Los Angeles River
Habitat Enhancement Study & Opportunities Assessment

Presentation to One Water
October 16, 2017
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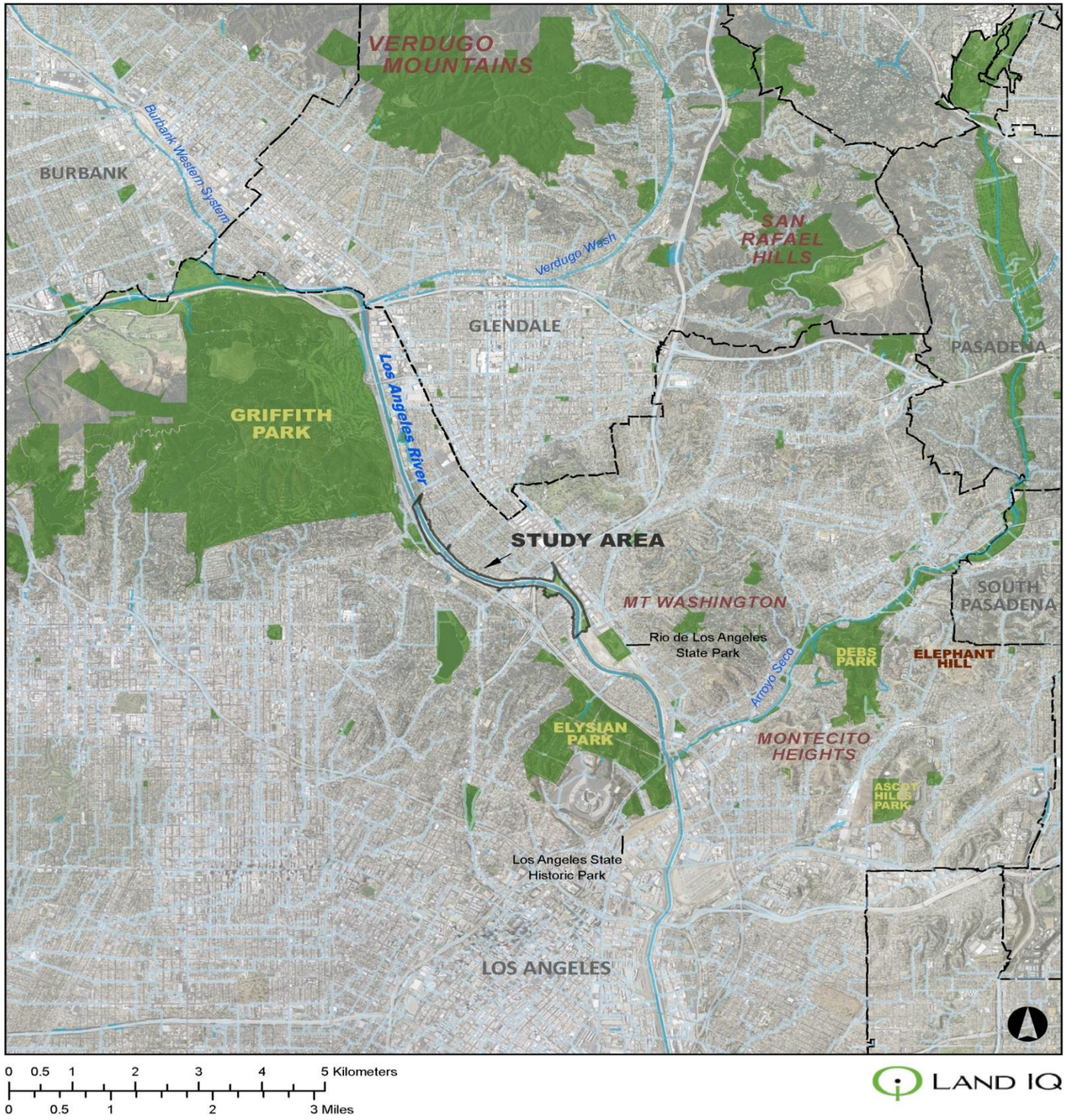
Scope of Work

- Ecological Baseline for the Los Angeles River
- Historic Ecological Conditions
- Biological Survey
- Hydrology and Flow Scenarios
- Habitat Enhancement Opportunities

Study Area

2.5 miles from Griffith Park to Taylor Yard



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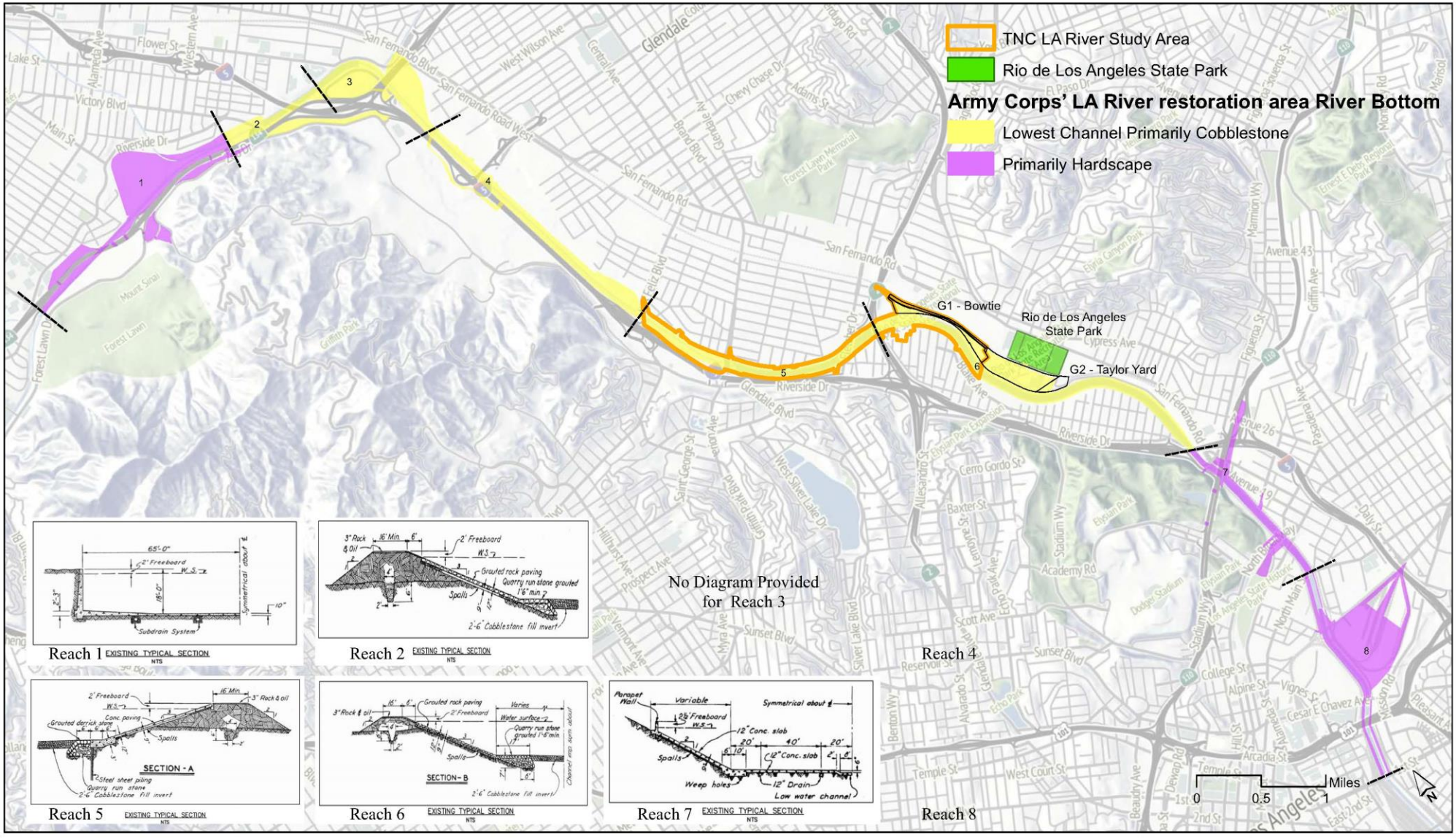
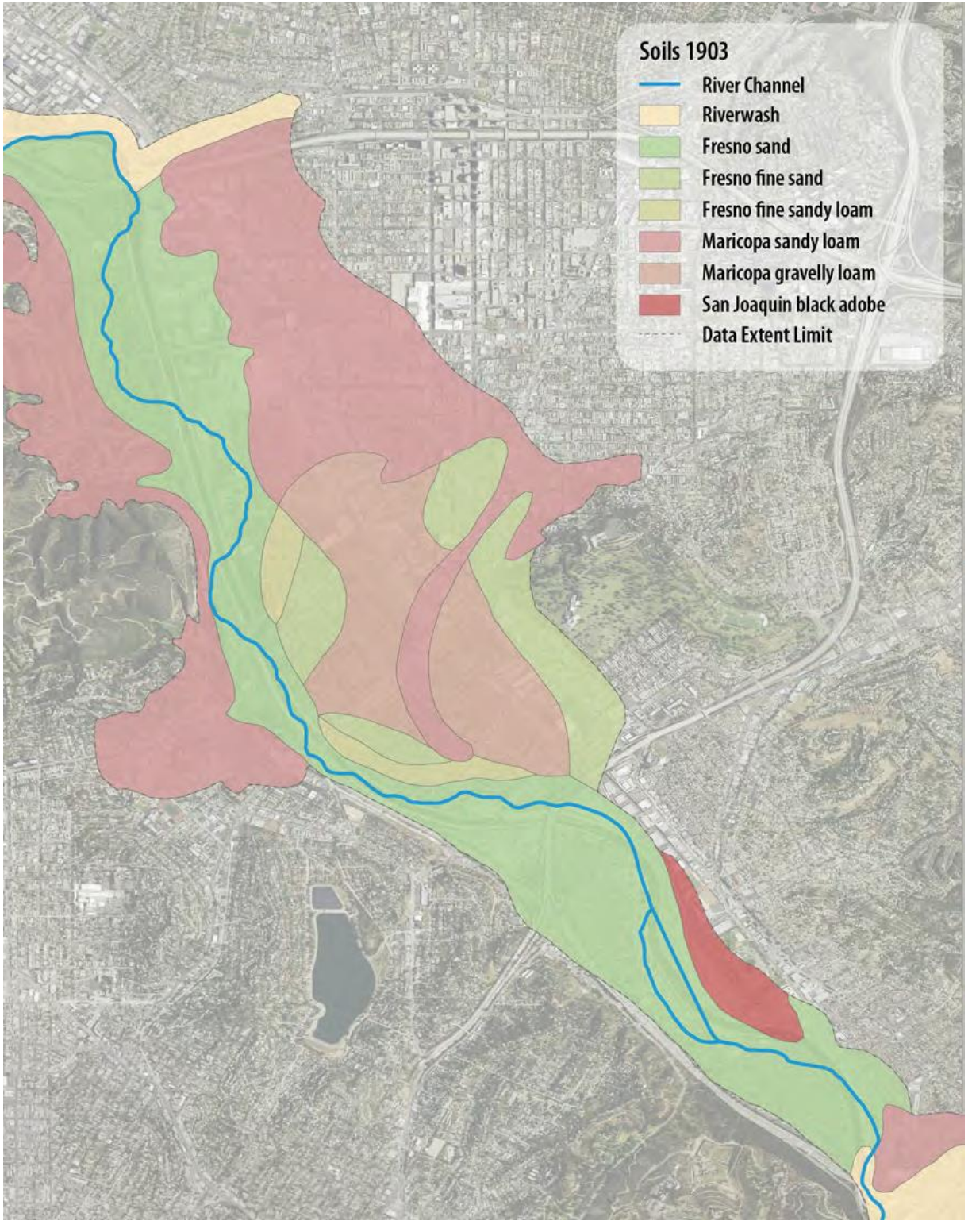
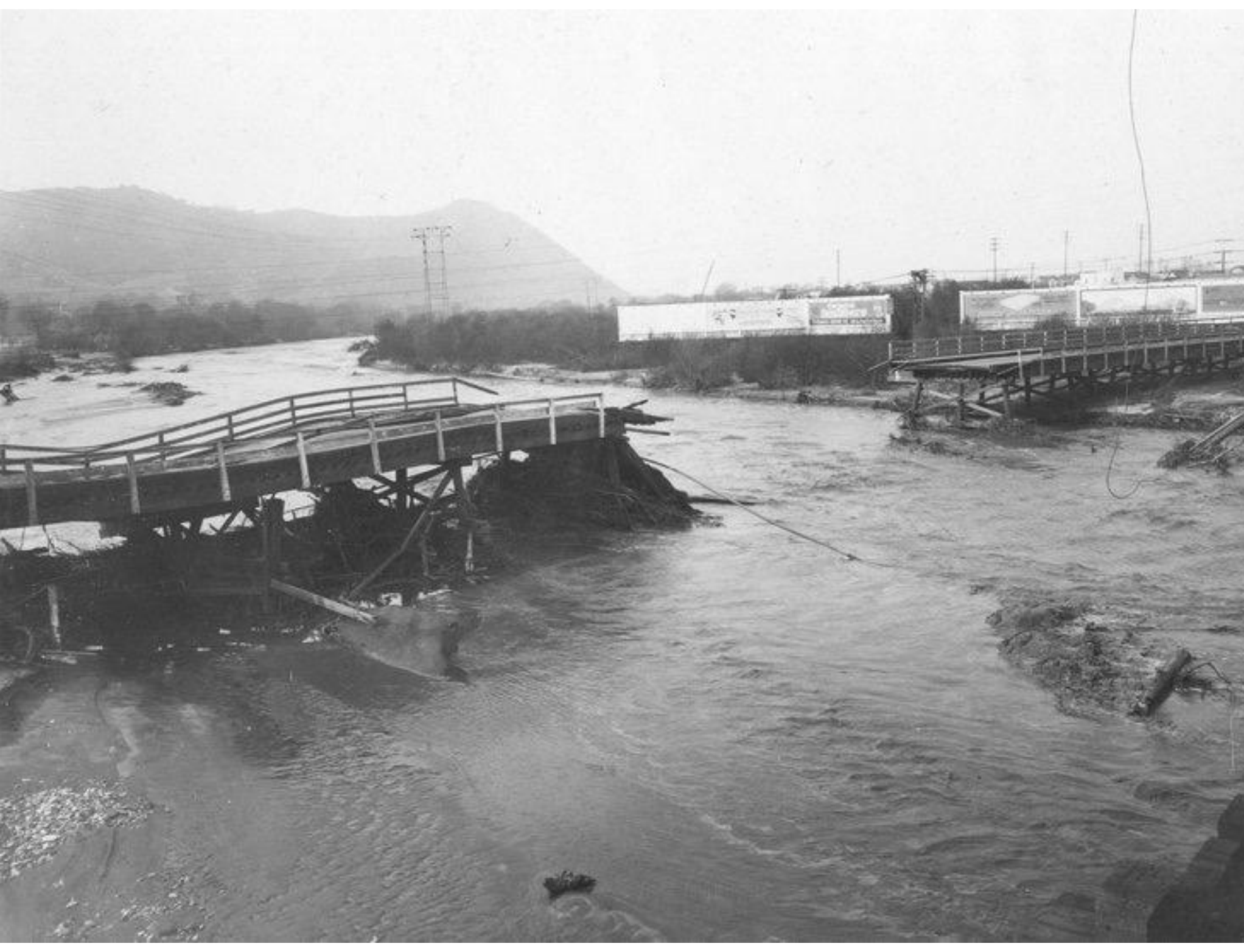
LA River Plant Propagation, Invasive Species Removal, & Revegetation
LA River Study Area and Project Area

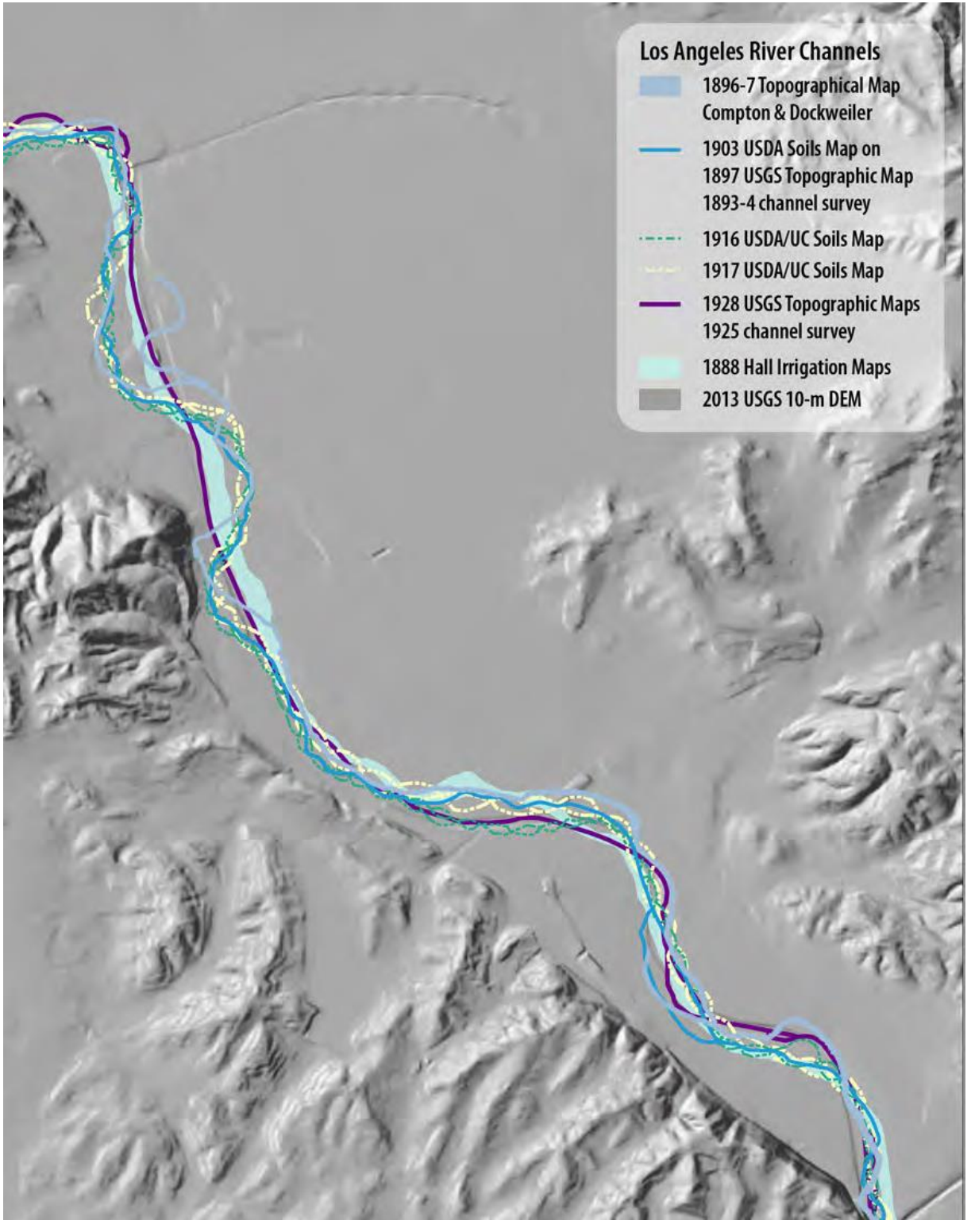


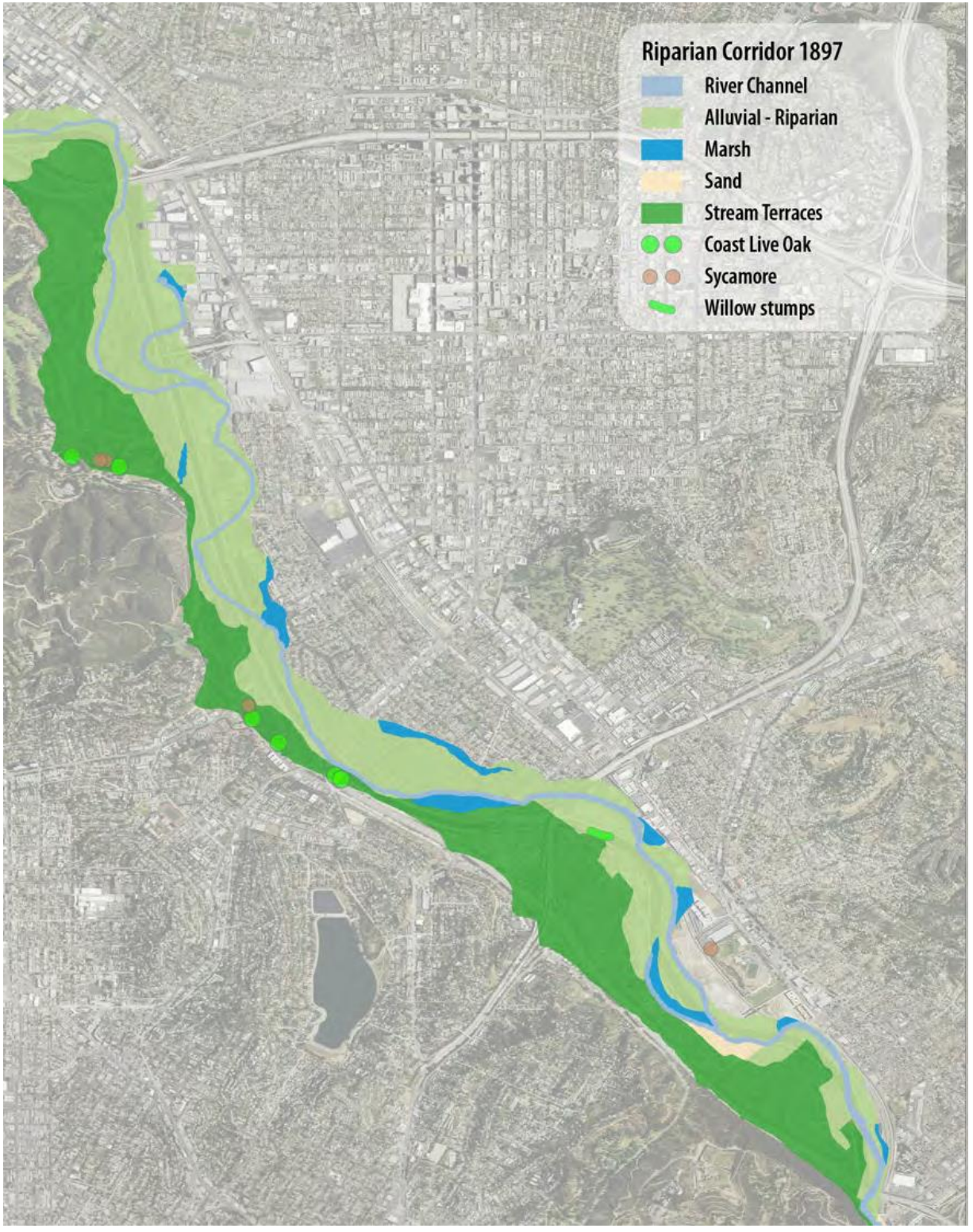

Soils 1903
River Channel
Riverwash
Fresno sand
Fresno fine sand
Fresno fine sandy loam
Maricopa sandy loam
Maricopa gravelly loam
San Joaquin black adobe
Data Extent Limit


MARSHY
Measurement
S.82°56'E. 1766.75'
S.55°29'E.319.78'
S.78°27'30"E. 565.50'
S.87°27'30"E.719.65
Blackberries.
Walnuts
Garden
22
23
24
25
355
360

UCLA Department of Geography, Benjamin and Gladys Thomas Air Photo Archives, Spence Air Photo Collection




Los Angeles River Channels
1896-7 Topographical Map
Compton & Dockweiler
1903 USDA Soils Map on
1897 USGS Topographic Map
1893-4 channel survey
1916 USDA/UC Soils Map
1917 USDA/UC Soils Map
1928 USGS Topographic Maps
1925 channel survey
1888 Hall Irrigation Maps
2013 USGS 10-m DEM


Riparian Corridor 1897
River Channel
Alluvial - Riparian
Marsh
Sand
Stream Terraces
Coast Live Oak
Sycamore
Willow stumps

Summary of Biotic Conditions (Survey Period: Oct 2014 to Sep 2015)

Plants

- 76 native species
- 167 total species
- Invasive plants, like arundo & castor bean
- 4 vegetation communities
- Native willow, oak and sycamore trees

Reptiles & Amphibians

- 5 natives, incl. western toad & Pacific chorus frog
- 7 total species
- 2 invasive species
- Lizards, like western fence lizard use river pocket parks

Birds

- 89 native species
- 106 total species
- Birds use in-stream & adjacent upland habitat
- Breeding documented or inferred for 33 bird species

Insects

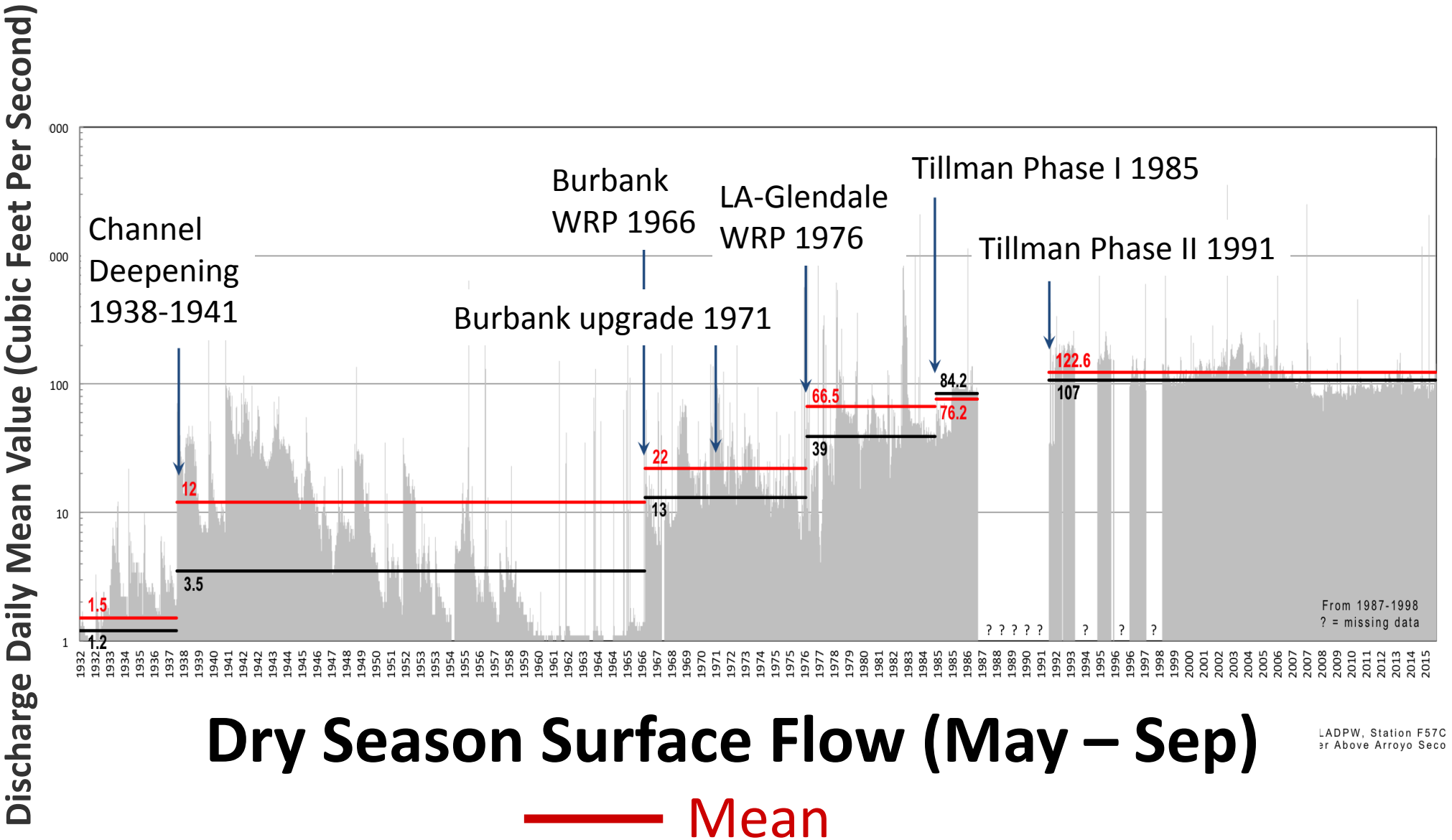
- 102 taxonomic families
- Native plants are diversity hotspots
- Low diversity of aquatic insects
- Invasive Argentine ants

Mammals

- 10 native species
- 17 total species, like coyote, desert cottontail, California ground squirrels
- 5 bat species, like Yuma myotis and big brown bat

Fish

- No native fish
- 1992 & 2007 surveys found 5 non-native fish, like carp and mosquito fish
- Lack of hydrological connections and refugia for natives


Discharge Daily Mean Value (Cubic Feet Per Second)
Channel Deepening 1938-1941
Burbank WRP 1966
Burbank upgrade 1971
LA-Glendale WRP 1976
Tillman Phase I 1985
Tillman Phase II 1991
1.5
1.2
12
3.5
22
13
66.5
39
84.2
76.2
122.6
107
From 1987-1998
? = missing data
Dry Season Surface Flow (May – Sep)
Mean
Median

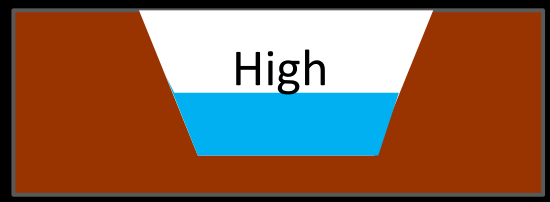
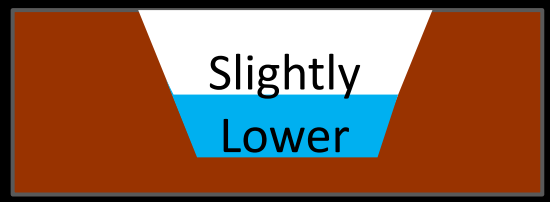
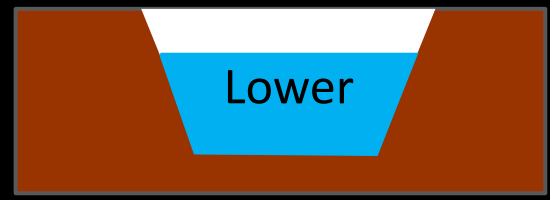
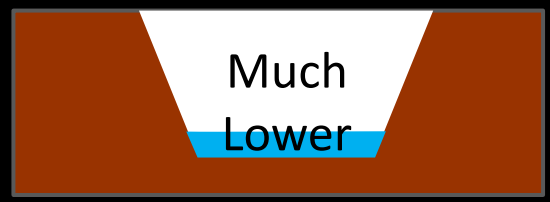
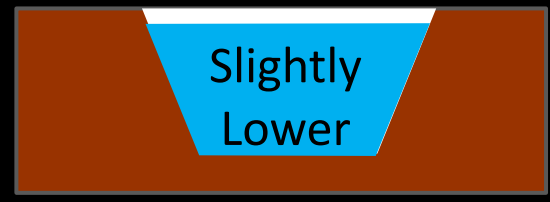
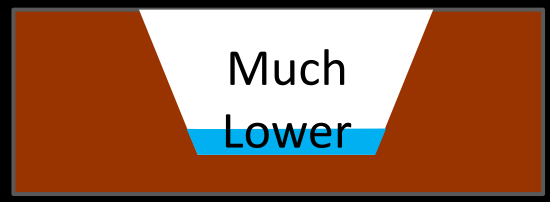
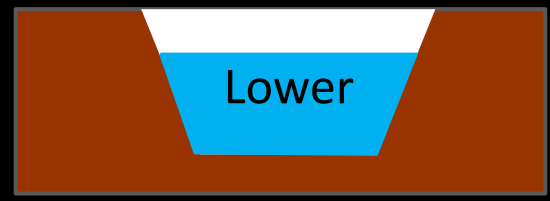
Components of Dry Season Flow (acre feet)

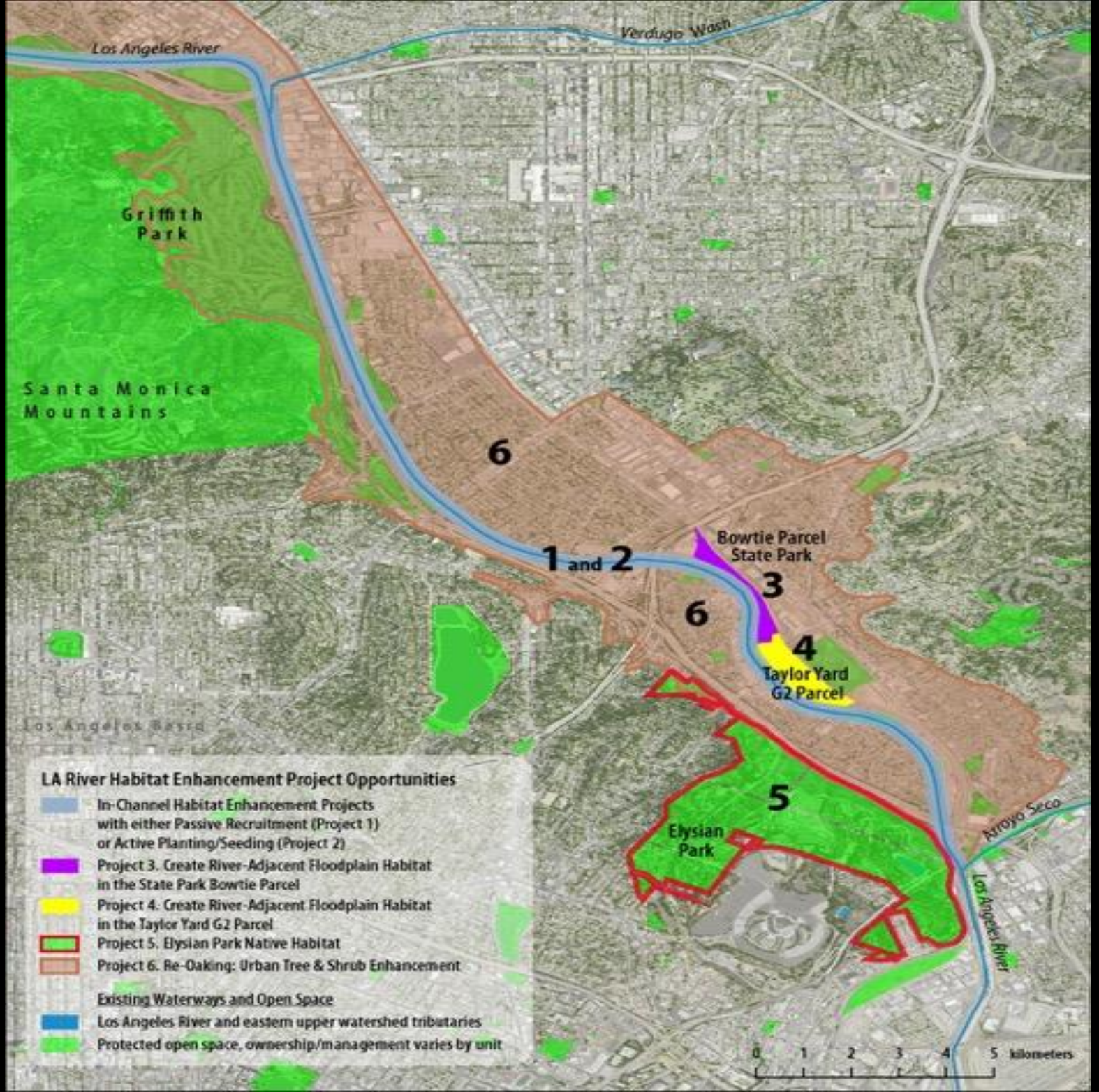
Year	Total	Rising Ground water	Owens River Discharge	Runoff	Burbank WRP	LA-Glendale WRP	Tilman WRP
1928	650	--	650	--	NA	NA	NA
1951	6,290	3,110	1,430	1,750	NA	NA	NA
1971	11,821	3,602	--	5,126	3,093	NA	NA
1982	21,070	3,460	--	9,922	4,670	3,018	NA
1993	91,083	2,952	--	7,071	5,320	12,576	63,164
2004	77,137	6,309	--	9,186	8,119	11,378	42,145
2012	69,619	1,754	--	11,584	7,422	12,898	35,961

Summary

- Dry weather flow was ephemeral and much lower than today.
- Hydrology drives biology: high dry weather flow and channelization support novel vegetation assemblages.
- The existing river features, vegetation assemblages, and concrete mimic some important features of native habitat.
- Many native habitat specialists that historically occurred in the Los Angeles River have been extirpated.
- Generalist species thrive on the river.
- Habitat enhancement or creation could allow populations of native animals to disperse from adjacent upland and riparian areas (e.g. Sepulveda Dam).

Flow Scenarios (compared to existing condition)

Scenario	Dry Weather Flow	Wet Weather Flow
Existing Condition		
Stormwater Capture		
Effluent Recycling		
Water Supply & Habitat Resiliency		


Los Angeles River
Verdugo Wash
Griffith Park
Santa Monica Mountains
6
1 and 2
Bowtie Parcel State Park
3
6
4
Taylor Yard G2 Parcel
Los Angeles Basin
5
Elysian Park
Arroyo Seco
Los Angeles River
LA River Habitat Enhancement Project Opportunities
In-Channel Habitat Enhancement Projects with either Passive Recruitment (Project 1) or Active Planting/Seeding (Project 2)
Project 3. Create River-Adjacent Floodplain Habitat in the State Park Bowtie Parcel
Project 4. Create River-Adjacent Floodplain Habitat in the Taylor Yard G2 Parcel
Project 5. Elysian Park Native Habitat
Project 6. Re-Oaking: Urban Tree & Shrub Enhancement
Existing Waterways and Open Space
Los Angeles River and eastern upper watershed tributaries
Protected open space, ownership/management varies by unit
0 1 2 3 4 5 kilometers

Next Steps and Questions

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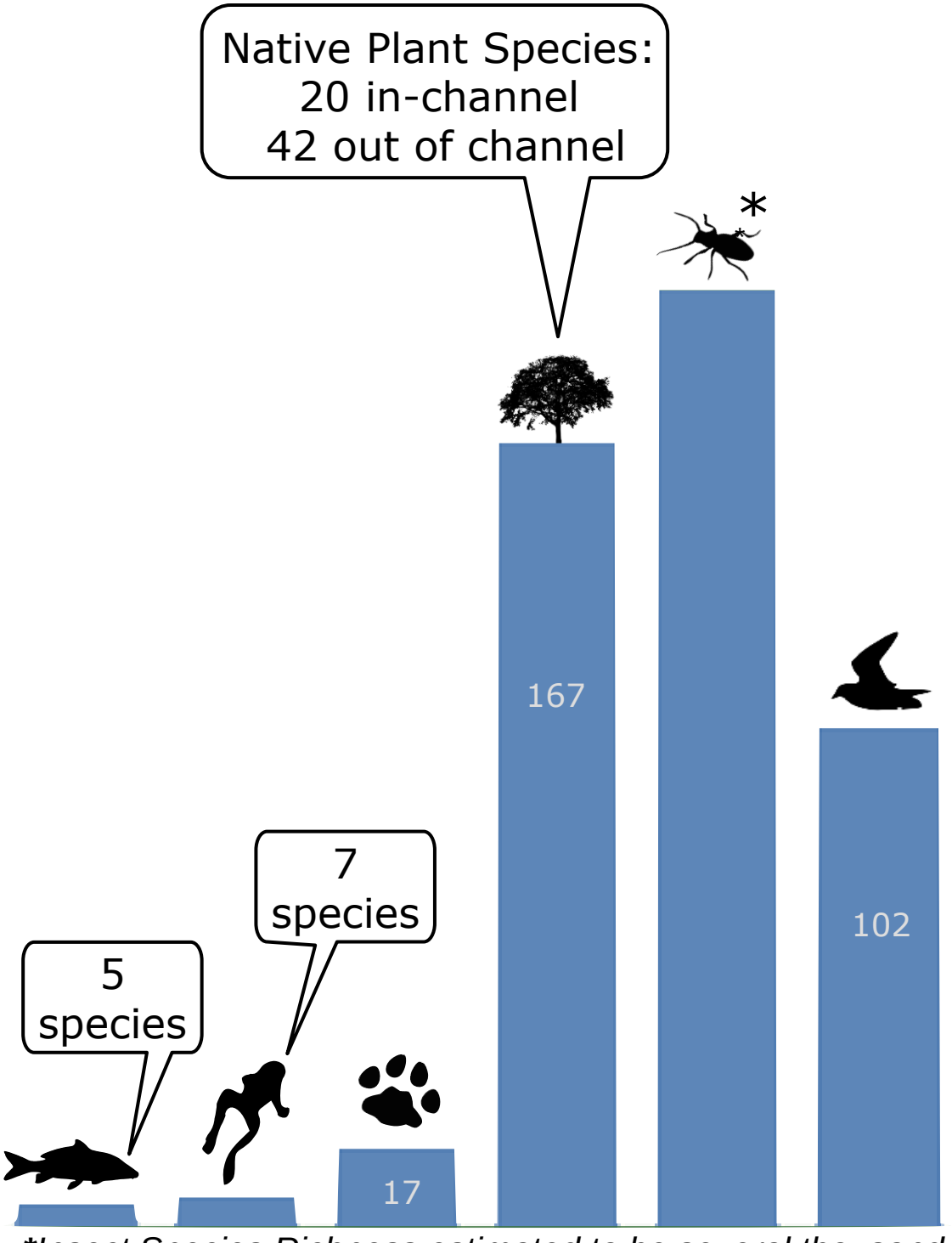
Habitat Enhancement Project Opportunities In-Channel

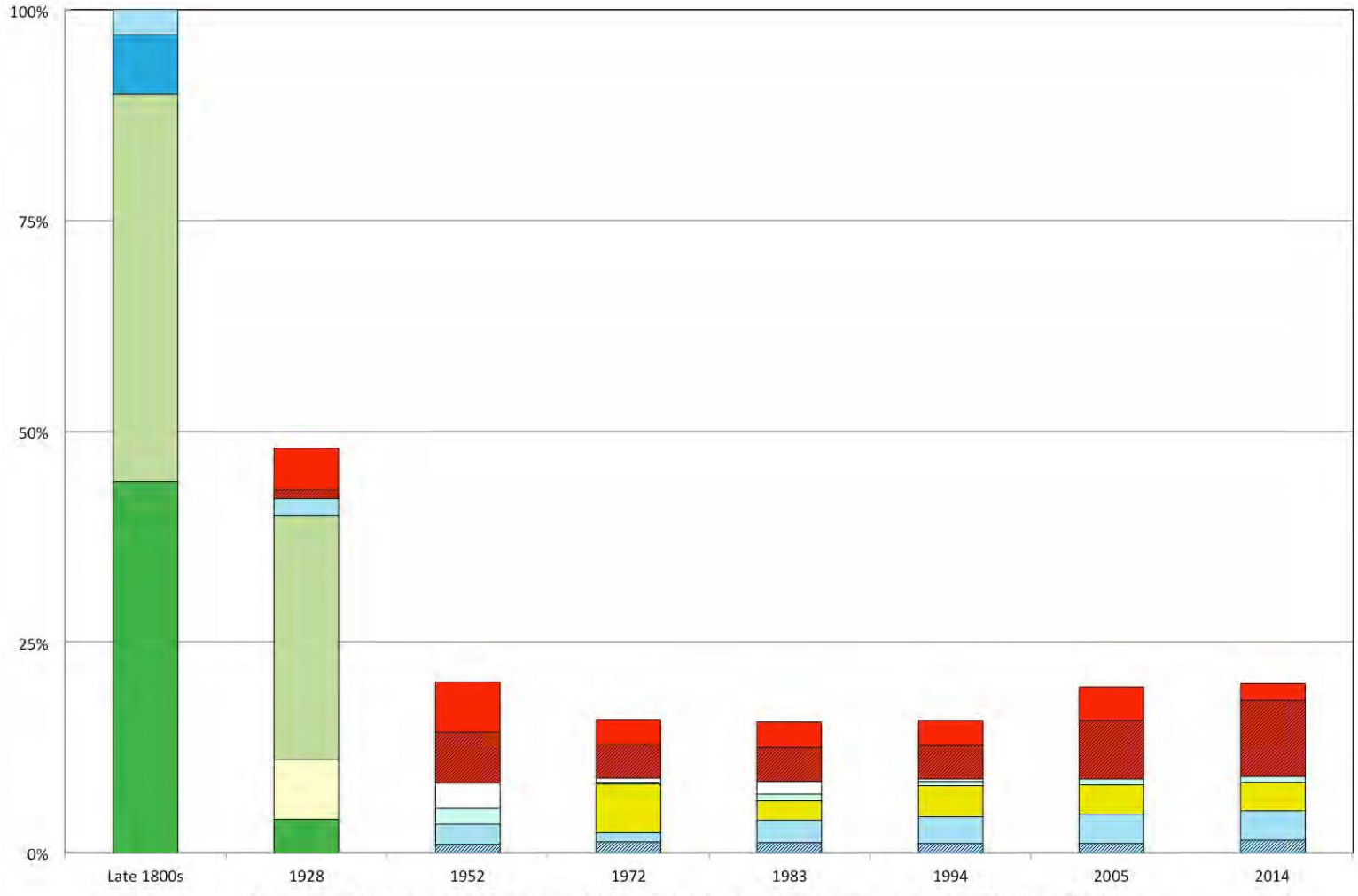
In-Channel Result Compared to Historic Condition	**Scenario 1** Existing Condition (1991–Present)	**Scenario 2** Stormwater Capture Focus	**Scenario 3** Effluent Recycling Focus	**Scenario 4** Water Supply & Habitat Resiliency Focus
1. In-Channel Habitat Enhancement with Passive Recruitment	5–10 years to control giant reed; passive increases over 3–5 years in quality of existing riparian habitat	Same as Scenario 1, but possibility of cleaner urban runoff inputs leading to higher quality aquatic habitat	3–5 years to control giant reed; passive increases over 3–5 years in quality of existing riparian habitat	Same as Scenario 3, but likely faster giant reed control, & reduced threat of scouring flows during plant establishment period
2. In-Channel Habitat Enhancement with Active Planting/ Seeding	5–10 years to control giant reed; increases in quality of existing riparian habitat in 1–3 years	Same as Scenario 1, but possibility of higher quality aquatic habitat; & reduced risk of scouring flows during plant establishment period from large storm	3–5 years to control giant reed; increases in quality of existing riparian habitat in 1–3 years	Same as Scenario 3, but likely faster giant reed control, & reduced threat of scouring flows during plant establishment period

Habitat Enhancement Project Opportunities Out-of-Channel

Out-of-Channel Result Compared to Historic Condition	Scenario 1 Existing Condition (1991–Present)	Scenario 2 Stormwater Capture Focus	Scenario 3 Effluent Recycling Focus	Scenario 4 Water Supply & Habitat Resiliency Focus
3. Create River-Adjacent Floodplain Habitat in the State Park Bowtie Parcel	1–3 years of weed control; over 3–5 years increases in quality of adjacent in-channel riparian habitat and creation of high quality floodplain scrub habitat	Same as Scenario 1, but more funding opportunities for creating ephemeral wetland habitat on-site that also provides stormwater capture	Similar to Scenario 1	Same as Scenario 2, with higher biodiversity supported by higher quality, complementary in-stream habitat
4. Create River-Adjacent Floodplain Habitat in the G2 Taylor Yard Parcel	1–3 years of weed control; over 3–5 years increases in quality of adjacent in-channel riparian habitat and creation of high quality floodplain scrub habitat	Same as Scenario 1, but more funding opportunities for creating ephemeral wetland habitat on-site that also provides stormwater capture	Similar to Scenario 1	Same as Scenario 2, with higher biodiversity supported by higher quality, complementary in-stream habitat
5. Elysian Park Native Habitat Enhancement	Higher quality upper terrace and upland habitat, providing complementary ecosystem services and habitat for riparian wildlife in 3–5 years, & engage local community	Same as Scenario 1, but more funding opportunities related to stormwater capture projects	Same as Scenario 1	Same as Scenario 2
6. Re-Oaking: Urban Tree & Shrub Enhancement	Increase oak woodland canopy for benefit of wildlife over 1–10 years Public engagement	Same as Scenario 1, but more funding opportunities related to stormwater capture projects	Same as Scenario 1	Same as Scenario 2



**Insect Species Richness estimated to be several thousand*



Change in Vegetation Communities of the Los Angeles River in the Elysian Valley

Historic Vegetation (Late 1800s to Early 1900s)

- River Channel (Intermittent Surface Water Flow)
- Perennial Freshwater Wetland
- Willow Woodlands
- River Wash (Unvegetated Sand/Mulefat Thickets)
- California Sycamore - Coast Live Oak Woodland

In Flood Control Channel (1938 to Present)

- Water (Non-Flood Condition)
- Water Over Concrete Apron or Slope Bank
- Channel Bar: Bare (<1% vegetated cover)
- Channel Bar: Semi-Vegetated (1-25% cover)
- Channel Bar: Vegetated (>25% cover)

Outside Flood Control Channel (Early 1900s to Present)

- Urban: Open Space
- Urban: Park
- Urban: Residential, Commercial, Industrial, City Infrastructure