west

Photo B of Feature 9
Concrete lined ditch near northern SR 710 terminus, facing northwest

Photo A of Feature 11
Laguna Channel, west of SR 710, north of I 10, facing north

Photo B of Feature 11
Laguna Channel, west of SR 710, north of I 10, facing south

Photo A of Feature 13
Concrete lined ditch, east of Laguna Channel, facing east

Photo B of Feature 13
Culvert, east of Laguna Channel, facing southwest

Photo A of Feature 14
Laguna Channel, east of SR 710, north of I-10, facing north

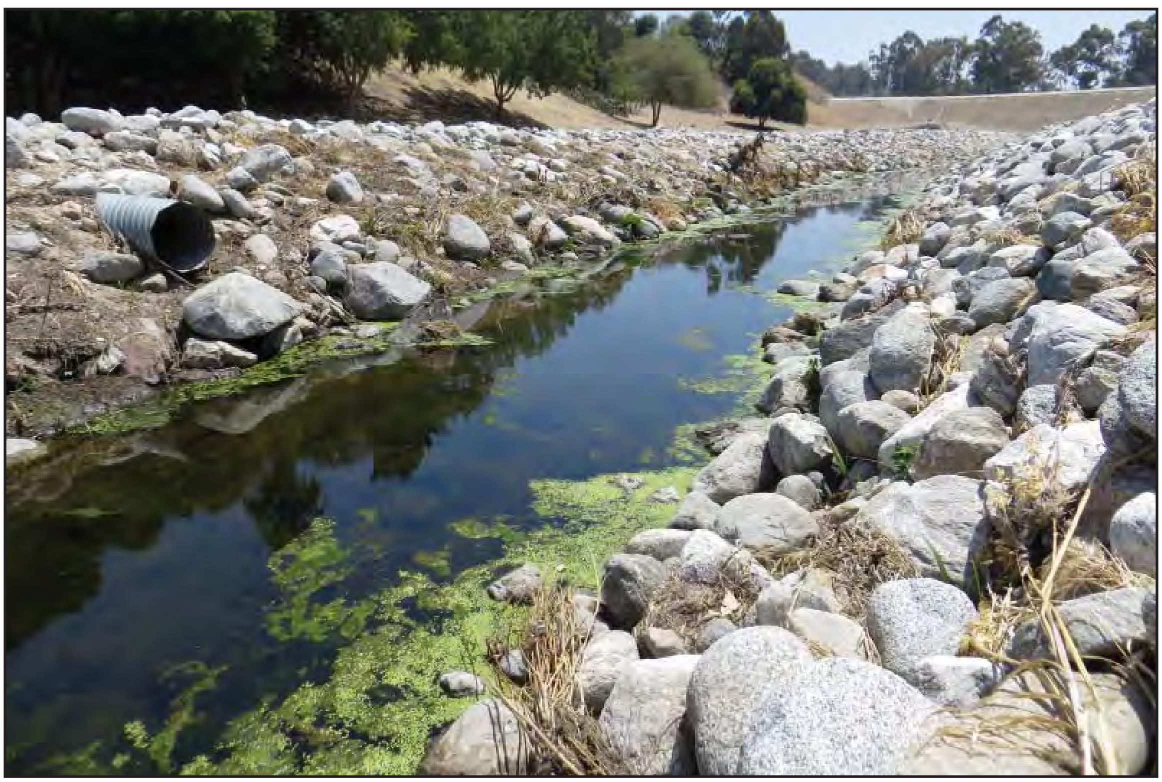

Photo B of Feature 14
Laguna Channel, east of SR 710, north of I 10, facing south

Photo C of Feature 14
Laguna Channel, east of SR 710, north of I 10, facing south

Photo D of Feature 14
Laguna Channel, east of SR 710, north of I 10, facing northeast

Photo A of Feature 15
Laguna Channel, underneath SR 710 and I 10 freeway interchange

Photo A of Feature 16
Laguna Channel, underneath SR 710 and I 10 freeway interchange

Photo A of Feature 20
Concrete lined ditch west of SR 710 and south of I 10, facing north

Photo B of Feature 20
Concrete lined ditch west of SR 710 and south of I 10, facing south

Photo A of Feature 21
Ditch located west of SR 710 and south of I 10, facing west

Photo B of Feature 21
Concrete lined ditch west of SR 710 and south of I 10, facing east

Photo C of Feature 21
Concrete lined ditch west of SR 710 and south of I 10, facing east

Photo D of Feature 21
Concrete lined ditch west of SR 710 and south of I 10, facing west

Photo E of Feature 21
Earthen ditch portion, west of SR 710 and south of I 10, facing east

Photo F of Feature 21
Earthen ditch portion, west of SR 710 and south of I 10, facing west

Photo G of Feature 21
Concrete lined ditch portion, west of SR 710 and south of I 10, facing south

Photo H of Feature 21
Earthen ditch portion, west of SR 710 and south of I 10, facing south

Photo A of Feature 22
Laguna Channel, west of SR 710, south of I 10, facing north

Photo B of Feature 22
Laguna Channel, west of SR 710, south of I 10, facing south

Photo A of Feature 23
Representative large concrete lined ditch, located between SR 710 and Corporate Center Dr.

Photo B of Feature 23
Representative small concrete lined ditch, located between SR 710 and Corporate Center Dr.

Photo A of Feature 25
Laguna Channel, east of SR 710, facing north

Photo B of Feature 25
Laguna Channel, east of SR 710, facing south

Photo C of Feature 25
Laguna Channel, east of SR 710, photo taken in late summer, facing south

Photo D of Feature 25
Laguna Channel, east of SR 710, photo taken in late summer

Photo E of Feature 25
Laguna Channel and wetland, east of SR 710, facing southeast

Photo F of Feature 25
Laguna Channel and wetland, east of SR 710, facing west

Appendix J Jurisdictional Delineation Report: Agencies of the State of California

Jurisdictional Delineation Report: State Agencies Jurisdiction

Prepared for

Caltrans
CALIFORNIA DEPARTMENT OF TRANSPORTATION

Metro
Los Angeles County
Metropolitan Transportation Authority

November 2014

EXECUTIVE SUMMARY

This Jurisdictional Delineation Report was prepared to support the State Route 710 North Study (SR 710 North Study) or "Proposed Project," located in Los Angeles County, California. The Proposed Project would include proposed transportation improvements to improve mobility and relieve congestion in east/northeast Los Angeles and the western San Gabriel Valley. This report identifies the location and extent of drainages, wetlands, and riparian areas under the potential jurisdiction of the California Department of Fish and Wildlife (CDFW) and/or Los Angeles Regional Water Quality Control Board (RWQCB). A separate report has been prepared to address waters and wetlands subject to the jurisdiction of the U.S. Army Corps of Engineers (Corps). Acreage of waters subject to the jurisdiction of the CDFW under Section 1600 of the California Fish and Game Code and of the RWQCB subject to Section 401 of the Clean Water Act are specifically identified in this report. The report may be used to support a request for agency concurrence regarding jurisdictional determination and support environmental permitting for any impacts to jurisdictional areas that may result from the implementation of the Proposed Project. The report may also be used to support evaluation of the environmental impacts of the Proposed Project, by alternative, pursuant to the requirements of the National Environmental Policy Act (NEPA) and California Environmental Quality Act (CEQA), and in the preparation of related environmental documents.

The waters and associated habitats were evaluated within the Biological Study Area (BSA) for the Proposed Project, which included an approximately 200-foot (ft) buffer around all areas under consideration to be included in the limits of disturbance as of July 2013, which is much larger (3,410.4 acres) than the area where ground-disturbing impacts may occur (approximately 570 acres for all alternatives combined). A total of 27 potential drainages, wetlands, and associated riparian habitats were evaluated for the Proposed Project; areas potentially subject to CDFW, and/or RWQCB jurisdiction were identified and delineated, including one wetland abutting a jurisdictional stream (0.44 acres). Two areas of non-wetland riparian vegetation were identified adjacent to jurisdictional streams, totaling 4.91 acres. Non-jurisdictional features, such as v-ditches that carry ephemeral storm water or nuisance flows, totaled 5.37 linear miles (mi) within the BSA. In all, the BSA included 9.78 acres potentially subject to CDFW jurisdiction, and 4.87 acres potentially subject to RWQCB jurisdiction.

Contents

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Tables

Figures

Acronyms and Abbreviations

ATM	Active Traffic Management
BRT	Bus Rapid Transit Alternative
BSA	Biological Study Area
Caltrans	California Department of Transportation
CDFW	California Department of Fish and Wildlife
CEQA	California Environmental Quality Act
Code	California Fish and Game Code
Corps	U.S. Army Corps of Engineers
ft	foot
FTIP	Federal Transportation Improvement Program
GPS	global positioning system
I	Interstate
IEN	Information Exchange Network
in	inch
LRT	Light Rail Transit Alternative
LRTP	Long Range Transportation Plan
Metro	Los Angeles County Metropolitan Transportation Authority
mi	mile
mph	miles per hour
MSA	Metropolitan Statistical Area
msl	mean sea level
NEPA	National Environmental Policy Act
NWI	National Wetlands Inventory
O&M	operations and maintenance
OHWM	ordinary high water mark
ROW	right of way
RTP/SCS	Regional Transportation Plan/Sustainable Communities Strategy
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
SCAG	Southern California Association of Governments
SR	State Route
TAP	Transit Access Pass
TNW	Traditional Navigable Water
TSM/TDM	Transportation System Management/Transportation Demand Management Alternative
USDA	U.S. Department of Agriculture
USGS	U.S. Geological Survey

1.0 INTRODUCTION

1.1 Project Description

The California Department of Transportation (Caltrans), in cooperation with the Los Angeles County Metropolitan Transportation Authority (Metro), proposes transportation improvements to improve mobility and relieve congestion in the area between State Route 2 (SR 2) and Interstates 5, 10, 210 and 605 (I-5, I-10, I-210, and I-605, respectively) in east/northeast Los Angeles and the western San Gabriel Valley (Figure 1, *Project Location*). The study area for the State Route 710 (SR 710) North Study is approximately 100 square miles and generally bounded by I-210 on the north, I-605 on the east, I-10 on the south, and I-5 and SR 2 on the west. Caltrans is the Lead Agency under the National Environmental Policy Act (NEPA) and the California Environmental Quality Act (CEQA).

The lack of continuous north-south transportation facilities in the study area has the following consequences, which have been identified as the elements of need for the Proposed Project:

- Degradation of the overall efficiency of the larger regional transportation system
- Congestion on freeways in the study area
- Congestion on the local streets in the study area
- Poor transit operations within the study area

The purpose of the proposed action is to effectively and efficiently accommodate regional and local north-south travel demands in the study area of the western San Gabriel Valley and east/northeast Los Angeles, including the following considerations:

- Improve efficiency of the existing regional freeway and transit networks
- Reduce congestion on local arterials adversely affected due to accommodating regional traffic volumes
- Minimize environmental impacts related to mobile sources.

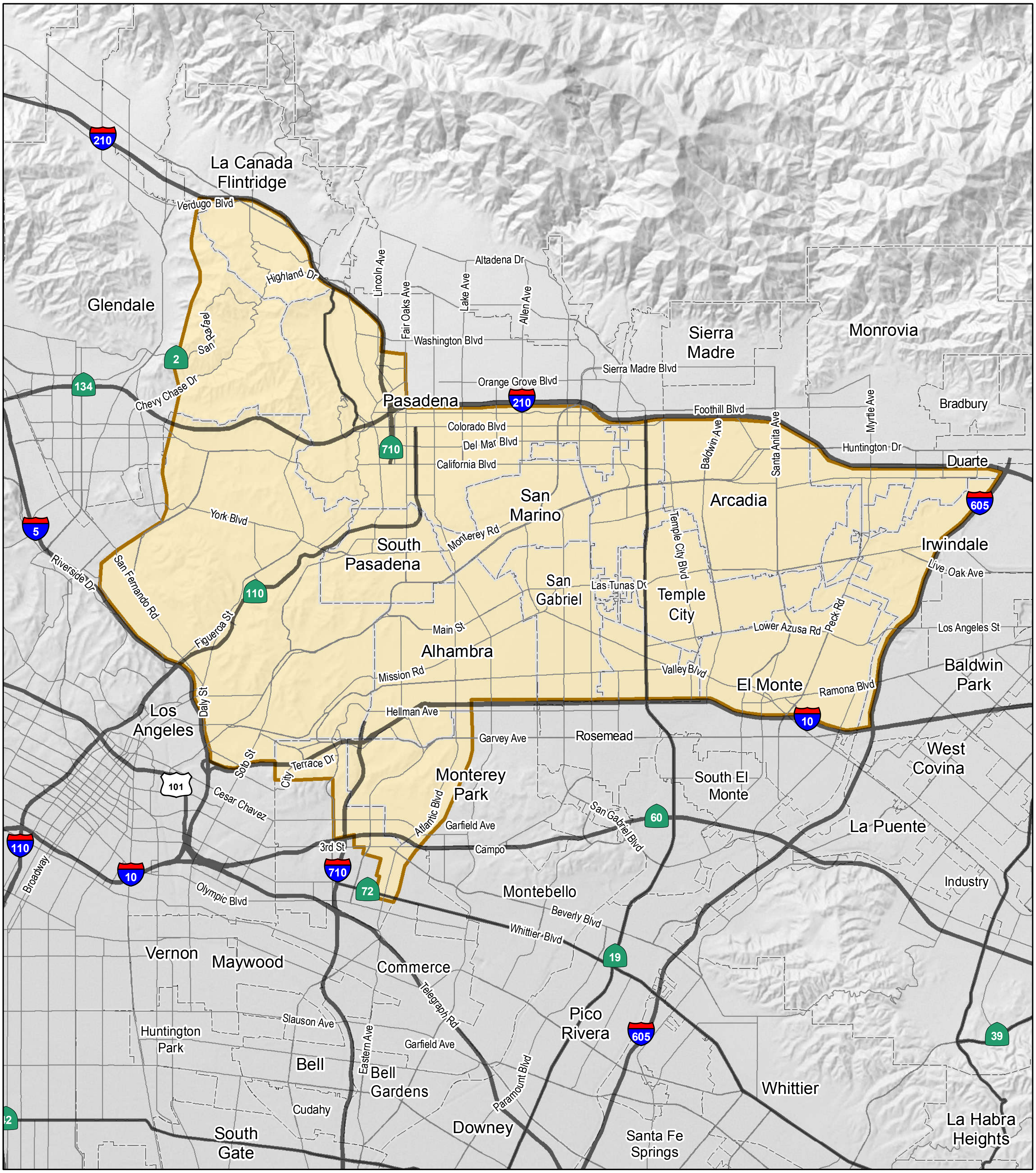
The proposed alternatives for the Proposed Project include:

- the No Build Alternative
- the Transportation System Management/Transportation Demand Management (TSM/TDM) Alternative,
- the Bus Rapid Transit (BRT) Alternative
- the Light Rail Transit (LRT) Alternative
- the Freeway Tunnel Alternative

Components of the TSM/TDM Alternative will also be included with the BRT, LRT and Freeway Tunnel Alternatives.

The No Build Alternative includes projects/planned improvements through 2035 that are contained in the Federal Transportation Improvement Program (FTIP), as listed in the Southern California Association of Governments (SCAG) 2012 Regional Transportation Plan/Sustainable Communities Strategy (RTP/SCS) Measure R and the funded portion of Metro’s 2009 Long Range Transportation Plan (LRTP). The No Build Alternative does not include any planned improvements to the SR 710 Corridor.

The TSM/TDM Alternative consists of strategies and improvements to increase efficiency and capacity for all modes in the transportation system with lower capital cost investments and/or lower potential impacts. The TSM/TDM Alternative is designed to maximize the efficiency of the existing transportation system by improving capacity and reducing the effects of bottlenecks and chokepoints. TSM strategies include Intelligent



LEGEND

SR 710 North Study Area

FIGURE 1

0 1.25 2.5
MILES

SOURCE: ESRI (2008); LSA (2013)

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SR 710 North Study

Project Location

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

Transportation Systems (ITS), local street and intersection improvements, and Active Traffic Management (ATM). The TDM strategies include expanded bus service, bus service improvements, and bicycle improvements.

The BRT Alternative would provide high-speed, high-frequency bus service through a combination of new, dedicated, and existing bus lanes, and mixed-flow traffic lanes to key destinations between East Los Angeles and Pasadena.

The LRT Alternative would include passenger rail operated along a dedicated guide way, similar to other Metro light rail lines. The LRT Alternative would begin on Mednik Avenue adjacent to the existing East Los Angeles Civic Center Station on the Metro Gold Line and end at Raymond Avenue adjacent to the existing Fillmore Station on the Metro Gold Line.

The Freeway Tunnel Alternative would start at the existing southern stub of SR 710 in Alhambra, just north of I-10, and connect to the existing northern stub of SR 710, south of the I-210/SR 134 interchange in Pasadena. Five operational variations for the Freeway Tunnel Alternative include:

- the freeway tunnel alternative without tolls
- freeway tunnel alternative with trucks excluded
- freeway tunnel alternative with tolls
- the freeway tunnel alternative with tolls and trucks excluded
- the freeway tunnel alternative with toll and express bus.

1.2 Scope of the Jurisdictional Delineation Report

This report was prepared to identify the location and extent of drainage features under the potential jurisdiction of CDFW and/or RWQCB in the BSA (Figure 2, *Topographic Map with USGS 7.5-minute Quadrangle Index*). This report may be used to support a request for concurrence regarding jurisdictional determination from these agencies and support environmental permitting for any impacts to jurisdictional areas that may result from the implementation of the Proposed Project. The report may also be used to support evaluation of the environmental impacts of the Proposed Project, by alternative, pursuant to the requirements of NEPA and CEQA, and in the preparation of related environmental documents.

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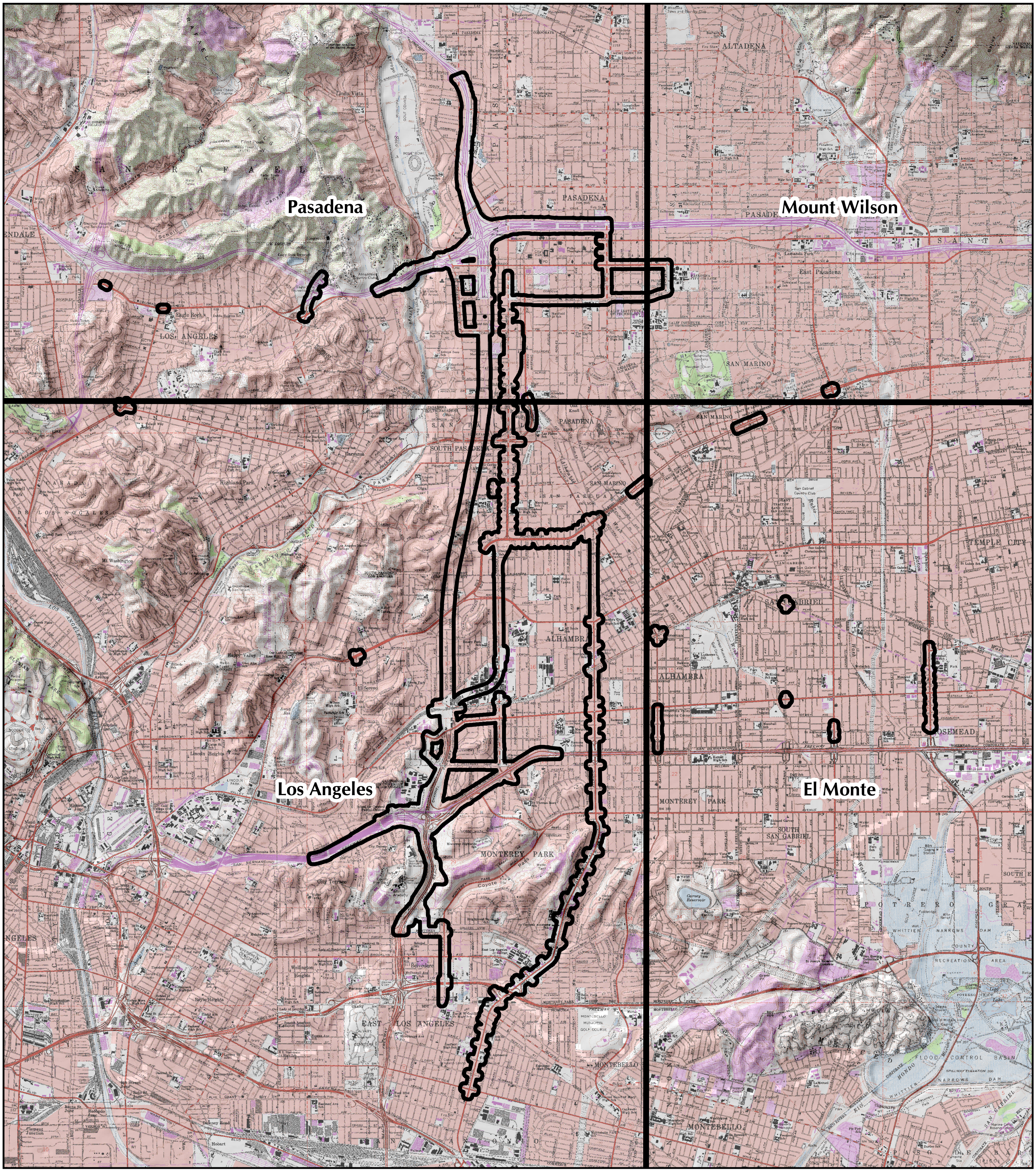

FIGURE 2

LEGEND

7.5-minute Index

Biological Study Area

N

0 0.25 0.5 1 1.5

Miles

SR 710 North Study

Topographic Map with USGS 7.5-minute Quadrangle Index

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013)

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2.0 REGULATORY FRAMEWORK

This section describes the regulatory basis for authority of the two state agencies responsible for administering and permitting impacts to drainages, wetlands, and associated vegetation communities in the state of California. Any proposed project that may impact these features must evaluate such impacts pursuant to the environmental analysis requirements of NEPA and CEQA and obtain the necessary permits and agreements required by the agency or agencies with jurisdiction over features impacted by the Proposed Project.

2.1 Regional Water Quality Control Board

The RWQCB is the primary state agency responsible for ensuring water quality in California, through the regulation of discharge to surface waters pursuant to Section 401 of the CWA, as well as the Porter-Cologne Water Quality Control Act (Porter-Cologne Act). Section 401 requires that any activity, including river or stream crossings during road, pipeline, or transmission line construction, which may result in discharges into waters of the U.S., must be certified by the RWQCB prior to the issuance of any federal permit or license. This certification ensures that the proposed activity does not violate state and/or federal water quality standards. The RWQCB's authority includes waters of the State, which are defined in California Water Code Section 13050 as any surface or groundwater, including saline waters, within the boundaries of the state. Waters of the State is inclusive of waters of the U.S., as well as isolated waters and wetlands.

2.2 California Department of Fish and Wildlife

Pursuant to Sections 1600 through 1603 of the California Fish and Game Code (Code), all diversions, obstructions, or changes to the natural flow or bed, channel, or bank of any river, stream, or lake in California are subject to the regulatory authority of CDFW. Pursuant to the Code, a *stream* is defined as a body of water that flows at least periodically, or intermittently, through a bed or channel having banks and supporting fish or other aquatic life. Based on this definition, a watercourse with surface or subsurface flows that support or have supported riparian vegetation is a stream and is subject to CDFW jurisdiction. Altered or artificial watercourses valuable to fish and wildlife are subject to CDFW jurisdiction. CDFW must be contacted for an SAA for any project that may impact a streambed or wetland. An SAA is not a permit, but rather an agreement between the project proponent and CDFW to determine appropriate means of compliance with the Code. CDFW has required replacement of lost habitats in proportion to the acres of impacts, at a level equal to or greater than 1 to 1.

CDFW's jurisdiction is similar to that of the Corps, but differs in placing more emphasis on habitat function and value and less on the OHWM. The inclusion of streamside habitats in CDFW jurisdiction means that some habitats subject to CDFW jurisdiction may not meet the definitions of wetlands that would be subject to federal jurisdiction. Riparian plant communities often fall under CDFW jurisdiction and occur above the ordinary high water level. CDFW jurisdictional wetlands (one subset of riparian habitats) do not need to exhibit the three criteria associated with federal jurisdiction (wetland hydrology, hydrophytic vegetation, and hydric soils). CDFW considers the U.S. Fish and Wildlife Service's definition of wetlands:

> *Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports hydrophytes, (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.*

CDFW typically asserts jurisdiction to the top of a stream bank, or the outer limits of riparian vegetation, whichever is greater.

3.0 METHODS

3.1 Biological Study Area and Limits of Disturbance

The BSA discussed in this report is inclusive of, and substantially larger than, all areas that may be directly impacted by implementation of the Proposed Project (Figure 2). The BSA was created to include an approximately 200-ft buffer around all of the areas under consideration to be included in the limits of disturbance as of July 2013. The BSA, at 3,410.4 acres, is much larger than the anticipated area where ground-disturbing permanent and temporary impacts may occur (approximately 570 acres for all alternatives combined). In some cases, the edge of the BSA is approximately 0.5 mi from the nearest permanent or temporary impact areas. All potential drainage features within the BSA were evaluated in the literature review, field surveys, and identification of potential jurisdictional areas conducted for this report.

3.2 Literature and Historical Map Review

The first step in the assessment process involved a review of the following literature, coordination, and maps, including the following resources:

- Aerial photographs of the Proposed Project property (1 inch [in] equals 250 ft; 1:3,000)
- California Department of Fish and Wildlife, *A Field Guide to Lake and Streambed Alteration Agreements*[1]
- California Interagency Watershed Map of 1999 (Calwater 2.2, updated May 2004)[2]
- General Soil Survey of the U.S.A. (U.S. Department of Agriculture – Natural Resources Conservation Service; USDA-NRCS)[3]
- Google Earth version 7.1.1.1888
- National Hydrography Dataset[4]
- Los Angeles Department of Water and Power Urban Water Management Plan[5]
- Los Angeles Department of Public Works, Los Angeles County Storm Drain System[6]
- National Flood Insurance Program Flood Insurance Rate Maps for Los Angeles County[7]
- State of California Regional Water Quality Control Board Basin Plan for the Los Angeles Region[8]
- U.S. Army Corps of Engineers, *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region* (Version 2.0)[9]
- U.S. Fish and Wildlife Service National Wetlands Inventory (NWI)[10]

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[1] California Department of Fish and Game. 1994. *A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607*. Sacramento, CA.

[2] California Department of Forestry and Fire Protection. Updated May 2004. The California Interagency Watershed Map of 1999 (Calwater 2.2). Available at: http://gis.ca.gov/BrowseCatalog.epl

[3] U.S. Department of Agriculture. 2013. *Natural Resources Conservation Science, Soil Survey*. Available at: http://soils.usda.gov/survey/nscd/description.html

[4] U.S. Geological Survey. 2011. USGS National Hydrography Dataset. Available at: http://egis3.lacounty.gov/dataportal/2011/05/09/rivers-streams-water-conveyance-pipelines-aqueducts/

[5] Los Angeles Department of Water and Power. 2010. *Urban Water Management Plan*. Available at: www.ladwp.com

6 Los Angeles Department of Public Works. n.d. Los Angeles County Storm Drain System. Available at: http://dpw.lacounty.gov/fcd/stormdrain/index.cfm#map

[7] Federal Emergency Management Agency. 2013. FEMA Map Service Center. Available at: https://msc.fema.gov/webapp/wcs/stores/servlet/mapstore/homepage/MapSearch.html

[8] California Regional Water Quality Control Board, Los Angeles Region. 13 June 1994. *Basin Plan for the Coastal Watersheds of Los Angeles and Ventura Counties*. Monterey Park, CA.

[9] U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS.

- U.S. Geological Survey (USGS) maps for the El Monte, Los Angeles, Mount Wilson, and Pasadena quadrangles[11,12,13,14,15,16,17]

Historical topographic maps and historical aerial photographs were reviewed to identify known drainages, wetlands, and riparian areas within the BSA, and to identify connections to traditional navigable waters subject to RWQCB (and Corps) jurisdiction. Database information sources included the NWI, National Hydrography Dataset, and Los Angeles County Storm Drain System. All potential drainages, wetlands, and riparian areas identified during the literature and historical map review were examined using geographic information system software (ESRI ArcGIS, Version 10.2) and Google Earth to identify any visible features, including ditches or vegetation.

Aerial imagery and topographic maps were reviewed to identify additional areas where the topography or image indicated the potential presence of any drainages not identified during the historical map and literature review. The resulting global positioning system (GPS) positions were then exported to GPS units, and printed on aerial maps for use during field verification efforts.

3.3 Field Surveys

All areas with potential drainage features or wetlands, or associated riparian vegetation were investigated during field surveys. Qualified Sapphos Environmental, Inc. biologists with experience identifying jurisdictional drainages and experience identifying plants and classifying plant communities conducted the field investigations throughout the BSA between April and October 2013. The surveys were conducted by Mr. Ryan Villanueva, Dr. Jolene Moroney, and Ms. Margaret Schaap, with assistance from Mr. Brian Bielfelt, Ms. Lauren Dorough, Mr. Adam Furman, Mr. John Ivanov, Mr. Thomas Kmett, Ms. Shelby Petro, and Mr. Jordan Zylstra. Field surveys were conducted on April 9; July 3 and 30; August 21, 26, and 30; September 24; and October 2, 4, 14, and 18, 2013. The surveyors identified non-wetland waters based on observation of OHWM, and field conditions. The surveyors also identified and delineated wetlands on the basis of vegetation, soils, and hydrology; identified riparian plant communities; and searched for OHWMs.

RWQCB jurisdiction was identified on the basis of the presence of an OHWM and/or wetland vegetation, soils, and hydrology. The identification of these features followed the same methods as are used to identify federally (Corps) jurisdictional waters and wetlands, except that isolated waters and wetlands are also RWQCB jurisdictional. The methods used to identify OHWMs and wetlands as they are federally defined are provided below.

CDFW jurisdiction was identified on the basis of the presence of a water body with a defined channel, bed, and bank. The extent of CDFW jurisdiction was identified as including these water bodies, from bank to bank, as well as the entirety of associated riparian areas (including wetlands). CDFW does not have any established protocols regarding delineation of wetland boundaries; CDFW jurisdiction of wetlands was assumed to match that RWQCB, which in turn is based on methods published by the Corps and methods used to identify OHWM and any abutting riparian areas (see section 3.3.2).

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[10] U.S. Fish and Wildlife Service. 2013. National Wetlands Inventory mapper. Available at: http://www.fws.gov/wetlands/Wetlands-Mapper.html

[11] U.S. Geological Survey. 2012. Los Angeles 7.5-Minute Topographic Map. Reston, VA.

[12] U.S. Geological Survey. 1966. Los Angeles 7.5-Minute Topographic Map. Denver, CO.

[13] U.S. Geological Survey. 1953. Alhambra Topographic Map. Denver, CO.

[14] U.S. Geological Survey. 1926. Alhambra Topographic Map. Denver, CO.

[15] U.S. Geological Survey. 2012. El Monte 7.5-Minute Topographic Map. Reston, VA.

[16] U.S. Geological Survey. 2012. Mount Wilson 7.5-Minute Topographic Map. Reston, VA.

[17] U.S. Geological Survey. 2012. Pasadena 7.5-Minute Topographic Map. Reston, VA.

3.3.1 Identification and Delineation of Non-Wetland Waters

Sapphos Environmental, Inc. used a combination of literature and database review, followed by field verification, to delineate non-wetland waters by identifying the OHWM. The OHWM is defined as "that line on the shore established by the fluctuation of water and indicated by physical characteristics such as a clear, natural line impressed on the bank; shelving; changes in the character of the soil; destruction of terrestrial vegetation, the presence of litter and debris; or other appropriate means that consider the characteristics of the surrounding areas."[18] Additional guidance was issued by the Corps in 2005 to clarify the meaning of "or other appropriate means that consider the characteristics of the surrounding areas." The Corps further states that the following characteristics should be considered: wracking; vegetation matted down, bent, or absent; sediment sorting; leaf litter disturbed or washed away; scour; deposition; multiple observed flow events; bed and banks; water staining; and changes in plant communities.[19]

The field delineations were conducted according to the Corps' region-specific guidance for the Arid West.[20] The OHWM was identified based on a combination of geomorphic and vegetation indicators characteristic of the channel types that occur in the Arid West region. Aerial photographs were first examined to evaluate the presence of active floodplain and potential drainages, as evidenced by geomorphic and/or vegetation features differing from the surrounding area, and by any anthropogenic features (e.g., constructed channels or ditches). Additional background data sources, such as topographic maps, soil maps, and a plant community map, were also examined. Based on these resources, a preliminary delineation map of active floodplain areas and drainages was created, which was then subject to field verification. Stream gage data were not available to assist with the delineation. Field verification of natural and anthropogenically altered channels entailed walking the area in a systematic manner to differentiate between low terrace, active floodplain, and low flow channel areas. For natural channels, the field surveys focused on identifying transitions between the low terrace, active floodplain, and low flow channel areas. For both natural and altered channels, indicators of OHWM were identified. Covered and confined sections of drainages (e.g., under highways) were not walked, but were assumed to follow a straight-line path between the inlet and outlet unless database information indicated otherwise. GPS units were used to record the locations of features during the field survey efforts.

The results of the field verification were transferred to digital format using GIS software, for subsequent use in analyses.

3.3.2 Identification and Delineation of Wetlands

At potential wetlands located within the BSA, surveyors followed the methods established by the Corps in the 1987 *Corps of Engineers Wetland Delineation Manual*, and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region*.[21,22] Within potential wetlands, two qualified wetland delineators and two qualified biologists recorded vegetation, soil, and hydrology data as outlined in the standard *Wetland Delineation Data Form – Arid West* (Attachment A, *Wetland Delineation Forms*)(Data Forms). Each sampling point was classified as wetland or non-wetland based on the presence of hydrophytic plants, hydric soil, and wetland hydrology. Wetland boundaries and sampling locations were recorded using an Ashtech GPS unit with sub-meter accuracy.

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[18] 33 *Code of Federal Regulations* 328.3(e).

[19] U.S. Army Corps of Engineers. 2005. *Regulatory Guidance Letter 05-05*. Available at: http://www.usace.army.mil/Portals/2/docs/civilworks/RGLS/rgl05-05.pdf

[20] Lichvar, R., and S. McColley. August 2008. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual*. Hanover, NH: U.S. Army Corps of Engineers Engineer Research and Development Center.

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

[22] U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS.

RWQCB jurisdiction was identified based on the Corps' definition of wetlands, which requires the presence of three parameters: (1) wetland vegetation, (2) hydric soils, and (3) hydrology. CDFW will consider the U.S. Fish and Wildlife Service's wetland definition, which was originally based on the presence of just one of the three parameters, as a guide to identifying their own jurisdiction.

3.3.2.1 Wetland Vegetation

Hydrophytic vegetation classification was determined based on visual estimates of percent cover in plots at each soil test pit. Plant species observed at potential wetlands were identified using *The Jepson Manual: Vascular Plants of California*[23] and a wetland floral compendium compiled (Attachment B, *Wetland Floral Compendium*). Based on their wetland indicator status, plant species were categorized based on their tendency to occur in wetlands or uplands (Table 3.3.2.1-1, *Wetland Indicator Vegetation Classes*).

TABLE 3.3.2.1-1
Wetland Indicator Vegetation Classes

Indicator Status	Designation	Probability to Occur in Wetlands
Obligate Wetland (OBL)	Hydrophyte	Almost always occur in wetlands (>99% probability)
Facultative Wetland (FACW)	Hydrophyte	Usually occur in wetlands (approx. 67–99%)
Facultative (FAC)	Hydrophyte	Equally likely to occur in wetlands/non-wetlands (approx. 34–66%)
Facultative Upland (FACU)	Nonhydrophyte	Usually occurs in non-wetlands (approx. 67-99%)
Obligate Upland (UPL)	Nonhydrophyte	Almost always occurs in non-wetlands (>99%)

SOURCE: Lichvar, R.W. 2013. *The National Wetland Plant List: 2013 Wetland Ratings*. Hanover, NH: U.S. Army Engineer Research and Development Center, Cold Regions Research and Engineering Laboratory.

3.3.2.2 Soils

Soils were sampled by digging soil test pits in pairs or trios of one upland and one wetland pit (and if needed a supplemental pit) to determine the boundaries of the wetland. The position of each sampling location was recorded using a GPS unit. Soil test pits were combined with vegetation sampling points where deemed necessary. At each sampling location the soil texture, matrix, and redoximorphic features—spots of different colors within the dominant color of the layer—were documented. The soil from each pit was examined for hydric soil indicators; low chroma, iron, or manganese concentrations, organic layers, gleization, sulfuric odor, and so forth, as listed on the Data Form as primary hydric soil indicators. The soil pits were dug to a depth of approximately 20 in whenever possible. The depth, color of the soil, texture of the soil, and presence of redoximorphic features were recorded at each pit. The soil color was determined from moist soil samples using the Munsell Soil Color Charts.[24] The Pocket Guide to Hydric Soil Field Indicators was used to assess the hydric soils at each pit.[25]

3.3.3 Identification and Delineation of Riparian Habitats

Riparian (non-wetland) habitats potentially subject to CDFW jurisdiction were identified by mapping and classifying vegetation community alliances larger than 0.1 acres as defined by *A Manual of California Vegetation*.[26] Plant community boundaries were marked in the field using an Ashtech GPS unit and marked on aerial photographs. Vegetation alliances occurring in wetlands that were smaller than the minimum plant community mapping unit of 0.1 acres were generalized as Wetland Complex. Vegetation alliances in this cover type included: *Typha* species (*T. angustifolia*, *T. domingensis*, *T. latifolia*) Herbaceous Alliances (cattail marshes),

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[23] Baldwin, B.G., D.H. Goldman, D.J. Keil, R. Patterson, T.J. Rosatti, and D.H. Wilken, eds. 2012. *The Jepson Manual: Vascular Plants of California*. 2nd ed. Berkeley: University of California Press.

[24] Munsel Color. 2012. *Munsell Soil Color Book*: *Munsell Soil-Color Charts*. Grand Rapids, MI.

[25] Wetland Training Institute, Inc. 2013. *2013 Pocket Guide to Hydric Soil Field Indicators, Based on Field Indicators of Hydric Soils in the United States (version 7.0 with updates)*. Glenwood, NM.

[26] Sawyer, J.O., T. Keeler-Wolf, and J.M. Evens. 2009. *A Manual of California Vegetation.* 2nd ed. Sacramento, CA: California Native Plant Society.

Lolium perenne Semi-Natural Herbaceous Stands (perennial rye grass fields), *Distichlis spicata* Herbaceous Alliance (salt grass flats), *Salix lasiolepis* Shrubland Alliances (arroyo willow thickets), *Arundo donax* Semi-Natural Herbaceous Stands (giant reed breaks), and *Echinocloa* Undetermined Semi-Natural Stands (barnyard grass marshes).

3.4 Feature Classification

Drainage features observed within the BSA were classified according to one or more of the following types, some of which have specific regulatory definitions. The feature classes described below are not exhaustive, and additional feature classes or subdivisions within those described here may be useful in identifying and determining jurisdictional status of drainages. Riparian habitats above the OHWM were mapped separately to facilitate agency-specific calculations of jurisdictional area for the RWQCB and CDFW.

3.4.1 Ditch

Ditches are relatively small features that convey water from one place to another in upland areas. Ditches typically lack function and value to support fish and wildlife, lack riparian vegetation, can be concrete or earthen, are generally ephemeral, and many are manmade to convey runoff in upland habitats. Concrete ditches with a v-shaped cross section are often constructed around roadways to channel and direct short-term flows away from road surfaces. These ditches typically have little or no vegetation, and are regularly cleared and maintained to preserve their functionality in conveying water. CDFW and RWQCBs generally do not assert jurisdiction over ditches.

3.4.2 Stream

A stream is defined by CDFW as a body of water that flows at least periodically or intermittently through a bed or channel, can be perennial, intermittent or ephemeral, and includes rivers, creeks, dry washes, sloughs, blue-line streams, and watercourses with subsurface flows. In addition, canals, aqueducts, irrigation ditches, and similar waterways may be considered streams if they support aquatic life, riparian vegetation, or stream-dependent terrestrial wildlife.[27] CDFW and the RWQCBs typically assert jurisdiction over streams. CDFW jurisdiction extends from the stream bed to the bank or the outer edge of the associated riparian vegetation. RWQCB jurisdiction is similar to that of the Corps, but does not require connection to a TNW or tributary thereof; a stream is jurisdictional for the Corps if it is considered a Traditional Navigable Water (TNW) or a tributary to a TNW up to the OHWM.[28]

3.4.3 Detention Basin

A detention basin is an earthen depression that has been built on or adjacent to tributaries of flood-control drainages, or streams, in order to manage storm water. Detention basins are designed to retain water for a period of time, thus protecting against flooding downstream. Because detention basins are associated with a watercourse, the jurisdiction within a detention basin is dependent on the jurisdiction of the watercourse, and the presence of riparian vegetation or wetlands. In some cases, detention basins are created in uplands as part of compliance with Section 402 of the CWA, and are not subject to Section 404 of the CWA. However, this report focuses on field observations, and final determinations of jurisdiction will be made by the regulatory agencies based on all available information.

[27] California Department of Fish and Game. 1994. *A Field Guide to Lake and Streambed Alteration Agreements, Sections 1600-1607*. Sacramento, CA.

[28] Lichvar, R., and S. McColley. August 2008. *A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States: A Delineation Manual*. Hanover, NH: U.S. Army Corps of Engineers Engineer Research and Development Center.

3.4.4 Wetlands

CDFW jurisdictional wetlands (one subset of riparian habitats) do not need to exhibit all three criteria associated with federal jurisdiction (wetland hydrology, hydrophytic vegetation, and hydric soils). CDFW considers the U.S. Fish and Wildlife Service's definition of wetlands:

> *Wetlands are lands transitional between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. For purposes of this classification, wetlands must have one or more of the following three attributes: (1) at least periodically, the land supports hydrophytes, (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is non-soil and is saturated with water or covered by shallow water at some time during the growing season of each year.*

3.4.5 Riparian Habitat

Riparian habitats are influenced by enhanced water availability due to their proximity to surface or subsurface waters, and they may include wetlands and non-wetland areas; wetlands are discussed above in Section 3.4.4. Riparian areas provide valuable habitat for many specialized plants and animals, and have been greatly impacted by development activities. Riparian habitats above the OHWM are generally included in CDFW's jurisdiction over rivers, streams, and lakes. Non-wetland riparian habitats are not subject to RWQCB jurisdiction.

4.1 Literature and Historical Map Review

4.1.1 Watershed Context

The Proposed Project and associated BSA include approximately 3,410 acres ranging in elevation from a low point of approximately 57 m above mean sea level (msl) in the south to 309 m at the northern end (187 to 1,014 ft), and is depicted on four USGS topographic 7.5-minute quadrangles (Figure 2). The entire BSA is contained within the watershed of the Los Angeles River. This watershed, called the Los Angeles River Hydrologic Unit (HUC 18070105), drains a 2,152-square-kilometer (831-square-mile) area (Figure 3, *Regional Watershed Hydrologic Units in Relation to the Biological Study Area*). The California Interagency Watershed Map further divides the Los Angeles River Hydrologic Unit into areas and subareas, four of which overlap with the BSA (Table 4.1.1-1, *Hydrologic Areas within the BSA*). The watershed includes more than 40 cities and unincorporated communities and has a population of approximately 9 million. The Los Angeles River has been heavily altered and was channelized beginning in the 1930s, primarily to contain heavy seasonal flooding and thus ensure public safety and facilitate urban development.

TABLE 4.1.1-1
Hydrologic Areas within the BSA

Hydrologic Unit	Hydrologic Area	Hydrologic Sub Area (if defined)	Acres
Los Angeles River	Los Angeles	—	939.5
	San Fernando	Bull Canyon	5.4
	Raymond	Pasadena	2,402.7
	San Fernando	Eagle Rock	62.5

4.1.2 Regional Soils

Nine soil types were identified as occurring within the BSA based on Los Angeles County Department of Public Works soils database, which in turn is based on soil surveys conducted in 1903 and 1919 by the U.S. Department of Agriculture (USDA) Bureau of Soils.[29] The soils in the BSA have not been mapped by NRCS and therefore the soils data may not match the standards or definitions used by NRCS. However, NRCS's database contains soil series descriptions for soils with names that match those in the BSA, and these descriptions were used as to indicate the potential for hydric conditions to occur in those soils. A list of hydric soils is also maintained by NRCS, which is only applicable to areas mapped by NRCS, but which was used to inform the evaluation of material observed in soil test pits dug in areas identified as potential wetlands (Table 4.1.2-1, *Soil Types Occurring within the BSA*; Figure 4, *Regional Soil Types in the Biological Study Area*).[30,31,32] Of the soils within the BSA, only the Upper Los Angeles River soil series lacked a description in the current NRCS soil series database (Attachment C, Soils Information).

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29 Los Angeles County Department of Public Works, Water Resources Division. 2004. Soils Database. Available from: http://ladpw.org/wrd/publication/, at: http://egis3.lacounty.gov/dataportal/2011/01/27/soil-types/

30 Los Angeles County Department of Public Works. January 2006. Hydrology Manual. Alhambra, CA Available at: http://ladpw.org/wrd/publication/

31 Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Official Soil Series Descriptions. Available at: http://soils.usda.gov/technical/classification/osd/index.html. Lincoln, NE.

32 Natural Resources Conservation Service, 2010. *Field Indicators of Hydric Soils in the United States, Version 7.0.* Ed. L.M. Vasilas, G.W. Hurt, C.V. Noble.

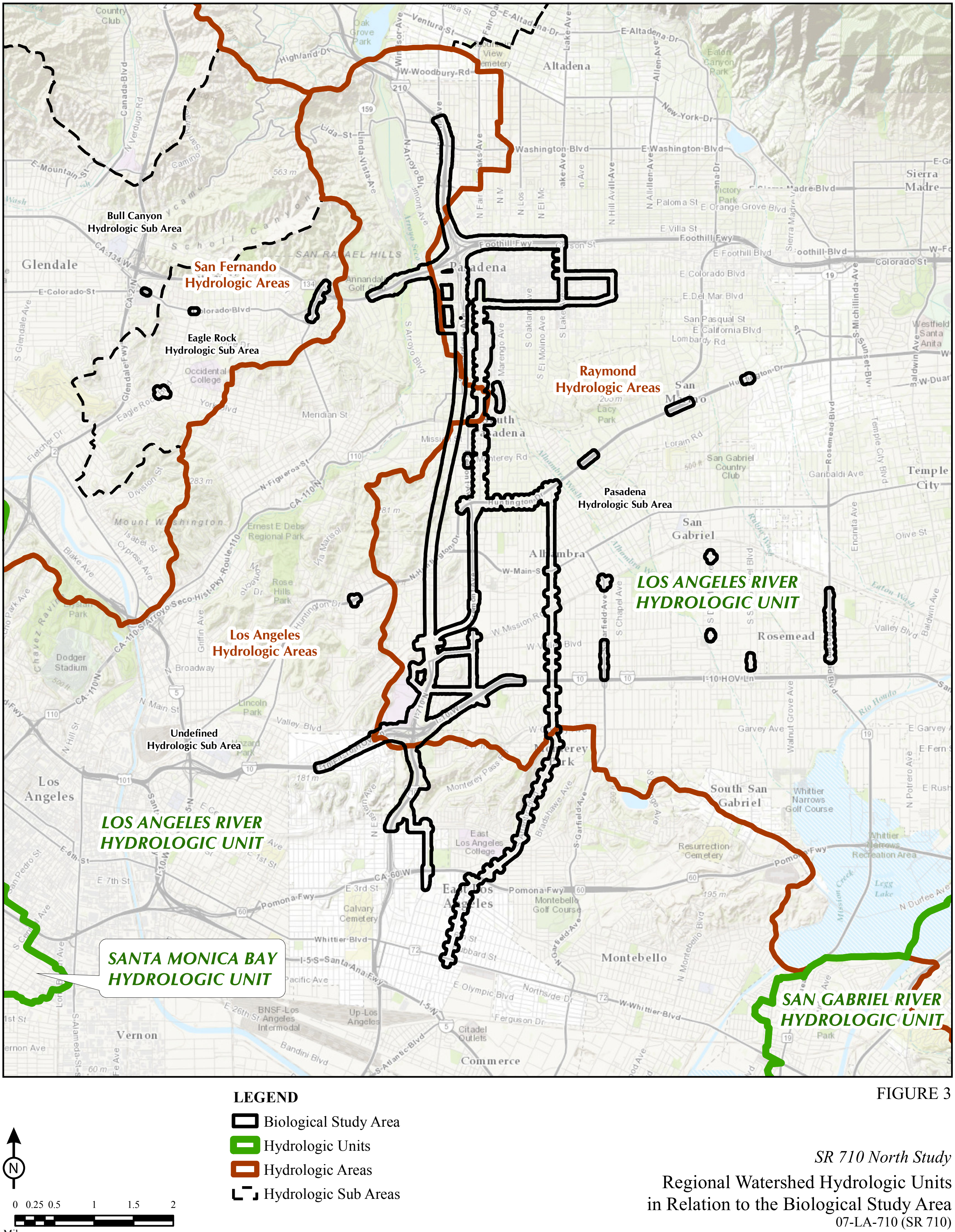

FIGURE 3

SR 710 North Study

Regional Watershed Hydrologic Units
in Relation to the Biological Study Area

07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013); California InterAgency Watershed Map (1999)
Q:\1282\SR_710\ArcProjects\JD Report\State_Water\Regional_Watersheds.mxd (10/24/2014)

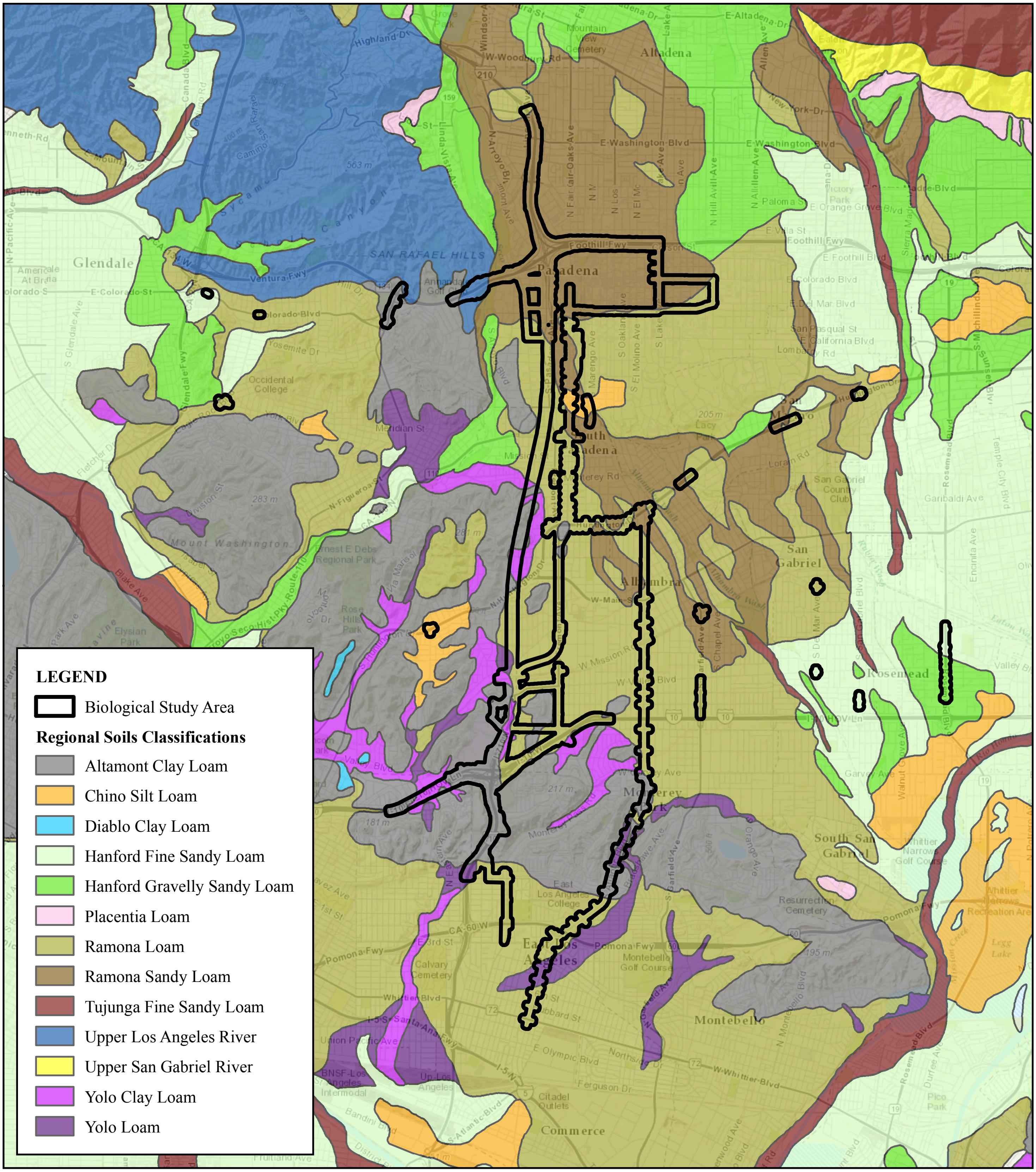

FIGURE 4

N

0 0.25 0.5 1 1.5 2
Miles

SR 710 North Study
Regional Soil Types in the Biological Study Area
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

SOURCE:ESRI LSA (8/2013); Sapphos Environmental (9/2013); Los Angeles County Department of Public Works (08/2013)
Q:\1282\SR_710\ArcProjects\JD Report\State_Water\Regional_Soils_Map.mxd (10/24/2014)

TABLE 4.1.2-1
Soils Types Occurring within the BSA

Soil Type	Acres
Altamont Clay Loam	548.3
Chino Silt Loam	48.7
Hanford Fine Sandy Loam	56.0
Hanford Gravelly Sandy Loam	41.8
Ramona Loam	1,526.7
Ramona Sandy Loam	906.5
Upper Los Angeles River	49.0
Yolo Clay Loam	136.1
Yolo Loam	97.0

In the absence of NRCS site-specific information about whether hydric soils were present, the soil series were not used directly to draw conclusions about the presence or absence of hydric soils within the BSA. Field identification of hydric soils was guided by visible indicators of hydric conditions[33] and the Corps' recommendations for the Arid West region.[34]

4.1.3 Wetlands and Waters

Blue-line drainages and other potential drainages, wetlands, and riparian areas were identified from USGS topographic maps and Los Angeles County hydrological data sources within the BSA (Attachment D, *Potential CDFW and RWQCB Jurisdictional Features Map*). These potential features included both aboveground surface waters and some belowground sections in culverts that connect aboveground sections. All blue-line features were subject to field verification. The culverted underground drainage sections were mapped based on Los Angeles County Storm Drain Mapper information to establish connectivity, but they were not included in the quantified jurisdictional waters in this report.

Two named drainages, the Arroyo Seco and the Laguna Channel, also sometimes referred to as the Dorchester Channel, were identified within the BSA as a result of the literature and historical map review. Both are natural drainages that have been partly or completely channelized in the vicinity of the Proposed Project. The USGS topographic maps identify and show both of these features as draining into the Los Angeles River.[35] The NWI database identified waters in the BSA only along the courses of the Arroyo Seco and the Laguna Channel.

Arroyo Seco

The Arroyo Seco passes through the northwestern portion of the BSA in the City of Pasadena, where it is crossed by the existing SR 134 via a concrete span and, just south and outside the BSA, by the Colorado Street Bridge. It then continues southward and eventually drains into the Los Angeles River, to which it is a major tributary. Part of the Arroyo Seco where it passes through the BSA has been the subject of a restoration project, which created new low-flow side channels and riparian habitat in the 1990s.[36] Since the project was implemented, riparian habitats have matured and developed in the project area, affecting some functions and values of the Arroyo Seco.

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33 Natural Resources Conservation Service, 2010. *Field Indicators of Hydric Soils in the United States, Version 7.0.* Ed. L.M. Vasilas, G.W. Hurt, C.V. Noble.

34 U.S. Army Corps of Engineers. 2008. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0)*, ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS.

35 U.S. Geological Survey. 2012. Los Angeles Topographic Quadrangle. Reston, VA.

36 City of Pasadena. 2003. *Arroyo Seco Master Plans: Central Arroyo Master Plan*. Pasadena, CA. Available at: http://www.ci.pasadena.ca.us/PublicWorks/CAMP/

Laguna Channel

The course of the Laguna Channel runs both above and below ground within the BSA, as depicted on USGS topographic maps, crossing under the SR 710 and I-710 several times. In early maps from the 1920s through the 1950s, the Laguna Channel followed a meandering and presumably mostly natural course originating near South Pasadena and subsequently feeding through the hills near the border of the unincorporated community of City Terrace and the City of Monterey Park, and then draining into the Los Angeles River. Heavy modification of the channel occurred between the publication of the 1953 and 1966 maps, in association with construction of the SR 710, which approximates the original course of the Laguna Channel, and the I-10 freeway. It is first named on the 1966 7.5-minute USGS quadrangle map as the Laguna Channel, and an alternate spelling, Luguna Channel, is presented on the 2012 map. The name Laguna Channel is used in this report following the 1966 nomenclature. Segments of the Laguna Channel are also visible on the L.A. County Storm Drain maps, including portions that are subterranean. These segments are labeled storm drain BI 0065, also given the name of Dorchester Avenue Channel. The Laguna Channel and the Dorchester Avenue Channel, or Dorchester Channel, are the same drainage feature.

The Laguna Channel as a named drainage on USGS topographic maps begins in the middle of the BSA along the open rectangular channel, but its upstream inputs are not apparent either on the USGS topographic maps or recent aerial imagery. Based on the L.A. County Storm Drain database, the Laguna Channel receives flow from three underground channels converging within the BSA (Figure 5, *Underground Upstream Inputs to the Laguna Channel*).[37]

4.1.4 Weather and Climate

The Los Angeles Basin, where the Proposed Project is located, is characterized by a Mediterranean climate with hot summers and cool winters. Average annual rainfall totals 17.5 in, most of which falls between October and April, with February as the rainiest month, on average, as reflected in the totals at the Burbank Airport weather station (station 23152).[38] Because of the large seasonal variation in rainfall, hydrology indicators, and to a lesser extent hydrophytic vegetation indicators, of wetlands may be reduced during the dry season. As a result, wetland delineations conducted during the dry season may result in negative indications for hydrology and short-lived annual hydrophytic vegetation, compared to delineations conducted during the wet season. However, wetland delineators should take the short- and long-term rainfall history, as well as seasonal variations, into consideration during the delineation. OHWM changes more slowly over time, and thus is less sensitive to fluctuations in rainfall. These general patterns are complicated in some features with large flow inputs originating from municipal water sources (e.g. lawn watering) which would be expected to show a flat or opposite seasonal pattern compared to the seasonal patterns of rainfall and storm water runoff.

The year 2013 was an extremely dry one, with only 3.5 in of rain recorded during the calendar year.[39] Because the field surveys were conducted in an unusually dry year, water levels would have been lower than normal. Although a preliminary field visit was conducted in April, at the tail end of the wet season, the wetland delineations were conducted in August and October, in the middle to late dry season. As a result, hydrophytic vegetation and hydrology indicators in the potential wetlands were likely less apparent than in years of average or high rainfall.

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[37] Los Angeles Department of Public Works. n.d. Los Angeles County Storm Drain System. Available at: http://dpw.lacounty.gov/fcd/stormdrain/index.cfm#map

[38] National Oceanic and Atmospheric Administration, National Climate Data Center. 2014. Weather history for Burbank station number 23152. Available at: http://www.ncdc.noaa.gov/data-access/land-based-station-data

[39] National Oceanic and Atmospheric Administration, National Climate Data Center. 2014. Weather history for Burbank station number 23152. Available at: http://www.ncdc.noaa.gov/data-access/land-based-station-data

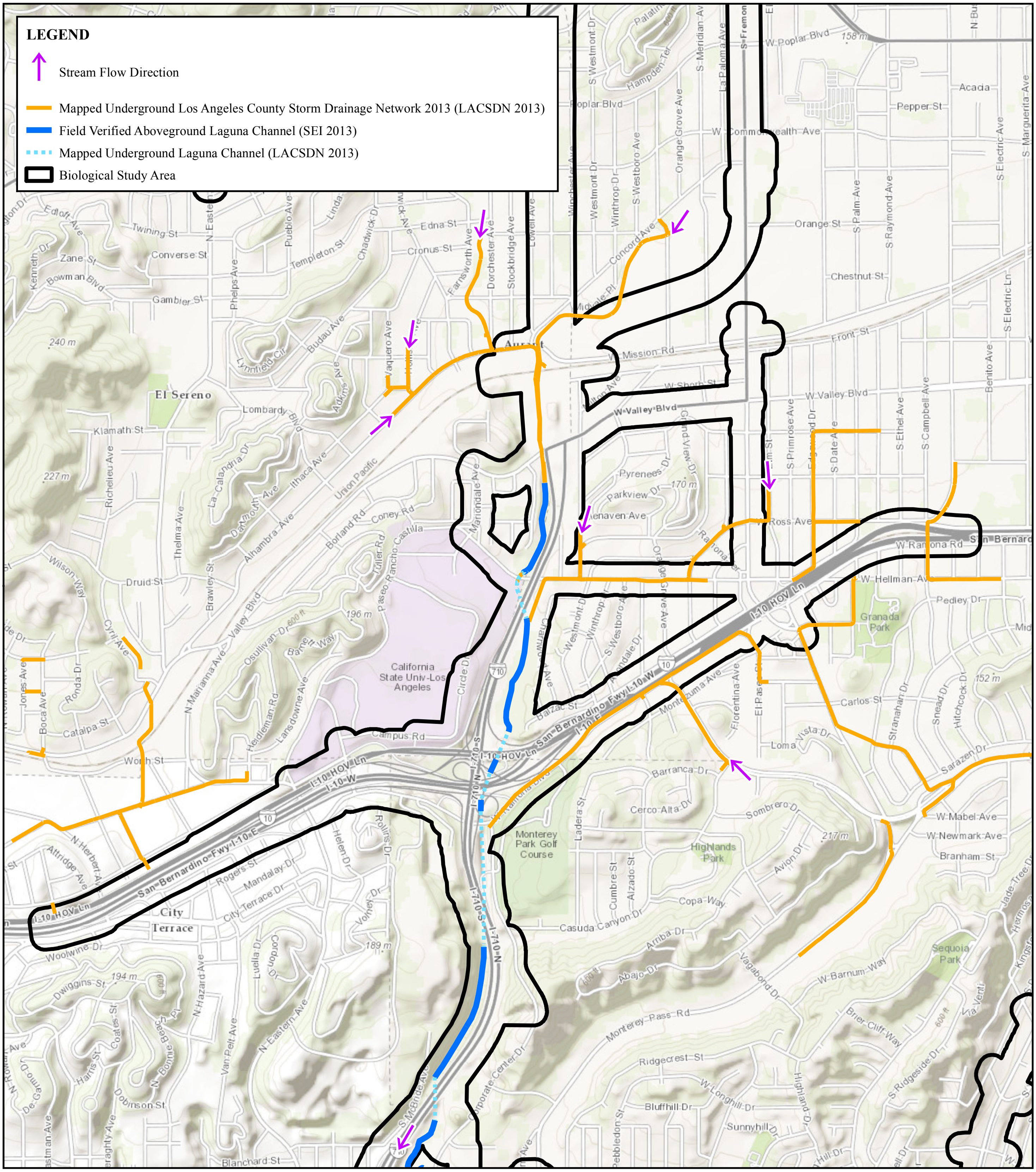

FIGURE 5

N

0 400 800 1,600 2,400
Feet

SOURCE: ESRI LSA (8/2013); Sapphos Environmental (11/2013)

Q:\1282\SR_710\ArcProjects\JD Report\State_Water\Underground_Upstreams_Inputs.mxd (10/24/2014)

SR 710 North Study

Underground Upstream Inputs to the Laguna Channel

07-LA-710 (SR 710)

EA 187900

EFIS 0700000191

During the field delineations, the biologists took these factors into consideration. Specifically, perennial vegetation that reflects long-term conditions was considered a better indicator than annual vegetation, and the biologists considered the possibility that hydrology indicators may be missing or absent. The one indicator that does not vary seasonally is hydric soils, but the two areas delineated both lacked hydric soil indicators, due to occasional soil disturbance and the apparently relatively recent origins of the wetlands. However, results of the field surveys did not suggest that the delineations were compromised by the field conditions: of the 20 wetland test plots, hydrology and hydrophytic vegetation indicators matched in all but three cases (i.e., both were indicative of wetlands, or both were indicative of uplands). At sampling point DM-3, hydrophytic vegetation was present, but not hydrology. At sampling points LAG-8 and LAG-13 (Attachment A), wetland hydrology was present, but hydrophytic vegetation was determined to be absent.

4.2 Field Survey Results

Based on the results of the map and literature review, 27 drainages, wetland, and riparian features were identified within the BSA and subject to field visits to assess current conditions and potential jurisdictional status (Table 4.2-1, *Drainages, Wetlands, and Riparian Features within the BSA*). All features were mapped and photographed during the field surveys (Attachment D; Attachment E, *Potential Non-Jurisdictional Features Map*; Attachment F, *Representative Site Photographs*). Each feature was assigned a unique number used for reference throughout this document (Table 4.2-1, Attachment C, Attachment D).

TABLE 4.2-1
Drainages, Wetlands, and Riparian Features within the BSA

Feature Description					Jurisdictional Area (acres)	
No.	**Type**	**Description**	**OHWM[A] width (ft)[a]**	**Length (ft)**	**CDFW**	**RWQCB**
1	Ditch	4 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not provide fish habitat but does provide minimal wildlife habitat.	—	1,077	—	—
2	Ditch	4 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not provide fish habitat but does provide minimal wildlife habitat.	—	1,231	—	—
3	Ditch	4 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not provide fish habitat but does provide minimal wildlife habitat.	—	509	—	—
4	Ditch	Unnamed surface drainage. 5 ft wide; drains hillside runoff; unvegetated; does not provide fish habitat but does provide minimal wildlife habitat.	—	915	—	—
5-A	Stream	Arroyo Seco, 80 ft wide; earthen lined; blue-line; riparian vegetation; no flowing water during survey; standing water at 1 ft depth on 10/4/13; drains to Los Angeles River. Provides fish and wildlife habitat.	80	1,076	1.98	1.98
5-B	Stream	Arroyo Seco alternate channel; 10 ft wide; earthen lined; drains waters diverted from main channel of Arroyo Seco; flowing water present during visit on 10/4/13; originates from culvert at the northern end; flows into Arroyo Seco main channel. Provides fish and wildlife habitat.	10	287	0.07	0.07
6	Riparian non-wetland habitat	Along both sides of the Arroyo Seco, adjacent to Features 5-A and 5-B; comprised of arroyo willow thickets, white alder groves, and black cottonwood forest. Provides no fish habitat but does provide wildlife habitat.	—	—	4.12	—

TABLE 4.2-1
Drainages, Wetlands, and Riparian Features within the BSA

Feature Description					Jurisdictional Area (acres)	
No.	**Type**	**Description**	**OHWM[A] width (ft)[a]**	**Length (ft)**	**CDFW**	**RWQCB**
7	Ditch	4 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not provide fish habitat but does provide minimal wildlife habitat.	—	1,894	—	—
8	Wetland	At Del Mar Pump Station; up to 90 ft wide; earthen bottom, riparian vegetation present immediately around the pump station; isolated; Provides fish and wildlife habitat.	—	—	—	—
9	Ditch	8 ft wide, concrete lined cobble ditch, unvegetated, drains commercial runoff, does not provide fish habitat but does provide minimal wildlife habitat.	—	89	—	—
10	Ditch	8 ft wide; concrete lined ditch; drains hillside runoff; unvegetated; does not provide fish habitat but does provide minimal wildlife habitat.	—	1,308	—	—
11-A	Stream	Laguna Channel; 20 ft wide, concrete lined channel and rock lined channel; blue line; mostly unvegetated; drains surface water runoff, water flowing during all site visits, drains south into the Los Angeles River. Provides fish habitat and minimal wildlife habitat.	20	1,419	0.65	0.65
12	Ditch	4 ft wide, concrete lined v-ditch, unvegetated, drains road and hillside runoff, does not provide fish habitat but does provide minimal wildlife habitat.	—	920	—	—
13	Ditch	5 to 8 ft wide; concrete-lined v-ditch, drains hillside runoff; unvegetated; does not provide fish habitat but does provide minimal wildlife habitat.	—	983	—	—
11-B	Stream	Laguna Channel; OHWM 10-24 ft wide; concrete bottom and riprap sides; drains south into the Los Angeles River. Provides fish habitat and minimal wildlife habitat.	10-24	1,740	0.57	0.57
14	Detention Basin	Surrounds the Laguna Channel (Feature 11-B); earthen bottom; no OHWM, riparian or wetland characteristics; terminus of ditch Feature 13; named the Laguna Regulating Basin. Does not provide fish habitat but does provide minimal wildlife habitat.	—	—	—	—
11-C	Stream	Laguna Channel; 12 ft wide; concrete lined channel below grade; drains south into the Los Angeles River. Provides fish habitat and minimal wildlife habitat.	12	189	0.05	0.05
11-D	Stream	Laguna Channel; 12 ft wide; concrete lined open rectangular channel below grade; drains south into the Los Angeles River. Provides fish habitat and minimal wildlife habitat.	12	170	0.05	0.05
15	Ditch	4 ft wide; concrete lined v-ditch; unvegetated, drains hillside runoff, does not provide fish habitat but does provide minimal wildlife habitat.	—	717	—	—
16	Ditch	3 ft wide; concrete lined v-ditch; unvegetated; drains hillside runoff; does not provide fish habitat but does provide minimal wildlife habitat.	—	528	—	—

TABLE 4.2-1
Drainages, Wetlands, and Riparian Features within the BSA

Feature Description					Jurisdictional Area (acres)	
No.	**Type**	**Description**	**OHWM[A] width (ft)[a]**	**Length (ft)**	**CDFW**	**RWQCB**
17	Ditch	3 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not provide fish habitat but does provide minimal wildlife habitat.	—	867	—	—
18	Ditch	Unnamed surface drainage; 5 to 25 ft wide; concrete and earthen lined ditch; native and non-native vegetation; originates from commercial runoff and precipitation events; also received flows from Feature 19; water flowing during site visit (10/2/13); flows into the Laguna Channel occasionally. Does not provide fish habitat but does provide minimal wildlife habitat.	—	1,754	—	—
19	Ditch	Unnamed surface drainage; 4 ft wide; three separate, roughly parallel sections; concrete and earthen lined v-ditch; mostly unvegetated; drains hillside runoff into Feature 18, and then into the Laguna Channel. Does not provide fish habitat but does provide minimal wildlife habitat.	—	882	—	—
11-E	Stream	Laguna Channel; 18 ft wide; concrete lined open rectangular channel below grade; drains south into the Los Angeles River. Provides fish habitat and minimal wildlife habitat.	18	2,104	0.87	0.87
20	Ditch	Unnamed surface drainage. 2 to 8 ft wide; concrete lined ditches; drains hillside runoff; unvegetated; flows drain into 12 ft wide concrete box channel; does not provide fish habitat but does provide minimal wildlife habitat.	—	11,027	—	—
21	Ditch	5 to 25 ft wide; concrete lined ditches; drains hillside runoff; unvegetated; does not provide fish habitat but does provide minimal wildlife habitat.	—	1,100	—	—
11-F	Stream	Laguna Channel: 6 ft wide; earthen bottom; drains south into the Los Angeles River; abutted by wetland (Feature 22) and riparian non-wetland woodland (Feature 23); surrounded by detention basin (Feature 24). Provides fish habitat and wildlife habitat.	6	1,387	0.19	0.19
22	Wetland	Abuts Laguna Channel (Feature 11-F), riparian vegetation; surrounded by detention basin (Feature 24). Does not provide fish habitat but does provide wildlife habitat.	—	—	0.44	0.44
23	Riparian non-wetland habitat	Riparian area comprised of non-native woodland and giant reed; abuts Features 11-F and 22. Does not provide fish habitat but does provide wildlife habitat.	—	—	0.79	—
24	Detention Basin	Earthen bottom; no OHWM, riparian or wetland characteristics; surrounds Features 11-F, 22 and 23. Does not provide fish habitat but does provide minimal wildlife habitat.	—	—	—	—
25	Ditch	3 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not provide fish habitat but does provide minimal wildlife habitat.	—	202	—	—
26	Ditch	3 ft wide; concrete lined v-ditch; drains hillside runoff; unvegetated; does not provide fish habitat but does provide minimal wildlife habitat.	—	645	—	—

TABLE 4.2-1
Drainages, Wetlands, and Riparian Features within the BSA

Feature Description					Jurisdictional Area (acres)	
No.	**Type**	**Description**	**OHWM[A] width (ft)[a]**	**Length (ft)**	**CDFW**	**RWQCB**
27	Ditch	Unnamed surface drainage; 3 ft wide; drains hillside runoff; unvegetated; does not provide fish habitat but does provide minimal wildlife habitat.	—	1,736	—	—
				Total[B]	**9.78**	**4.87**

[A] Features classified as ditches and detention basins did not exhibit an OHWM or riparian vegetation.
[B] Sums vary due to rounding
KEY: CDFW = California Department of Fish and Wildlife, ft = feet, OHWM = Ordinary high water mark, RWQCB = Regional Water Quality Control Board, TNW = Traditional navigable water

Two streams potentially subject to RWQCB and CDFW jurisdiction were identified, including the Arroyo Seco (Features 5-A and 5-B) and the Laguna Channel (Features 11-A though 11-F). Two wetlands were delineated and mapped based on surface hydrology, soil conditions and the presence or absence of hydrophytic vegetation (Appendix A; Attachment B). Both wetlands were adjacent to existing watercourses and contained suitable habitat for wildlife species. Additionally, both wetlands have both wetland vegetation and hydrology. Both wetlands thus met the CDFW criteria to be considered wetlands.

Another wetland (Feature 22) abuts the Laguna Channel and would be subject to RWQCB and CDFW jurisdiction because it has all parameters necessary to meet both agencies' definitions of wetlands and contains suitable habitat for wildlife species.

During the field visits, large sections of potential features depicted on both the NWI and L.A. County Storm Drain maps were observed to be partly or entirely subterranean within the BSA, including large sections of the Laguna Channel. In cases where a single drainage included both aboveground and belowground portions within the BSA, each aboveground portion was assigned a unique feature number for ease of discussion. Feature numbers were assigned to drainages generally in numeric order from north to south. Streams with multiple distinct separate aboveground segments were assigned one number for the entire stream, and a letter for each segment. Covered belowground (i.e., culverted) segments were not assigned feature numbers or letters.

4.2.1 CDFW Jurisdiction

Two drainages, the Arroyo Seco and the Laguna Channel, both blue-line drainages that drain directly into the Los Angeles River, were identified as meeting CDFW criteria for jurisdiction.

Arroyo Seco

The Arroyo Seco carries relatively permanent waters, but is often dry at the end of summer (a small area of ponded water was observed on October 2, 2013). The main channel of the Arroyo Seco as it passes through the BSA is an earthen-bottom stream with an 80-ft wide OHWM (Feature 5-A). Water is diverted from upstream through a culvert that drains into a relatively small (10-ft wide at OHWM) earthen bottom side channel on the west side of the main Arroyo Seco (Feature 5-B). The Arroyo Seco is subject to CDFW jurisdiction because it has defined bed and bank. The total acreage of the Arroyo Seco likely subject to CDFW jurisdiction within the BSA is 2.04 acres.

Laguna Channel

The Laguna Channel is a channelized blue-line drainage that includes both above- and belowground portions within the BSA (Features 11-A to 11-F). Within the BSA, most of the length of the Laguna Channel consists of concrete rectangular channel and one abutting wetland (Feature 22). The total acreage of aboveground portions of the Laguna Channel likely subject to CDFW jurisdiction is approximately 2.82 acres (2.38 acres of non-wetland stream and 0.44 acres of wetlands). Although the CDFW typically does not assert regulatory authority over subsurface flows, except in the case of diversions, culverts do not affect the jurisdictional status of the associated water bodies, which may be jurisdictional regardless of connectivity.[40]

The wetland (Feature 22) associated with the Laguna Channel was located on both sides of the stream (Feature 11-F) as an abutting wetland configuration; wetland plants and hydrology were contiguous with the main stream channel (Figure 6, *Laguna Channel and Abutting Wetland*). Survey personnel noted that the soils in the wetland contained large amounts of fill material, including bricks and rock. The first appearance of the wetland on the 1966 USGS topographic map suggests, but does not confirm, that the wetland and surrounding detention basin may have originated after 1955 (the latest USGS topographic map on which it does not appear). Soils in the wetland were significantly disturbed, due to vegetation clearing and/or soil-moving activities, likely to maintain the contours of the basin containing the stream and wetland. Based on field observations, the soils and vegetation were characterized as significantly disturbed. Due to the presence of fill material (red bricks and varied debris) from an unknown location, it is assumed the soils originated from an upland location. The sites with positive indicators of vegetation and hydrology lacked hydric soil indicators in the areas classified as wetland and upland within the detention basin. The problematic situation was classified as “Other,” which reflects both the disturbed soils and the relatively recent wetland origins. Because a problematic situation was identified, hydric soil indicators are not necessary to establish the area as a wetland; hydrology and vegetation indicators are sufficient. Given the observation of hydrological indicators (high water table and saturated soils) at the end of the dry season when the survey was conducted, it is anticipated that if the soils were left undisturbed and the current hydrological regime persists, visible indicators of hydric soils would develop over time.

Two areas of non-wetland riparian vegetation (Features 6 and 23) were also identified as meeting the criteria for CDFW jurisdiction. Along the Arroyo Seco, one area comprised of three non-wetland riparian vegetation alliances totaling 4.12 acres were identified (Table 4.2.2-1, *Riparian Non-Wetland Habitats within the BSA*). Along the Laguna Channel, in the southern end of the BSA, a 0.79-acre riparian area was identified. This was mapped as two cover types: non-native riparian woodland (0.54 acre), which was dominated by Mexican fan palm (*Washingtonia robusta*); and giant reed (*Arundo donax*) semi-natural stands (0.25 acre).

[40] U.S. Army Corps of Engineers. 2007. *US Army Corps of Engineers Jurisdictional Determination Form Instructional Guidebook*. Available at: http://www.Corps.army.mil/Portals/2/docs/civilworks/regulatory/cwa_guide/jd_guidebook_051207final.pdf

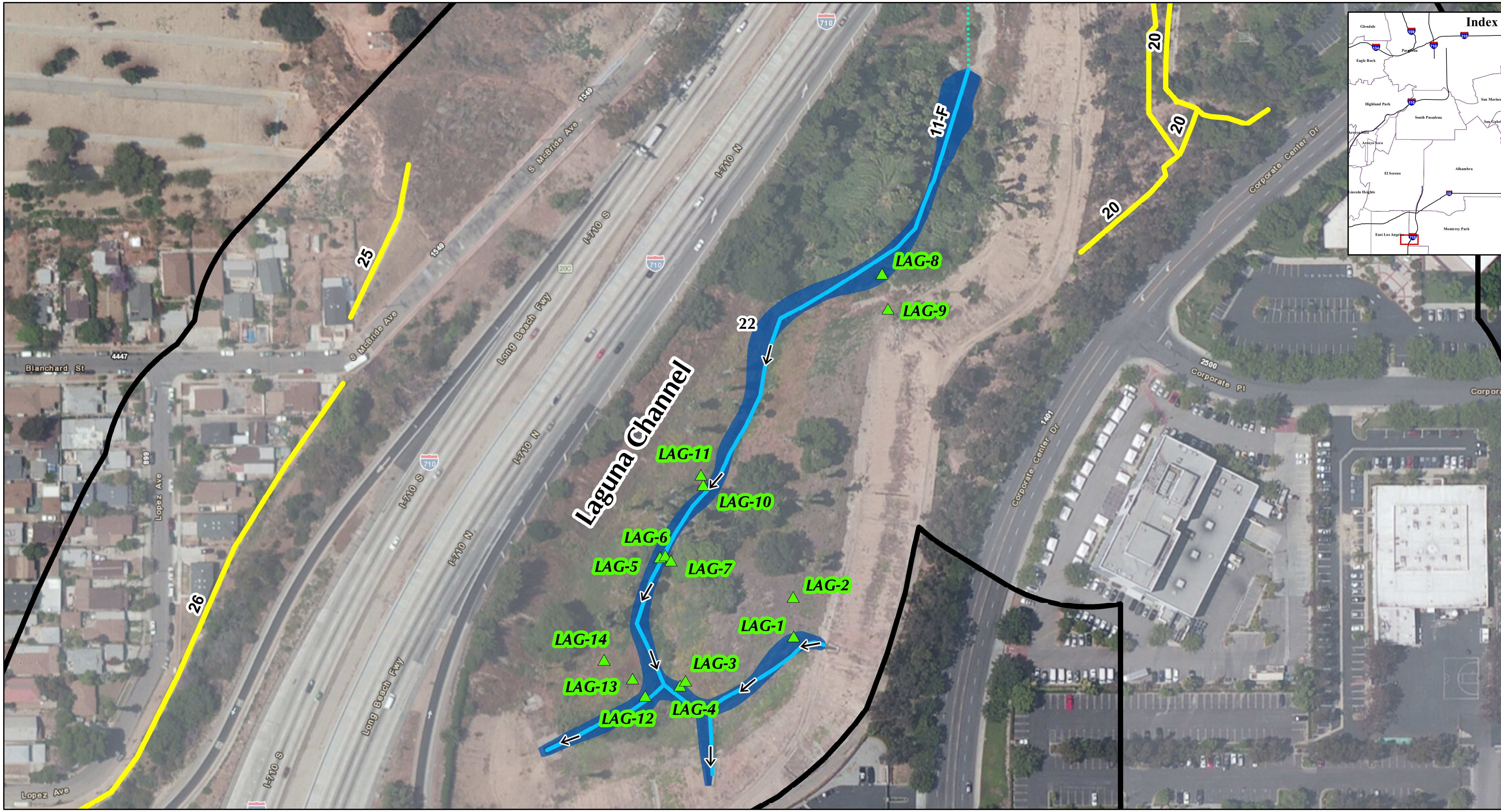

FIGURE 6

LEGEND

Stream Flow Direction

Non-Jurisdictional

Non-Jurisdictional Underground

Soil Test Pit

Biological Study Area

Corps Jurisdiction

Non-Wetland (Feature 11-F)

Wetland (Feature 22)

0 50 100 200 300
Feet

SOURCE: ESRI (3/2014); Sapphos Environmental(11/2013)
Q:\1282\SR_710\ArcProjects\JD Report\State_Water\Laguna_Channel_Wetland_Areas.mxd (10/24/2014)

SR 710 North Study
Laguna Channel and Abutting Wetland
07-LA-710 (SR 710)
EA 187900
EFIS 0700000191

TABLE 4.2.1-1
Riparian Non-Wetland Habitats within the BSA

Feature Number	Stream	Plant Community	Acres
6	Arroyo Seco	White alder groves	0.95
6	Arroyo Seco	Arroyo willow thicket	2.34
6	Arroyo Seco	Black cottonwood forest	0.83
23	Laguna Channel	Non-native woodland and giant reed breaks	0.79
		Total	**4.91**

The total area meeting the criteria for CDFW jurisdiction was 9.78 acres, of which 4.43 acres were non-wetland waters, an additional 4.91 acres were riparian non-wetland habitats, and 0.44 acres were wetlands.

4.2.2 RWQCB Jurisdiction

All of the areas meeting criteria for CDFW jurisdiction also met the criteria for RWQCB jurisdiction. The RWQCB may or may not elect not to assert jurisdiction over the wetland at the Del Mar Pump Station (Feature 8), because it is a wholly manmade storm water facility that depends on actively pumped storm water to maintain existing conditions. The total RWQCB jurisdiction (including this wetland) is approximately 4.87 acres, including 4.43 acres of non-wetland waters and 0.44 acres of wetland waters.

4.2.3 Non-Jurisdictional Features

A total of 19 aboveground ditch features totaling 28,378 ft (5.4 mi) in combined length were identified within the BSA, most were not included in any database or map resource. Many of the detention basins and ditches are storm water conveyance features that typically do not fall under CDFW jurisdiction as state waters. Furthermore, these features do not provide sufficient fish and wildlife habitat values to warrant the state having jurisdiction. All of these ditches were determined to carry ephemeral flows in response to precipitation events or nuisance flows; none were identified as having a significant nexus to the biological, chemical, or physical integrity of downstream TNWs, and none were identified as potentially jurisdictional during the field surveys. Features 1–4 and 27 are simple roadside ditches that do not carry relatively permanent flows. Feature 8 was identified as a wetland contained within a detention basin. Features 14 and 24 were identified as detention basins associated with the Laguna Channel.Features 7, 9–10, 12–13, 15–19, and 25–26 drain areas such as parking lots and residential areas, in some cases in a ditch network, and do not solely parallel a road; all drain uplands and none carry relatively permanent flows. All of these ditches are of a type over which the agencies do not typically assert jurisdiction.

The wetland at the Del Mar Pump Station (Feature 8) is excavated wholly in uplands, and depends on water actively pumped onto the site. The wetland contains suitable habitat for fish and wildlife. Feature 8 is isolated, draining into the groundwater with a connection to streams or lakes. The entire detention basin, including the wetland, is possibly exempt from CDFW jurisdiction as it is a regularly maintained detention facility that is part of a water treatment system. A minimal amount of offsite mitigation may be done based on native plant community impacts.

Two associated detention basins (Features 14 and 24) were recorded along the Laguna Channel. One of the detention basins (Feature 14) had small amounts of opportunistic vegetation both above and below the OHWM (e.g., Mexican fan palm; *Washingtonia robusta*), but there were no wetland indicators at this site or riparian habitat. The other detention basin (Feature 24) encompassed the main Laguna Channel (Feature 11-F), a small wetland buffering the channel itself (Feature 22), and riparian non-wetland habitat (Feature 23). At these locations, the channel and wetland were considered jurisdictional; neither detention basin was identified as jurisdictional due to the lack of wetland indicators, lack of relatively permanent waters, and lack of OHWM.

Feature 18 is a ditch feature which runs downhill from north to south. Feature 19 is a ditch feature with three distinct, roughly parallel, sections on a hillside with each section running downhill from west to east. All sections of Feature 19 flow into to Feature 18; both features drain only uplands and do not carry relatively permanent flows. Features 18 and 19 were identified on the NWI as riverine and freshwater pond, but the observed conditions do not support that assessment. During a visit conducted on October 2, 2013, water was observed in the southernmost section of Feature 19 that originated from commercial runoff at the top of the hill, as well as from a 0.1-inch recent precipitation event. The flows drained into Feature 18, which runs along the base of the hill, and then drained directly into, without ponding, the Laguna Channel where it emerges from a belowground section to flow through a rectangular channel (Feature 11-E). No typical indicators (hydrology, hydric soils or vegetation) suggested that the area within the NWI-identified pond feature differed from nearby areas outside the NWI area.

Features 20 and 21 are networks of interconnected concrete-lined ditches draining hillside runoff; they are excavated wholly in and drain only uplands, and do not carry relatively permanent flows. Feature 20 drains into a 12-ft-wide concrete box channel that may connect underground to the storm drain system; however, it is not identified in any data source reviewed for this report.

5.0 References

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Appendix K Faunal Compendium

FAUNAL COMPENDIUM

Technical Note: The names and taxonomy for all faunal species is based on the most current and accepted checklists approved by the appropriate scientific societies. Reptile names and taxonomy follow the report from the committee sanctioned by the Society for the Study of Amphibians and Reptiles, the American Society of Ichthyologists and Herpetologists, and the Herpetologists' League to continue the development of standard English names of the North American herpetofauna.[1] Bird names and taxonomy follow the *Check-List of North American Birds* (7th Edition) and its supplements approved by the American Ornithologist Union.[2] Mammals are based on a checklist published by the Museum of Texas Tech University.[3]

All fauna listed with a plus symbol ($^+$) are species that were not directly observed, but are likely to occur within the Proposed Project site. All fauna listed with an asterisk (*) are non-native species to California. All birds listed with a cross symbol (†) represent observations that were high flyovers or transient observations.

Fauna listed with no symbol were observed during 2013 field surveys.

REPTILES

Squamata

Phrynosomatidae – Zebra-Tailed, Spiny, Tree, and Horned Lizards

$^+$*Uta stansburiana*
common side-blotched lizard

Sceloporus occidentalis
western fence lizard

BIRDS

Anseriformes

Anatidae – Ducks and Geese

Branta canadensis
Canada goose

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[3] Baker, R.J., L.C. Bradley, R.D. Bradley, J.W. Dragoo, M.D. Engstrom, R.S. Hoffmann, C.A. Jones, F. Reid, D.W. Rice, and C. Jones. 2003. *Revised Checklist of North American Mammals North of Mexico, 2003*. Occasional Papers, Museum of Texas Tech University, No. 229.

Anas platyrhynchos
mallard

Suliformes

Phalacrocoracidae – Ducks and Geese

†*Phalacrocorax auritus*
double-crested cormorant

Pelecaniformes

Ardeidae – Herons

†*Ardea herodias*
great blue heron
†*Ardea alba*
great egret
Butorides virescens
green heron
Nycticorax nycticorax
black-crowned night-heron

Accipitriformes

Cathartidae – New World Vultures

Cathartes aura
turkey vulture

Accipitridae – Hawks

†*Accipiter striatus*
sharp-shinned hawk
Accipiter cooperii
Cooper’s hawk
Buteo lineatus
red-shouldered hawk
Buteo jamaicensis
red-tailed hawk

Charadriiformes

Charadriidae – Plovers

Charadrius vociferus
killdeer

Scolopacidae – Sandpipers, Phalaropes, and Allies

Gallinago delicata
Wilson's snipe

Laridae – Gulls

Larus delawarensis
ring-billed gull
Larus occidentalis
western gull
[†]*Larus californicus*
California gull

Columbiformes

Columbidae – Pigeons and Doves

Columba livia
rock pigeon
Patagioenas fasciata
band-tailed pigeon
**Streptopelia decaocto*
Eurasian collared-dove
Zenaida macroura
mourning dove

Strigiformes

Tytonidae – Barn Owls

[+]*Tyto alba*
barn owl

Strigidae – Typical owls

[+]*Bubo virginianus*
great-horned owl

Apodiformes

Apodidae – Swifts

[†]*Chaetura vauxi*
Vaux's swift
Aeronautes saxatalis
white-throated swift

Trochilidae – Hummingbirds

Calypte anna
Anna's hummingbird
Selasphorus sasin
Allen's hummingbird

Coraciiformes

Alcedinidae – Kingfishers

Megaceryle alcyon
belted kingfisher

Piciformes

Picidae – Woodpeckers

Melanerpes formicivorus
acorn woodpecker
Picoides nuttallii
Nuttall's woodpecker
Picoides pubescens
downy woodpecker
Colaptes auratus
northern flicker

Falconiformes

Falconidae – Caracaras and Falcons

Falco sparverius
American kestrel

Psittaciformes

Psittacidae – Parrots

**Amazona viridigenalis*
red-crowned parrot

Passeriformes

Tyrannidae – Tyrant Flycatchers

Contopus sordidulus
western wood-pewee
Empidonax hammondii

Hammond's flycatcher
Empidonax difficilis
*p*acific-slope flycatcher
Sayornis nigricans
black phoebe
Myiarchus cinerascens
ash-throated flycatcher
Tyrannus vociferans
Cassin's kingbird
Tyrannus verticalis
western kingbird

Vireonidae – Vireos

Vireo gilvus
warbling vireo

Corvidae – Jays and Crows

Aphelocoma californica
western scrub-jay
Corvus brachyrhynchos
American crow
Corvus corax
common raven

Hirundinidae – Swallows and Martins

Tachycineta bicolor
tree swallow
Stelgidopteryx serripennis
northern rough-winged swallow
Petrochelidon pyrrhonota
cliff swallow
Hirundo rustica
barn swallow

Paridae – Titmice and Chickadees

Baeolophus inornatus
oak titmouse

Aegithalidae – Bushtits

Psaltriparus minimus
bushtit

Sittidae – Nuthatches

Sitta carolinensis
white-breasted nuthatch

Troglodytidae – Wrens

Troglodytes aedon
house wren
Thryomanes bewickii
Bewick’s wren

Polioptilidae – Gnatcatchers

+*Polioptila caerulea*
blue-gray gnatcatcher

Regulidae – Kinglets

Regulus calendula
ruby-crowned kinglet

Turdidae – Thrushes

Sialia mexicana
western bluebird
+*Catharus ustulatus*
Swainson’s thrush
+*Catharus guttatus*
hermit thrush
Turdus migratorius
American robin

Mimidae – Thrashers

Mimus polyglottos
northern mockingbird

Sturnidae – Starlings

**Sturnus vulgaris*
European starling

Bombycillidae – Waxwings

Bombycilla cedrorum
cedar waxwing

Ptilogonatidae – Phainopeplas

Phainopepla nitens
phainopepla

Parulidae – Wood Warblers

Oreothlypis celata
orange-crowned warbler
[+]*Oreothlypis ruficapilla*
Nashville warbler
[+]*Geothlypis tolmiei*
MacGillivray’s warbler
Geothlypis trichas
common yellowthroat
Setophaga petechia
yellow warbler
Setophaga coronata
yellow-rumped warbler
Setophaga nigrescens
black-throated gray warbler
[†]*Setophaga townsendi*
Townsend’s warbler
[†]*Cardinella pusilla*
Wilson’s warbler

Emberizidae – Towhees and Sparrows

Pipilo maculatus
spotted towhee
Melozone crissalis
California towhee
[+]*Passerculus sandwichensis*
savannah sparrow
[+]*Passerella iliaca*
fox sparrow
Melospiza melodia
song sparrow
Melospiza lincolnii
Lincoln’s sparrow
Zonotrichia leucophrys
white-crowned sparrow
Zonotrichia atricapilla
golden-crowned sparrow
Junco hyemalis
dark-eyed junco

Cardinalidae – Tanager and Grosbeaks

Piranga ludoviciana
western tanager
Pheucticus melanocephalus
black-headed grosbeak
+*Passerina caerulea*
blue grosbeak
+*Passerina amoena*
lazuli bunting

Icteridae – Blackbirds and Orioles

+*Agelaius phoeniceus*
red-winged blackbird
+*Sturnella neglecta*
western meadowlark
Euphagus cyanocephalus
Brewer's blackbird
+*Quiscalus mexicanus*
great-tailed grackle
**Molothrus ater*
brown-headed cowbird
Icterus cucullatus
hooded oriole
Icterus bullockii
Bullock's oriole

Fringillidae – Finches

Carpodacus mexicanus
house finch
Spinus psaltria
lesser goldfinch
Spinus tristis
American goldfinch

Passeridae – Old World Sparrows

**Passer domesticus*
house sparrow

Estrildidae – Waxbills

**Lonchura punctulata*
nutmeg mannikin

MAMMALS

Didelphimorphia

Didelphidae – Opossums

[+*]*Didelphis virginiana*
Virginia opossum

Chiroptera

Vespertilionidae – Evening Bats

[+]*Eptesicus fuscus*
big brown bat
Lasiurus blossevillii
western red bat
[+]*Lasiurus cinereus*
hoary bat
[+]*Myotis californicus*
California myotis
[+]*Myotis ciliolabrum*
western small-footed myotis
[+]*Myotis lucifugus*
little brown bat
[+]*Myotis volans*
long-legged myotis
[+]*Myotis yumanensis*
yuma myotis
Parastrellus hesperus
western pipistrelle

Molossidae – Free-Tailed Bats

[+]*Nyctinomops femorosaccus*
pocketed free-tailed bat
Tadarida brasiliensis
Mexican free-tailed bat

Lagomorpha

Leporidae – Hares and Rabbits

Sylvilagus bachmani
brush cottontail

Rodentia

Sciuridae – Squirrels

Otospermophilus beecheyi
California ground squirrel
[+]_Sciurus griseus_
western gray squirrel
*_Sciurus niger_
eastern fox squirrel

Muridae – Mice, Rats, and Voles

[+]_Mus musculus_
house mouse
[+]_Peromyscus maniculatus_
deer mouse
[+*]_Rattus norvegicus_
brown rat

Carnivora

Felidae – Cats

[+*]_Felis catus_
(feral) domestic cat

Canidae – Wolves and Foxes

[+]_Canis latrans_
coyote
[+]*_Canis lupus familiaris_
(feral) domestic dog

Mephitidae – Skunks

[+*]_Mephitis mephitis_
striped skunk

Procyonidae – Ringtail, Raccoon, and Coatis

[+]_Procyon lotor_
raccoon

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Appendix L United States Fish and Wildlife Service Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
Carlsbad Fish and Wildlife Office
2177 Salk Avenue, Suite 250
Carlsbad, California 92008

In Reply Refer To:
FWS-LA-12B0146-14SL0011

OCT 28 2013

Mr. Paul Caron
Senior District Biologist
Caltrans District 7 Environmental Planning Branch
100 South Main Street, MS-16A
Los Angeles, CA 90012

Attention: Mary Ngo, Associate Environmental Planner

Subject: Request for a List of Proposed, Threatened, or Endangered Species Potentially Occurring in the Vicinity of the State Route 710 North Extension Project Study Area, Los Angeles County, California

Dear Mr. Caron:

This letter is in response to your request, dated September 16, 2013, for information on federally endangered, threatened, proposed, and candidate species that may occur in and around the State Route 710 (SR-710) North Extension Project Study Area, Los Angeles County, California. To assist you in evaluating the potential occurrence of federally listed endangered, threatened, proposed, and candidate species that may occur in the vicinity of the area identified, we are providing the enclosed list.

Because we do not have site-specific information for the proposed project, we recommend that you seek assistance from a biologist familiar with the habitat conditions and associated species in and around the project site to assess the actual potential for direct, indirect, and cumulative impacts likely to result from the proposed activity. We also suggest that you contact the California Department of Fish and Wildlife regarding State-listed and sensitive species that may occur within the project area. Please note that State-listed species are protected under the provisions of the California Endangered Species Act.

As a reminder, if a proposed project is authorized, funded, or carried out by a Federal agency and may affect a federally listed species, then section 7 consultation pursuant to the Endangered Species Act of 1973 (Act), as amended, is required. If a proposed project does not involve a Federal agency, but is likely to result in the take of a listed animal species, then the project proponent should apply for an incidental take permit, pursuant to section 10 of the Act.

Please note that the Carlsbad Fish and Wildlife Office is hosting all critical habitat GIS data within our jurisdictional area on our website at http://www.fws.gov/carlsbad. Select the GIS DATA link to access current critical habitat layers.

Should you have any questions regarding the species listed, your responsibilities under the Act, or if we can provide any other technical assistance related to fish and wildlife resource planning, please contact Lauren Kershek of this office at 760-431-9440, extension 208.

Sincerely,

Jonathan Snyder

for Karen A. Goebel
Assistant Field Supervisor

Enclosure

Federally Endangered, Threatened, Proposed, and Candidate Species and Critical Habitat that May Occur in the Vicinity of the SR-710 North Extension Project Study Area, Los Angeles County, California

Common Name	**Scientific Name**	**Status**
PLANTS		
Brand's phacelia	*Phacelia stellaris*	C
Nevin's barberry	*Berberis nevinii*	E
BIRDS		
least Bell's vireo	*Vireo bellii pusillus*	E
coastal California gnatcatcher	*Polioptila californica californica*	T; CH
yellow-billed cuckoo (Western DPS)	*Coccyzus americanus*	Proposed threatened
Southwestern willow flycatcher	*Empidonax traillii extimus*	E

E: endangered
T: threatened
C: candidate
CH: critical habitat

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Carlsbad Fish and Wildlife Office
2177 SALK AVENUE - SUITE 250
CARLSBAD, CA 92008
PHONE: (760)431-9440 FAX: (760)431-5901
URL: www.fws.gov/carlsbad/

Consultation Tracking Number: 08ECAR00-2015-SLI-0042 October 27, 2014
Project Name: FWS-LA-12B0146-14SL0011

Subject: List of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project.

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, and proposed species, designated critical habitat, and candidate species that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment

United States Department of Interior
Fish and Wildlife Service

Project name: FWS-LA-12B0146-14SL0011

Official Species List

Provided by:

Carlsbad Fish and Wildlife Office
2177 SALK AVENUE - SUITE 250
CARLSBAD, CA 92008
(760) 431-9440
http://www.fws.gov/carlsbad/

Expect additional Species list documents from the following office(s):

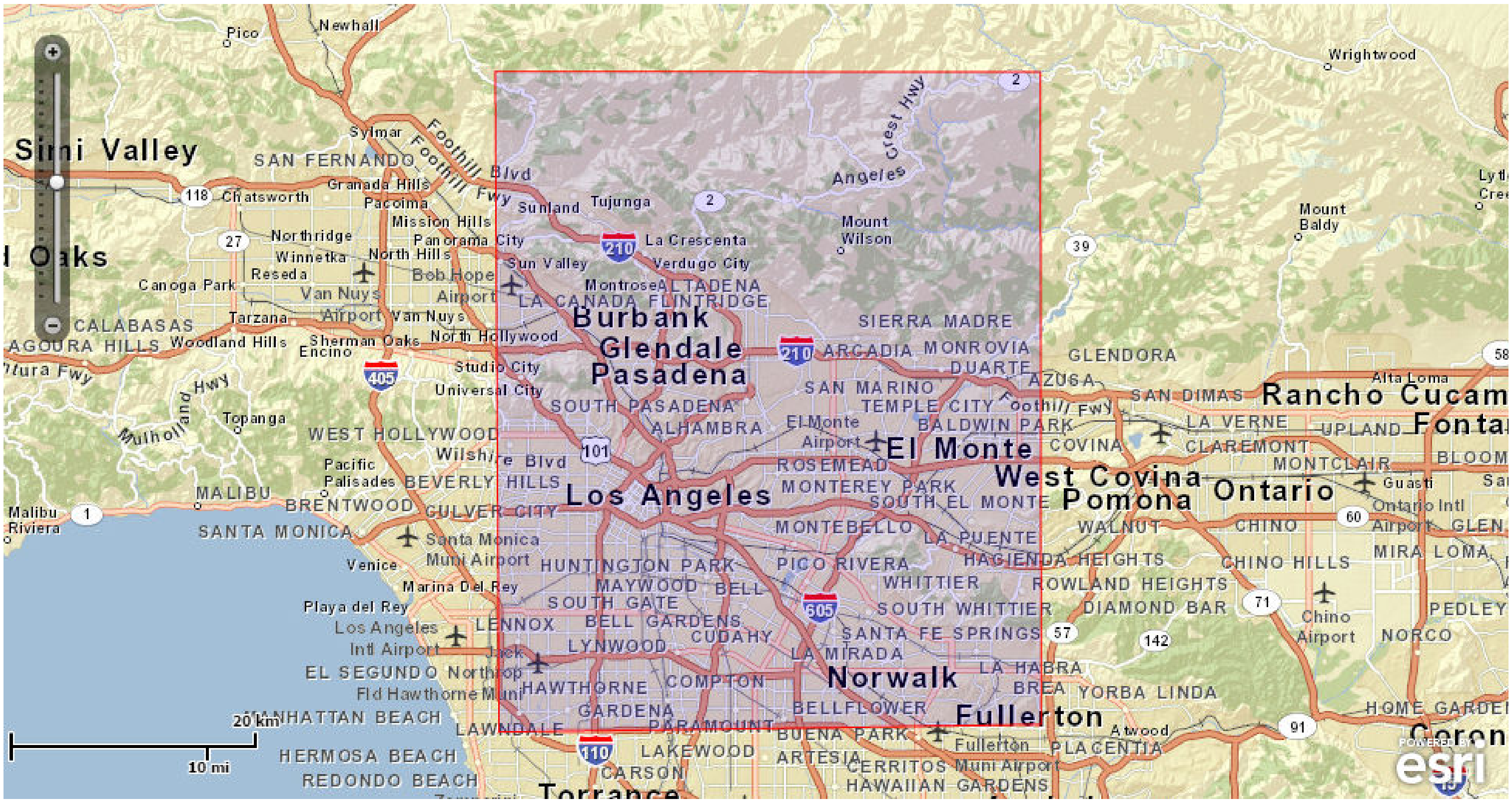
Ventura Fish and Wildlife Office
2493 PORTOLA ROAD, SUITE B
VENTURA, CA 93003
(805) 644-1766

Consultation Tracking Number: 08ECAR00-2015-SLI-0042
Project Type: Bridge Construction / Maintenance
Project Description: The proposed project is located in the cities of Los Angeles, Pasadena, South Pasadena, San Marino Alhambra, San Gabriel, Rosemead, and Monterey Park in Los Angeles County. The study area is bounded by SR-2 to the west, SR-605 to the east, I-210 to the north, and I-10 and I-5 to the south.

United States Department of Interior
Fish and Wildlife Service

Project name: FWS-LA-12B0146-14SL0011

Project Location Map:



Project Coordinates: MULTIPOLYGON (((-117.8891675 34.3572592, -117.8884808 33.8777036, -118.3701746 33.8725158, -118.3735272 34.3579394, -117.8891675 34.3572592)))

Project Counties: Los Angeles, CA | Orange, CA

Endangered Species Act Species List

There are a total of 15 threatened or endangered species on your species list. Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species. Critical habitats listed under the **Has Critical Habitat** column may or may not lie within your project area. See the **Critical habitats within your project area** section further below for critical habitat that lies within your project. Please contact the designated FWS office if you have questions.

Amphibians	Status	Has Critical Habitat	Condition(s)
arroyo toad *(Anaxyrus californicus)* Population: Entire	Endangered	Final designated	
Mountain Yellow-Legged frog *(Rana muscosa)* Population: southern California DPS	Endangered	Final designated	
Birds			
California Least tern *(Sterna antillarum browni)*	Endangered		
Coastal California gnatcatcher *(Polioptila californica californica)* Population: Entire	Threatened	Final designated	
Least Bell's vireo *(Vireo bellii pusillus)* Population: Entire	Endangered	Final designated	
Light-Footed Clapper rail *(Rallus longirostris levipes)* Population: U.S.A. only	Endangered		
Southwestern Willow flycatcher	Endangered	Final designated	

(Empidonax traillii extimus) Population: Entire			
western snowy plover *(Charadrius nivosus ssp. nivosus)* Population: Pacific coastal pop.	Threatened	Final designated	
Fishes			
Santa Ana sucker *(Catostomus santaanae)* Population: 3 CA river basins	Threatened	Final designated	
Flowering Plants			
Braunton's milk-vetch *(Astragalus brauntonii)*	Endangered	Final designated	
Nevin's barberry *(Berberis nevinii)*	Endangered	Final designated	
Slender-Horned spineflower *(Dodecahema leptoceras)*	Endangered		
Thread-Leaved brodiaea *(Brodiaea filifolia)*	Threatened	Final designated	
Insects			
Palos Verdes Blue butterfly *(Glaucopsyche lygdamus palosverdesensis)* Population: Entire	Endangered	Final designated	
Mammals			
Pacific Pocket mouse *(Perognathus longimembris pacificus)* Population: Entire	Endangered		

Critical habitats that lie within your project area

The following critical habitats lie fully or partially within your project area.

Amphibians	**Critical Habitat Type**
arroyo toad *(Anaxyrus californicus)* Population: Entire	Final designated
Mountain Yellow-Legged frog *(Rana muscosa)* Population: southern California DPS	Final designated
Birds	
Coastal California gnatcatcher *(Polioptila californica californica)* Population: Entire	Final designated
Southwestern Willow flycatcher *(Empidonax traillii extimus)* Population: Entire	Final designated
Fishes	
Santa Ana sucker *(Catostomus santaanae)* Population: 3 CA river basins	Final designated
Flowering Plants	
Braunton's milk-vetch *(Astragalus brauntonii)*	Final designated

Appendix M Functions and Values of Waters and Wetlands in the BSA

Functions and Values of Waters and Wetlands in the BSA

In 1989 President George H. W. Bush established a national policy to ensure no net loss of wetlands.[1] This policy, which followed on President Jimmy Carter's 1977 Executive Order 11990 requiring federal agencies to avoid impacts to wetlands whenever practicable, set the basis for replacing lost wetland areas with new areas with similar functions and values. In the permitting process the Corps will consider the loss of wetland functions and values.

A qualitative assessment of the functions and values attributable to the identified wetlands and other potential jurisdictional waters in the BSA was conducted, using criteria that have been applied other waters within the Los Angeles Basin.[2] All wetlands and other waters have some degree of functionality, and no single wetland can perform all of the functions considered below. The following functions are analyzed at low, moderate, or high value levels. Each water feature category is analyzed in Table 4.3-1 based on the following criteria.

Hydrologic Regime. This 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 to store water than sandy soils. The storage of water belowground allows for the fluctuation between anaerobic and aerobic conditions that benefit environmental conditions necessary for microbial cycling.

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 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 high in the watershed may have more ability to reduce flooding in downstream areas, but areas lower 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.

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. Similar to above, the vegetation, shape, and configuration of a wetland will also affect sediment retention if water is detained for long durations, as would be the case with dense vegetation, a bowl-shaped watershed, or slow-moving water. This function would be demonstrated (i.e., high) if the turbidity of the incoming water is greater than that of the outgoing water.

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

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[1] National Resources Conservation Service, available at: http://www.nrcs.usda.gov/wps/portal/nrcs/main/national/water/wetlands/

[2] California Department of Transportation. November 2009. *Jurisdictional Delineation Report: State Route 91 Corridor Improvement Project*. Prepared by: LSA Associates. Available at: http://www.sr91project.info/library-and-related-links

(nutrient uptake) and associated detritivores and generate nutrients that may be utilized by a variety of aquatic and terrestrial wildlife downstream.

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

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

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.

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.

TABLE 1

Functions and Values of Water Features within the BSA

Feature Type	Feature Name (if any)	Feature Nos.	Hydrologic Regime	Flood Storage	Sediment Retention	Nutrient Retention	Toxicant Trapping	Social Significance	Wildlife Habitat	Aquatic Habitat
Ditch		1-4, 7, 9-10,								
12-13, 17-21, 23-24, 27-29	Low	Low	Low	Low	Low	Low	Low	Low		
Stream	Arroyo Seco	5, 6	Moderate	High	High	High	High	High	High	High
	Laguna Channel	11, 14-16, 22, 25	Low to Moderate	Low to Moderate	Low to Moderate	Low to Moderate	Low	Low to Moderate	Low	Moderate
Detention Basin		14, 25	Low	Moderate	Moderate	Low	Low	Low	Low	Low
Wetland	Del Mar Pump Station	8	Moderate	Moderate	Low	Moderate	Moderate	Low	Moderate	Moderate
	Laguna Channel	26	Moderate	Moderate	Moderate	Moderate	Low to Moderate	Low to Moderate	High	Moderate