





Figure 293. Projects Along the LA River. A consistent cadence of XS, S, M, L, and XL projects occurs along the 51 miles of the LA River.

## 6.

# FACILITIES AND AMENITIES

Facilities and amenities along the LA River promote a sense of place and belonging along the river corridor. They are not only what draw people to the river, but also encourage them to stay for longer periods of time to enjoy the river with comfort and safety. These amenities, ranging from large pavilions to a single bench, are meant to be used by all people, including commuters, recreational users, nearby residents, and persons experiencing homelessness. Though the River Pavilions are a significant community resource and house a cluster of various amenities, a single drinking fountain along the multiuse river trail is just as vital to the experience of a person along the river. Most importantly, these facilities and amenities should strive for design excellence. Great design of these elements will elevate the experience of users along the river and offer opportunities for artwork. Additionally, they must be maintained, be visible, and occur at a consistent cadence so that people know what to expect along the river corridor. This consistency encourages community members to keep coming back and exploring the LA River.

## WHAT'S IN THE CHAPTER

The following pages contain the information regarding the size, occupancy, program, and configuration of the different types of pavilions along the LA River. This chapter will also provide information regarding the types of site furnishings that are deemed acceptable to be used along the river. Consult the checklist at the end of the chapter to ensure the correct guideline items are followed.

<b>317</b>	<b>6. Facilities and Amenities</b>
318	What's in the Chapter
330	River Pavilions
322	Pavilion Cadence
324	Pavilion Components
332	Pavilion Configurations
334	Shade Pavilions (Tier I)
338	Rest Pavilions (Tier II)
342	Gathering Pavilions (Tier III)
346	Pavilion Best Practices
348	Site Furnishings
350	Site Furnishings: Litter and Recycling Receptacles
351	Site Furnishings: Bike Racks
352	Site Furnishings: Benches
353	Site Furnishings: Drinking Fountains
354	Site Furnishings: Lighting
357	Site Furnishings: Emergency Call Boxes
358	Facilities and Amenities Checklist



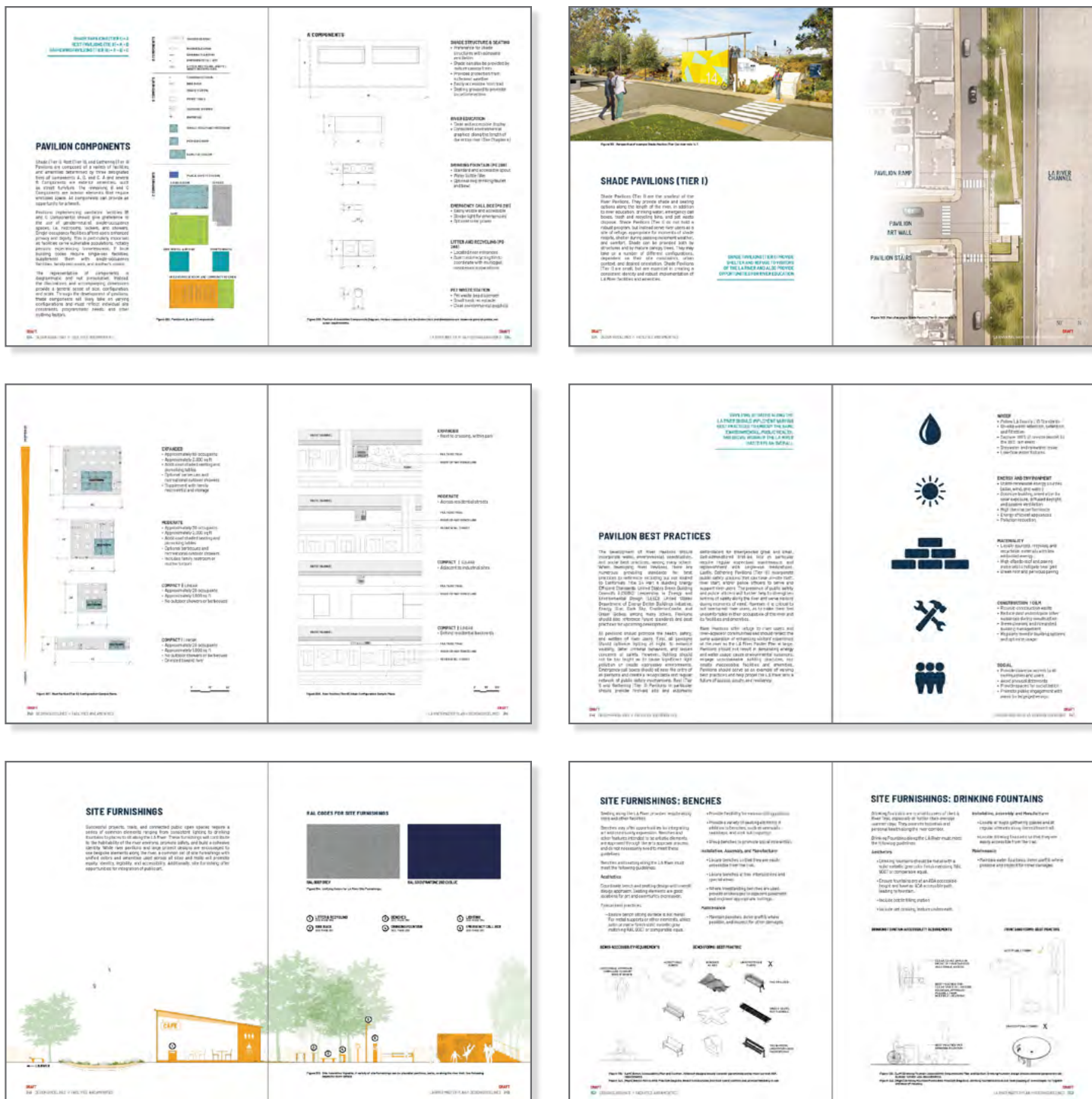


Figure 294. Chapter 6 of this document covers items related to facilities and amenities along the LA River.

THE LA RIVER'S SHADE (TIER I),  
REST (TIER II), AND GATHERING  
(TIER III) PAVILIONS FORM A VARIED  
NETWORK OF COMMUNITY ASSETS  
THAT ACCESSIBLE TO ALL

---



## RIVER PAVILIONS

Pavilions situated along the LA River will house numerous facilities and amenities and will form a network of programs and activities to support a continuous and unified experience along the river trail. Pavilions serve as an asset for river users and river-adjacent communities. They should complement existing neighborhood assets, such as parks, schools, community facilities, public transit, and cultural organizations to form enriched nodes of interest. Furthermore, pavilions provide multiple opportunities for artwork. Other master plans and urban designs have already identified several sites for facilities and amenities, but additional pavilions are necessary to establish a regular and equitable cadence for all river users.

The architecture of the River Pavilions should meet the highest standard of design excellence. All pavilions should have a finish floor elevation above the 1% storm event level. If elevation at the 1% storm event level is not feasible, first consider other locations. If no other location is possible, consider making the facility floodable. Further, the maintenance planning for the pavilions is critical, as to best alleviate future operations and maintenance costs.





**Figure 295.** Lewis MacAdams Riverfront Park is one example of an existing pavilion along the LA River at river mile 26. Source: LA Public Works, 2018.

River Pavilions have been organized into three tiers based on the number and type of amenities provided. Pavilions with baseline amenities will occur more frequently in the cadence along the river, while pavilions with added amenities occur more intermittently at an appropriate cadence. Shade Pavilions (Tier I), the baseline, include seating, shade structures, drinking fountains, waste disposal, and an emergency call box. Rest Pavilions (Tier II) include the baseline amenities Shade Pavilion (Tier I) and restrooms, bike racks, picnic tables, charging stations, and vending machines, with optional barbecues and outdoor showers.

Gathering Pavilions (Tier III), include all Shade (Tier I) and Rest (Tier II) Pavilion amenities in addition to a cafe, indoor showers, lockers, public safety station, and bike rental and repair. Sports equipment rental, multipurpose rooms, and community kitchens can further enhance Gathering Pavilions (Tier III). Larger pavilions, in particular, operate as destinations in themselves attracting visitors to the river. More information on potential use of different pavilions can be found later in this chapter. Within each tier, pavilions can adjust in scale, configuration, and specific program to react to local site conditions and amenities that may already exist.

**CONSISTENTLY DISTRIBUTE PAVILIONS ALONG  
THE 51 MILES OF THE LA RIVER TO PROVIDE  
ESSENTIAL FACILITIES AND AMENITIES  
WITHIN REACH OF ALL OF THE RIVER'S USERS  
AND NEIGHBORING COMMUNITIES**

---

## PAVILION CADENCE

A network of pavilions along the LA River should adhere to a cadence that optimizes an equitable distribution of facilities and amenities for river users and river-adjacent communities.

Ideally, Shade (Tier I) and Rest (Tier II) Pavilions alternate every 1/2 mile along both sides of the river where feasible, with the exception of gaps in the river trail. Shade (Tier I) and Rest (Tier II) Pavilions should have a spacing tolerance of 1/10th of a mile to provide adequate flexibility in selecting appropriate and favorable sites. The 1/2 mile spacing affords river users shaded seating within an approximate five-minute walk in either direction. The one-mile spacing between Rest Pavilions (Tier II) in particular provides river users a restroom facility within an estimated ten-minute walk in either direction.

Located every 2-3 miles on either side of the river, Gathering Pavilions (Tier III) should be located in conjunction with river gateway access points, enhancing their accessibility to river-adjacent communities. The spacing of the pavilions is intended to create a consistent cadence of amenities without creating redundancy. The spacing tolerance of 1/10th of a mile helps

equalize the distribution of facilities and amenities. For example, if a Gathering Pavilion (Tier III) falls within 1/2 mile of a Shade (Tier I) or Rest (Tier II) Pavilion, the smaller pavilion should move 1/10th of a mile away from the larger one.

Upon full implementation of the LA River Master Plan, pavilions will regularly stand on both banks of the river along its continuous 51 miles of connected open space. The spacing of pavilions on opposite riverbanks does not need to align with one another. Instead, it is more important that pavilions situate appropriately in their context, instead of adhering to a rigid plan at the expense of more logical and strategic placement. Further, additional pavilions can supplement the baseline cadence to respond to community needs and increased visitation.

Urban context should further inform site selection and the orientation of pavilions. Optimized placement of pavilions enhances the river's relationship to the river itself, along with proximate streets, crossings, parks, community facilities, and public transportation. River users should have a plethora of facilities and amenities within every frame, along both banks of the river.





SHADE PAVILIONS (TIER I) = A  
 REST PAVILIONS (TIER II) = A + B  
 GATHERING PAVILIONS (TIER III) = A + B + C

## PAVILION COMPONENTS

Shade (Tier I), Rest (Tier II), and Gathering (Tier III) Pavilions are composed of a variety of facilities and amenities determined by three designated tiers of components A, B, and C. A and several B Components are exterior amenities, such as street furniture. The remaining B and C Components are interior elements that require enclosed space. All components can provide an opportunity for artwork.

Pavilions implementing sanitation facilities (B and C Components) should give preference to the use of gender-neutral, single-occupancy spaces, i.e. restrooms, lockers, and showers. Single-occupancy facilities afford users enhanced privacy and dignity. This is particularly important as facilities serve vulnerable populations, notably persons experiencing homelessness. If local building codes require single-sex facilities, supplement them with single-occupancy facilities, family restrooms, and mother's rooms.

The representation of components is diagrammatic and not prescriptive. Instead, the illustrations and accompanying dimensions provide a general sense of size, configuration, and scale. Through the development of pavilions, these components will likely take on varying configurations and must reflect individual site constraints, programmatic needs, and other outlying factors.

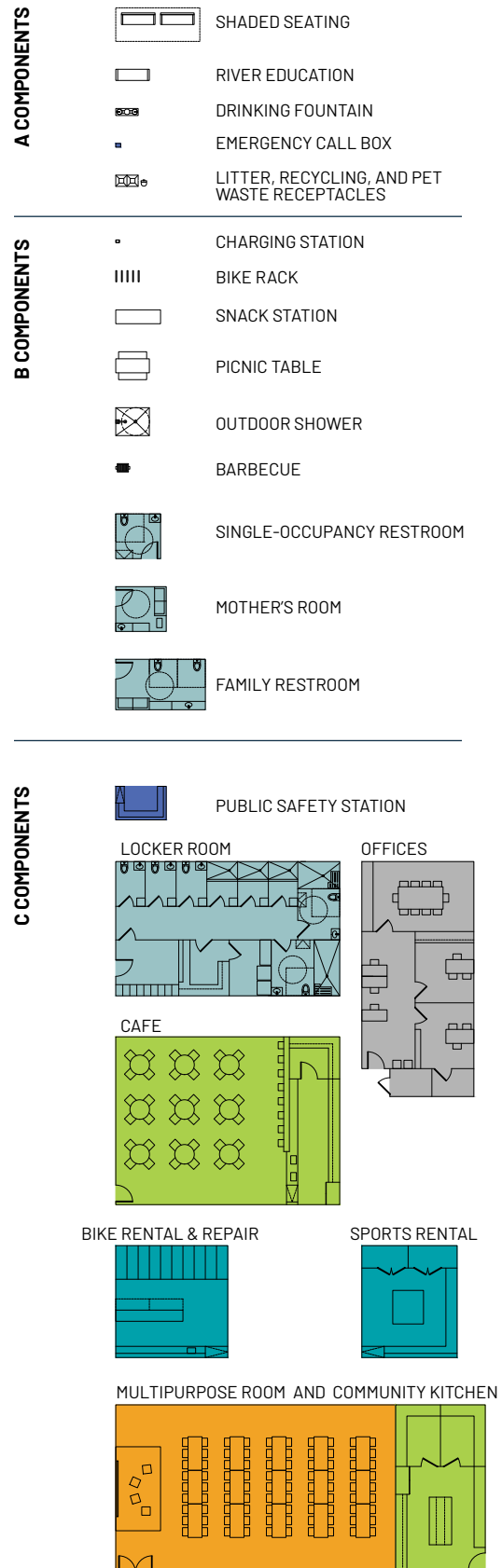
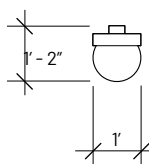
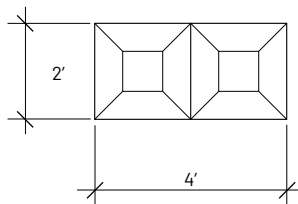
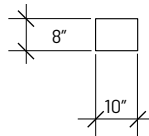
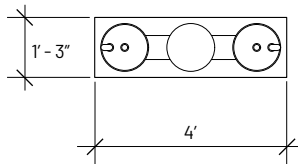
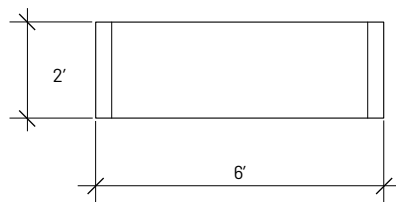
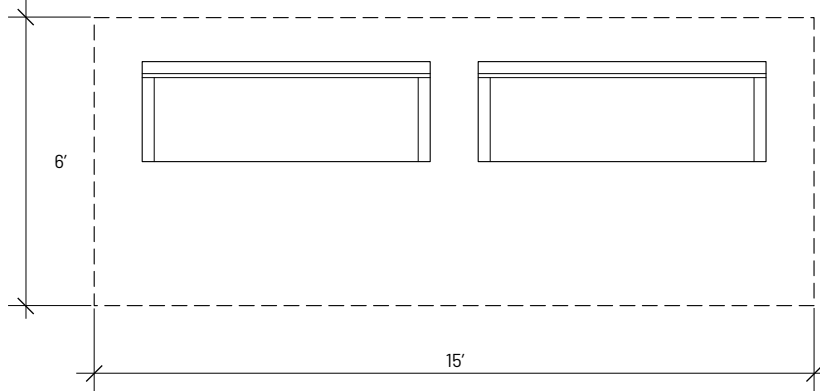


Figure 297. Pavilion A, B, and C components range in size and programming from shade and drinking fountains to restrooms and community kitchens.

## A COMPONENTS



### SHADE STRUCTURE & SEATING

- Preference for shade structures with adequate ventilation
- Shade can also be provided by mature canopy trees
- Provides protection from inclement weather
- Easily accessible from trail
- Seating grouped to promote social interaction

### RIVER EDUCATION

- Clear and accessible display
- Consistent environmental graphics along the length of the entire river (See Chapter 4)

### DRINKING FOUNTAIN (PG 289)

- Standard and accessible spout
- Water bottle filler
- Optional dog drinking faucet and bowl

### EMERGENCY CALL BOX (PG 291)

- Easily visible and accessible
- Strobe light for emergencies
- Optional solar power

### LITTER AND RECYCLING (PG 288)

- Located near entrances
- Dual trash/recycling bin to coordinate with municipal maintenance operations

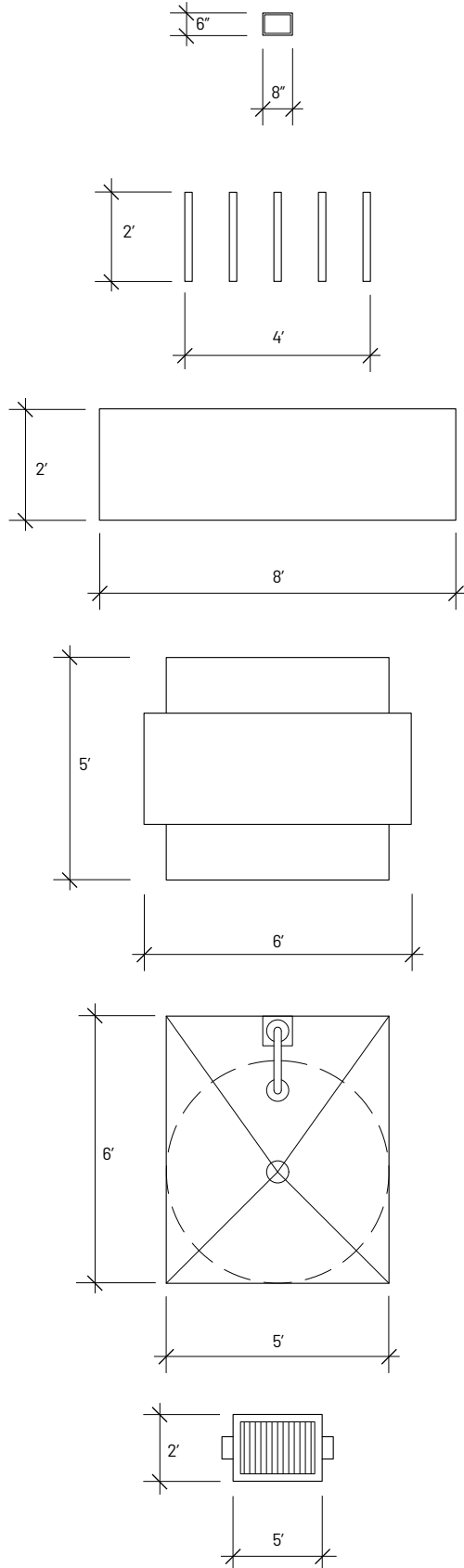
### PET WASTE STATION

- Pet waste bag dispenser
- Small trash receptacle
- Clear environmental graphics

Figure 298. The basic components of a Shade Pavilion include shade, seating, and drinking fountains. Various components are illustrated here and dimensions are shown as general guides, not exact requirements.



## B COMPONENTS



### CHARGING STATION

- Dual USB rapid-charge ports
- Universal charging cords
- Wireless charging capable

### BIKE RACK

- Provide 6' of length for bikes and an additional 5' unobstructed clearance for bike parking

### SNACK STATION

- Offer healthy and affordable beverages and snacks
- Promote local food entrepreneurs, suppliers, and distribution

### PICNIC TABLE

- Aggregated into picnic areas
- Preferred table configurations for 2, 4, 6, 8, and 10 persons per table
- Do not fix all tables to the ground

### RECREATIONAL OUTDOOR SHOWERS (OPTIONAL)

- Optimal for pavilions adjacent to pools, splash pads, kayaking, and other sports recreation amenities
- Time-flow valve shower heads
- Add hooks for personal items
- Optional pet wash attachment

### BARBECUE (OPTIONAL)

- Distributed across picnic areas
- Provide adequate space for ventilation and safety
- Do not include in fire hazard areas or areas of dense vegetation

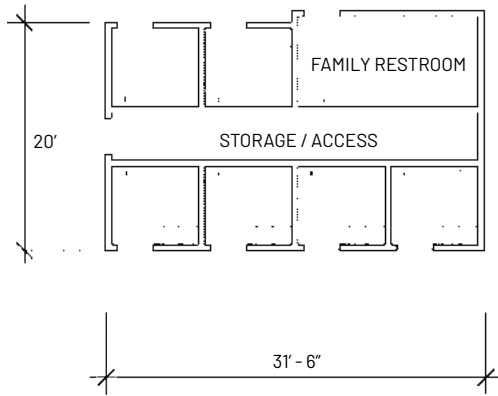
0' 2' 4'

Figure 299. The basic components of a Rest Pavilion include restrooms, bike racks, and a snack station. Dimensions are general guides and not exact requirements.

## TIER II – BASIC SANITATION FACILITIES

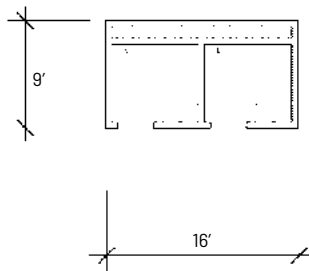
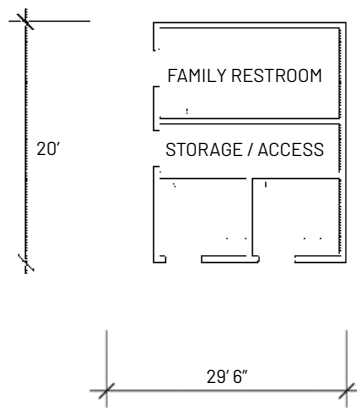
### SINGLE OCCUPANCY | LARGE

- Modular and standardized
- 6 restrooms
- 1 family restroom
- Changing station
- Storage and access room
- Modular and standardized



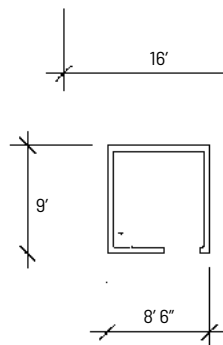
### SINGLE OCCUPANCY | MEDIUM

- Modular and standardized
- 2 restrooms
- 1 family restroom
- Changing station
- Storage and access room
- Modular and standardized



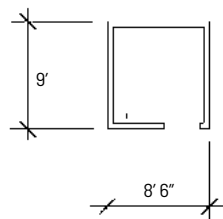
### SINGLE OCCUPANCY | SMALL

- 2 restrooms
- Changing station
- Access shaft for plumbing
- Modular and standardized



### MOTHER'S ROOM (OPTIONAL)

- Changing station
- Seating and space for nursing
- Bottle warmer
- Modular and standardized



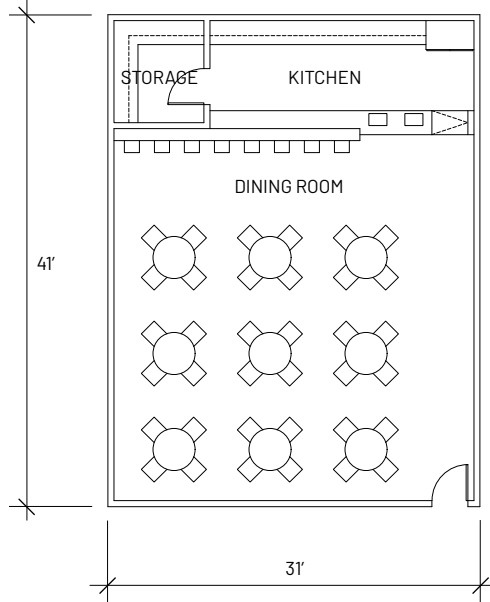
### STORAGE ROOM (PREFERRED)

- Storage and cleaning supplies
- Utility sink and counter space
- Space for bathroom attendant



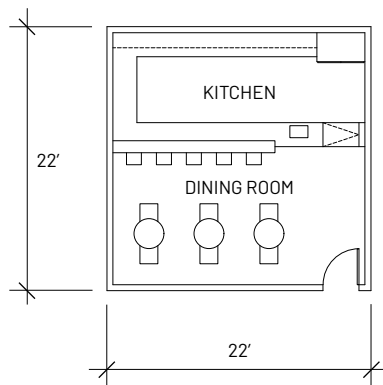
Figure 300. Restrooms should consist of single occupancy stalls, preferably including both a storage room and a mother's room. Various components are illustrated here and dimensions are shown as general guides, not exact requirements.

## C COMPONENTS



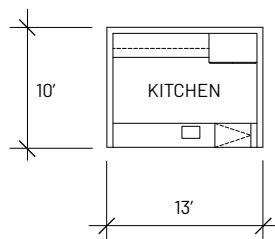
### CAFE | LARGE

- Appropriate for large pavilion with other significant program
- Table seating and counter service
- Full service kitchen capable of on-site preparation
- Take-out / ready-made counter
- Separate food storage



### CAFE | MEDIUM

- Appropriate for small and medium pavilions
- Limited table seating and counter service
- Kitchen capable of basic on-site preparation
- Take-out / ready-made counter



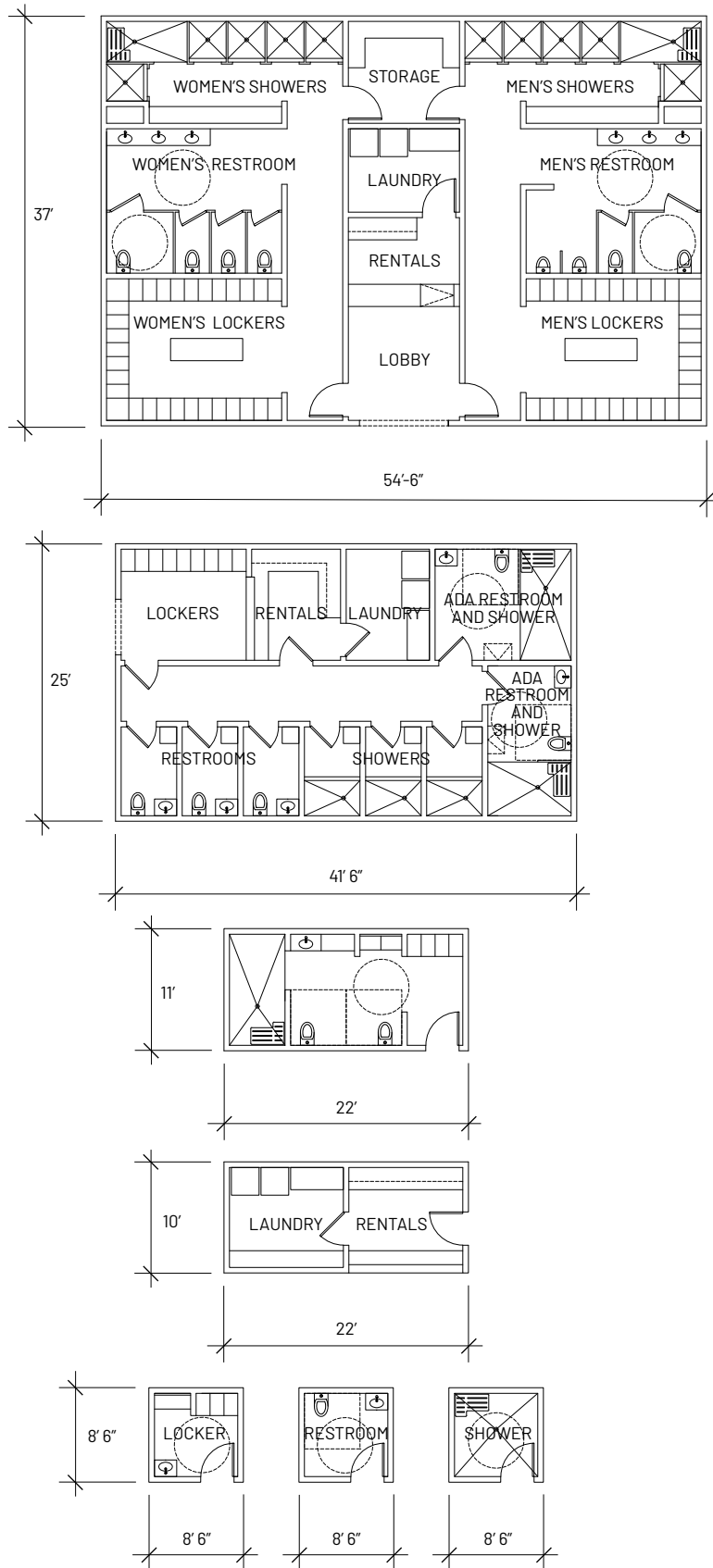
### CAFE | SMALL

- Appropriate for small pavilions and outdoor picnic areas
- No indoor seating
- Limited on-site preparation
- Take-out / ready-made counter



Figure 301. The basic components of a Gather Pavilion include a programed element such as a cafe or community center. Cafes can vary in size depending on the project site. Dimensions are general guides and not exact requirements.





### TIER III - ENHANCED SANITATION FACILITIES

#### SINGLE-SEX LOCKER ROOM

- Utilize single-sex locker room configurations only when required by local building code
- Provides an efficient and centralized use of space
- Does not afford users the same level of privacy as single occupancy showers, restrooms, or changing areas
- On-site attendant required
- Customized to pavilion

#### UNISEX LOCKER ROOM

- Preferred configuration to increase sense of privacy
- Should separate restrooms from showers as they have varied time of visitorship
- On-site attendant required
- Customized to pavilion

#### FAMILY LOCKER ROOM

- Lockers and showers
- Adult and child's height toilets
- Seating and space for nursing
- Changing table
- Customized to pavilion

#### RENTAL & SERVICE STATION

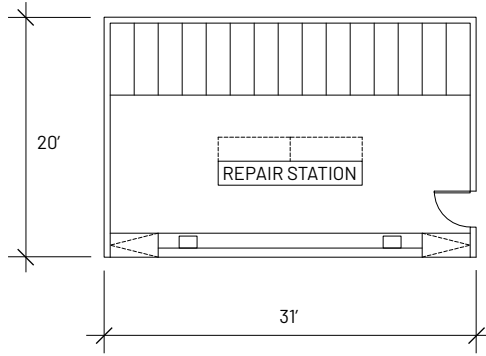
- Station to rent towels and purchase toiletry items
- Laundry and storage for maintenance
- Customized to pavilion

#### SINGLE OCCUPANCY FACILITIES

- Increased sense of privacy
- Separate facilities for lockers, restroom, and shower
- Customized to pavilion

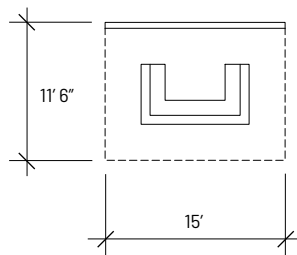
0' 10' 20'

Figure 302. Locker rooms in Gather Pavilions may not be able to provide single use occupancy restrooms or locker stalls, although they are preferred if possible. Various components are illustrated here and dimensions are shown as general guides, not exact requirements.



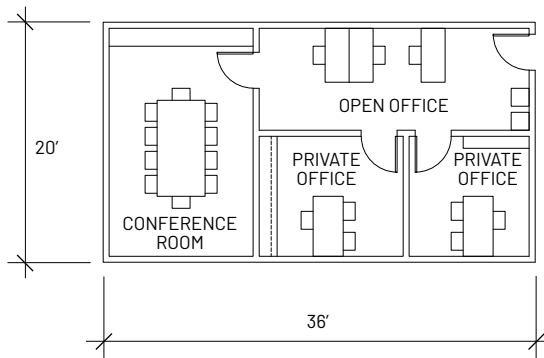
#### BIKE RENTAL & REPAIR

- Can be either indoor or outdoor
- Station for river users to rent bike and inflate tires
- Provide adequate space, floor and counter, for bike repairs



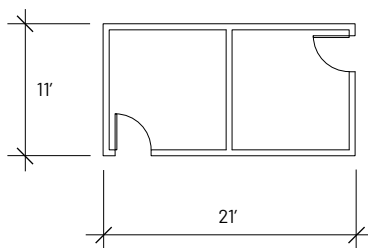
#### PUBLIC SAFETY STATION

- Visible station for public safety or police officer
- Can also serve as a LA River concierge with information on events and activities along the river



#### MANAGEMENT OFFICES (OPTIONAL)

- Provide offices and conference room for pavilion management operations and staff
- Located away from public function
- Connect to storage room as necessary

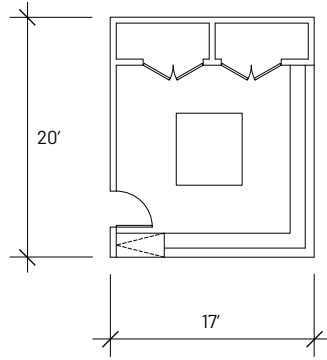


#### FACILITIES STORAGE (OPTIONAL)

- Configuration dependent on pavilion size and storage needs
- Provide storage for general facility needs and management offices

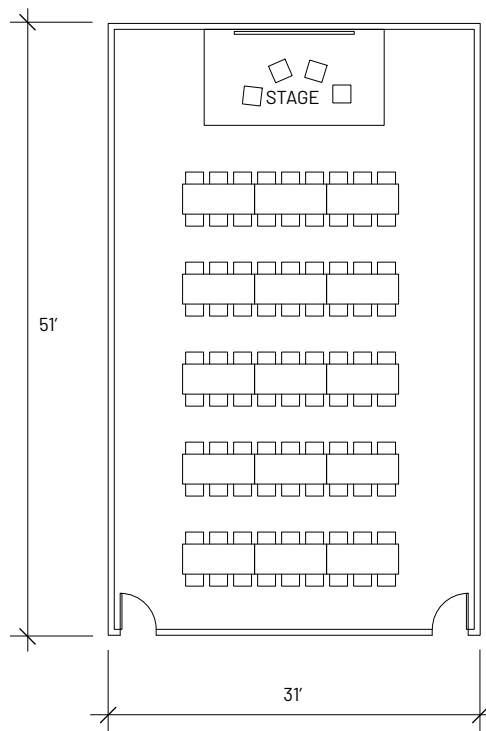


Figure 303. Gather Pavilions may include a bike repair and rental shop or a public safety station. Supporting facilities such as management offices or additional storage can also be included. Dimensions are general guides and not exact requirements.



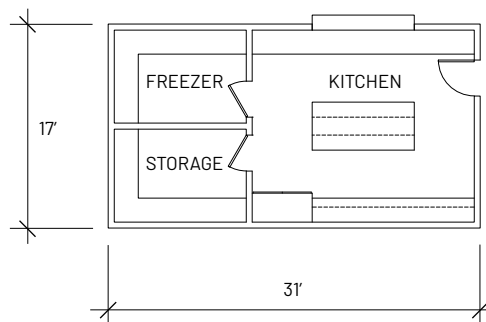
#### SPORTS EQUIPMENT RENTAL (OPTIONAL)

- Short-term rentals of sports equipment adjacent to major recreational areas
- Incorporate horizontal and vertical storage



#### MULTIPURPOSE ROOM (OPTIONAL)

- Flexible space for events such as parties, lectures, meetings, community engagement, and performances
- Can be combined with a community kitchen to support events and dining activities
- Optional room dividers for concurrent events



#### COMMUNITY KITCHEN (OPTIONAL)

- Flexible kitchen space for food preparation for events and culinary education
- Servery to multipurpose room
- Commercial grade appliances



Figure 304. Gather Pavilions may include rooms that can be of general use to the community, such as a community kitchen or multipurpose room. Various components are illustrated here and dimensions are shown as general guides, not exact requirements.



## PAVILION CONFIGURATIONS

There are numerous ways to configure A, B, and C Components into the varying Shade (Tier I), Rest (Tier II), and Gathering (Tier III) Pavilions. Sample configurations demonstrate different planar organizations appropriate for discrete site constraints and desired results: Compact-Linear, Compact-Square, Moderate, and Expanded.

Compact-Linear and Compact-Square configured pavilions represent the baseline facilities and amenities required per tier. Compact-Linear pavilions are most appropriate in constricted sites, such as those within an existing, narrow right-of-way or a future cantilever constructed above the river channel. Compact-Linear configurations optimize pavilions' river frontage. Compact-Square pavilions are more appropriate for larger, less-constrained sites.

Moderate configurations incorporate additional amenities and larger facilities into more spacious pavilions, which include multiple shade structures for seating and larger picnic areas. Similarly, expanded configurations further integrate enlarged facilities and increased amenities, but also include optional programs from the pavilion components, such as outdoor showers and barbecues in Rest Pavilions (Tier II) and the multipurpose room and community kitchen of Gathering Pavilions (Tier III). Expanded configurations require significant land area and have a higher development cost, but become enhanced resources to river users and river-adjacent communities.

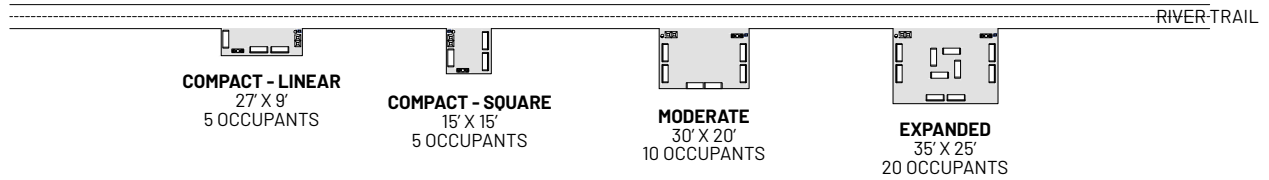
River Pavilions occupancy vary by program and square footage, in which there is an approximate range of 5 to 500 occupants. An occupant load factor is used to determine a maximum occupation of different programmed spaces.

Occupant load factors should reflect the prevailing International Building Code or the local building code of the site's jurisdiction, adhering to whichever is more restrictive. Shade Pavilions (Tier I) are single-use structures and therefore utilize a single occupant load factor. However, Rest (Tier II) and Gathering (Tier III) Pavilions are multiuse, necessitating multiple occupancy calculations as determined by each significant program, i.e., restrooms, locker rooms, rental stations, offices, cafe, multipurpose room, and kitchen.

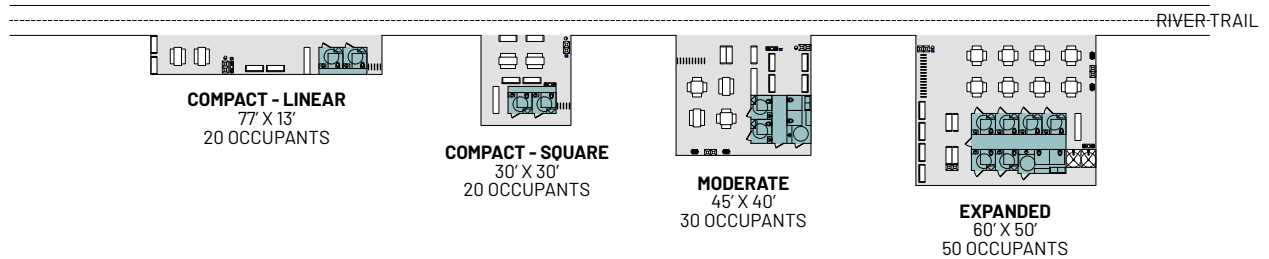
Use discretion when assigning occupant load factors to the varying programs. For example, a kiosk cafe without patron seating will have a significantly lower occupant load factor and thus occupancy than an enclosed cafe with a service counter, tables, and chairs. Further, flexible programs can have varied configurations and thus differing occupant load factors. For example, a multipurpose room can be configured loosely for events with tables and chairs, moderately with unfixed seating, and tightly with standing room only. Utilize the occupant load factor for spaces in the most confined configuration anticipated.

Shade (Tier I), Rest (Tier II), and Gathering (Tier III) Pavilions must adhere to the following prevailing standards: Federal, state and county requirements, such as California's Title 24 Part 6 Building Energy Efficiency Standards, and local building codes, zoning regulations, and parking requirements. Moreover, the development of pavilions should reflect a commitment to serve the entirety of river users and make necessary accommodations for universal access.

### SHADE PAVILIONS (TIER I)



### REST PAVILIONS (TIER II)



### GATHERING PAVILIONS (TIER III)

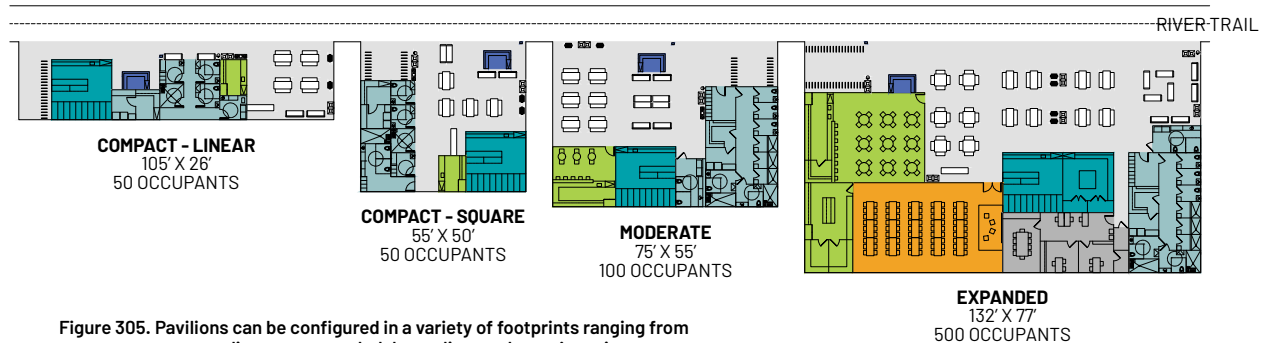


Figure 305. Pavilions can be configured in a variety of footprints ranging from compact linear to expanded depending on the project site.

#### Shade Pavilions (Tier I)

- Compact | Linear (27' x 9') : 5 occupants
- Compact | Square (15' x 15') : 5 occupants
- Moderate (30' x 20') : 10 occupants
- Expanded (35' x 25') : 20 occupants

#### Rest Pavilions (Tier II)

- Compact | Linear (77' x 13') : 20 occupants
- Compact | Square (30' x 30') : 20 occupants
- Moderate (45' x 40') : 30 occupants
- Expanded (60' x 50') : 50 occupants

#### Gathering Pavilions (Tier III)

- Compact | Linear (105' x 26') : 50 occupants
- Compact | Square (55' x 50') : 50 occupants
- Moderate (75' x 55') : 100 occupants
- Expanded (132' x 77') : 500 occupants



Figure 306. A Shade Pavilion (Tier I) at river mile 14.7 is an example of how trail users can be welcomed with environmental graphics, an accessible ramp entrance, and amenities such as bike racks and drinking fountains.

## SHADE PAVILIONS (TIER I)

Shade Pavilions (Tier I) are the smallest of the River Pavilions. They provide shade and seating options along the length of the river, in addition to river education, drinking water, emergency call boxes, trash and recycling bins, and pet waste disposal. Shade Pavilions (Tier I) do not hold a robust program, but instead serve river users as a site of refuge, appropriate for moments of shade respite, shelter during passing inclement weather, and comfort. Shade can be provided both by structures and by mature canopy trees. They may take on a number of different configurations, dependent on their site constraints, urban context, and desired orientation. Shade Pavilions (Tier I) are small, but are essential in creating a consistent identity and robust implementation of LA River facilities and amenities.

**SHADE PAVILIONS (TIER I) PROVIDE SHELTER AND REFUGE TO VISITORS OF THE LA RIVER AND ALSO PROVIDE OPPORTUNITIES FOR RIVER EDUCATION**



PAVILION RAMP

PAVILION  
ART WALL

PAVILION STAIRS

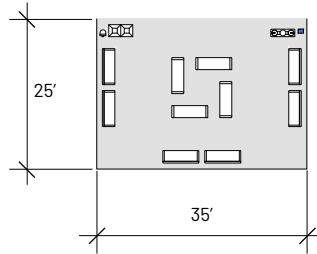
LA RIVER  
CHANNEL

Figure 307. The plan of the Shade Pavilion (Tier I) example at river mile 14.7 shows how multiple points of access are provided to the LA River multiuse trail.

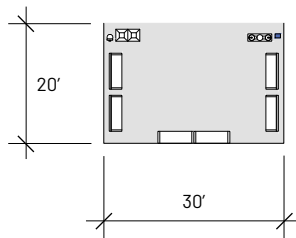
30'

N

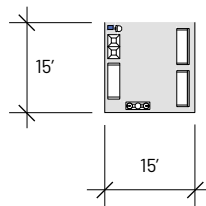
DRAFT

**EXPANDED**

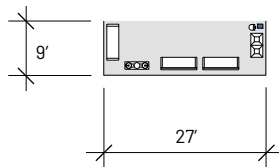
- Approximately 20 occupants
- Approximately 900 sq ft
- Arranges covered seating for to encourage socialization
- Enhanced river education area
- Seating orientated facing and away from river and parallel and perpendicular to trail

**MODERATE**

- Approximately 10 occupants
- Approximately 600 sq ft
- Arranges covered seating for to encourage socialization
- Seating orientated away from river and perpendicular to trail

**COMPACT | SQUARE**

- Approximately 5 occupants
- Approximately 250 sq ft
- Seating orientated away from river and perpendicular to trail

**COMPACT | LINEAR**

- Approximately 5 occupants
- Approximately 250 sq ft
- Seating oriented toward river and parallel to trail



Figure 308. The Shade Pavilion (Tier I) can be configured in a variety of footprints from compact to expanded, depending on the project site and other constraints.

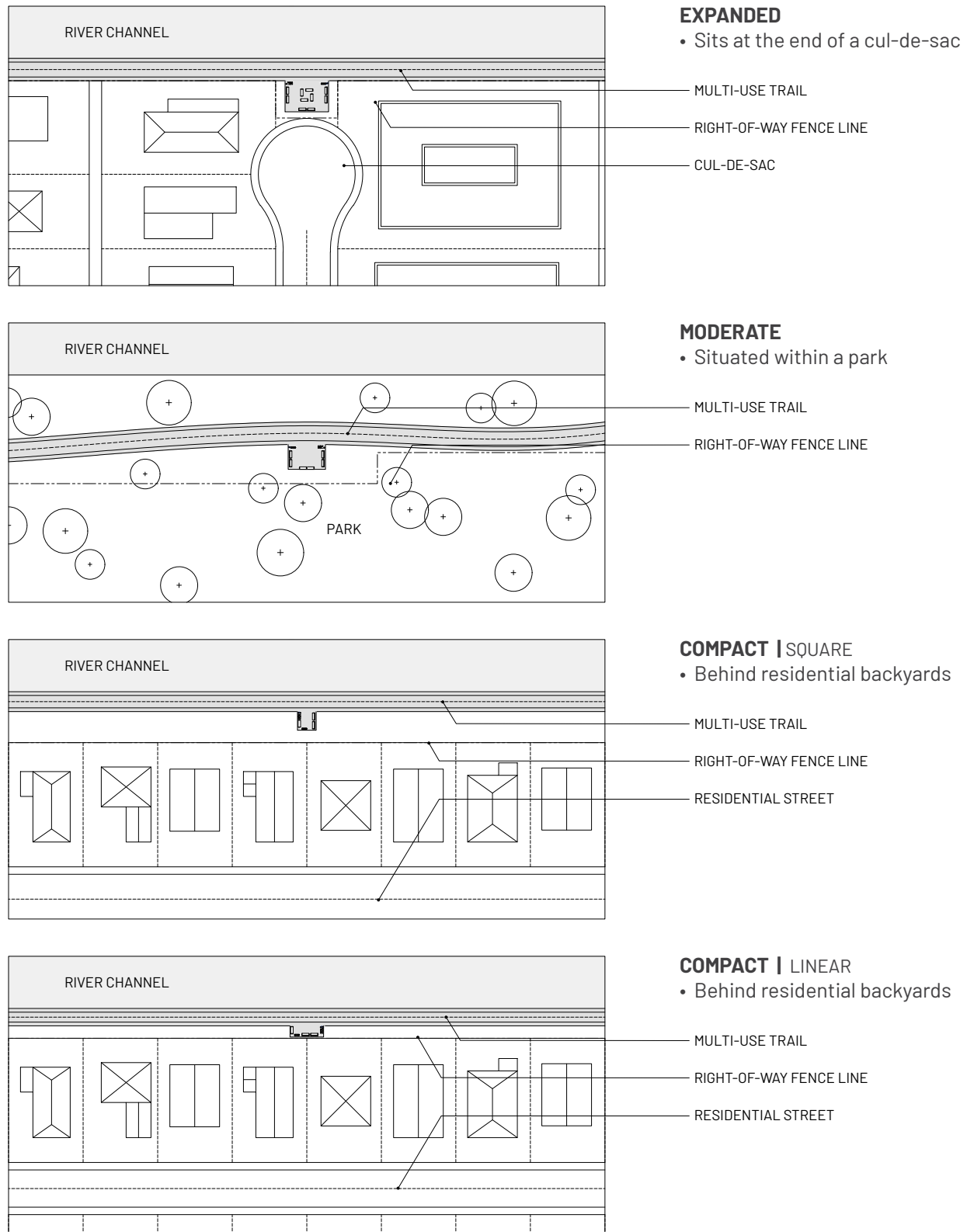


Figure 309. These example plans show how the Shade Pavilion (Tier I) can be implemented in a variety of urban contexts along the LA River.





**Figure 310. The example of a Rest Pavilion (Tier II) at river mile 50.9 welcomes users through pavement markings, a picnic area, and a local food vendor. Public restrooms are an important feature of Rest Pavilions.**

## REST PAVILIONS (TIER II)

Rest Pavilions (Tier II) offer enhanced facilities and amenities beyond the baseline Shade Pavilions (Tier I), but fewer than Gathering Pavilions (Tier III). The most notable addition is restrooms. There should be a preference for single-occupancy restrooms and family restrooms, to provide greater privacy and dignity to all users. To increase efficiency and recognizability, Rest Pavilions (Tier II) should implement modular restrooms configurations that can be fabricated off-site, customized to incorporate graphic standards established along the LA River, and have an extensive presence across its 51 miles on both river banks. The modularity of the restrooms enhances the river's unification, pavilion familiarity, and equity for all river users.

Rest Pavilions (Tier II) also incorporate picnic areas, vending machines for healthy and affordable snacks and beverages, universal charging stations, and bike racks. Depending on their size and context, they may also include barbecues and recreational outdoor showers, which are particularly beneficial if the pavilion is adjacent to pools, other water features, or sports facilities. These pavilions serve as accessory facilities and amenities for river users, enabling relief, rest, and sustenance.

Regular maintenance is essential to preserve the upkeep of these facilities. In their implementation across the river, it is essential to consider materials that are durable, easily cleaned, and vandal-resistant, lessening long-term maintenance costs. Further, it is important to regularly operate and survey them to deter people from misappropriating their use. In facilitating welcoming, comfortable, and familiar structures, Rest Pavilions (Tier II) can establish a cadence of refuge along both banks of the LA River. They can create an accessible environment, in which river user and river-adjacent community needs are met.

**REST PAVILIONS (TIER II), SPACED ON AVERAGE ONE MILE APART FROM OTHER TIER II PAVILIONS, FORM A RELIABLE NETWORK OF RESTROOM FACILITIES, PROVIDING RIVER USERS GREATER COMFORT AND IMPROVING SANITATION ALONG THE LA RIVER**



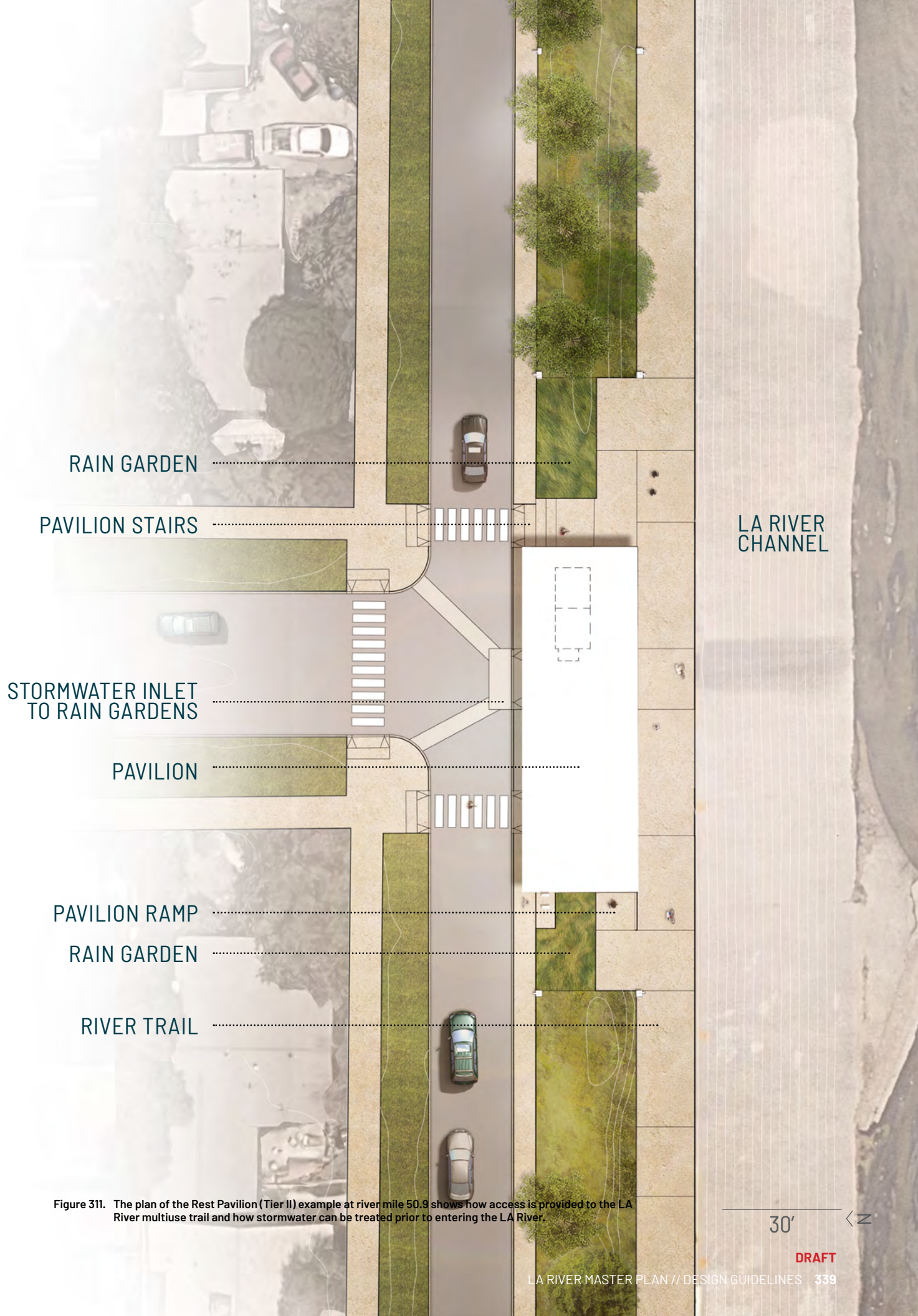
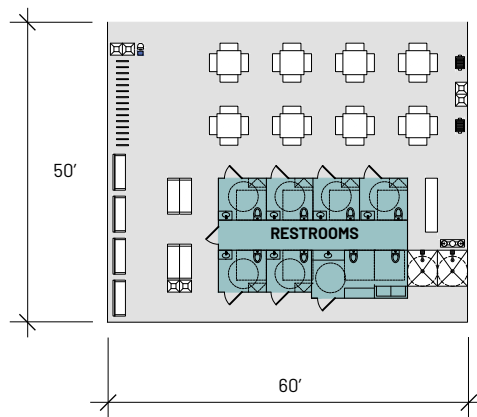


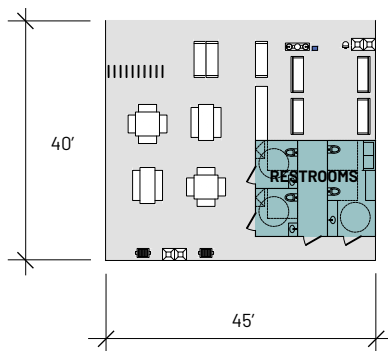
Figure 311. The plan of the Rest Pavilion (Tier II) example at river mile 50.9 shows how access is provided to the LA River multiuse trail and how stormwater can be treated prior to entering the LA River.

30' <Z

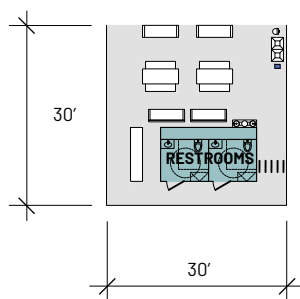
DRAFT

**EXPANDED**

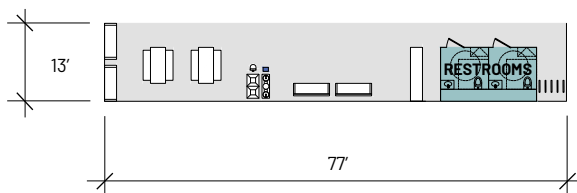
- Approximately 50 occupants
- Approximately 3,000 sq ft
- Additional shaded seating and picnicking tables
- Optional barbecues and recreational outdoor showers
- Supplement with family restroom(s) and storage

**MODERATE**

- Approximately 30 occupants
- Approximately 2,000 sq ft
- Additional shaded seating and picnicking tables
- Optional barbecues and recreational outdoor showers
- Includes family restroom or mother's room

**COMPACT | LINEAR**

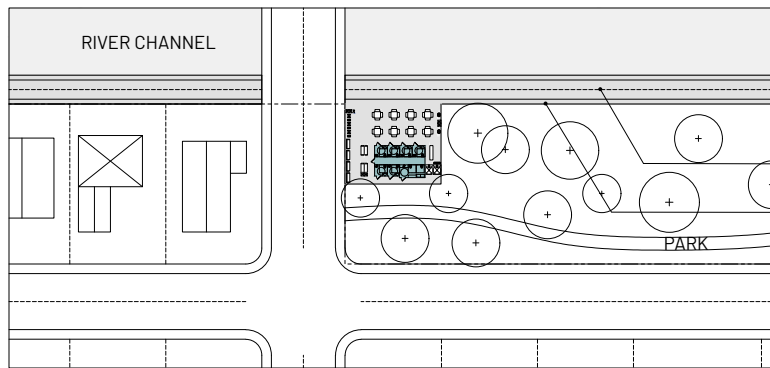
- Approximately 20 occupants
- Approximately 1,000 sq ft
- No outdoor showers or barbecues

**COMPACT | LINEAR**

- Approximately 20 occupants
- Approximately 1,000 sq ft
- No outdoor showers or barbecues
- Oriented toward river



Figure 312. The Rest Pavilion (Tier II) can be configured in a variety of footprints from compact to expanded, depending on the project site and other constraints.



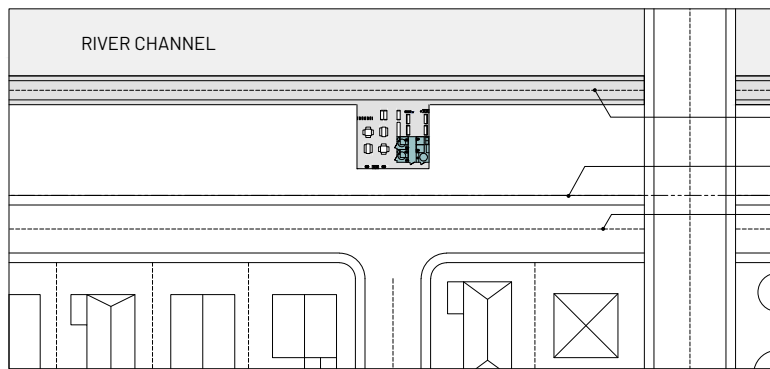
### EXPANDED

- Next to crossing, within park

MULTIUSE TRAIL

RIGHT-OF-WAY FENCE LINE

PARK



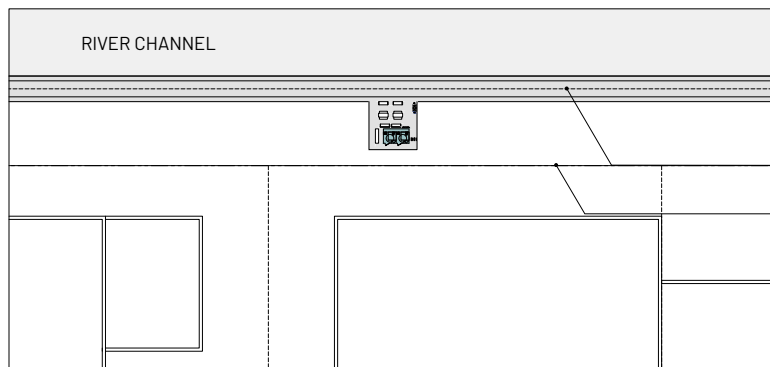
### MODERATE

- Across residential streets

MULTIUSE TRAIL

RIGHT-OF-WAY FENCE LINE

RESIDENTIAL STREET

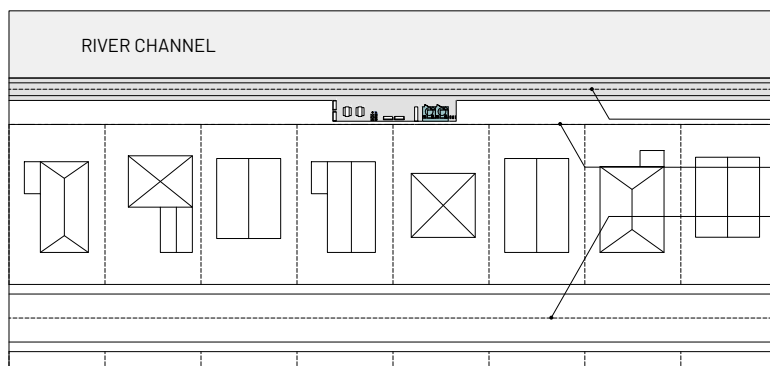


### COMPACT | SQUARE

- Adjacent to industrial sites

MULTIUSE TRAIL

RIGHT-OF-WAY FENCE LINE



### COMPACT | LINEAR

- Behind residential backyards

MULTIUSE TRAIL

RIGHT-OF-WAY FENCE LINE

RESIDENTIAL STREET

0' 50' 100'

Figure 313. These example plans show how the Rest Pavilion (Tier II) can be implemented in a variety of urban contexts along the LA River.





**Figure 314.** This example of a Gathering Pavilion (Tier III) at river mile 28.4 includes a cafe overlooking the LA River. Gather Pavilions often include community programming that requires expanded facilities.

## GATHERING PAVILIONS (TIER III)

Gathering Pavilions (Tier III) are the largest of the River Pavilions and can serve as significant hubs for programming and activity. Ideally situated every 2-3 miles at the access points to the LA River, these pavilions are accessible to both river users and adjacent community members. Expanded Gathering Pavilions in particular can support river-adjacent neighborhoods as community centers with robust facilities, amenities, and opportunities for events, education, and engagement.

Gathering Pavilions (Tier III) also offer enhanced sanitation facilities including restrooms, showers, lockers, and changing facilities. Locker rooms, paired with attendant stations, should have regular on-site maintenance to preserve their upkeep and deter misuse. Further, they have rental kiosks to provide river users towels for rent, in addition to soap, shampoo, conditioner, and other toiletries for purchase. Unlike Rest Pavilions (Tier II), sanitation facilities in Gathering Pavilions (Tier III) should be customized to best relate to the specific organization of other spaces within the pavilion.

These sanitation facilities provide multiple benefits and can help alleviate the sanitation needs of persons experiencing homelessness.

Currently, many of these individuals have limited access to sanitation facilities and as the county and river-adjacent cities make further investments to construct affordable housing and permanent supportive housing for persons experiencing homelessness, Gathering Pavilions (Tier III) can serve in the interim as spaces to support this vulnerable population's sanitation needs. However, upon their development and long-term, locker rooms can serve the needs of everyone along the length of the river, especially those engaging in athletic activity. Gathering Pavilions (Tier III) will supplement the active needs of river users outside of the building itself, such as soccer, dance and theater arts, sporting events, yoga classes, and jogging along the trail.

Gathering Pavilions (Tier III) are centralized hubs for the LA River. Their optional multipurpose rooms can be utilized for community events, ceremonies, and other large gatherings. They should also have enough hardscaped floor area to similarly host outside events and ceremonies. Unlike smaller pavilions, they can support on-site management staff to establish daily programming and robust community offerings. The pavilions must be flexible for different needs, programs, and activities to optimize the development of the river at large.





RIVER TRAIL

LA RIVER  
CHANNEL

CAFE

COURTYARD

HYGIENE FACILITIES  
AND LOCKERS

BIKE RENTAL &  
REPAIR

EXISTING  
BICYCLE BRIDGE

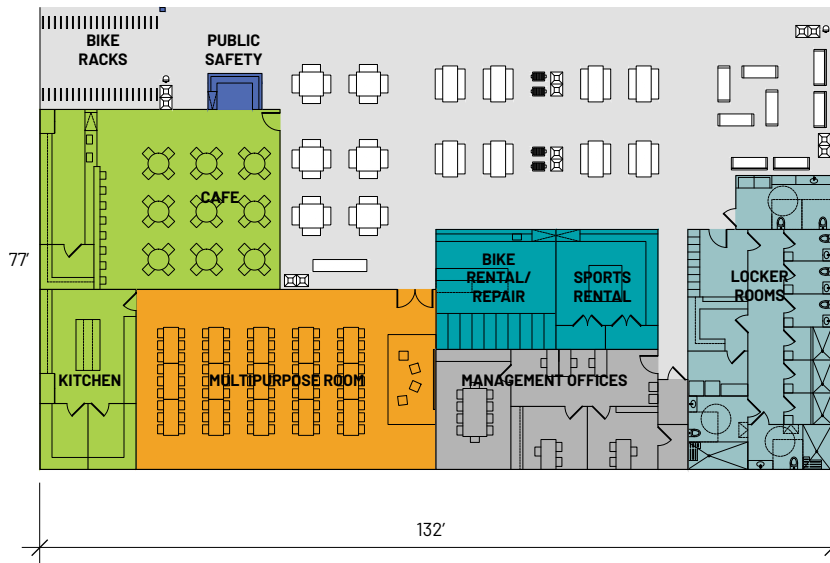
Figure 315. The plan of the Gathering Pavilion (Tier III) example at river mile 28.4 shows how multiple facilities can be incorporated onto a project site.

30' N

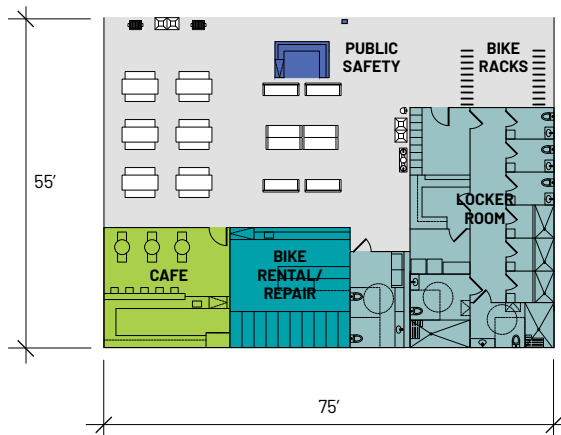
DRAFT



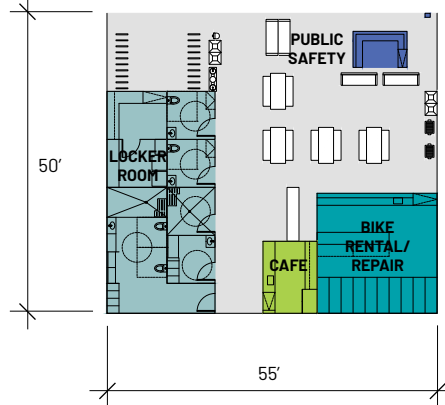
PREFERRED

**EXPANDED**

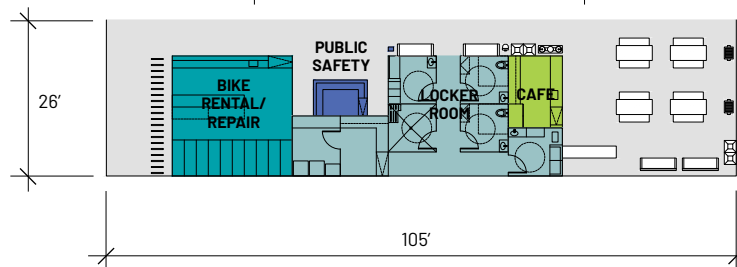
- Approximately 500 occupants
- Approximately 10,500 sq ft
- Enlarged cafe and locker room
- Multipurpose room and community kitchen provides large, flexible event space
- Includes sports equipment rental to supplement adjacent sports fields and courts
- If using single-sex locker rooms, supplement with family locker room

**MODERATE**

- Approximately 100 occupants
- Approximately 4,500 sq ft
- Enlarged cafe and locker room
- No multipurpose room, community kitchen, or sports equipment rental

**COMPACT | SQUARE**

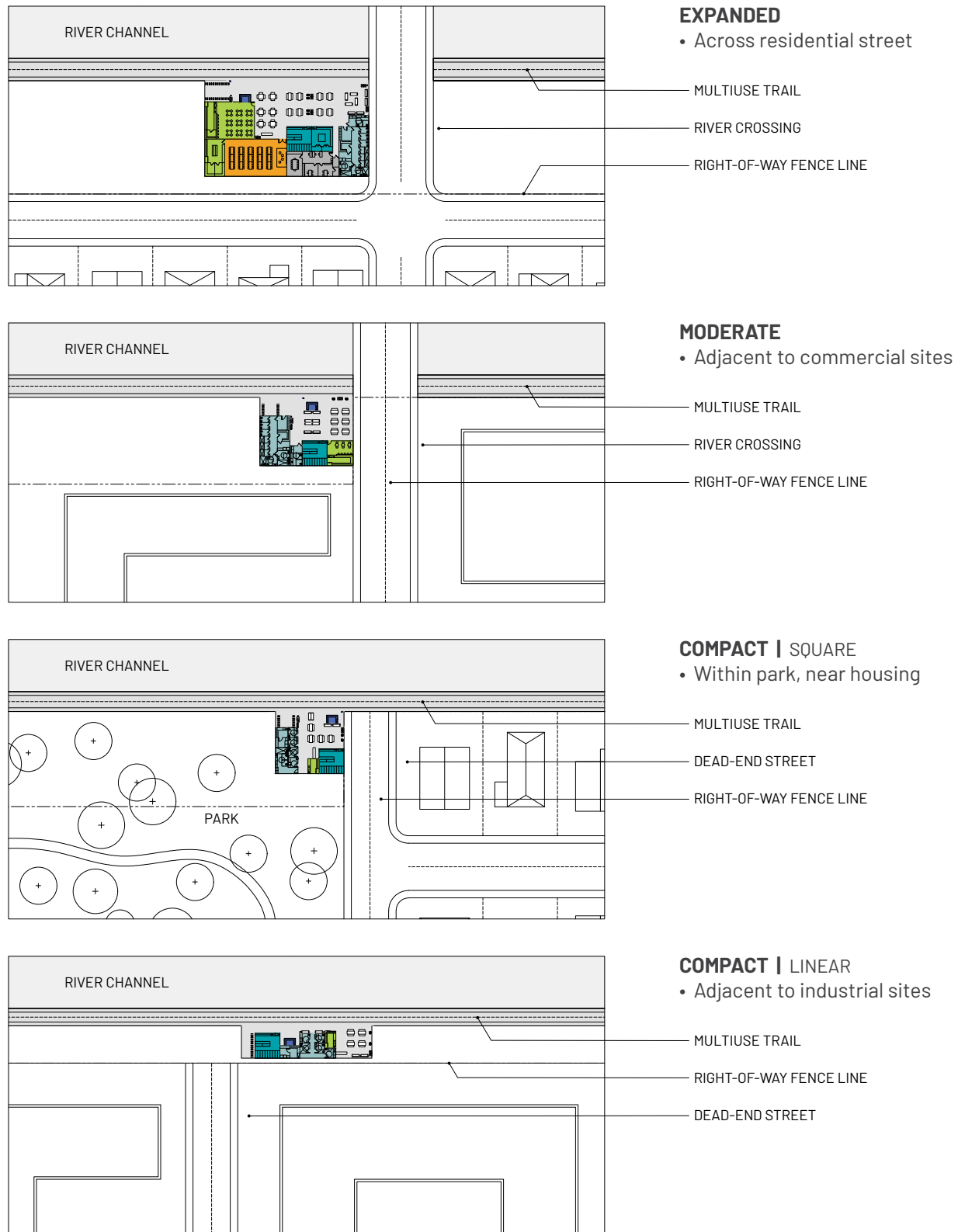
- Approximately 50 occupants
- Approximately 3,000 sq ft
- No multipurpose room, community kitchen, or sports equipment rental

**COMPACT | LINEAR**

- Approximately 50 occupants
- Approximately 3,000 sq ft
- No multipurpose room, community kitchen, or sports equipment rental

0' 20' 40'

Figure 316. The Gather Pavilion (Tier III) can be configured in a variety of footprints from compact to expanded, depending on the project site and other constraints.



0' 50' 100'

Figure 317. These example plans show how the Gathering Pavilion (Tier III) can be implemented in a variety of urban contexts along the LA River.

## PAVILION BEST PRACTICES

The development of River Pavilions should incorporate water, environmental, construction, and social best practices, among many others. When developing River Pavilions, there are numerous prevailing standards for best practices to reference, including but not limited to California's Title 24 Part 6 Building Energy Efficient Standards, United States Green Building Council's (USGBC) Leadership in Energy and Environmental Design (LEED), United States Department of Energy Better Buildings Initiative, Energy Star, Dark Sky, Cradle-to-Cradle, and Green Globes, among many others. Pavilions should also reference future standards and best practices for upcoming development.

All pavilions should promote the health, safety, and welfare of river users. First, all pavilions should optimize lighting at night, to enhance visibility, deter criminal behaviors, and lessen concerns of safety. However, lighting should not be too bright as to cause significant light pollution or create oppressive environments. Emergency call boxes should sit near the entry of all pavilions and create a recognizable and regular network of public safety mechanisms. Rest (Tier I) and Gathering (Tier II) Pavilions in particular should provide first-aid kits and automatic

defibrillators for emergencies great and small. Self-administered first-aid kits in particular require regular inspection, maintenance, and replenishment with single-use medications. Lastly, Gathering Pavilions (Tier III) incorporate public safety stations that can have on-site staff, river staff, and/or police officers to serve and support river users. The presence of public safety and police officers will further help to strengthen notions of safety along the river and serve visitors during moments of need. However, it is critical to not oversurveil river users, as to make them feel uncomfortable in their occupation of the river and its facilities and amenities.

River Pavilions offer refuge to river users and river-adjacent communities and should reflect the same aspiration of enhancing visitors' experience of the river as the LA River Master Plan at large. Pavilions should not result in demanding energy and water usage, cause environmental nuisances, engage unsustainable building practices, nor create inaccessible facilities and amenities. Pavilions should serve as an example of varying best practices and help propel the LA River into a future of access, equity, and resiliency.



### **WATER**

- Follow LA County LID Standards
- On-site water retention, detention, and filtration
- Capture 100% of on-site rainfall for the 85% rain event
- Greywater and rainwater reuse
- Low-flow water fixtures



### **ENERGY AND ENVIRONMENT**

- Utilize renewable energy sources (solar, wind, and water)
- Optimize building orientation for solar exposure, diffused daylight, and passive ventilation
- High thermal performance
- Energy efficient appliances
- Pollution reduction



### **MATERIALITY**

- Locally sourced, recycled, and recyclable materials with low embodied energy
- High-albedo roof and paving materials to mitigate heat gain
- Green roof and pervious paving



### **CONSTRUCTION / O&M**

- Recycle construction waste
- Reduce dust and mitigate other nuisances during construction
- Green cleaning and integrated building management
- Regularly monitor building systems and optimize usage



### **SOCIAL**

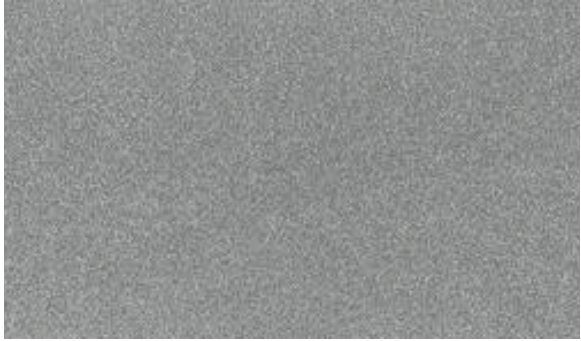
- Provide universal access to all communities and users
- Avoid physical deterrents
- Provide spaces for socialization
- Promote public engagement with areas for large gatherings

# SITE FURNISHINGS

Successful projects, trails, and connected public open spaces require a series of common elements ranging from consistent lighting to drinking fountains to places to sit along the LA River. These furnishings will contribute to the habitability of the river environs, promote safety, and build a cohesive identity. While river pavilions and large project designs are encouraged to use bespoke elements along the river, a common set of site furnishings with unified colors and amenities used across all sites and trails will promote equity, identity, legibility, and accessibility. Additionally, site furnishing offer opportunities for integration of public art.



## RAL CODES FOR SITE FURNISHINGS



**RAL 9007 GREY**



**RAL 5013 (PANTONE 282 C) BLUE**

Figure 319. LA River Site Furnishings should use RAL 9007 for silver metallic finishes and an RAL 5013 to match the environmental graphics and for overall consistency along the LA River.

**1 LITTER & RECYCLING**  
SEE PAGE 350

**2 BIKE RACK**  
SEE PAGE 351

**3 BENCHES**  
SEE PAGE 352

**4 DRINKING FOUNTAIN**  
SEE PAGE 353

**5 LIGHTING**  
SEE PAGE 354

**6 EMERGENCY CALL BOX**  
SEE PAGE 357



Figure 318. A variety of site furnishings can be placed at pavilions, parks, or along the river trail. See the following pages for more details on each element.



# SITE FURNISHINGS: LITTER AND RECYCLING RECEPTACLES

Litter and recycling receptacles are necessary to maintain the health, safety, and the general aesthetic of the LA River.

Litter Receptacles along the LA River must meet the following guidelines:

## Aesthetics

- Select receptacles without ornament or protrusions.
- Receptacles should be metal with a solid metallic gray color finish matching RAL 9007 or comparable equal.
- Receptacles should have rain guards or a side opening that prevents rainwater from collecting in the receptacle.

## Assembly, Installation, and Manufacturer

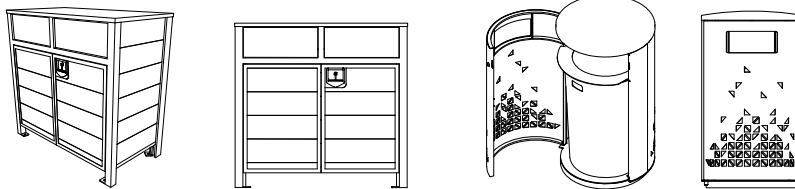
- Locate receptacles so that they are easily accessible from the trail or other user area.
- Locate receptacles at entrances, rest stops, major access points, and near benches.
- Co-locate recycling receptacles adjacent to all trash receptacles.

## Maintenance

- Install receptacles that are easy to empty and do not require heavy lifting by maintenance staff. For example, seek receptacles with side panels that open to empty.
- Coordinate maintenance program to ensure receptacles will be emptied regularly.
- Ensure receptacle does not leach or contaminate adjacent areas.

## RECEPTACLE FORMS: BEST PRACTICE

ACCEPTABLE FORMS



UNACCEPTABLE FORMS

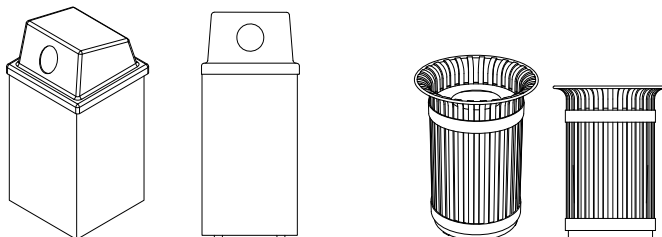


Figure 320. Litter receptacles should have simple forms with flat tops and an opening protected from rain.

# SITE FURNISHINGS: BIKE RACKS

Frequent bicycle racks encourage the use of bicycle trails and multi-modal transit along the LA River and throughout LA County.

Bicycle racks along the LA River must meet the following guidelines:

## Aesthetics

- Select racks without ornament or protrusions.
- Racks should be metal with a solid metallic gray color finish matching RAL 9007 or comparable equal.
- Provide racks with individual loops, not continuous rows.

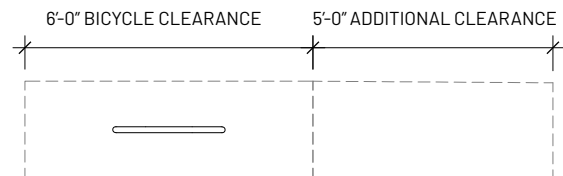
## Installation, Assembly, and Manufacturer

- Provide 6' of length for bikes and an additional 5' unobstructed clearance for bike parking.
- Locate racks at entrances to the river, pavilions, and access points.

## Maintenance

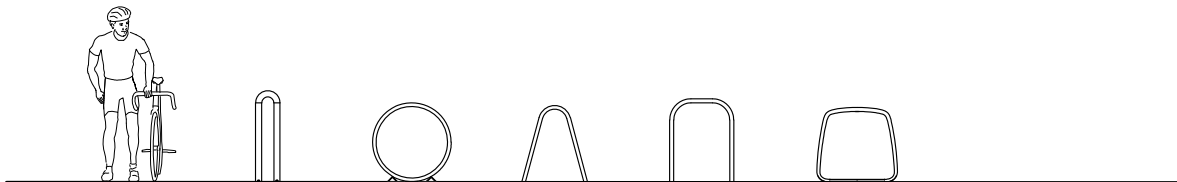
- Use a durable material that will withstand weathering.
- Maintain bicycle racks, deter graffiti where possible and inspect for other damages.

## BICYCLE RACK PLAN



## BICYCLE RACK FORMS: BEST PRACTICE

ACCEPTABLE FORMS



UNACCEPTABLE FORMS

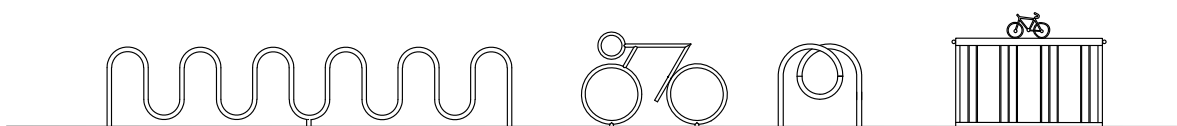


Figure 321. (Top) Bicycle racks should be placed to allow room for parking and maneuvering.  
Figure 322. (Bottom) Bicycle racks should be individual loops and simple forms without ornamentation.

# SITE FURNISHINGS: BENCHES

Seating along the LA River provides respite along trails and other facilities.

Benches may offer opportunities for integrating art and community expression. Benches and other features intended to be artistic elements are approved through the arts approval process and do not necessarily need to meet these guidelines.

Benches and seating along the LA River must meet the following guidelines:

## Aesthetics

Coordinate bench and seating design with overall design approach. Seating elements are good locations for art and community expression.

Typical best practices:

- Ensure bench sitting surface is not metal. For metal supports or other elements, utilize satin or matte finish solid metallic gray matching RAL 9007 or comparable equal.

- Provide flexibility for various sitting options.
- Provide a variety of seating elements in addition to benches, such as seatwalls, seatsteps, and rock outcroppings.
- Group benches to promote social interaction.

## Installation, Assembly, and Manufacturer

- Locate benches so that they are easily accessible from the trail.
- Locate benches at trail intersections and special views.
- Where freestanding benches are used, provide anchorages to adjacent pavement and engineer appropriate footings.

## Maintenance

- Maintain benches, deter graffiti where possible, and inspect for other damages.

## BENCH FORMS: BEST PRACTICE

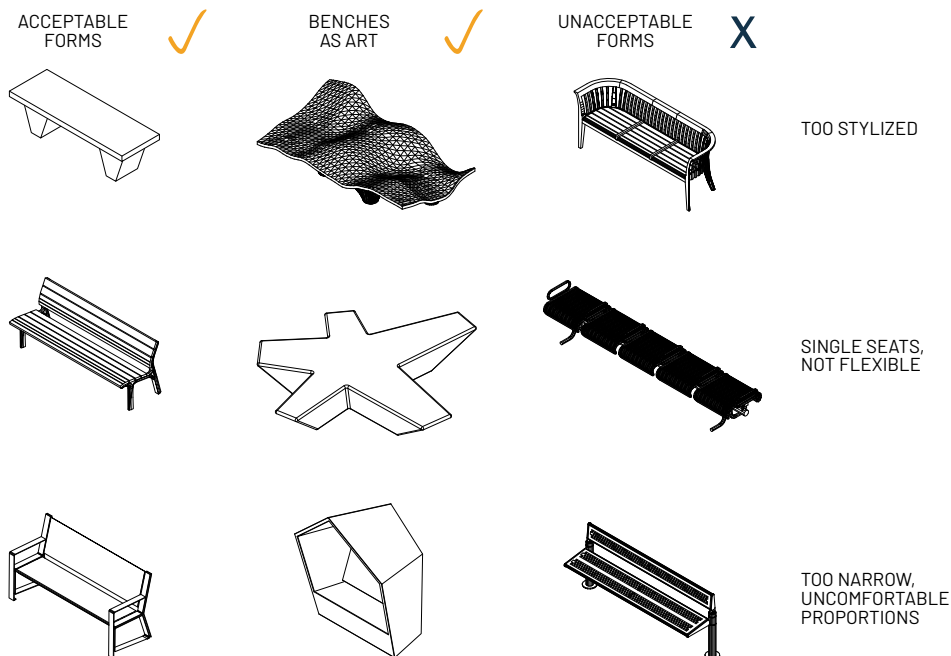


Figure 323. Bench forms should prioritize users' comfort and provide flexibility in use.

# SITE FURNISHINGS: DRINKING FOUNTAINS

Drinking fountains are crucial to users of the LA River Trail, especially on hotter-than-average summer days. They promote hydration and personal health along the river corridor.

Drinking Fountains along the LA River must meet the following guidelines:

## Aesthetics

- Drinking fountains should be metal with a solid metallic gray color finish matching RAL 9007 or comparable equal.
- Include bottle filling station
- Include pet drinking feature underneath.

## Installation, Assembly, and Manufacturer

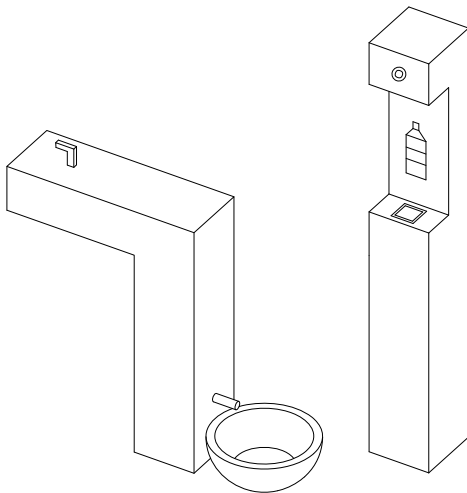
- Locate at major gathering spaces and at regular intervals along the multiuse trail.
- Locate drinking fountains so that they are easily accessible from the trail.

## Maintenance

- Maintain water fountains, deter graffiti where possible and inspect for other damages.

## FOUNTAINS FORMS: BEST PRACTICE

ACCEPTABLE FORMS



UNACCEPTABLE FORMS

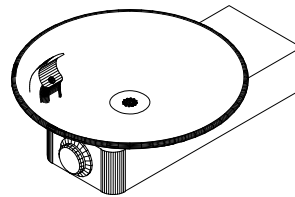


Figure 324. Drinking fountains should not have cupping or bowl shapes for hygiene and ease of cleaning.

# SITE FURNISHINGS: LIGHTING

Lighting provides visibility for cyclists and pedestrians and highlights special areas such as major access points, emergency call boxes, and information kiosks. Trail underpasses, future overpasses, and street ends are all areas that need special attention to lighting with regards to safety and visibility. All lighting should minimize light pollution to the greatest extent possible and be sensitive to ecological needs. Special care needs to be taken around wildlife habitat areas. Project lighting should be designed by qualified lighting design professionals. Technology and research with regards to lighting is constantly evolving, and the most efficient fixtures should be allowed for use in projects along the LA River.

Lighting elements along the LA River vary per specific application. Overall, all lighting must meet the following:

## Aesthetics

- Select fixtures that have a modern, urban aesthetic free of extraneous decorative elements.
- Acorn light fixtures and light masts are prohibited.
- Integrate lighting into architecture where possible rather than having standalone fixtures.
- Finish for luminaries and pole must be available in a neutral solid metallic gray color matching RAL 9007 or comparable equal.

## Light Quality and Locations

- Complete lighting study to determine appropriate light levels, fixture types, and fixture heights.
- Install lighting at over/underpasses, intersections, and trailheads for safety.
- Use LED or more efficient light source.

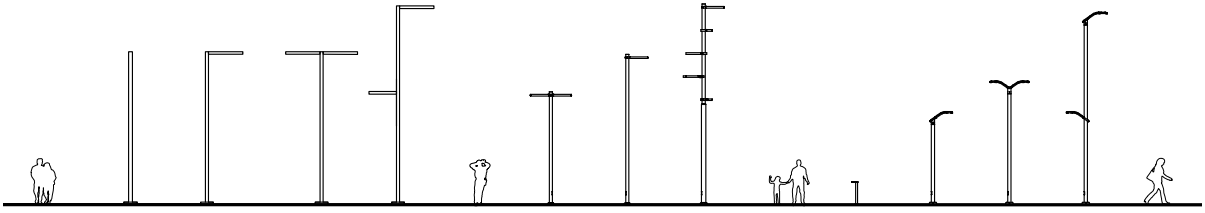
- Use Dark Sky compliant and BUG rated (backlight, uplight, glare) fixtures. These ratings should be as efficient as possible and eliminate spillover lighting. Fixtures should meet these requirements without adding additional shielding.
- Provide fixtures that have IES (Illuminating Engineering Society) files for illumination measured in lumens (bulb strength depending on pole height) and footcandles (light falling on a surface determined by lighting designer).
- Engineer poles and footings to withstand all project loads, including but not limited to, wind loads.
- Luminaire housing to be IP66 suitable for damp locations.

## Installation, Assembly, and Manufacturer

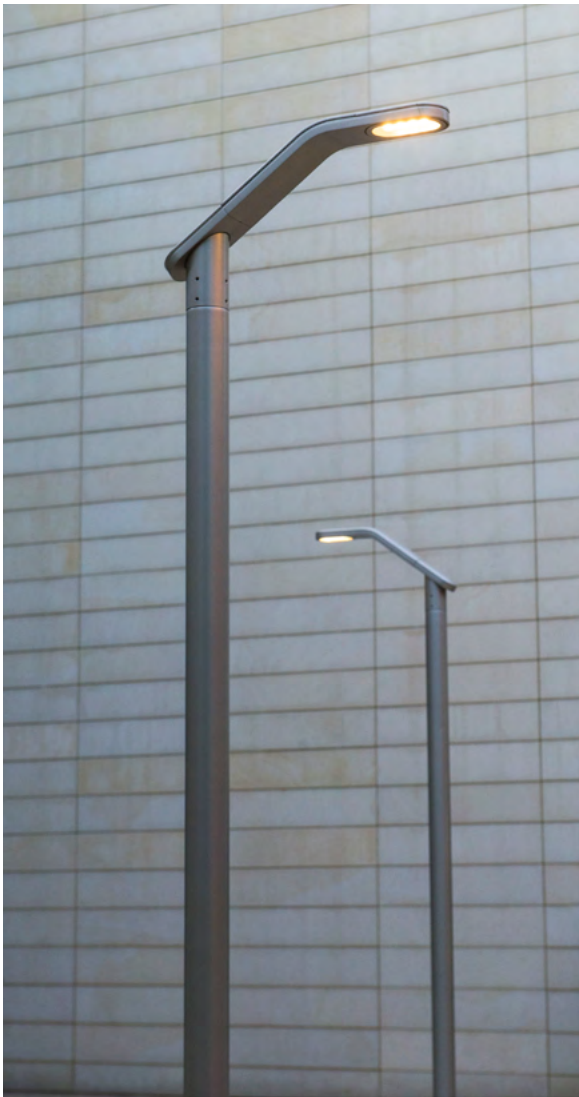
- Require UL listed products.
- Require manufacturers with established history of light fixture production.
- Snap together assembly or comparable system for ease of installation.
- Use fixtures that can host other uses including emergency call boxes, banners, and signs.
- Use products supported with complete engineering drawings and patents.

## Energy Use and Maintenance

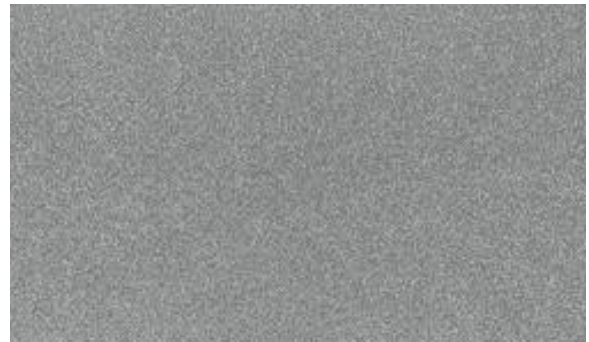
- Use solar powered light fixtures along the river wherever possible.
- Use fixtures made with recycled content where possible
- Ensure fixtures have LED cartridges that are easily replaced.



**LA RIVER EXAMPLES LIGHTING FAMILIES**



**EXAMPLE LUMINAIRE**



**RAL 9007 GREY**



**EXAMPLE LUMINAIRE**

Figure 325. (Top) Luminaires should have a modern, simple form without ornamentation.

Figure 326. (Left) Luminaires should be Dark Sky compliant and not have protruding features. Source: Torres Area Light, Landscape Forms, 2017.

Figure 327. (Top Right) All finishes should be a solid metallic grey color matching RAL 9007. Source: RAL-Color 9007, Wikimedia Commons, 2007.

Figure 328. (Bottom Right) Luminaires should occur at a regular cadence to illuminate the path. Source: Rama Area Light, Landscape Forms, 2008.



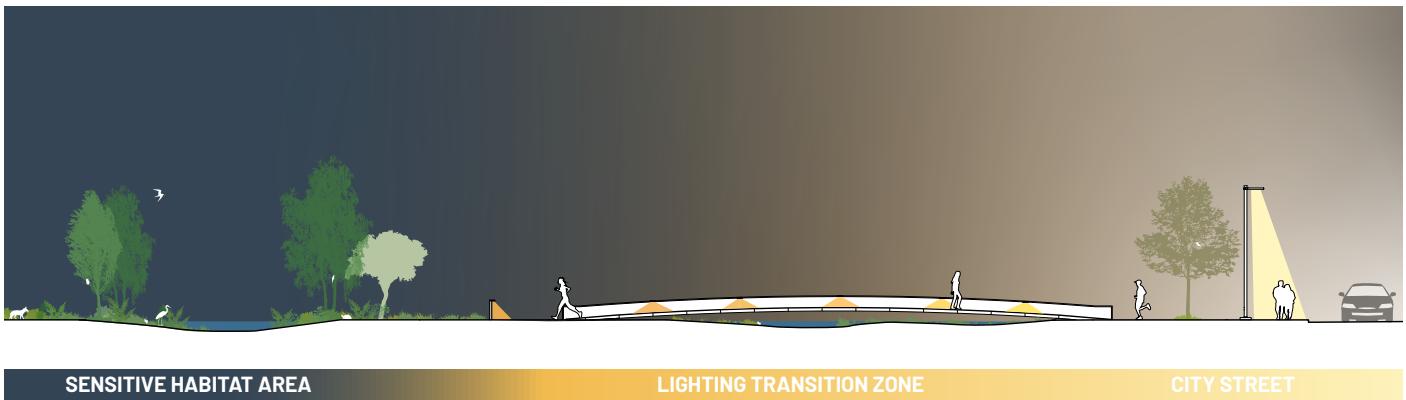


Figure 329. Factors such as light color temperature should step down incrementally when transitioning from street lighting to sensitive habitat areas that are not lit. Qualified lighting designers, landscape architects, and ecologists should work to limit the amount of light fixtures, reduce color temperature, and eliminate light spillover on a project by project basis.

Lighting for trails or paths of egress along the LA River must meet the following:

- Use only what fixtures are needed, and the warmest color temperature possible to provide safety and egress. Do not over-light or make lights unnecessarily bright.
- Provide fixtures and controls capable of dimming or shutting off lighting when occupancy loads are low (example: dimmable driver and occupancy sensor).
- Color rendering should be at least 80 CRI.
- Avoid light bollards where possible.

Lighting for wildlife habitat areas must meet the following:

- Use as few fixtures as possible. Fixtures should be low-level lighting. Avoid tall poles where possible.
- Use the warmest color temperature possible, no more than 2200K as a maximum. Consider other measures that impact wildlife when selecting an appropriate fixture, such as the light spectrum emitted.
- Transition to a warm color temperature in gradual steps if moving from a street or path of egress to a habitat area.
- Provide fixtures and controls capable of shutting off lighting on a timer, such as when a park is closed, to limit the duration of lighting to the absolute minimum period possible.
- No CRI level is required. Light should be as amber as possible.

Sample fixtures that may meet requirements include Landscape Forms RAMA, Landscape Forms Torres, and Hess Linea. BEGA also carries low-level lighting fixtures that may meet requirements for lighting wildlife habitat areas.

# SITE FURNISHINGS: EMERGENCY CALL BOXES

Emergency call boxes are crucial to the perceived and actual safety of users along the LA River. They are important in case a user does not own or have access to a cell phone and because they allow emergency response to pinpoint the exact location of a caller.

Emergency call boxes along the LA River must meet the following:

## Aesthetics

- Select product with an identifying light or beacon on top. There should be no protrusions or ornamentation.
- Provide accessible push-button calling.
- Along trail, call box should be directional towards the trail. In an open area with many angles of approach, the call box should be non-directional.

## Installation, Assembly, and Manufacturer

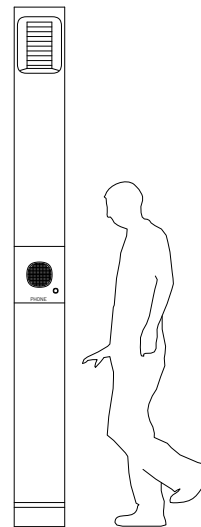
- Locate call boxes along bike path every 1/2 mile minimum, to be coordinated with river pavilion locations. They should be clearly visible from the trail.
- Ensure that the call box is TTY (text telephone for the deaf) equipped.
- Provide on-site programming option and option to program up to 2 emergency phone numbers.
- Functioning temperature range should withstand extreme heat (up to 150F).
- Cellular or hard lined to be determined by presiding agency.

## Energy Use and Maintenance

- Use solar powered call boxes along the river wherever possible.
- Maintain call boxes, deter graffiti where possible and inspect for continued functionality and other damages.



CALL BOX LIGHT BEACON



CALL BOX ELEVATION

Figure 330. (Left) Call boxes should have an identifiable and visible top. When possible, call boxes should match the LARMP Blue, RAL 5013.

Source: Blue Light Tower, CASE Emergency systems, 2019.

Figure 331. (Middle) Call boxes should be freestanding tall structures with push button calling. Blue Light Tower, CASE Emergency systems, 2019.

# FACILITIES AND AMENITIES CHECKLIST

Reference the LACFCD and Public Works Permitting checklist on page 36 for an overview of project permitting and applicable codes.

## Detailed Technical Requirements Checklist for Facilities and Amenities

### Occupancy

- ☐ Shade Pavilions (Tier I) must be sized for the following approximate occupancy rates:
  - Compact | Linear (27' x 9') : 5 occupants
  - Compact | Square (15' x 15'): 5 occupants
  - Moderate (30' x 20'): 10 occupants
  - Expanded (35' x 25'): 20 occupants
- ☐ Rest Pavilions (Tier II) must be sized for the following approximate occupancy rates:
  - Compact | Linear (77' x 13'): 20 occupants
  - Compact | Square (30' x 30'): 20 occupants
  - Moderate (45' x 40'): 30 occupants
  - Expanded (60' x 50'): 50 occupants
- ☐ Gathering Pavilions (Tier III) must be sized for the following approximate occupancy rates:
  - Compact | Linear (105' x 26'): 50 occupants
  - Compact | Square (55' x 50'): 50 occupants
  - Moderate (75' x 55'): 100 occupants
  - Expanded (132' x 77'): 500 occupants

### River Pavilions

- ☐ Follow applicable building codes: Federal, state, and county requirements, such as California's Title 24 Part 6 Building Energy Efficiency Standards, and local building codes, zoning regulations, and parking requirements.
- ☐ Shade Pavilions (Tier I) must include:
  - Shade structure or mature canopy trees and seating
  - River education display
  - Drinking fountain
  - Emergency call box
  - Litter and recycling receptacles
  - Pet waste station

- Rest Pavilions (Tier II) must include everything in the Shade Pavilions (Tier I) plus the following:
  - Single occupancy restrooms / basic sanitation facilities
  - Charging station
  - Bike racks (number based on occupancy and local codes)
  - Snack station
  - Picnic tables
- Gather Pavilions (Tier III) must include everything in the Shade Pavilions (Tier I) and Rest Pavilions (Tier II) plus the following:
  - Locker rooms / enhanced sanitation facilities
  - Public safety station
  - Cafe

### **Common Elements**

- All projects must provide:
  - Benches and seating (to follow requirements on page 352)
  - Bike racks (to follow requirements on page 351)
  - Litter and recycling receptacles (to follow requirements on page 350)
  - Drinking fountains (to follow requirements on page 353)
  - Lighting (to follow requirements on page 354)
  - Emergency call boxes (to follow requirements on page 357)
  - Use graffiti-deterrent finishes where possible.

### **Detailed Maintenance Program Checklist for Facilities and Amenities**

#### **River Pavilions**

- Develop a pavilion-specific maintenance plan and schedule – frequent and special attention is required to prevent vandalism and ensure proper use of facilities.
- For Rest (Tier II) and Gathering (Tier III) Pavilions, dedicated full-time staff is required.

#### **Common Elements**

- Coordinate with presiding agency for lighting, trash and litter receptacles, and emergency call boxes.
- Inspect furnishings regularly for damages and continued functionality.

## UPDATE ROUND 1: WHAT WE HEARD

EN SOBRE LA PARTICIPACION DE LOS ASISTENTES EN LA 1ª RONDA: LO QUE

## ENGAGED IN Y MEETINGS & SURVEY

Community members attended the Canoga Park meeting  
Miembros de la comunidad asistieron a la reunión de  
Canoga Park

Community members attended the Cudahy meeting  
Miembros de la comunidad asistieron a la reunión de  
Cudahy

Community members attended the Long Beach meeting  
Miembros de la comunidad asistieron a la reunión de Long  
Beach

Community members attended the Friendship Auditorium  
meeting  
Miembros de la comunidad asistieron a la reunión de  
Friendship Auditorium

Community members attended the Studio City meeting  
Miembros de la comunidad asistieron a la reunión de Studio City.

Completed digital and in-person surveys as of Jan 29, 2019  
Cuestiones completadas digitalmente y en persona hasta el  
de enero, 2019.

Completed youth summit surveys  
Cuestiones completadas por los jóvenes

## MÁS DE 1,550 PERSONAS ASISTIERON A LAS REUNIONES COMUNITARIAS & COMPLETARON LA ENCUESTA

### GENERATIONS REPRESENTED

### GENERACIONES REPRESENTADAS:

(Total from Survey + Community Meetings + Youth Summit)  
(Total de Encuesta + Reuniones Comunitarias + Cumbre Juvenil)

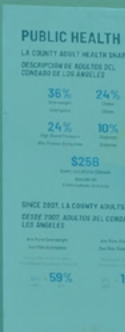
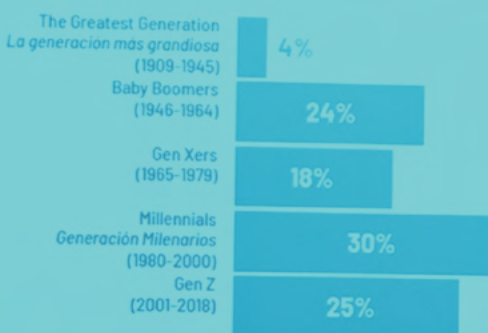


Figure 332. Attendees listening to the Jessica Henson speak about the Master Plan at the Canoga Park community meeting at river mile 51.  
Source: OLIN, 2018.





# RESOURCES

# GLOSSARY

**1% Flood (100-Year Flood):** A flood of a magnitude that has a 1 percent chance of being equaled or exceeded in any given year (i.e. has a recurrence interval of 100 years, on average).

**1% Floodplain (100-Year Floodplain):** Areas with a 1 percent annual chance of flooding.

**0.2% Flood (500-Year Flood):** A flood of a magnitude that has a 0.2 percent chance of being equaled or exceeded in any given year (i.e. has a recurrence interval of 500 years, on average).

**0.2% Floodplain (500-Year Floodplain):** Areas with a 0.2 percent annual chance of flooding.

**Active Transport:** Modes of transportation that are non-motorized relying on physical activity, such as walking and cycling, in addition to public transportation, which will be understood to require walking or cycling as a part of the whole journey. (Source: Healthy Spaces & Places, Australia)

**Alluvium/Alluvial:** Any soil or rock material deposit transported by water.

**Aquifer:** A natural underground layer of porous, water bearing materials (sand, gravel) usually capable of yielding a large amount or supply of water.

**Aquifer Recharge:** Aquifer recharge (AR) and aquifer storage and recovery (ASR) are processes that convey water underground. These processes replenish groundwater stored in aquifers for beneficial purposes. Although the terms are often used interchangeably, they are separate processes with distinct objectives. AR is used solely to replenish water in aquifers. ASR is used to store water which is later recovered for reuse. (Source: US EPA)

**Area Median Income:** The median family income calculated by the US Department of Housing and Urban Development (HUD) for each jurisdiction, in order to determine Fair Market Rents (FMRs) and income limits for HUD programs. Also known as HUD Area Median Family Income.

**Aspect:** The compass direction of exposure of a site to environmental factors (in particular, sunlight).

**Beneficial Use:** **1.** The uses of water necessary for the survival or well being of man, plants and wildlife. These uses of water serve to promote the tangible and intangible economic, social and environmental goals of mankind. Examples include drinking, swimming, industrial and agricultural water supply, and the support of fresh and saline aquatic habitats. **2.** Defines the resources, services, and qualities of aquatic systems that are the ultimate goals of protecting and achieving. For example, Beneficial Use of Estuarine Habitat are uses of water that support estuarine ecosystems, including, but not limited to preservation or enhancement of estuarine habitats, vegetation, fish, shellfish, or wildlife (e.g., estuarine mammals, waterfowl, shorebirds), and the propagation, sustenance, and migration of estuarine organisms. (Source: Regional Water Board, Heal the Bay)

**Best Management Practice (BMP):** In the context of water quality, BMPs are structural, non-structural devices and/or managerial techniques that improve or prevent the pollution contained within dry and wet weather runoff from reaching downstream water ways.

**Box Channel:** A rectangular-shaped section of a channel, typically made of concrete.

**Canopy:** The uppermost continuous layer of foliage in forest vegetation formed by the crowns of the trees.

**Climate Resourcefulness:** An approach to climate resilience and justice that frames resilience in community action and/or activism as well as community self-determination and agency. This framework proposed a re-centering and re-grounding of resilience in communities and progressive, justice movements. (Source: Mackinnon and Derickson, 2013. "From Resilience to Resourcefulness: A Critique of Resilience Policy and Activism." Progress in Human Geography, 37.)

**Community Based Process:** Varies among communities and project scope but generally includes the following steps: initial community consultation; gathering data, observations, and analysis of primary issues; sharing those issues back to the community for further input; and finally, implementation. (Source: Project for Public Spaces)

**Confined Aquifer:** An aquifer in which an impermeable layer of soil or rock lays on top and prevents water from seeping into the ground.

**Distributed Infiltration:** Naturally or artificially allowing rainwater and runoff to percolate into the soil on a widespread basis.

**Disturbance:** Environmental fluctuations and destructive events, both man-made as well as natural, whether or not these are perceived as 'normal' for a particular system.

**Diversity:** Full range of variety and variability within and among living organisms, their associations, and habitat-oriented ecological complexes. Term encompasses ecosystem, species, and landscape as well as intraspecific (genetic) levels of diversity.

**Ecoregions:** Areas where ecosystems (and the type, quality, and quantity of environmental resources) are generally similar. This framework is derived from mapping done in collaboration with EPA regional offices, other Federal agencies, state resource management agencies, and neighboring North American countries. (Source: US EPA)

**Ecosystem Function:** The biological, geochemical and physical processes that take place or occur within an ecosystem. These processes often benefit human needs directly or indirectly. For example: providing shade, carbon sequestration, or filtering pollutants.

**Ecosystem Services:** The direct or indirect contributions of ecosystems to human well-being that support our survival and quality of life.

**Ecotone:** A transition area, or region, of vegetation between two different biological communities (biomes).

**Extant Vegetation:** The mix of plants and trees present above ground in a vegetated area that still exists from pre-urbanization conditions.

**Fence:** A barrier for public safety along LA County watercourses at least 60 inches high off the adjacent surface. Designers should reference the latest LA County codes for any updates.

**Flood Control Basin:** Large, empty basins which hold significant amounts of water during flood conditions to reduce flooding downstream. Examples of flood control basins in LA County include Sepulveda and Hansen.

**Flood Channel:** Concrete or earthen channels that convey water during large rain events. Flood channels are sometimes built on the courses of waterways as a way to reduce flooding. The LA River and many of its tributaries operate as flood channels.

**Flood Control District:** The Los Angeles County Flood Control Act (ACT) was adopted by the State Legislature in 1915, after a disastrous regional flood took a heavy toll on lives and property. The Act established the Los Angeles County Flood Control District and empowered it to provide flood protection, water conservation, recreation and aesthetic enhancement within its boundaries. The Flood Control District is governed, as a separate entity, by the County of Los Angeles Board of Supervisors.

**Forest:** An area of closely canopied trees.

**Fuel break:** A gap, strip, or block of vegetation in which detritus and debris have been removed, and which has been altered to act as a barrier to slow or stop the progress of a wildfire. They are also known as fire breaks, which are more commonly strips or areas of bare soil or fire-retardant material.

**Functioning Ecosystem:** A dynamic complex of plant, animal, and microorganism communities and their non-living environment that exhibits biological and chemical activities characteristic for its type, regardless of whether the system visually looks like a natural system.

**Gate:** An aperture along a fence to provide access while maintaining public safety.

**Groundwater Basin:** Groundwater stored in an area with permeable materials below the ground, typically capable of storing a significant supply of water.

**Guardrail:** A barrier at least 42 inches high near the open sides of elevated surfaces that minimizes the possibility of a fall. Guardrails should follow the latest code and ADA requirements (such as restrictions on openings).

**Habitat:** The locality, site, and particular type of local environment occupied by an organism; includes food, water, shelter, cover, and the ability to raise young.

**Habitat Linkage:** A connection between large areas of habitat that is typically vegetated. Linkages are critical to provide sufficient habitat for wide-ranging animal species with large home territories as well as for other wildlife species.

**Historic Floodplain:** Areas subject to inundation by the LA River and its tributaries and distributaries prior significant channelization in the 19th and 20th centuries.

**Horizontal Structure:** Patchiness; the composition and distribution of species that varies widely from one spot to the next.

**Hydraulic Reach:** A reach is a length of stream or river used as a unit of study. It contains a specified feature that is either fairly uniform throughout, such as hydraulic characteristics or flood damages, or that requires special attention in the study, such as a bridge. (Source: USDA)

**Hydraulics:** Science that focuses on the movement of water through channels, pipes, and rivers.

**Hydrology:** The study of water, specifically its properties, movement and interaction with land, and how it affects the earth and atmosphere.

**Indeterminate Growth:** Growth that continues throughout the lifespan of an individual.

**Infiltration:** The gradual flow or movement of water into and through (to percolate or pass through) the pores of the soil.

**Injection:** An injection well is a device that places fluid deep underground into porous rock formations, such as sandstone or limestone, or into or below the shallow soil layer.

**Invasive Species:** An alien species whose introduction does or is likely to cause economic or environmental harm or harm to human health. (Source: USDA)

**Invasive Plant Species:** Plant species that are both non-native and able to establish on many sites, grow quickly, and spread to the point of disrupting plant communities or ecosystems, causing environmental harm and/or harm to human health. (Source: USDA)

**LA River ROW:** The LA River right-of-way is the “fenceline to fenceline” area of the river channel and typically includes the river, river banks or levees, and LA River Trail. The ROW is owned and maintained by a variety of entities.

**LA River Watershed Native Plant Species:** Plant species that are a part of the balance of nature that has developed over hundreds or thousands of years in the LA River Watershed. Refer to the LA River Design Guidelines plant community lists, qualified botanists or ecologists, and resources such as the California Native Plant Society (<https://www.cnps.org/>). (Source: USDA)

**Levee:** An embankment whose primary purpose is to furnish flood protection from seasonal high water and which is therefore subject to water loading for periods of only a few days or weeks a year.

**Local Park:** Local parks are under 100 acres and contain active amenities such as athletic courts and fields, playgrounds, and swimming pools. (Source: LA County Parks and Recreation)

**Local Tribal Government:** Refers to three local Tribal nations that identify themselves as Ventureño, Fernandeño, or Gabrieleno. This list can be obtained from the Native American Heritage Commission of California.

**Low Flow Channel:** In a concrete flood control channel, the low flow channel is a narrow, lowered section within the middle of the channel, designed to concentrate steady, non-wet weather runoff (water treatment flows, irrigation, etc.) by increasing channel velocity and depth.

**Low Impact Development (LID):** term used to describe a land planning and engineering design approach to manage stormwater runoff as part of green infrastructure. LID emphasizes conservation and use of on-site natural features to protect water quality.

**Mafic:** Pertaining to rocks rich in magnesium and iron.

**Multiuse Trail:** Trails which allow for many user types, such as pedestrians, cyclists, and equestrians.

**Mycorrhizae:** Largely symbiotic relationships between large and taxonomically diverse groups of fungi and vascular plants that allows for the uptake of water and minerals by the vascular plant, and for the uptake of sugars and carbohydrates from the vascular plant by the associated fungus.



**Native Species:** A species that is a part of the balance of nature that has developed over hundreds or thousands of years in a particular region or ecosystem. (Source: USDA)

**Nature-based:** Nature-based strategies aim to protect, manage, and enhance natural or modified ecosystems through sustainable techniques that produce benefits for society and biodiversity. (Source: International Union for Conservation of Nature)

**Non Native Plant Species:** A plant species introduced with human help (intentionally or accidentally) to a new place or new type of habitat where it was not previously found. Not all non-native plants are invasive and may not reproduce or spread readily without continued human help. (Source: USDA)

**Perched Aquifer:** Localized zone of saturation above the main water table created by a laterally limited layer of underlying impermeable material.

**Perennials:** Plants that persist for several years with a period of growth each year.

**Planning Frame:** A series of nine geographical areas used in the LA River Master Plan to assist in the delineation of reach-specific concepts related to jurisdictional, hydraulic, and ecological zones. The planning frames also offer a more detailed local scale to assess project cadence, character, and community connectivity along the varying conditions of the LA River.

**Platform Park:** A park situated on a structural deck spanning over a space typically unsuitable for parkland, such as a roadway or waterbody.

**Potable Water:** Water quality that is suitable for drinking.

**Propagule:** Any part of an organism, produced sexually or asexually, that is capable of giving rise to a new individual. (for plants: seeds, cuttings, divisions, etc.)

**Public Art:** The creative community expression which includes permanent and temporary installations, cultural facilities and uses, and community engagement and programming. Other examples include, but are not limited to: sculpture, murals, portable paintings, fixtures, exhibit or performance space, conservation, performing arts, literary art, media art, new media, education, special events, arts services, community engagement, food, building arts, and environmental arts. (Source: LA County Department of Arts and Culture)

**Railing:** A barrier that separates trail uses or provides a visual separation but is not required to follow code.

**Receiving Waters:** All distinct bodies of water that receive runoff or wastewater discharges, such as streams, rivers, ponds, lakes, and estuaries.

**Recharge:** Process of addition of water to the saturated zone such as an aquifer. (Source: USGS)

**Recharge Area:** An area in which water reached the zone of saturation by surface infiltration. (Source: USGS)

**Reclaimed Wastewater:** Wastewater-treatment plant effluent that has been diverted for beneficial uses such as irrigation, industry, or thermoelectric cooling instead of being released to a natural waterway or aquifer. (Source: USGS)

**Regional Detention (Basin):** A detention basin which collects stormwater runoff from a relatively large area, and has been designed to use storage as a means of reducing downstream flood peaks, reducing possible flood damage, or reducing downstream channel construction costs. Regional facilities are usually multi-purpose, and normally are the responsibility of a public entity. (Source: Pima County Regional Flood Control District)

**Regional Park:** Park over 100 acres and contains active amenities such as athletic courts and fields, playgrounds, and swimming pools. (Source: LA County Parks and Recreation)

**Resiliency:** The capacity of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow, no matter what kinds of chronic stresses and acute shocks they experience. (Source: 100 Resilient Cities)

**Restoration:** Altering an area in such a way as to reestablish an ecosystem's structure and function, usually bringing it back to its original (pre-disturbance) state or to a healthy state close to the original. Management techniques that attempt to enhance or bring back the natural pre disturbance form and functions of a self-sustaining community or ecosystem; measures taken to return a site to pre disturbance conditions.



**Revegetate:** Establish vegetation on disturbed lands.

**Rhizomatous:** Having an underground horizontal stem that bears reduced scaly leaves.

**Riparian:** Pertaining to the banks of a stream, most often used to describe the hydrophilic (water-loving) vegetation along a stream.

**River Mile:** A measure of distance along the river centerline from its mouth. The LA River river mile system was developed in 2016 to reduce confusion between different jurisdictional reach designations. This numbering system is used consistently throughout the LA River Master Plan, with mile zero at the river mouth in Long Beach and mile 51 in Canoga Park.

**River Ruler:** The river ruler is an analysis tool developed for the LA River Master Plan that represents and takes measure of the entire 51 miles of the LA River in a simple vertical straight-line diagram. This approach simplifies and reinforces the river's linearity, allowing the eye to quickly perceive how conditions along the river change from one river mile to the next. This compact abstraction of the river allows for comparing across multiple river ruler categories at multiple locations along the river in a single drawing and is essential for recognizing where planning and design proposals can achieve multiple benefits at a particular location.

**Senescence:** The biological process of aging.

**Solarizing:** Weed management technique whereby sunlight is used to kill weed seed in the soil by using either transparent or black plastic to capture radiant heat energy from the sun, thereby causing physical, chemical and biological changes in the soil. Solarization reduces populations of weeds, disease-causing organisms, harmful invertebrates and insect pests in the top three to six inches of soil without environmental contamination; and increases populations of warmth loving beneficial soil organisms.

**Spreading Basin:** Basin used to impound water to allow for slow percolation of water into the ground in order to recharge the underlying groundwater aquifer.

**Spreading Grounds:** A spreading ground is a water conservation facility that retains surface water long enough for it to percolate into the soil where it can be stored and pumped for later use. Spreading grounds must be located within soft bottom channels or adjacent to rivers and flood channels and situated where underlying soils are permeable and in hydraulic connection to a target aquifer.

**Stormwater:** Stormwater runoff is generated from rain and snowmelt events that flow over land or impervious surfaces, such as paved streets, parking lots, and building rooftops, and does not soak into the ground. The runoff picks up pollutants like trash, chemicals, oils, and dirt/sediment that can harm our rivers, streams, lakes, and coastal waters. (Source: US EPA)

**Succession:** The geological, ecological or seasonal sequence of species within a habitat or community.

**Trapezoidal Section:** A section of a channel with a trapezoidal cross-section. This shape is used to efficiently convey flows on a concrete surface.

**Tributary:** A stream that flows to a larger stream or other body of water.

**Unconfined Aquifer:** A water table—or unconfined—aquifer is an aquifer whose upper water surface (water table) is at atmospheric pressure, and thus is able to rise and fall. Water table aquifers are usually closer to the Earth's surface than confined aquifers are, and as such are impacted by drought conditions sooner than confined aquifers. (Source: USGS)

**Understory:** The vegetation layer between the overstory or canopy and the groundlayer of a forest or woodland community.

**Upland:** Referring to locations elevated above lower-lying locations, often used when discussing two locations within a watershed.

**US Army Corps of Engineers:** The Army Corps of Engineers provides public engineering services in peace and war to strengthen national security, energize the economy, and reduce risks from disasters.

**Vegetation:** The assemblage of plant species in a given area; also used as a general term for plant life.

**Vertical Structure:** Division of vegetation into distinct layers, each adapted to increasingly filtered sunlight if going top down. The layers are: canopy, understory, groundlayer, and the forest (or woodland) floor. Not all forests and woodlands have each layer.

**Water Quality:** Surface water conditions suitable for aquatic life and human health.

**Water Security:** The capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socioeconomic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability. (Source: United Nations Water)

**Water Supply:** Available water provided to fulfill a particular need. If the need is domestic, industrial, or agricultural, the water must fulfill both quality and quantity requirements. Water supplies can be obtained by numerous types of engineering projects, such as wells, dams, or reservoirs. (Source: Encyclopaedia Britannica)

**Water Year:** The 12-month period from October 1 through September 30 for any given year. Water years are written as the ending year (i.e., water year 1986-87 is written as 1987).

**Watershed:** The land area that drains into a river or stream. An area of land that contributes runoff to one specific delivery point. Large watersheds may be composed of several smaller "sub watersheds," each of which contributes runoff to different locations that ultimately combine at a common delivery point. Watersheds are usually bordered and separated from other watersheds by mountain ridges or other naturally elevated areas.

**Wetland:** Any number of tidal and non-tidal areas characterized by saturated or nearly saturated (wet) soils most of the year that form an interface between terrestrial (land-based) and aquatic environments. These include freshwater marshes around ponds and channels (rivers and streams) and brackish and salt marshes. Other common names include swamps and bogs.

**Woodland:** An area of canopied trees with greater distances between trees than found in forested areas.

# RESOURCE LIST

LA County does not endorse any of these suppliers or guarantee that they meet the necessary requirements placed on them from the Master Plan or other applicable documents.

## NATIVE PLANT NURSERIES

### El Nativo Growers

Large wholesale nursery supplying a range of small to large projects including restoration.

—

200 South Peckham Road Azusa, CA 91702  
626.969.8449  
[www.elnativogrowers.com](http://www.elnativogrowers.com)  
[sales@elnativogrowers.com](mailto:sales@elnativogrowers.com)

### Las Pilitas Nursery

Large wholesale nursery specializing in large projects.

—

3232 Las Pilitas Road Santa Margarita, CA 93453  
805.438.5992  
[www.laspilitas.com](http://www.laspilitas.com)  
[penny@laspilitas.com](mailto:penny@laspilitas.com)

### Matilija Nursery

Large wholesale nursery with climate suitable varieties of groundcovers, shrubs, trees, perennials, and grasses specializing in large projects including contract grows for restoration.

—

8225 Waters Road Moorpark, CA 93021  
805.523.8604  
[www.matilijanursery.com](http://www.matilijanursery.com)  
[matilijanurserweb@gmail.com](mailto:matilijanurserweb@gmail.com)

### A & F

Formerly Mockingbird Nursery, wholesale nursery for shrubs, ornamental grasses, trees, succulents, and annuals.

—

803 Adams Street Riverside, CA 92504-5310  
951.352.4922  
<https://afgrowers.com>  
[office@afgrowers.com](mailto:office@afgrowers.com)

### Rancho Santa Ana Botanic Garden

Working with Seed LA initiative (contact Naomi Fraga; [nfraga@rsabg.org](mailto:nfraga@rsabg.org)) for native seed sourcing. Medium sized retail nursery with capacity for contract grows for restoration and mitigation projects.

—

1500 N College Avenue, Claremont CA 91711  
909.625.8767  
[www.rsabg.org](http://www.rsabg.org)  
[gnnclaremont@rsabg.org](mailto:gnnclaremont@rsabg.org); [bsale@rsabg.org](mailto:bsale@rsabg.org)

### Theodore Payne Foundation

Large retail nursery with a focus on native seed sourcing and propagation.

—

10459 Tuxford Street Sun Valley, CA 91711  
818.768.1802  
[www.theodorepayne.org](http://www.theodorepayne.org)  
[info@theodorepayne.org](mailto:info@theodorepayne.org)

### Tree of Life Nursery

Wholesale/retail nursery with capacity for contract growing, an active mycorrhizae program, and local seed mix availability.

—

33201 Ortega Highway San Juan Capistrano, CA 92693  
949.728.0685  
[www.californianativeplants.com](http://www.californianativeplants.com)  
[inquiries@treeoflifenuresery.com](mailto:inquiries@treeoflifenuresery.com)

### Antelope Valley Resource Conservation Nursery

Commercial nursery with capacity for contract growing and educational programs.

—

10148 West Ave. I, Lancaster, CA 93536  
(661) 942-7306  
<https://www.avrcd.org>  
[avrcd@carcd.org](mailto:avrcd@carcd.org)

### Hahamongna Native Plant Nursery

Contact Arroyo Seco Foundation for details

—

Hahamongna Watershed Park, 4550 Oak Grove Dr. Pasadena, CA 91103  
(323) 405-7326

**Tarweed Native Plants**

Small retail nursery more appropriate for small scale projects.

—

1307 Graynold Ave, Glendale, CA 91202

(818) 419-7034

<http://www.tarweednativeplants.com/>

[tarweed@tarweednativeplants.com](mailto:tarweed@tarweednativeplants.com)

**Artemisia Nursery**

Small retail nursery more appropriate for small scale projects.

—

5068 Valley Blvd., Los Angeles, CA 90032

323-795-5515

<https://www.artemisiannursery.com>

[artemisiannursery@gmail.com](mailto:artemisiannursery@gmail.com)

**Glendora Gardens**

Medium sized nursery with drought tolerant species as well as sod, soil, and turf removal services.

—

1132 S. Grand Avenue, Glendora, CA 91740

(626) 914-6718

<https://www.glendoragardens.com>

**Fremontia Horticultural Inc.**

Specializing in drought tolerant plants for large scale projects including succulents and grasses.

—

0401 E Riverside Drive, Ontario, CA 91761

(909) 673-0600

<https://fremontiahorticultural.com>

[info@fremontiahorticultural.com](mailto:info@fremontiahorticultural.com)

**Greenbelt Growers**

Specializing in ornamental plants for commercial landscape and restoration projects.

—

9820 Dufferin Avenue, Riverside, CA 92503

(951) 688-4091

<https://www.greenbeltgrowers.com/>

[sales@greenbeltgrowers.com](mailto:sales@greenbeltgrowers.com)

**Pacific Coast Nursery Inc.**

Large wholesale nursery specializing in large commercial development projects.

—

1924 Monroe Street Riverside, CA. 92504

951-689-1777

<https://www.pacificcoastnursery.com>

[info@pacificcoastnursery.com](mailto:info@pacificcoastnursery.com)

**Back to Natives Nursery @ Santiago Park**

Prefer to use seeds collected from or near the site. Right now the BTN Nursery is entirely volunteer driven though the scale of projects seem to range from small to large restoration projects.

—

Santiago Park Nature Reserve, Santa Ana, CA 92706

(949) 509-4787

<http://www.backtonatives.org/nursery>

[info@backtonatives.org](mailto:info@backtonatives.org)

**NATIVE PLANT SEED****Rancho Santa Ana Botanic Garden**

Nursery and regional educational resource.

—

1500 North College Avenue Claremont, CA 91711

909.625.8767 ext 404

[www.rsabg.org](http://www.rsabg.org)

[gnnclaremont@rsabg.org](mailto:gnnclaremont@rsabg.org)

**S & S Seeds**

Extensive seed inventory and mixes available for sale.

—

P.O. Box 1275 Carpinteria, CA 93014

805.684.0436

<http://www.ssseeds.com>

[info@ssseeds.com](mailto:info@ssseeds.com)

**Stover Seed Company**

Native and non-native seed company with a native seed database for large scale projects.

—

P.O. Box 1579 Sun Valley, CA 91353

800.621.0315

[www.stoverseed.com](http://www.stoverseed.com)

[customer\\_service@stoverseed.com](mailto:customer_service@stoverseed.com)

**Theodore Payne Foundation**

Nursery and regional educational resource.

—

10459 Tuxford Street Sun Valley, CA 91711

818.768.1802

[www.theodorepayne.org](http://www.theodorepayne.org)

[info@theodorepayne.org](mailto:info@theodorepayne.org)

**Seed LA**

New nonprofit working with Rancho Santa Ana Botanic Garden among other nurseries to encourage native seed use. (contact Naomi Fraga; [nfraga@rsabg.org](mailto:nfraga@rsabg.org))



# ENDNOTES

- 1 Historic Resources Surveys. Los Angeles City Planning . Accessed March 24, 2020. <https://planning.lacity.org/preservation-design/historic-resources-survey>.
- 2 Los Angeles River Master Plan, Los Angeles County Public Works, 1996
- 3 LA County Flood Control District, Guidance for Flood Control Permits. <http://dpw.lacounty.gov/ldd/lib/forms/Guidelines/LACFCD%20Flood%20Permit%20Guidance%20v4.2.1.pdf>
- 4 Ibid.
- 5 Ibid.
- 6 Ibid.
- 7 Ibid.
- 8 U.S. Environmental Protection Agency, "Permit Program under CWA Section 404." April 30, 2019. <https://www.epa.gov/cwa-404/permit-program-under-cwa-section-404>
- 9 Headquarters U.S. Army Corps of Engineers, "Section 408." April 30, 2019. <https://www.usace.army.mil/Missions/Civil-Works/Section408/>
- 10 State Water Resources Control Board, 401 Water Quality Certification Frequently Asked Questions. May 2014. [https://www.waterboards.ca.gov/sandiego/water\\_issues/programs/401-certification/docs/401c/401FAQRB9V514.pdf](https://www.waterboards.ca.gov/sandiego/water_issues/programs/401-certification/docs/401c/401FAQRB9V514.pdf)
- 11 Ibid.
- 12 Headquarters U.S. Army Corps of Engineers, "Section 408." April 30, 2019. <https://www.usace.army.mil/Missions/Civil-Works/Section408/>
- 13 Ibid.
- 14 State Water Resources Control Board, 401 Water Quality Certification Frequently Asked Questions. May 2014. [https://www.waterboards.ca.gov/sandiego/water\\_issues/programs/401-certification/docs/401c/401FAQRB9V514.pdf](https://www.waterboards.ca.gov/sandiego/water_issues/programs/401-certification/docs/401c/401FAQRB9V514.pdf)
- 15 Headquarters U.S. Army Corps of Engineers, "Section 408." April 30, 2019. <https://www.usace.army.mil/Missions/Civil-Works/Section408/>
- 16 U.S. Department of Justice. (2010). 2010 ADA Standards for Accessible Design. Washington, DC: U.S. Department of Justice.
- 17 Rallo, A., Forest, E., Kuo, J., Boutilier, R., & Li, E. (2019). Access Ability 2: A Practical Handbook on Accessible Graphic Design (2nd ed.). Toronto, ON: The Association of Registered Graphic Designers (RGD).
- 18 California State Parks, State of California. "General Provisions." CA State Parks, 2019. [https://www.parks.ca.gov/?page\\_id=21301](https://www.parks.ca.gov/?page_id=21301).
- 19 United States of America, Department of the Army, US Army Corps of Engineers, Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures, ETL 1110-2-583 (Washington, D.C.: US Army Corps of Engineers, 2014), 3-3.
- 20 United States of America, Department of the Army, US Army Corps of Engineers, Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures, ETL 1110-2-583 (Washington, D.C.: US Army Corps of Engineers, 2014), 2-2.
- 21 United States of America. County of Los Angeles Public Works. Low Impact Development Standards Manual. Los Angeles, CA, 2014.
- 22 University of California. "The Urban Agriculture Incentive Zones Act (AB551)." Urban Agriculture, n.d. [https://ucanr.edu/sites/UrbanAg/Laws\\_Zoning\\_and\\_Regulations/The\\_Urban\\_Agriculture\\_Incentive\\_Zones\\_Act\\_AB551/](https://ucanr.edu/sites/UrbanAg/Laws_Zoning_and_Regulations/The_Urban_Agriculture_Incentive_Zones_Act_AB551/). Accessed 08/27/19.
- 23 Trust for Public Land, Los Angeles County Public Works, and City of South Gate. "Agreement with the Trust for Public Land for the Urban Orchard Project" (2017). p. 26.
- 24 Los Angeles County Development Authority, and Carmelitos Public Housing Development. "The Growing Experience: An Urban Farm." Community Garden, n.d. <https://growingexperience.lacda.org/community-garden>. Accessed 08/27/19.
- 25 Garcia, Richard D. "Alma Backyard Farms," n.d. <https://www.almabackyardfarms.com/>. Accessed 08/27/19.
- 26 Wood, Jason, and Emily Gleicher. Farm LA , n.d. <http://farmla.org/>.
- 27 State of California. "Model Water Efficient Landscape Ordinance." California Department of Water Resources , 2015. <https://water.ca.gov/Programs/Water-Use-And-Efficiency/Urban-Water-Use-Efficiency/Model-Water-Efficient-Landscape-Ordinance>. Accessed 08/27/19.
- 28 Brenzel, Kathleen Norris., ed. The New Sunset Western Garden Book: The Ultimate Gardening Guide. 9th ed. New York, NY: Time Home Entertainment Inc., 2012. p. 93-94, 698-706.

- 29 County of Los Angeles Public Works. Low Impact Development Standards Manual. Los Angeles, CA, 2014.
- 30 Bell, Carl and Dean Lehman. 2015. Best Management Practices for Vegetation Management (revised). Ellen Mackey, editor. Los Angeles County Weed Management Area. Los Angeles, California.
- 31 Leonard J. Hopper, Landscape Architectural Graphic Standards (Hoboken, NJ: Wiley, 2007), 505-510.
- 32 Leonard J. Hopper, Landscape Architectural Graphic Standards (Hoboken, NJ: Wiley, 2007), 785-790.
- 33 The California Chaparral Institute, The California Chaparral Preservation Plan. The California Chaparral Institute, Escondido, 2010. [www.californiachaparral.org](http://www.californiachaparral.org).
- 34 Ibid.
- 35 Allen, Edith B., et al. "Chaparral Restoration." In Valuing Chaparral, 347-84. Springer International Publishing, 2018. [https://www.fs.fed.us/psw/publications/beyers/psw\\_2018\\_beyers001\\_allen.pdf](https://www.fs.fed.us/psw/publications/beyers/psw_2018_beyers001_allen.pdf).
- 36 Quinn, Ronald D., Sterling C. Keeley, and Marianne D. Wallace. "Fire." In Introduction to California Chaparral, 1st ed., 43-73. University of California Press, Berkeley, 2006.
- 37 Allen, Edith B., et al. "Chaparral Restoration." In Valuing Chaparral, 347-84. Springer International Publishing, 2018. [https://www.fs.fed.us/psw/publications/beyers/psw\\_2018\\_beyers001\\_allen.pdf](https://www.fs.fed.us/psw/publications/beyers/psw_2018_beyers001_allen.pdf).
- 38 Natural Resources Conservation Service. "Code 383: Fuel Break." In Conservation Practice Standard. National Resources Conservation Service, CA, 2007. [https://efotg.sc.egov.usda.gov/references/public/CO/CO383\\_Spec.pdf](https://efotg.sc.egov.usda.gov/references/public/CO/CO383_Spec.pdf)
- 39 Ibid.
- 40 Sunset. "Create a Landscape that Fights Fire." Sunset Publishing Corporation, CA, 2003. Cited in Topanga Coalition for Emergency Preparedness. <http://www.t-cep.org/wildfire/createalandscape.htm>
- 41 Natural Resources Conservation Service. "Code 383: Fuel Break." In Conservation Practice Standard. National Resources Conservation Service, CA, 2007. [https://efotg.sc.egov.usda.gov/references/public/CO/CO383\\_Spec.pdf](https://efotg.sc.egov.usda.gov/references/public/CO/CO383_Spec.pdf)
- 42 Bellm Carl and Dean Lehman. 2015. Best Management Practices for Vegetation Management (revised). Ellen Mackey, editor. Los Angeles County Weed Management Area. Los Angeles, California.

# BIBLIOGRAPHY

The 2004 and 2020 Design Guidelines rely on a wealth of knowledge from the following sources.

Abrams, LeRoy. *Flora of Los Angeles and Vicinity*. Stanford: Stanford University Press. First Edition. 1904.

Abrams, LeRoy. *Flora of Los Angeles and Vicinity*. 2nd Edition. Stanford: Stanford University Press. 1917.

Bakker, Elna. *An Island Called California: An Ecological Introduction to its Natural Communities*. Berkeley: University of California Press. 1971.

Bell, Carl and Dean Lehman. 2015. *Best Management Practices for Vegetation Management* (revised).

Ellen Mackey, editor. *Los Angeles County Weed Management Area*. Los Angeles, California.

Booth, Derek B. *The University of Washington Permeable Pavement Demonstration Project*. 1997.

Booth, Derek ed. "Porous Asphalt Road Shoulders: Effect of Road Sanding Operations and Their Projected Life Span." *The Washington Water Resource*. Fall 1997.

Brenzel, Kathleen Norris., ed. *The New Sunset Western Garden Book: The Ultimate Gardening Guide*. 9th ed. New York, NY: Time Home Entertainment Inc., 2012.

Burrows, Colin J. *Processes of Vegetation Change*. Boston: Unwin Hyman Ltd. 1990.

CA Native Plant database and search tool

California Department of Conservation, Office of Mine Reclamation, Showers, Mary Ann and Karen Wiese. *Nursery Sources for California Native Plants* DMG Open file Report 90-04. 1995. (Revised from Newton, Gail and Laura Laidet. 1990, 1992.)

California Department of Fish and Game, Barbour, Michael and Jeane Wirka. *Classification of Alluvial Scrub in Los Angeles, Riverside and San Bernardino Counties*. 1997. Unpublished report. (U.S. Fish and Wildlife Service, Section 6 program contract no. FG5638-RS)

California Department of Fish and Game, Garrett, Kimball. *Biota of the Los Angeles River*. 1993. Unpublished report prepared by the Natural History Museum of Los Angeles County Foundation under contract no. FG 0541.

California Department of Fish and Game, Holland, Robert F. *Preliminary Descriptions of the Terrestrial Natural Communities of California*. 1986. Unpublished report.

California Native Plant Society, Los Angeles/Santa Monica Mountains Chapter. *Recommended List of Native Plants for Landscaping in the Santa Monica Mountains*. 1996.

California Native Plant Society. Accessed May 2019. <https://calscape.org/>.

California Native Plant Society. *Guidelines For Landscaping To Protect Native Vegetation From Genetic Degradation*. <http://www.cnps.org/archives/landscaping.htm>. December, 2001.

California Resources Agency, San Gabriel and Lower Los Angeles Rivers and Mountains Conservancy and the Santa Monica Mountains Conservancy. *Common Ground from the Mountains to the Sea*.

*Watershed and Open Space Plan*, San Gabriel and Los Angeles Rivers. October, 2001.

California Stormwater Quality Association. *Stormwater Best Management Practice Handbooks; Construction; New Development & Redevelopment; Municipal; Industrial & Commercial*. 2003.

Caltrans. *Bikeway Design Standards*, Highway Design Manual. February, 1995.

City of Augusta, Georgia, County Planning Commission. *Riverfront Development Ordinance*. N.d.

City of Los Angeles Planning Department and Department of Recreation and Parks. *Proposed Los Angeles River Greenbelt Corridor Feasibility Study*. December, 1990.

City of Los Angeles, Department of City Planning. *Citywide Plan*. August, 1972.

City of Los Angeles, Department of Recreation and Parks. *Landscape Architectural Design Standards*. August, 1995.

City of Olympia, Public Works Department. *Impervious Surface Reduction Study*. January, 1996.

City of San Antonio, Department of Planning. *Historic Preservation and Urban Design Ordinance # 80910*. December, 1994.

City of Santa Cruz. *San Lorenzo River Design Concept Plan*. 1987.

City of Santa Cruz. *San Lorenzo River Enhancement Plan*. n.d.

City of Tempe. *Rio Salado A River Once More, Construction Update*. <http://www.tempe.gov/rio/>. October, 1998

Costello, L.R., et al. *A Guide to Estimating Irrigation Water Needs of Landscape Plantings in California*. UC Cooperative Extension, California Department of Water Resources, US Bureau of Reclamation. August 2000.

County of Los Angeles, Department of Arts and Culture, LA County Arts Report: Cultural Equity & Inclusion Initiative. April, 2017.

County of Los Angeles, Department of Public Works, Construction Division, Permit Section. Permit Guidelines. September, 1992.

County of Los Angeles, Department of Public Works. Los Angeles River Master Plan. June, 1996.

County of Los Angeles, Department of Public Works. Los Angeles River Master Plan Maintenance Guidelines. In preparation.

County of Los Angeles, Department of Public Works. Los Angeles River Master Plan Sign Guidelines. August, 2003.

County of Los Angeles, Department of Public Works. Low Impact Development Standards Manual. Los Angeles, CA, 2014.

County of Los Angeles, Department of Regional Planning. Plan of Bikeways. June, 1976.

County of Los Angeles, Flood Control District. Tujunga Wash Property Use Plan. 1981.

County of Los Angeles, Transportation Commission. Flood Control Channel Transportation Study, Phase I. October, 1989.

Crampton, Beecher. Grasses in California. Vol. 33 of California Natural History Guides. Berkeley and Los Angeles: University of California Press. 1974.

Czaminske, David. "Competing Bills Complicate Efforts to Create Conservancy." Arroyo View, June/July 1999, 6.

Dale, Nancy. Flowering Plants of the Santa Monica Mountains, Coastal and Chaparral Regions of Southern California. Santa Barbara: Capra Press. 1986.

Dallman, Suzanne and Thomas Piechota. Storm Water: Asset Not Liability. Los Angeles and San Gabriel Rivers Watershed Council. 1999.

East River Bikeway and Esplanade Planning and Design Project. "A River of Recreation." Landscape Architecture. November, 1996.

Friends of the Los Angeles River. Environmentally Compatible and Long-Term Flood Control Alternatives. 1993.

Glick, Fred. "Going Places." Landscape Architecture. March, 1985.

Good, James. "Effective Coastal Wetland Management." National Wetlands Newsletter. July/August, 1998.

Griffin, James R., and William B. Critchfield. The distribution of forest trees in California. Research Paper PSW-82. Berkeley, CA. Pacific Southwest Research Station, Berkeley, CA. U. S. Department of Agriculture Forest Service. 1976.

Hanes, T. L., R. D. Friesen, and K. Keane. "Alluvial scrub vegetation in coastal southern California." In California Riparian Systems Conference: Protection, management and restoration for the 1990s. September 22-24, 1988 in Davis, CA, edited by D. L. Abell, Pacific Southwest Forest and Range Experiment Station, U. S. Forest Service, USDA, 187-193. 1989.

Heintzman, James. Making the Right Connections: A Guide for Nature Writers. Stevens Point: UW-SP Foundation Press, Inc. 1988.

Hickman, James C., ed. The Jepson Manual: Higher Plants of California. Berkeley and Los Angeles: University of California Press. 1993.

Higgins, Lila M., Gregory B. Pauly, Jason G. Goldman, and Charles Hood. Wild LA: Explore the Amazing Nature in and around Los Angeles. Portland, OR: Timber Press, 2019.

Hopper, Leonard J. Landscape Architectural Graphic Standards. Hoboken, NJ: Wiley, 2007.

Keeley, Jon E. "Demographic structure of California black walnut (*Juglans californica*: Juglandaceae) woodlands in California." Madrono. No. 4. 1990, 237-248.

Keeley, Jon E. "Native Grassland Restoration: The Initial Stage – Assessing Suitable Sites." Interface Between Ecology and Land Development in California. Los Angeles: Southern California Academy of Sciences. 1993.

Keeley, Jon E. "The California valley grassland." Endangered Plant Communities of Southern California. Proceedings of the 15th annual symposium, Southern California Botanists special publication No.3. Claremont: Rancho Santa Ana Botanic Garden. 1990.

Keller, Kit. Mountain Bikes on Public Lands: A Manager's Guide to the State of the Practice. Bicycle Federation of America. 1990.

King County, Washington. Surface Water Design Manual. February, 1996.

Kirkpatrick, J. B. and C. F. Hutchinson. "The community composition of Californian coastal sage scrub." Vegetation. 35 (1). 1977, 21-33.

Leccese, Michael. "A River Reborn." Landscape Architecture. June, 1996.

Leccese, Michael. "In the San Antonio Mode." Landscape Architecture. November, 1996.

Lenz, Lee W. and John Dourley. California Native Trees and Shrubs: For Garden and Environmental Use in Southern California and Adjacent Areas. Claremont: Rancho Santa Ana Botanic Garden. 1981.

Leskinen, Carolyn Albee. "*Juglans californica*: Local patterns in southern California." M.A. thesis, University of California, Los Angeles. 1972.



Los Angeles County Flood Control District, Chun, L. and L. Beauchaine. Property Use Plan for Los Angeles River, Lankershim Boulevard to Sepulveda Boulevard. February, 1982.

Los Angeles County Flood Control District, Stone, H. W., L.L. Easton, et. al. Aesthetic Standards Manual. October, 1974.

Marchand, M. and F. H. Toomstra. Ecological Guidelines for River Basin Development. March, 1986.

Maynard, Michael. "On the Waterfront." Landscape Architecture. October, 1996.

Mays, Vernon. "In the Boardwalk Tradition." Landscape Architecture. January, 1998.

McAdam, Lewis. "Restoring the Los Angeles River: A Forty-Year Art Project." Whole Earth Review, Spring 1995, 62.

Munz, P. A. and D. D. Keck. A Flora of California and Supplement. Berkeley and Los Angeles: University of California Press. 1968.

O'Brien, Bart. "The Intersection of Conservation and Gardening: An Overview of the Consequences of Growing California Native Plants." *Fremontia* 29(1): 2001, 16-23.

O'Brien, Bart, Betsey Landis, and Ellen Mackey. Care & Maintenance of Southern California Native Plant Gardens = Cuidado Y Mantenimiento De Jardines De Plantas Nativas Del Sur De California. Claremont, CA: Rancho Santa Ana Botanic Garden, 2006.

O'Brien, Bart, Betsey Landis, and Ellen Mackey. Gardener's Primer for Planting and Maintaining Native Plant Landscapes. Published by Metropolitan Water District of Southern California. In preparation.

O'Brien, Bart, Betsey Landis, and Ellen Mackey. Care & Maintenance of Southern California Native Plant Gardens = Cuidado Y Mantenimiento De Jardines De Plantas Nativas Del Sur De California. Claremont, CA: Rancho Santa Ana Botanic Garden, 2006.

O'Leary, John. "California Coastal Sage Scrub: General Characteristics and Considerations for Biological Conservation." *Endangered Plant Communities of Southern California*. Proceedings of the 15th annual symposium, Southern California Botanists special publication No.3. Claremont: Rancho Santa Ana Botanic Garden. 1990.

Perry, Bob. Landscape Plants for California Gardens: An Illustrated Reference of Plants for California Landscapes. Claremont, CA: Land Design Pub., 2010.

Perry, Robert C. Landscape Plants for Western Regions. Claremont: Land Design Publishing. 1992.

Quinn, Ronald D. "The Status of Walnut Forests and Woodlands (*Juglans californica*) in Southern California." *Endangered Plant Communities of Southern California*. Proceedings of the 15th annual symposium, Southern California Botanists special publication No. 3. Claremont: Rancho Santa Ana Botanic Garden. 1990.

Quinn, Ronald D., and Sterling C. Keeley. Introduction to California Chaparral. Berkeley, CA: University of California Press, 2006.

Rainer, Thomas, and Claudia West. Planting in a Post-wild World: Designing Plant Communities for Resilient Landscapes. Portland, OR: Timber Press, 2016.

Raven, Peter H. et. al. Flora of the Santa Monica Mountains. 2nd Edition. Southern California Botanists Special Publication, No. 2. Los Angeles: University of California. 1986.

Regnier, Kathleen, Michael Gross et. al. The Interpreter's Guidebook. Stevens Point: UW-SP Foundation Press, Inc. 1992.

"Resources - For Communities - TreePeople's LA City Approved Street Tree List." TreePeople. November 27, 2018. Accessed May 2019. <https://www.treepeople.org/resources>.

Roberts, Fred M. Illustrated Guide to the Oaks of the Southern Californian Floristic Province: The Oaks of Coastal Southern California and Northwestern Baja California, Mexico. Encinitas: F.M. Roberts Publications. 1995.

Rosenthal, Sue and friends. "Native Plant Horticulture Resources: A Starting Point for Native Plant Gardening." *Fremontia* 29(1): 2001, 26-27.

Sawyer, John O. and Todd Keeler-Wolf. A Manual of California Vegetation. Sacramento: California Native Plant Society. 1995.

Smith, Robin Lee. "Alluvial scrub vegetation of the San Gabriel River Floodplain, California." *Madroño* 27(3): 1980, 126-138.

Sprugel, D.G. "Disturbance, equilibrium, and environmental variability: What is 'natural' vegetation in a changing environment?" *Biological Conservation* 58: 1991, 1-18.

St. John, Ted, and Bob Dixon. Land Imprinting. Tree of Life Nursery. March, 1996.

St. John, Ted. Habitat Restoration: A Regulator's Perspective. Tree of Life Nursery. April, 1995.

St. John, Ted. Habitat Restoration: An Overview for Agency Clients. Tree of Life Nursery. April, 1995.

St. John, Ted. Why Habitat Restoration Projects Fail. Tree of Life Nursery. April, 1995.

"Street Tree Selection Guide." City of Los Angeles Bureau of Street Services. Accessed May 2019. <http://bss.lacity.org/UrbanForestry/StreetTreeSelectionGuide.htm>.

Stone, Edward and Associates. "River Redux." Landscape Architecture.

Swanson, C. James, "The Ecology and Distribution of *Juglans californica* Wats. in Southern California." M. A. thesis California State College at Los Angeles. 1967.

Swanson, Mitchell L., John Stanley, et. al. San Lorenzo River Enhancement Plan. n.d.

Thompson, William. "A Creek Runs Through It." Landscape Architecture. February, 1996.

Thompson, William. "Pier Review." Landscape Architecture. January, 1998.

Trapp, Suzanne, Michael Gross et. al. Signs, Trails, and Wayside Exhibits. Stevens Point: UW-SP Foundation Press, Inc. 1992."

"Tree of Life Nursery Native Plant Catalog." December 20, 2016. Accessed May 2019. <https://californianativeplants.com/plants/plantcatalogdownload/>.

Trim, Heather. Beneficial Uses of the Los Angeles and San Gabriel River. Los Angeles and San Gabriel Rivers Watershed Council. 2001.

United States Army Corps of Engineers. Final Master Plan and Environmental Assessment-Los Angeles River Recreational Development. March, 1998.

United States Army Corps of Engineers. Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures. ETL 1110-2-583. Washington, D.C.: US Army Corps of Engineers, 2014.

United States Army Corps of Engineers. Landscape Planting at Floodwalls, Levees and Embankment Dams. December 29, 1972.

United States Army Corps of Engineers. Los Angeles County Drainage Area Recreation Review. September, 1988.

United States Army Corps of Engineers. Plants of the Los Angeles District.

United States Army Corps of Engineers. Rio Salado, Salt River, Arizona, Feasibility Report. April, 1998.

United States Army Corps of Engineers, Los Angeles District Regulatory Branch. Michael Brandman Associates. Preliminary draft biological assessment of threatened and endangered species: Los Angeles International Golf Club: Big Tujunga Wash, Los Angeles, CA. 1988. Unpublished report.

United States Department of Agriculture, Forest Service. Sign and Poster Guidelines for the Forest Service. August, 1998.

United States Department of the Interior, National Park Service. Comprehensive Management and Use Plan Final Environmental Impact Statement, Juan Bautista de Anza National Historic Trail, California, Arizona. April, 1996.

United States Department of the Interior, National Park Service. "Juan Bautista de Anza National Historic Trail, Official Map and Guide."

United States Department of the Interior, National Park Service. Wayside Exhibit Guidelines. March, 1998.

United States Engineer Office. Flood Control in the Los Angeles County Drainage Area. May, 1938.

United States Forest Service (USFS). "Vegetation Types of California" (Corona, Cucamonga, Pomona, Redlands, San Bernardino, San Fernando and Santa Susanna quadrangles). 1:62,500 scales. Prepared under the direction of A. E. Weislander. 1932, 1934.

Williams, Prentiss. "Los Angeles River Overflowing with Controversy." California Coast & Ocean. 8: Summer 1993.

Wilson, Bert. "A Guide to the Plant Communities of California." Las Pilitas Native Plant Nursery. November 19, 2013. Accessed May 2019. <https://www.laspilitas.com/>.

Wolf, Adam, Naupaka B. Zimmerman, William R. L. Anderegg, Posy E. Busby, and Jon Christensen. "Altitudinal Shifts of the Native and Introduced Flora of California in the Context of 20th-century Warming." *Global Ecology and Biogeography* 25, no. 4 (2016): 418-29. doi:10.1111/geb.12423.

Zehr, Jeffrey, Michael Gross et. al. Creating Environmental Publications. Stevens Point: UW-SP Foundation Press, Inc. 1991.

# TABLE OF FIGURES

- Figure 1. The LA River begins at the confluence of Arroyo Calabasas and Bell Creek at river mile 51. Source: OLIN, 2018. Found on Page 10
- Figure 2. The LA River brings people and communities together in more ways than one, as can be seen in this photo of the SELA Arts Festival at river mile 11.7 in July 2018. Source: OLIN, 2018. Found on Page 12
- Figure 3. The LA River channel has two different profiles: box and trapezoid. This section of box channel runs through Studio City, near river mile 39. Source: OLIN, 2018. Found on Page 14
- Figure 4. Certain reaches of the LA River, such as this segment near river mile 25, are soft-bottom rather than concrete. Source: OLIN, 2018. Found on Page 16
- Figure 5. Certain reaches of the river, such as this segment at river mile 14, are entrenched rather than leveed. Source: OLIN, 2018. Found on Page 17
- Figure 6. Design strategies can be categorized into six infrastructure and urban river typologies. See Chapter 8 in the LA River Master Plan for more information. Source: LA River Master Plan, 2020. Found on Page 19
- Figure 7. The LA River Master Plan proposes five scales of impact for sites along the river: XS, S, M, L, XL. Each scale has varying needs for facilities, amenities, gathering spaces, performance areas, and recreation. Source: OLIN, 2018. Found on Page 20
- Figure 8. (Top) The LA River can host community performances, such as the one shown in the image by a local high school at the SELA Arts Festival at river mile 11.7. Source: OLIN, 2018. Found on Page 21
- Figure 9. (Middle) The LA River Campout at river mile 26 is an example of programming that broadens participants' understanding of the LA River. Source: Clockshop, The Bowtie Project, 2017. <https://bit.ly/2Kels9t>. Found on Page 21
- Figure 10. (Bottom) The LA River is an important resource to the Indigenous Peoples of Los Angeles. This image shows the Native American Veterans Association's annual Veterans Appreciation and Heritage Pow Wow at river mile 13. Source: Marvin Lynchard, 2014. <https://bit.ly/2Xlqhvn>. Found on Page 21
- Figure 11. Projects along the LA River should improve ecosystem function and provide educational opportunities. Source: OLIN, 2019. Found on Page 23
- Figure 12. Vendors set up booths within the river channel at the SELA Arts Festival at river mile 11.7. Source: OLIN, 2019. Found on Page 24
- Figure 13. The industrial land that hems in the LA River, such as this example at river mile 18, is representative of over ten percent of all land within the river corridor. Source: OLIN, 2018. Found on Page 25
- Figure 14. (Top) The Bowtie Project at river mile 26 has hosted many artist projects, such as the 2014 project "Building: a simulacrum of power" by Rafa Esparza. Source: "The Bowtie Project, <https://clockshop.org/project/bowtie/>. Found on Page 27
- Figure 15. (Middle) The LA River can host student art installations and sculptures, as shown in this image at river mile 26. Source: 2016, "ACE Spring Design Studio" by Woodbury University. Found on Page 27
- Figure 16. (Bottom) Programs such as Turnaround Arts foster art education in schools and communities along the LA River. Source: Turnaround Arts: California, <https://bit.ly/2QBK5tt>. Found on Page 27
- Figure 17. This example of an art installation at a Tier III Pavilion at RM 28.4 portrays a data-based installation that could show real-time water quality through the color of the lights. Source: OLIN, 2019. Found on Page 28
- Figure 18. LA River Maintenance Responsibilities. Currently, the LA River and its tributaries are operated and maintained by the USACE or the FCD. This map indicates which entity has jurisdiction in different segments of the river. Source: LA County Public Works, GIS Maintenance Map, 2016. Found on Page 33
- Figure 19. Various governmental entities use differing methods to define river segments, as shown in this diagram. However, all projects permitted under these guidelines are required to reference the 51 mile LA River numbering system. This diagram is for reference only. Other entities may change their definitions over time, so consult with the applicable entity as needed. Source: LA River Master Plan, 2020. Found on Page 36
- Figure 20. LA River Planning Frames. Source: LA River Master Plan, 2020. Found on Page 41
- Figure 21. The channel conditions of LA River Planning Frame 9 range from soft bottom to trapezoidal to concrete. Much of the frame occurs in a dense residential context. Source: LA River Master Plan, 2020. Found on Page 43
- Figure 22. LA River Planning Frame 8 occurs in a dense urban and residential context and the river has a narrow, rectangular box channel section. Source: LA River Master Plan, 2020. Found on Page 45
- Figure 23. This channel condition of LA River Planning Frame 7 is a rectangular box section. Certain areas of the river have no ROW due to large private land holdings. Source: LA River Master Plan, 2020. Found on Page 47
- Figure 24. LA River Planning Frame 6 contains soft bottom river profiles and runs adjacent to Griffith Park. Source: LA River Master Plan, 2020. Found on Page 49
- Figure 25. LA River Planning Frame 5 includes the section of the river that runs through Downtown LA, often near railroads or industrial sites. Source: LA River Master Plan, 2020. Found on Page 51
- Figure 26. The river widens to a concrete trapezoidal channel in LA River Planning Frame 4, with many sites that have contamination from adjacent industrial land uses. Source: LA River Master Plan, 2020. Found on Page 53
- Figure 27. LA River Planning Frame 5 includes the section of the river that runs through South Gate, and often includes power lines from major utilities. Source: LA River Master Plan, 2020. Found on Page 55
- Figure 28. The channel in LA River Planning Frame 2 has a trapezoidal concrete section. There is a significant equestrian community that uses trails along this portion of the river. Source: LA River Master Plan, 2020. Found on Page 57
- Figure 29. The estuary in LA River Planning Frame 1 contains brackish water and is a significant bird habitat. Source: LA River Master Plan, 2020. Found on Page 59
- Figure 30. LA River Access. Access points, trails, and public transportation stops along or adjacent to the LA River. Source: LA River Master Plan, 2020. Found on Page 62
- Figure 31. Chapter 3 of this document covers items related to access and mobility along the LA river. Source: LA River Master Plan, 2020. Found on Page 65
- Figure 32. Multiuse trails can be designed in different ways depending on available width. Ideally equestrians would be separated from pedestrians and bicyclists with a buffer. Dimensions illustrated for bikes are based on the County of LA Bike Plan. Source: OLIN, 2019. Found on Page 67
- Figure 33. Pedestrian, bicycle, and equestrian trail components vary in width and are most often used in combination with one another, but they may also be implemented as standalone trails in certain projects. Dimensions illustrated for bikes are based on the County of LA Bike Plan. Source: OLIN, 2019. Found on Page 68
- Figure 34. ROW conditions vary greatly along the 51 miles of the river. In general, there are four typologies that represent the majority of conditions along the river. Source: OLIN, 2019. Found on Page 71
- Figure 35. A wide landside ROW would allow for the separation of trail types. This presents the possibility to have wide trail dimensions and highest safety measures. This figure represents one possible configuration of this typology. Source: OLIN, 2019. Found on Page 72
- Figure 36. Trails may be consolidated when a wide landside right-of-way (ROW) is present. When the trails are consolidated, more land becomes available for parks, planting, and habitat. This figure represents one possible configuration of this typology. Source: OLIN, 2019. Found on Page 73
- Figure 37. Narrow landside rights-of-way (ROW) allow for the separation of pedestrian and bike trails. However, they do not allow room for separate equestrian trails. In this condition, room for buffer planting is present, allowing separation between the trail users and the property owners. This figure represents one possible configuration of this typology. Source: OLIN, 2019. Found on Page 74
- Figure 38. Narrow landside rights-of-way (ROW) allow for the separation of pedestrian and bike trails. However, they do not allow room for separate equestrian trails. This figure represents one possible configuration of this typology. Source: OLIN, 2019. Found on Page 74

- Figure 40. The cantilevered and elevated trails allow pedestrians and cyclists to utilize the right-of-way (ROW) when there is not enough room between the channel and adjacent property, infrastructure, or utilities. Guardrails on both sides of the trail help keep users safe. This typology could stay open during storm events and offer elevated views. This figure represents one possible configuration of this typology. Source: OLIN, 2019. Found on Page 75
- Figure 39. For instances where there is no landside rights-of-way (ROW), a cantilevered condition can create space for an accessible multiuse trail. This figure represents one possible configuration of this typology. Source: OLIN, 2019. Found on Page 75
- Figure 41. Wide landside rights-of-way (ROW) allow for the separation of trail types with vegetated buffers. This figure represents one possible configuration of this typology. Source: OLIN, 2019. Found on Page 76
- Figure 42. Where possible, trails should slope away from the river and to a landscape drain or infiltration zone. That water should then be filtered and conveyed into the river. Source: OLIN, 2019. Found on Page 79
- Figure 43. Paving types are not limited to those above and vary based on the intended use. Paving material thicknesses and sub-base dimensions vary according to use. Any geotechnical conditions should be studied and reviewed by a licensed State of California Civil engineer. Source: All images OLIN, 2019. Found on Page 80
- Figure 44. Fences, guardrails, and railings should be utilized in the correct locations along the river. These locations are dictated by channel characteristics, user access, adjacent land uses, and programming. Source: OLIN, 2019. Found on Page 82
- Figure 45. The terms above are defined as used in this document. Source: OLIN, 2019. Found on Page 83
- Figure 46. Fence, guardrail, or gate type is determined by location on the river and the intended use. Source: OLIN, 2019. Found on Page 84
- Figure 47. Fence types along the LA River vary due to intended uses and adjacent elements. Source: (Top) OLIN/ Sahar Coston-Hardy, 2013. All other images OLIN, 2019. Found on Page 85
- Figure 48. Gateway conditions vary depending on the space available. Gateways signify entrances to the LA River Trail and vary from trail access points with clear environmental graphics and minimum site-specific amenities to access points with pavilions and programming. Source: OLIN, 2019. Found on Page 87
- Figure 49. Bridge crossings are unique to the use of the bridge. The design, materiality, and form of each bridge should be determined based on the intended use. All bridge proposals shall be studied for hydraulic impacts on the flood capacity of the channel. Source: OLIN, 2019. Found on Page 89
- Figure 50. Land bridges create habitat and movement opportunities through varied planting and topography. Pedestrian, bicycle, and equestrian paths should be a minimum of 12' wide between railings. When possible, slope bridge paths to a maximum of 5%. If sloped up to 8.33% or more, provide landings and railings as per ADA requirements for accessible ramps. Cross-slope should be a maximum of 2%. Use clear centerline striping and environmental graphics, developed with a project's specific needs, to warn trail users of a bridge crossing and provide a clear connection to equestrian trail. Source: OLIN, 2019. Found on Page 90
- Figure 51. Pedestrian, bicycle, and equestrian paths should be a minimum of 12' wide between railings. When possible, slope bridge paths to a maximum of 5%. If sloped up to 8.33% or more, provide landings and railings as per ADA requirements for accessible ramps. Cross-slope should be a maximum of 2%. Use clear centerline striping and environmental graphics, developed with a project's specific needs, to warn trail users of a bridge crossing and provide a clear connection to equestrian trail. Source: OLIN, 2019. Found on Page 90
- Figure 52. Equestrian bridge to be a minimum of 12' wide between railings. When possible, slope equestrian bridge paths to a maximum of 5%. If sloped up to 8.33% or more, provide landings and railings as per ADA requirements for accessible ramps. Cross-slope should be a maximum of 2%. Use clear centerline striping and environmental graphics, developed with a project's specific needs, to warn trail users of a bridge crossing and provide a clear connection to equestrian trail. Source: OLIN, 2019. Found on Page 91
- Figure 53. Pedestrian and bicycle paths should be a minimum of 12' wide between railings. When possible, slope bridge paths to a maximum of 5%. If sloped up to 8.33% or more, provide landings and railings as per ADA requirements for accessible ramps. Cross-slope should be a maximum of 2%. Use clear centerline striping and environmental graphics, developed with a project's specific needs, to warn trail users of a bridge crossing. Source: OLIN, 2019. Found on Page 91
- Figure 54. Lighting, safety, grading, and opportunities for art are key design considerations at underpass locations. Source: OLIN, 2019. Found on Page 92
- Figure 55. Environmental graphics help to define river gateways, as shown in this Shade Pavilion example at river mile 14.7. Source: OLIN, 2019. Found on Page 96
- Figure 56. Chapter 4 of this document covers items related to environmental graphics that are present on and along the LA river. Source: LA River Master Plan, 2020. Found on Page 99
- Figure 57. Character height required for ADA accessibility is based on horizontal viewing distance. Designers should check the latest ADA standards for updates. Source: Standards from U.S. Department of Justice. (2010). 2010 ADA Standards for Accessible Design. Washington, DC: U.S. Department of Justice. Found on Page 101
- Figure 58. Single or double posts are required for signs directly overhanging on circulation paths depending on the height they are hung and the amount of sign protruding beyond the post. Designers should check the latest ADA standards for updates. Source: Standards from U.S. Department of Justice. (2010). 2010 ADA Standards for Accessible Design. Washington, DC: U.S. Department of Justice. Found on Page 101
- Figure 59. Manual on Uniform Traffic Control Devices (MUTCD) symbols, such as the ones for pedestrians, cyclists, equestrians, restrooms, first aid, and drinking water, should be used on signs where possible. Source: 2009 MUTCD Edition with Revisions 1 and 2, 2012. Found on Page 102
- Figure 60. The heron icon should be used when a logo for the LA River is needed, such as on a sign. Source: Edited for the LA River Master Plan, 2020 from the LA River Sign Guidelines, 2003. Found on Page 102
- Figure 61. The terminology and font on all environmental graphics should be "LA River" in Barlow. Source: OLIN, 2019. Found on Page 102
- Figure 62. When a symbol is needed that is not available from MUTCD, another symbol in a similar style and weight to MUTCD standards should be used. Examples include symbols for gender-neutral restrooms, river crossings, a river confluence, and wetlands. Source: (Left) Title 24 of the California Code of Regulations, California Building Code, 2016; all other symbols River LA. Found on Page 102
- Figure 63. The heron graphic should be used for large scale environmental graphics or other identifying environmental graphics. Source: LA River Master Plan, 2020. Found on Page 102
- Figure 64. Barlow is an open-source typeface designed by Jeremy Tribby and is available from Google Fonts. "Semi-bold" through "black" thicknesses are recommended for environmental graphics intended to be read from a distance or while traveling at a fast speed. Source: OLIN, 2019. Found on Page 103
- Figure 65. The approach to the placement and sequence of environmental graphics depends on the context and expected volume and speed of users passing by. The diagram above shows an abstraction of different contexts for environmental graphics leading to and along the LA River. Example scenarios are depicted on the pages that follow. Source: OLIN, 2019. Found on Page 104
- Figure 66. Environmental graphics along arterial roads should guide users across busy intersections. Source: OLIN, 2019. Found on Page 106
- Figure 67. Environmental graphics along vehicular bridges alert drivers to the presence of the LA River. Source: OLIN, 2019. Found on Page 107
- Figure 68. Environmental graphics along collector roads guide users towards the river and also allow for community expression. Source: OLIN, 2019. Found on Page 108
- Figure 69. Environmental graphics along local roads guide users through residential areas. Source: OLIN, 2019. Found on Page 109
- Figure 70. Environmental graphics at gateways should avoid sign clutter. Source: OLIN, 2019. Found on Page 110
- Figure 71. Environmental graphics along the LA River help locate and inform trail users. Source: OLIN, 2019. Found on Page 111
- Figure 72. The suite of LA River environmental graphics includes signs leading to the LA River and signs within projects along the LA River. Source: OLIN, 2019. Found on Page 112



- Figure 73. Baseline requirements for environmental graphics leading to the LA River and projects within the LA County Flood Control District right-of-way depend on the scale of the project. Directional signage is required to be two miles away from an XL project, while only required to be 500 ft away from a S project. Directional signage for bicycles are required only for XL-M projects. At gateways, information signage and regulatory environmental graphics are required for S-XL projects. Within an XS project, interpretive, pavement markings, and mile markers are required. Confirmation signs are required with S-XL projects. Incorporation of large scale graphics with L and XL projects should be considered. Source: OLIN, 2019. Found on Page 114
- Figure 74. This matrix lists the minimum design feature requirements for each category of environmental graphics. Specific requirements will be determined on a project by project basis. These parameters provide the best practices for clear, uncluttered text layout and consistency. Source: OLIN, 2019. Found on Page 116
- Figure 75. Freestanding informational environmental graphics should be hung on double posts with the bottom of the sign between 40" and 45" minimum above grade. Source: OLIN, 2019. Found on Page 118
- Figure 76. Informational signs provide the location name, owner, operator, and funding source of a project, along with trail usage symbols denoting types of trails available. Source: OLIN, 2019. Found on Page 119
- Figure 77. The information panel allows for ease of updating information such as management and funding. Source: OLIN, 2019. Found on Page 120
- Figure 78. Regulatory environmental graphics should be hung so that the bottom-most text is between 40"-70" above grade. Certain freestanding signs require double posts. Source: OLIN, 2019. Found on Page 121
- Figure 79. Regulatory rule signs alert park and trail users to the rules and regulations in effect within river parks and on trails, and must be bilingual. Source: OLIN, 2019. Found on Page 122
- Figure 80. Regulatory warnings signs alert users of flood dangers and trail violations should be placed on gates or fences at entrances to the trail. Source: OLIN, 2019. Found on Page 123
- Figure 81. The signs shown above (1-4) are examples of warning and safety regulations signs that are standard designs and must not be altered. These guidelines do not provide artwork for these standard signs. Designers should consult latest MUTCD guidelines. Source: 2009 MUTCD Edition with Revisions 1 and 2, 2012. Found on Page 124
- Figure 82. The signs shown to the left (5) is a standard regulatory sign, created as part of these guidelines, that must not be altered. Artwork for this standard sign can be downloaded here: Found on Page 124
- Figure 83. Confirmation environmental graphics should be hung so that the "LA River" text is between 70"-120" above grade. Source: OLIN, 2019. Found on Page 126
- Figure 84. Confirmation signs confirm to the viewer that they are traveling the correct direction and identify the next closest major destinations. They can also indicate arrival at a destination with the addition of an arrow. Source: OLIN, 2019. Found on Page 127
- Figure 85. This Confirmation sign should be used at locations such as bridge crossings to confirm the location of the LA River. Source: OLIN, 2019. Found on Page 128
- Figure 86. Confirmation maps help users locate where they are on the trail in relation to the river system and the trail itself, and help to locate other access points. Source: OLIN, 2019. Found on Page 129
- Figure 87. This Confirmation sign should be used for bike routes leading to LA River. Source: OLIN, 2019. Found on Page 130
- Figure 88. A street identifying signs should be hung above the LA River trail denoting name of street above, crossing over the trail. Source: OLIN, 2019. Found on Page 130
- Figure 89. Interpretive environmental graphics should be hung at a height that is easily legible. When freestanding, the sign should be on double posts. Source: OLIN, 2019. Found on Page 131
- Figure 90. The content grid of the interpretive sign provides a template for the layout of content. Source: OLIN, 2019. Found on Page 132
- Figure 91. There are many different ways that the grid can be used for the layout of interpretive signs. The above example shows one method of basic organization with a hierarchy of text sizes. Source: OLIN, 2019. Found on Page 132
- Figure 92. Images or maps should also be incorporated into interpretive signs as focal points. Source: OLIN, 2019. Found on Page 133
- Figure 93. Large callouts or quotes can be incorporated into interpretive signs to highlight key information. Source: OLIN, 2019. Found on Page 133
- Figure 94. Directional environmental graphics should be placed along bike routes leading to the LA River and its access points and projects. Estimated times are based on an average six minute mile. Source: OLIN, 2019. Found on Page 134
- Figure 96. Directional environmental graphics, communicating to both pedestrians and bicyclists, lead to the LA River and its access points and projects from a maximum of two miles away. Source: OLIN, 2019. Found on Page 135
- Figure 95. The above information is from the Manual on Uniform Traffic Control Devices for Streets and Highways, 2009 Edition, including Revisions 1 and 2 dated May 2012, section 9B.20 Bicycle Guide Signs. Source: 2009 MUTCD Edition with Revisions 1 and 2, 2012. Found on Page 135
- Figure 97. Place directional bike route signs along bike routes leading to LA River. These signs include a directional arrow, the distance to LA River, and the estimated time to bike there. Source: OLIN, 2019. Found on Page 136
- Figure 98. This LA River Bike Route Sign can be mounted above another MUTCD Bike Route sign within 2 miles of LA River access points. Source: OLIN, 2019. Found on Page 137
- Figure 99. This LA River bike route sign can be mounted above another MUTCD bike route sign within 2 miles of LA River access points. Source: OLIN, 2019. Found on Page 137
- Figure 100. LA River directional bike destination sign panels direct users to major destinations and provide the distance and estimated time to bike there. Separate panels allow for multiple destinations to be added over time. Source: OLIN, 2019. Found on Page 138
- Figure 101. This LA River directional bike destination sign combination allows for all three destinations to live on a singular sign. Source: OLIN, 2019. Found on Page 139
- Figure 102. Large directional signs provide direction and distance to the LA River and serve as a visual marker. Source: OLIN, 2019. Found on Page 140
- Figure 103. LA River directional destination sign panels direct users to major destinations and the distances to them. At a maximum, three should be stacked together per MUTCD guidelines. Source: OLIN, 2019. Found on Page 141
- Figure 104. LA River large directional signs should be used within 0.5 miles from the LA River. Mile numbers do not appear on signs within 0.5 miles of the destination. Source: OLIN, 2019. Found on Page 142
- Figure 105. LA River bike route directional sign does not show the distance and estimated time when within 0.5 miles of the LA River. Source: OLIN, 2019. Found on Page 142
- Figure 106. Mile markers must appear every 0.5 miles along the LA River. The mile number and bank side are clear and helpful indicators for travelers and emergency responders. Found on Page 143
- Figure 107. Mile markers should be hung so that the bottom of the sign is at 40" above grade. Source: OLIN, 2019. Found on Page 143
- Figure 108. LA River pavement markings alert users to their river mile location along the trail. Source: OLIN, 2019. Found on Page 144
- Figure 109. Pavement markings should be placed so that they face the direction of travel. Source: OLIN, 2019. Found on Page 145
- Figure 110. Underpasses are an opportunity for large scale icon graphics and can alert users to their river mile location. Source: OLIN, 2019. Found on Page 146
- Figure 111. Bridges and overpasses are opportunities for large scale icon graphics and can alert users to street crossings underneath. Source: OLIN, 2019. Found on Page 146
- Figure 112. Pavement Markings can be customized along the LA River trail at gateways to allow for the integration of community expression. Source: OLIN, 2019. Found on Page 148
- Figure 113. Elements of informational environmental graphics, interpretive signs and displays, and large scale icon graphics can all be customized for specific projects. Designers can create their own approaches within the outlined parameters on a project by project basis. Source: OLIN, 2019. Found on Page 149

- Figure 114. Common layers of an aluminum sign include anti-graffiti film, printed vinyl, and retroreflective substrate on aluminum. The best application of applied graphics using vinyl or print is to be determined by fabricator. Always confirm with the fabricator that graphics are protected for exterior environments. Source: OLIN, 2019. Found on Page 151
- Figure 115. Aluminum with rounded corners is used as the base of many types of signs. Source: OLIN, 2019. Found on Page 152
- Figure 117. New sign posts should be RAL 9007. Found on Page 152
- Figure 116. Retroreflective substrates, colored film, and clear anti-graffiti film layer on top of aluminum to create the graphic of a sign. Source: OLIN, 2019. Found on Page 152
- Figure 118. There are many options of paint for pavement markings. Thermoplastic and water-based paints are recommended for use along the LA River based on their durability and environmental impact. Source: OLIN, 2019. Found on Page 153
- Figure 119. Thermoplastic paint is a durable option for pavement markings on asphalt. Source: LeManna, Shutterstock.com, 2020. Found on Page 153
- Figure 120. Vegetation Classification. Much of the vegetation around the LA River is degraded or mostly comprised of non-native plant species. Source: LA River Master Plan, 2020. Found on Page 156
- Figure 121. Chapter 5 of this document covers items related to ecology, habitat, and planting in and along the LA river. Source: LA River Master Plan, 2020. Found on Page 159
- Figure 122. Depicted here with a 4x vertical exaggeration, the LA River changes approximately 780 feet in elevation over its course of 51 miles and passes through several distinct ecological reaches, from the San Fernando Valley to the Estuary. Source: OLIN, 2019. Found on Page 161
- Figure 123. Along entrenched portions of the channel, the LACFCD requires a 17' Limited Landscape Management Zone that prohibits any structures and limits planting to shrubs and groundcovers up to 3-5' in height. The USACE guidelines require a 15' Vegetation Free Zone that limits planting to grasses and shallow-rooting perennials near levees or floodwalls. This distance is measured from either the landside edge of the levee, the top of a levee with a planting berm, or from the edge of a flood wall. Source: OLIN, 2019. Found on Page 163
- Figure 124. Planting along the landside of levees is achievable through the creation of a planting berm that includes a 3' root-free zone off the landside slope of the levee. This planting must follow the latest USACE requirements as stated in the Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures. Source: Drawing based on US Army Corps of Engineers Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures, 2014. Found on Page 165
- Figure 125. Planting along floodwalls is achievable as long as the vegetation-free is kept clear of shrubs and trees. Planting along floodwalls must follow the USACE requirements as stated in the Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures. Source: Drawing based on US Army Corps of Engineers Guidelines for Landscape Planting and Vegetation Management at Levees, Floodwalls, Embankment Dams, and Appurtenant Structures, 2014. Found on Page 165
- Figure 126. Proper ingress and egress clearance must be allowed for maintenance vehicles. The above example considers requirements for a maintenance ramp into an entrenched portion of the river channel, which includes, but is not limited to, the turning radius, direction of flow, and the limited landscape management zone. Source: OLIN, 2019. Found on Page 166
- Figure 127. Tree limbing height requirements vary based on the location of the tree, the programmed use of the area, and visibility requirements. Young trees are exempt from these requirements and should not be limbed until they have reached maturity. Source: OLIN, 2019. Found on Page 167
- Figure 128. Requirements for planting in a utility ROW vary depending on the specific utility agency, but often include limitations on the installation of vegetation of a certain height or within a specified distance to the utility's infrastructure. Source: OLIN, 2019. Found on Page 168
- Figure 129. Clear lines of sight and consistently lit paths of travel should be included at gateways and access points. Source: OLIN, 2019. Found on Page 171
- Figure 130. Lighting along the LA River trail should be consistent and should not be blocked by tree limbs or any other obstructions. Source: OLIN, 2019. Found on Page 171
- Figure 131. Access points where a street drains into the river provide opportunities to capture and treat stormwater. Swales along trails that slope away from the river also provide opportunities for water treatment. Source: OLIN, 2019. Found on Page 172
- Figure 132. A densely planted buffer consisting of trees, shrubs, and groundcovers creates a unique sense of place along the LA River and provides opportunities to create connected habitats. Source: OLIN, 2019. Found on Page 173
- Figure 133. If a trail is designed to slope towards a planted swale, it can collect, convey, and treat stormwater before it reaches the LA River. Source: OLIN, 2019. Found on Page 173
- Figure 134. New projects along the LA River offer the opportunity to change the typical condition of stormdrain pipes that flow underneath street ends and exit directly into the river channel. Source: OLIN, 2019. Found on Page 175
- Figure 135. A daylight storm drain allows for infiltration and treatment of runoff before it enters the LA River. These types of projects can help improve the water quality in the river. Source: OLIN, 2019. Found on Page 175
- Figure 136. Various BMP techniques can be implemented depending on the space available and intended use. Source: (Top) OLIN, 2018, (Middle) OLIN, 2018, (Bottom) Roger Soh, 2010. <https://bit.ly/2ZJNv2l> Found on Page 176
- Figure 137. The infrastructure of each BMP varies based on project needs and should be designed with engineers. Source: OLIN, 2019. Found on Page 177
- Figure 138. Ideas on variations of channel modifications help push the envelope of what is possible along the LA River. Hydraulic analysis and coordination with engineers is necessary to bring these ideas to fruition. Source: OLIN, 2019. Found on Page 179
- Figure 139. The trapezoidal channel could be modified to create large terraces for habitat. Consultation with qualified engineers and hydraulic analysis is necessary. This is not a solution for all 51 miles of the LA River. Source: OLIN, 2019. Found on Page 181
- Figure 140. The trapezoidal channel could be modified to create a public amphitheater. Consultation with qualified engineers and hydraulic analysis is necessary. This is not a solution for all 51 miles of the LA River. Source: OLIN, 2019. Found on Page 181
- Figure 141. The rectangular channel could be modified to create large amphitheaters, a performance venue, or ramps for wildlife. Consultation with qualified engineers and hydraulic analysis is necessary. For sections of these conditions, See Figure 142 on page 183. Source: OLIN, 2019. Found on Page 182
- Figure 142. The rectangular channel could be modified to create a bioswale to collect and treat water before it enters the LA River. Consultation with qualified engineers and hydraulic analysis is necessary. This is not a solution for all 51 miles of the LA River. Source: OLIN, 2019. Found on Page 183
- Figure 143. The rectangular channel could be modified to create large amphitheaters, a performance venue, or ramps for wildlife. Consultation with qualified engineers and hydraulic analysis is necessary. Source: OLIN, 2019. Found on Page 183
- Figure 144. To ensure the healthy growth of planting, the following soil depths should be implemented over structure. The required depths, drainage, and waterproofing need to be coordinated across the project team. Source: OLIN, 2019. Found on Page 184
- Figure 146. Platform construction is complex and should be designed per project by the design team. Service trucks will need to have access underneath the platform. Consultation with qualified engineers and hydraulic analysis is necessary. This is not a solution for all 51 miles of the LA River. Source: OLIN, 2019. Found on Page 185
- Figure 145. Platform program and design may vary to include a range of ecological functions, recreational amenities, or passive park space. Platforms cannot be used over soft bottom portions of the channel or in the estuary. Platforms cannot be used for development, only for open space. This is not a solution for all 51 miles of the LA River. Source: OLIN, 2019. Found on Page 185
- Figure 147. The creation of urban agricultural and community gardens along the LA River is encouraged and provides opportunities for education, access to fresh food, and a sense of stewardship in landscapes along the river. Productive landscapes are not subject to the same native planting or water requirements as other areas. Source: Craig Dietrich, 2011. <https://www.flickr.com/photos/craigdietrich/5837953488/in/photostream/>. Found on Page 187

- Figure 148. Tree protection should be coordinated with the project arborist. Protection fencing should be placed along the dripline of existing trees. Source: OLIN, 2019. Found on Page 188
- Figure 149. (Left) Tree protection also includes wood slats around the trunk of existing trees and they should be removed after construction. Source: OLIN, 2019. Found on Page 189
- Figure 150. (Top Right) Protective wire cages around shrubs susceptible to wildlife grazing can help protect them during establishment. Source: OLIN, 2019. Found on Page 189
- Figure 151. (Bottom Right) Gopher cages help protect shrub rootballs from burrowing wildlife during establishment. Source: OLIN, 2019. Found on Page 189
- Figure 152. Ensuring proper soil testing and composition is crucial to supporting the life and structure of healthy functioning ecosystems. Soil mixes should be designed for it criteria of use, and all soils should be tested for suitability prior to installation. Source: OLIN, 2019. Found on Page 191
- Figure 153. Planting installation methods should include scarifying the subgrade, aligning all root flares with the finished grade, and providing a compacted base for rootballs to provide the best growing conditions and allow the planted media to have the best chance of success. Source: OLIN, 2019. Found on Page 193
- Figure 154. Native planting along the LA River, as seen here at the North Valleyheart Riverwalk at river mile 39.7, should be incorporated into the trail access points. Source: OLIN, 2019. Found on Page 195
- Figure 155. Gabion walls are often a more economical option for grade retention and allow for a substantial amount of planting near the wall. Gabion walls should be designed with a structural engineer. Source: OLIN, 2019. Found on Page 196
- Figure 156. Site walls may function as barriers, seat walls, or decorative elements and should be designed with a structural engineer. Source: OLIN, 2019. Found on Page 197
- Figure 157. Retaining walls achieve a significant change in grade over a relatively narrow space and should be designed with a structural engineer. Source: OLIN, 2019. Found on Page 197
- Figure 158. Geogrid mats, erosion mats, and hydroseeding are examples of strategies for slope stabilization on landside levee slopes. Slope stabilization should occur both during and after construction. The growth of deep rooting shrubs and groundcovers should be encouraged as a long-term slope stabilization method. Source: OLIN, 2019. Found on Page 198
- Figure 159. Armoring the landside slope of a levee is a technique that helps prevent levee failure under extreme overtopping events and strengthens the resilience of the levee over time. It also allows for the construction of a planting berm that supports tree and shrub planting. Source: OLIN, 2019. Found on Page 199
- Figure 160. Historic Fire Occurrences Map. While native plant communities are adapted to occasional fires, the increased frequency of wildfires threatened the establishment of native shrubs and trees and favors non-native invasive species. Several design and maintenance strategies can help reduce this threat to native habitat. Source: State of California and the Department of Forestry and Fire Protection, Fire Perimeters Version 17.1, 2017. Found on Page 201
- Figure 161. Vertical structure in planting varies depending on the type of native plant community. Woodland and forest communities tend to have large canopies, while scrub and chaparral communities tend to have primarily understory and shrub layers. Source: OLIN, 2019. Found on Page 203
- Figure 162. Plant communities in different contexts can host diverse types wildlife. The example above shows a soft-bottom basin condition of either an existing or proposed river section. The species listed are meant to be a snapshot of a full list to be developed with a qualified ecologist and assume appropriate soil and plant community health to support the wildlife species. For more details, reference Chapter 6 of Appendix Volume II: Technical Backup Document. Source: OLIN, 2019. Found on Page 203
- Figure 163. The chaparral community is often found on exposed slopes and hillsides, such as this example in the Santa Monica Mountains. Source: Tracie Hall, <https://www.flickr.com/photos/twobears2/5190609445/> (Topanga State Park, 2010) Found on Page 205
- Figure 164. The coast live oak woodland can be found on slopes or on river banks and terraces, such as this example in Malibu Creek State Park. Source: Tracie Hall, <https://www.flickr.com/photos/twobears2/5193454253/in/photostream/> (Malibu Creek State Park, 2010). Found on Page 205
- Figure 165. Terms and Definitions for Native Plant Species. Terms are defined as used in this document. Source: USDA, US EPA. Found on Page 206
- Figure 166. Species planting at gateways and along street frontages can incorporate more climate-adapted species, while riparian and other habitat areas should prioritize planting locally-sourced LA River watershed native plant species. Source: OLIN, 2019. Found on Page 207
- Figure 167. *Platanus racemosa*. Source: Raffi Kojan, <http://www.gardenology.org>, <https://commons.wikimedia.org/w/index.php?curid=9705655>. Found on Page 214
- Figure 168. *Quercus agrifolia*. Source: Stickpen, <https://commons.wikimedia.org/w/index.php?curid=9944130>. Found on Page 214
- Figure 169. *Umbellularia californica*. Source: Krzysztof Ziarnik, Kenraiz, <https://commons.wikimedia.org/w/index.php?curid=54448438> Found on Page 214
- Figure 170. *Frangula californica*. Source: Krzysztof Ziarnik, Kenraiz, <https://commons.wikimedia.org/w/index.php?curid=37322426>. Found on Page 214
- Figure 171. *Mimulus aurantiacus*. Source: Franz Xaver, <https://commons.wikimedia.org/w/index.php?curid=17165632>. Found on Page 214
- Figure 172. *Salvia mellifera*. Source: Jerry Kirkhart, Black Sage, <https://commons.wikimedia.org/w/index.php?curid=43169351>. Found on Page 214
- Figure 173. *Salvia spathacea*. Source: peganum, <https://commons.wikimedia.org/w/index.php?curid=37049932>. Found on Page 214
- Figure 174. *Solidago californica*. Source: Stickpen, <https://commons.wikimedia.org/w/index.php?curid=8092464>. Found on Page 214
- Figure 175. *Clematis ligusticifolia*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=5376939>. Found on Page 214
- Figure 176. *Sambucus nigra* ssp. *caerulea*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=1953423>. Found on Page 222
- Figure 177. *Lepidospartum squamatum*. Source: Anthony Valois and the National Park Service, [http://researchlearningcenter.org/bloom/species/Lepidospartum\\_squamatum.htm](http://researchlearningcenter.org/bloom/species/Lepidospartum_squamatum.htm) and <https://commons.wikimedia.org/w/index.php?curid=6011633>. Found on Page 222
- Figure 178. *Artemisia californica*. Source: Daderot, <https://commons.wikimedia.org/w/index.php?curid=75807390>. Found on Page 222
- Figure 179. *Eriogonum fasciculatum* var. *fasciculatum*. Source: Dominic, <http://www.inaturalist.org/photos/2067855>. Found on Page 222
- Figure 180. *Eriodictyon trichocalyx*. Source: Jim Morefield, <https://www.inaturalist.org/photos/14141764>. Found on Page 222
- Figure 181. *Salvia apiana*. Source: Laura Camp, <https://www.flickr.com/photos/lauracamp/16355349843>. Found on Page 222
- Figure 182. *Cylindropuntia californica* var. *parkeri*. Source: Stan Spencer, [https://calphotos.berkeley.edu/cgi/img\\_query?enlarge=0000+0000+0409+1587](https://calphotos.berkeley.edu/cgi/img_query?enlarge=0000+0000+0409+1587). Found on Page 222
- Figure 183. *Croton californicus*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=5915540>. Found on Page 222
- Figure 184. *Yucca whipplei*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=2826038>. Found on Page 222
- Figure 185. *Sambucus nigra* ssp. *caerulea*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=1953423>. Found on Page 230
- Figure 186. *Baccharis pilularis* var. *consanguinea*. Source: Miguel Vieira, <https://commons.wikimedia.org/w/index.php?curid=9389145>. Found on Page 230
- Figure 187. *Artemisia californica*. Source: Daderot, <https://commons.wikimedia.org/w/index.php?curid=75807390>. Found on Page 230
- Figure 188. *Eriogonum fasciculatum* var. *fasciculatum*. Source: Dominic, <http://www.inaturalist.org/photos/2067855>. Found on Page 230
- Figure 189. *Isocoma menziesii* ssp. *vernonioides*. Source: Miguel Vieira, <https://commons.wikimedia.org/w/index.php?curid=9389145>. Found on Page 230
- Figure 190. *Epilobium canum* ssp. *canum*. Source: Krzysztof Ziarnik, Kenraiz, <https://commons.wikimedia.org/w/index.php?curid=54696863>. Found on Page 230
- Figure 191. *Corethrogyne filaginifolia* var. *filaginifolia*. Source: John Rusk, [https://www.flickr.com/photos/john\\_d\\_rusk/21207961929](https://www.flickr.com/photos/john_d_rusk/21207961929). Found on Page 230
- Figure 192. *Yucca whipplei*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=2826038>. Found on Page 230
- Figure 193. *Stipa lepida*. Source: John Rusk, <https://commons.wikimedia.org/w/index.php?curid=59287600>. Found on Page 230

Figure 194. *Juglans californica*. Source: Consultaplantas, <https://commons.wikimedia.org/w/index.php?curid=44978241>. Found on Page 238

Figure 195. *Cercocarpus betuloides*. Source: Lazaregagnidze, <https://commons.wikimedia.org/w/index.php?curid=32918241>. Found on Page 238

Figure 196. *Ceanothus oliganthus*. Source: Anthony Valois and the National Park Service, 2004. [http://researchlearningcenter.org/bloom/species/Ceanothus\\_oliganthus.htm](http://researchlearningcenter.org/bloom/species/Ceanothus_oliganthus.htm). Found on Page 238

Figure 197. *Prunus ilicifolia* ssp. *ilicifolia*. Source: John Rusk, <https://commons.wikimedia.org/w/index.php?curid=59290247>. Found on Page 238

Figure 198. *Heteromeles arbutifolia*. Source: Miguel Vieira, <https://commons.wikimedia.org/w/index.php?curid=19525268>. Found on Page 238

Figure 199. *Rhus ovata*. Source: Bri Weldon, <https://www.flickr.com/photos/briweldon/5228764249>. Found on Page 238

Figure 200. *Eriophyllum confertiflorum*. Source: Björn S., <https://www.flickr.com/photos/40948266@N04/43163438812>. Found on Page 238

Figure 201. *Lotus scoparius* (Acmispon glaber). Source: glmory, <https://commons.wikimedia.org/w/index.php?curid=32092287>. Found on Page 238

Figure 202. *Stipa pulchra*. Source: Matt Lavin, [https://www.flickr.com/photos/plant\\_diversity/35034340452](https://www.flickr.com/photos/plant_diversity/35034340452). Found on Page 238

Figure 203. *Quercus agrifolia*. Source: Stickpen, <https://commons.wikimedia.org/w/index.php?curid=9944130>. Found on Page 246

Figure 204. *Fraxinus velutina* var. *coriacea*. Source: Kenraiz, <https://commons.wikimedia.org/w/index.php?curid=75992775>. Found on Page 246

Figure 205. *Platanus racemosa*. Source: Raffi Kojian, <http://www.gardenology.org>, <https://commons.wikimedia.org/w/index.php?curid=9705655>. Found on Page 246

Figure 206. *Populus trichocarpa*. Source: Daniel Mayer, <https://commons.wikimedia.org/w/index.php?curid=7381945>. Found on Page 246

Figure 207. *Keckiella cordifolia*. Source: Björn S., [https://commons.wikimedia.org/wiki/File:Heartleaf\\_Keckiella\\_-\\_Keckiella\\_cordifolia\\_\(43818527031\).jpg](https://commons.wikimedia.org/wiki/File:Heartleaf_Keckiella_-_Keckiella_cordifolia_(43818527031).jpg). Found on Page 246

Figure 208. *Ribes aureum* var. *gracillimum*. Source: John Rusk, [https://www.flickr.com/photos/john\\_d\\_rusk/8941180855](https://www.flickr.com/photos/john_d_rusk/8941180855). Found on Page 246

Figure 209. *Artemisia douglasiana*. Source: Römert, <https://commons.wikimedia.org/w/index.php?curid=19802958>. Found on Page 246

Figure 210. *Rosa californica*. Source: Bill Leikam, <https://commons.wikimedia.org/w/index.php?curid=40893617>. Found on Page 246

Figure 211. *Dryopteris arguta*. Source: John Rusk, <https://commons.wikimedia.org/w/index.php?curid=59291429>. Found on Page 246

Figure 212. *Quercus agrifolia*. Source: Stickpen, <https://commons.wikimedia.org/w/index.php?curid=9944130>. Found on Page 254

Figure 213. *Sambucus nigra* ssp. *caerulea*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=1953423>. Found on Page 254

Figure 214. *Umbellularia californica*. Source: Krzysztof Ziarnek, Kenraiz, <https://commons.wikimedia.org/w/index.php?curid=54448438>. Found on Page 254

Figure 215. *Prunus ilicifolia* ssp. *ilicifolia*. Source: John Rusk, <https://commons.wikimedia.org/w/index.php?curid=59290247>. Found on Page 254

Figure 216. *Ribes californicum*. Source: Tom Hilton, [https://commons.wikimedia.org/wiki/File:Ribes\\_californicum.jpg](https://commons.wikimedia.org/wiki/File:Ribes_californicum.jpg). Found on Page 254

Figure 217. *Rhus aromatica*. Source: David J. Stang, <https://commons.wikimedia.org/w/index.php?curid=61092418>. Found on Page 254

Figure 218. *Sisyrinchium bellum*. Source: Franco Folini, <https://www.flickr.com/photos/livenature/4350730696>. Found on Page 254

Figure 219. *Bromus carinatus* var. *carinatus*. Source: Matt Lavin, <https://commons.wikimedia.org/w/index.php?curid=25134214>. Found on Page 254

Figure 220. *Muhlenbergia rigens*. Source: Krzysztof Ziarnek, Kenraiz, <https://commons.wikimedia.org/w/index.php?curid=54450777>. Found on Page 254

Figure 221. *Populus fremontii*. Source: CK Kelly, <https://www.inaturalist.org/photos/10765354>. Found on Page 262

Figure 222. *Salix laevigata*. Source: no attribution necessary. Found on Page 262

Figure 223. *Salix exigua*. Source: Thayne Tuason, <https://commons.wikimedia.org/w/index.php?curid=67414102>. Found on Page 262

Figure 224. *Salix lasiandra*. Source: Matt Lavin, <https://commons.wikimedia.org/w/index.php?curid=22760167>. Found on Page 262

Figure 225. *Salix lasiolepis*. Source: Par Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=7556942>. Found on Page 262

Figure 226. *Mimulus cardinalis*. Source: Dcjrjr, <https://commons.wikimedia.org/w/index.php?curid=42183047>. Found on Page 262

Figure 227. *Juncus patens*. Source: Daderot, <https://commons.wikimedia.org/w/index.php?curid=37530402>. Found on Page 262

Figure 228. *Agrostis exarata*. Source: sarahnwilson, <https://www.inaturalist.org/photos/19749167>. Found on Page 262

Figure 229. *Carex praegracilis*. Source: Katie Hetrick, [https://commons.wikimedia.org/wiki/File:Carex\\_praegracilis\\_-\\_Spring\\_in\\_the\\_Mary\\_Wattis\\_Brown\\_Garden\\_of\\_California\\_Native\\_Plants.jpg](https://commons.wikimedia.org/wiki/File:Carex_praegracilis_-_Spring_in_the_Mary_Wattis_Brown_Garden_of_California_Native_Plants.jpg). Found on Page 262

Figure 230. *Platanus racemosa*. Source: Raffi Kojian, <http://www.gardenology.org>, <https://commons.wikimedia.org/w/index.php?curid=9705655>. Found on Page 268

Figure 231. *Fraxinus velutina* var. *coriacea*. Source: Kenraiz, <https://commons.wikimedia.org/w/index.php?curid=75992775>. Found on Page 268

Figure 232. *Populus fremontii*. Source: CK Kelly, <https://www.inaturalist.org/photos/10765354>. Found on Page 268

Figure 233. *Amorpha fruticosa*. Source: Leonora (Ellie) Enking, <https://www.flickr.com/photos/33037982@N04/14428257254>. Found on Page 268

Figure 234. *Baccharis salicifolia*. Source: Krzysztof Ziarnek, Kenraiz, <https://commons.wikimedia.org/w/index.php?curid=54913701>. Found on Page 268

Figure 235. *Rhamnus ilicifolia*. Source: Charlie Hohn, <https://www.inaturalist.org/photos/7262866>. Found on Page 268

Figure 236. *Rubus ursinus*. Source: Gaia Leo, <https://commons.wikimedia.org/w/index.php?curid=68610213>. Found on Page 268

Figure 237. *Thalictrum fendleri* var. *polycarpum*. Source: Flowersinmyyard, <https://commons.wikimedia.org/w/index.php?curid=68320295>. Found on Page 268

Figure 238. *Elymus condensatus*. Source: Peggy A. Lopipero-Langmo, <https://www.flickr.com/photos/98699202@N03/10355498513>. Found on Page 268

Figure 239. *Quercus lobata*. Source: King of Hearts, <https://commons.wikimedia.org/w/index.php?curid=75700289>. Found on Page 276

Figure 240. *Platanus racemosa*. Source: Raffi Kojian, <http://www.gardenology.org>, <https://commons.wikimedia.org/w/index.php?curid=9705655>. Found on Page 276

Figure 241. *Frangula californica* ssp. *californica*. Source: Krzysztof Ziarnek, Kenraiz, <https://commons.wikimedia.org/w/index.php?curid=54696941>. Found on Page 276

Figure 242. *Eriophyllum confertiflorum*. Source: Björn S., <https://www.flickr.com/photos/40948266@N04/43163438812>. Found on Page 276

Figure 243. *Sisyrinchium bellum*. Source: Franco Folini, <https://www.flickr.com/photos/livenature/4350730696>. Found on Page 276

Figure 244. *Malacothamnus fasciculatus*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=1113761>. Found on Page 276

Figure 245. *Vitis girdiana*. Source: Stickpen, <https://commons.wikimedia.org/wiki/File:Vitisgirdiana1.JPG>. Found on Page 276

Figure 246. *Stipa cernua*. Source: Kyle Nessen, <https://www.inaturalist.org/photos/38751036>. Found on Page 276

Figure 247. *Stipa pulchra*. Source: Matt Lavin, [https://www.flickr.com/photos/plant\\_diversity/35034340452](https://www.flickr.com/photos/plant_diversity/35034340452). Found on Page 276

Figure 248. *Juglans californica*. Source: Consultaplantas, <https://commons.wikimedia.org/w/index.php?curid=44978241>. Found on Page 280

Figure 249. *Sambucus nigra* ssp. *caerulea*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=1953423>. Found on Page 280

Figure 250. *Heteromeles arbutifolia*. Source: Miguel Vieira, <https://commons.wikimedia.org/w/index.php?curid=19525268>. Found on Page 280

Figure 251. *Salvia leucophylla*. Source: John Rusk, [https://www.flickr.com/photos/john\\_d\\_rusk/9309081263](https://www.flickr.com/photos/john_d_rusk/9309081263). Found on Page 280

Figure 252. *Malacothamnus fasciculatus*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=1113761>. Found on Page 280

Figure 253. *Asclepias fascicularis*. Source: Jim Morefield, <https://www.flickr.com/photos/127605180@N04/15966683860>. Found on Page 280

Figure 254. *Achillea millefolium* var. *californicum*. Source: Dcjrjr, <https://commons.wikimedia.org/w/index.php?curid=16059528>. Found on Page 280

Figure 255. *Calyptegia macrostegia* ssp. *arida*. Source: OLIN, 2017. Found on Page 280

Figure 256. *Solidago californica*. Source: Stickpen, <https://commons.wikimedia.org/w/index.php?curid=8092464>. Found on Page 280

Figure 257. *Salix exigua*. Source: Thayne Tuason, [https://commons.wikimedia.org/wiki/File:Salix\\_exigua\\_var.\\_exigua\\_4.jpg](https://commons.wikimedia.org/wiki/File:Salix_exigua_var._exigua_4.jpg). Found on Page 286

Figure 258. *Baccharis salicifolia*. Source: Krzysztof Ziarnek, Kenraiz, <https://commons.wikimedia.org/w/index.php?curid=54913701>. Found on Page 286

Figure 259. *Cyperus eragrostis*. Source: Krzysztof Ziarnek, Kenraiz, [https://commons.wikimedia.org/wiki/Category:Cyperus\\_eragrostis#/media/File:Cyperus\\_eragrostis\\_kz03.jpg](https://commons.wikimedia.org/wiki/Category:Cyperus_eragrostis#/media/File:Cyperus_eragrostis_kz03.jpg). Found on Page 286

Figure 260. *Typha latifolia*. Source: R. A. Nonenmacher, [https://commons.wikimedia.org/wiki/File:Typha\\_latifolia\\_7642.jpg](https://commons.wikimedia.org/wiki/File:Typha_latifolia_7642.jpg). Found on Page 286

Figure 261. *Bolboschoenus maritimus*. Source: Stefan Lefnaer, [https://commons.wikimedia.org/wiki/File:Bolboschoenus\\_maritimus\\_s.\\_str.\\_slf.jpg](https://commons.wikimedia.org/wiki/File:Bolboschoenus_maritimus_s._str._slf.jpg). Found on Page 286



- Figure 262. *Schoenoplectus californicus*. Source: Forest and Kim Starr, [https://upload.wikimedia.org/wikipedia/commons/2/2a/Burr\\_Marigold\\_Bidens\\_Laavis\\_%28237189541%29.jpeg](https://upload.wikimedia.org/wikipedia/commons/2/2a/Burr_Marigold_Bidens_Laavis_%28237189541%29.jpeg) Found on Page 286
- Figure 263. *Bidens laevis*. Source: Suzanne Antonia, [https://commons.wikimedia.org/wiki/File:Burr\\_Marigold\\_Bidens\\_Laavis\\_\(237189541\).jpeg](https://commons.wikimedia.org/wiki/File:Burr_Marigold_Bidens_Laavis_(237189541).jpeg). Found on Page 286
- Figure 264. *Sparganium eurycarpum*. Source: Tom Koerner, [https://commons.wikimedia.org/wiki/File:Bur-reed\\_\(Sparganium\\_eurycarpum\)\\_Sand\\_Lake\\_Wetland\\_Management\\_District\\_01\\_\(14385334072\).jpg#filelinks](https://commons.wikimedia.org/wiki/File:Bur-reed_(Sparganium_eurycarpum)_Sand_Lake_Wetland_Management_District_01_(14385334072).jpg#filelinks). Found on Page 286
- Figure 265. *Artemisia douglasiana*. Source: Römert, <https://commons.wikimedia.org/w/index.php?curid=19802958>. Found on Page 286
- Figure 266. *Elymus glaucus* ssp. *glaucus*. Source: Wild Bryde, <https://www.inaturalist.org/photos/38822555>. Found on Page 292
- Figure 267. *Lotus scoparius* (Acmispon glaber). Source: glmory, <https://commons.wikimedia.org/w/index.php?curid=32092287>. Found on Page 292
- Figure 268. *Isocoma menziesii* ssp. *vernonioides*. Source: Miguel Vieira, <https://commons.wikimedia.org/w/index.php?curid=9389145>. Found on Page 292
- Figure 269. *Bromus carinatus*. Source: Matt Lavin, [https://www.flickr.com/photos/plant\\_diversity/3861052158](https://www.flickr.com/photos/plant_diversity/3861052158). Found on Page 292
- Figure 270. *Deinandra fasciculata*. Source: Björn S. [https://commons.wikimedia.org/wiki/File:Clustered\\_Tarweed\\_-\\_Deinandra\\_fasciculata\\_\(41948547430\).jpg](https://commons.wikimedia.org/wiki/File:Clustered_Tarweed_-_Deinandra_fasciculata_(41948547430).jpg). Found on Page 292
- Figure 271. *Stipa cernua*. Source: Kyle Nessen, <https://www.inaturalist.org/photos/38751036>. Found on Page 292
- Figure 272. *Stipa lepida*. Source: John Rusk, <https://commons.wikimedia.org/w/index.php?curid=59287600>. Found on Page 292
- Figure 273. *Muhlenbergia rigens*. Source: Krzysztof Ziarnek, Kenraiz, <https://commons.wikimedia.org/w/index.php?curid=54450777>. Found on Page 292
- Figure 274. *Koeleria macrantha*. Source: Matt Lavin, [https://commons.wikimedia.org/wiki/File:Koeleria\\_macrantha\\_\(3879657197\).jpg](https://commons.wikimedia.org/wiki/File:Koeleria_macrantha_(3879657197).jpg). Found on Page 292
- Figure 275. *Parkinsonia florida*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=344153>. Found on Page 298
- Figure 276. *Quercus wislizeni*. Source: Krzysztof Ziarnek, Kenraiz, [https://commons.wikimedia.org/wiki/File:Quercus\\_wislizeni\\_kz3.jpg](https://commons.wikimedia.org/wiki/File:Quercus_wislizeni_kz3.jpg). Found on Page 298
- Figure 277. *Atriplex canescens*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=4269398>. Found on Page 298
- Figure 278. *Calliandra eriophylla*. Source: Chris English, <https://commons.wikimedia.org/w/index.php?curid=56261079>. Found on Page 298
- Figure 279. *Fallugia paradoxa*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=3929255>. Found on Page 298
- Figure 280. *Larrea tridentata*. Source: Andrey Zharkikh, <https://commons.wikimedia.org/w/index.php?curid=60781561>. Found on Page 298
- Figure 281. *Encelia farinosa*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=204952>. Found on Page 298
- Figure 282. *Sphaeralcea ambigua*. Source: Stan Shebs, <https://commons.wikimedia.org/w/index.php?curid=8563714>. Found on Page 298
- Figure 283. *Abutilon palmeri*. Source: Ken-ichi Ueda, <https://www.inaturalist.org/photos/27181425?size=large>. Found on Page 298
- Figure 284. *Cercis occidentalis*. Source: Stan Shebs, [https://commons.wikimedia.org/wiki/File:Cercis\\_occidentalis\\_1.jpg](https://commons.wikimedia.org/wiki/File:Cercis_occidentalis_1.jpg). Found on Page 304
- Figure 285. *Chilopsis linearis*. Source: Krzysztof Ziarnek, Kenraiz, <https://commons.wikimedia.org/w/index.php?curid=54448559>. Found on Page 304
- Figure 286. *Chitalpa tashkentensis*. Source: Frau Siebenschläfer, <https://commons.wikimedia.org/w/index.php?curid=15746538>. Found on Page 304
- Figure 287. *Hesperocyparis forbesii*. Source: Consultapantas, [https://commons.wikimedia.org/wiki/File:Cupressus\\_forbesii\\_1c.JPG](https://commons.wikimedia.org/wiki/File:Cupressus_forbesii_1c.JPG). Found on Page 304
- Figure 288. *Lyonothamnus floribundus* ssp. *asplenifolius*. Source: J Brew, <https://commons.wikimedia.org/w/index.php?curid=15394974>. Found on Page 304
- Figure 289. *Pinus torreyana*. Source: Richard O. Barry, [https://en.m.wikipedia.org/wiki/File:Pinus\\_torreyana\\_at\\_State\\_Reserve.jpg](https://en.m.wikipedia.org/wiki/File:Pinus_torreyana_at_State_Reserve.jpg) Found on Page 304
- Figure 290. *Quillaja saponaria*. Source: Daderot, <https://commons.wikimedia.org/w/index.php?curid=37387713>. Found on Page 304
- Figure 291. *Quercus douglasii*. Source: Yath, [https://commons.wikimedia.org/wiki/File:Large\\_Blue\\_Oak.jpg](https://commons.wikimedia.org/wiki/File:Large_Blue_Oak.jpg). Found on Page 304
- Figure 292. *Tipuana tipu*. Source: Daniel Ventura, <https://commons.wikimedia.org/w/index.php?curid=2246165>. Found on Page 304
- Figure 293. Projects Along the LA River. A consistent cadence of XS, S, M, L, and XL projects occurs along the 51 miles of the LA River. Source: LA River Master Plan, 2020. Found on Page 316
- Figure 294. Chapter 6 of this document covers items related to facilities and amenities along the LA river. Source: LA River Master Plan, 2020. Found on Page 319
- Figure 295. Lewis MacAdams Riverfront Park is one example of an existing pavilion along the LA River at river mile 26. Source: LA Public Works, 2018. Found on Page 321
- Figure 296. Shade, Rest, and Gathering Pavilions all occur at a consistent cadence along the river. A base level of amenities are to be installed at a minimum of every half mile along each bank of the river. Source: OLIN, 2019. Found on Page 323
- Figure 297. Pavilion A, B, and C components range in size and programming from shade and drinking fountains to restrooms and community kitchens. Source: Gehry Partners, 2019. Found on Page 324
- Figure 298. The basic components of a Shade Pavilion include shade, seating, and drinking fountains. Various components are illustrated here and dimensions are shown as general guides, not exact requirements. Source: Gehry Partners, 2019. Found on Page 325
- Figure 299. The basic components of a Rest Pavilion include restrooms, bike racks, and a snack station. Dimensions are general guides and not exact requirements. Source: Gehry Partners, 2019. Found on Page 326
- Figure 300. Restrooms should consist of single occupancy stalls, preferably including both a storage room and a mother's room. Various components are illustrated here and dimensions are shown as general guides, not exact requirements. Source: Gehry Partners, 2019. Found on Page 327
- Figure 301. The basic components of a Gather Pavilion include a programed element such as a cafe or community center. Cafes can vary in size depending on the project site. Dimensions are general guides and not exact requirements. Source: Gehry Partners, 2019. Found on Page 328
- Figure 302. Locker rooms in Gather Pavilions may not be able to provide single use occupancy restrooms or locker stalls, although they are preferred if possible. Various components are illustrated here and dimensions are shown as general guides, not exact requirements. Source: Gehry Partners, 2019. Found on Page 329
- Figure 303. Gather Pavilions may include a bike repair and rental shop or a public safety station. Supporting facilities such as management offices or additional storage can also be included. Dimensions are general guides and not exact requirements. Source: Gehry Partners, 2019. Found on Page 330
- Figure 304. Gather Pavilions may include rooms that can be of general use to the community, such as a community kitchen or multipurpose room. Various components are illustrated here and dimensions are shown as general guides, not exact requirements. Source: Gehry Partners, 2019. Found on Page 331
- Figure 305. Pavilions can be configured in a variety of footprints ranging from compact linear to expanded depending on the project site. Found on Page 333
- Figure 306. A Shade Pavilion (Tier I) at river mile 14.7 is an example of how trail users can be welcomed with environmental graphics, an accessible ramp entrance, and amenities such as bike racks and drinking fountains. Source: OLIN, 2019. Found on Page 334
- Figure 307. The plan of the Shade Pavilion (Tier I) example at river mile 14.7 shows how multiple points of access are provided to the LA River multiuse trail. Source: OLIN, 2019. Found on Page 335
- Figure 308. The Shade Pavilion (Tier I) can be configured in a variety of footprints from compact to expanded, depending on the project site and other constraints. Source: Gehry Partners, 2019. Found on Page 336



- Figure 309. These example plans show how the Shade Pavilion (Tier I) can be implemented in a variety of urban contexts along the LA River. Source: Gehry Partners, 2019. Found on Page 337
- Figure 310. The example of a Rest Pavilion (Tier II) at river mile 50.9 welcomes users through pavement markings, a picnic area, and a local food vendor. Public restrooms are an important feature of Rest Pavilions. Source: OLIN, 2019. Found on Page 338
- Figure 311. The plan of the Rest Pavilion (Tier II) example at river mile 50.9 shows how access is provided to the LA River multiuse trail and how stormwater can be treated prior to entering the LA River. Source: OLIN, 2019. Found on Page 339
- Figure 312. The Rest Pavilion (Tier II) can be configured in a variety of footprints from compact to expanded, depending on the project site and other constraints. Source: Gehry Partners, 2019. Found on Page 340
- Figure 313. These example plans show how the Rest Pavilion (Tier II) can be implemented in a variety of urban contexts along the LA River. Source: Gehry Partners, 2019. Found on Page 341
- Figure 314. This example of a Gathering Pavilion (Tier III) at river mile 28.4 includes a cafe overlooking the LA River. Gather Pavilions often include community programming that requires expanded facilities. Source: OLIN, 2019. Found on Page 342
- Figure 315. The plan of the Gathering Pavilion (Tier III) example at river mile 28.4 shows how multiple facilities can be incorporated onto a project site. Source: OLIN, 2019. Found on Page 343
- Figure 316. The Gather Pavilion (Tier III) can be configured in a variety of footprints from compact to expanded, depending on the project site and other constraints. Source: Gehry Partners, 2019. Found on Page 344
- Figure 317. These example plans show how the Gathering Pavilion (Tier III) can be implemented in a variety of urban contexts along the LA River. Source: Gehry Partners, 2019. Found on Page 345
- Figure 319. LA River Site Furnishings should use RAL 9007 for silver metallic finishes and an RAL 5013 to match the environmental graphics and for overall consistency along the LA River. Source: OLIN, 2019. Found on Page 349
- Figure 318. A variety of site furnishings can be placed at pavilions, parks, or along the river trail. See the following pages for more details on each element. Source: OLIN, 2019. Found on Page 349
- Figure 320. Litter receptacles should have simple forms with flat tops and an opening protected from rain. Source: OLIN, 2019. Found on Page 350
- Figure 321. (Top) Bicycle racks should be placed to allow room for parking and maneuvering. Source: OLIN, 2019. Found on Page 351
- Figure 322. (Bottom) Bicycle racks should be individual loops and simple forms without ornamentation. Source: OLIN, 2019. Found on Page 351
- Figure 323. Bench forms should prioritize users' comfort and provide flexibility in use. Source: OLIN, 2019. Found on Page 352
- Figure 324. Drinking fountains should not have cupping or bowl shapes for hygiene and ease of cleaning. Source: OLIN, 2019. Found on Page 353
- Figure 325. (Top) Luminaires should have a modern, simple form without ornamentation. Source: OLIN, 2019. Found on Page 355
- Figure 326. (Left) Luminaires should be Dark Sky compliant and not have protruding features. Source: Torres Area Light, Landscape Forms, 2017. <https://www.landscapeforms.com/en-US/product/Pages/Torres-Area-Light.aspx>. Found on Page 355
- Figure 327. (Top Right) All finishes should be a solid metallic grey color matching RAL 9007. Source: RAL-Color 9007, Wikimedia Commons, 2007. [https://commons.wikimedia.org/wiki/File:RAL-Color\\_9007.gif](https://commons.wikimedia.org/wiki/File:RAL-Color_9007.gif). Found on Page 355
- Figure 328. (Bottom Right) Luminaires should occur at a regular cadence to illuminate the path. Source: Rama Area Light, Landscape Forms, 2008. <https://www.landscapeforms.com/en-US/product/Pages/Rama-Area-Light.aspx>. Found on Page 355
- Figure 329. Factors such as light color temperature should step down incrementally when transitioning from street lighting to sensitive habitat areas that are not lit. Qualified lighting designers, landscape architects, and ecologists should work to limit the amount of light fixtures, reduce color temperature, and eliminate light spillover on a project by project basis. Source: OLIN, 2019. Found on Page 356
- Figure 330. (Left) Call boxes should have an identifiable and visible top. When possible, call boxes should match the LARMP Blue, RAL 5013. Source: Blue Light Tower, CASE Emergency systems, 2019. <https://www.caseemergencysystems.com/products/blue-light-tower/>. Found on Page 357
- Figure 331. (Middle) Call boxes should be freestanding tall structures with push button calling. Source: Blue Light Tower, CASE Emergency systems, 2019. <https://www.caseemergencysystems.com/products/blue-light-tower/>. Found on Page 357
- Figure 332. Attendees listening to the Jessica Henson speak about the Master Plan at the Canoga Park community meeting at river mile 51. Source: OLIN, 2018. Found on Page 360
- Figure 333. Students at the LA River Master Plan Youth Summit move between worksessions to learn about the LA River. Source: OLIN, 2018. Found on Page 385
- Figure 334. Community members actively participating in the planning process at the Community Meeting in Studio City. Source: LA County Public Works, 2019. Found on Page 386
- Figure 335. Steering committee members listen and discuss Master Plan items at the 8th Steering Committee Meeting. Source: OLIN, 2019. Found on Page 387

# ACKNOWLEDGMENTS

This update to the LA River Master Plan was initiated by the LA County Board of Supervisors and led by LA County Public Works. The creation of the plan was supported by numerous departments within LA County as well as municipalities, organizations, and individuals that served on the Steering Committee and Subcommittees.

In addition to the named individuals on these pages, many people committed to the future of the LA River contributed significantly to the plan by sharing ideas, priorities, and goals for the river.

This Master Plan was made possible only through their rich contributions.

---

## LA COUNTY BOARD OF SUPERVISORS

**Supervisor Hilda L. Solis**  
First District

**Supervisor Mark Ridley-Thomas**  
Second District

**Supervisor Sheila Kuehl**  
Third District

**Supervisor Janice Hahn**  
Fourth District

**Supervisor Kathryn Barger**  
Fifth District

---

## LA COUNTY PUBLIC WORKS

**Director Mark Pestrella**  
**Angela George-Moody**  
**Dan Lafferty**

**Keith Lilley**  
**Carolina Hernandez**  
**Genevieve Osmeña**  
**Christine Wartman**  
**Mark Beltran**  
**Donna Diaz**  
**Alynn Sun**

**Armando D'Angelo**  
**David Gallagher**  
**Ernesto Rivera**  
**Helen To**  
**Iraj Nasser**  
**James Bazinet**  
**Kenneth Chow**  
**Khai Chung**  
**Luis Garcia**

**Luis Perez**  
**Mateusz Suska**  
**Nayiri Vartanian**  
**Paul Shadmani**  
**Richard Shieh**  
**Ryan Ong**  
**Stella Quiroz**  
**Stephen Zurek**  
**Yvonne Taylor**



Figure 333. Students at the LA River Master Plan Youth Summit move between worksessions to learn about the LA River. Source: OLIN, 2018.

## INTERNAL COUNTY TEAM

### BOARD OF SUPERVISORS FIRST DISTRICT

Waqas Rehman  
Guadalupe Duran-Medina  
Martin Reyes  
Teresa Villegas

### BOARD OF SUPERVISORS SECOND DISTRICT

Karly Katona  
Carmen Gosey

### BOARD OF SUPERVISORS THIRD DISTRICT

Katy Yaroslavsky  
Virdiana Velez

### BOARD OF SUPERVISORS FOURTH DISTRICT

Jocelyn Rivera-Olivas

### BOARD OF SUPERVISORS FIFTH DISTRICT

Chris Perry  
Edel Vizcarra

### CHIEF SUSTAINABILITY OFFICE

Gary Gero  
Rita Kampalath

### DEPARTMENT OF ARTS AND CULTURE

Kristin Sakoda  
Heather Rigby  
Grace Ramirez Gaston  
Iris Anna Regn  
Pauline Kamiyama  
Leticia Rhi Buckley  
Mayen Alcantara

### DEPARTMENT OF PARKS AND RECREATION

Alina Bokde  
Michelle O'Connor  
Sheela Mathai  
Clement Lau  
John Diaz

### DEPARTMENT OF REGIONAL PLANNING

Gina Natoli  
Patricia Hachiya  
Jennifer Mongolo  
Connie Chung  
Ayala Scott

### NATURAL HISTORY MUSEUM OF LOS ANGELES COUNTY

Carol Bornstein  
Lila Higgins

### HEALTH SERVICES

Whitney Lawrence



Figure 334. Community members actively participating in the planning process at the Community Meeting in Studio City.  
Source: LA County Public Works, 2019.

## CONSULTANT TEAM

Mark Hanna, Project Manager

### PRIME, LEAD ENGINEER, AND WATER RESOURCES: GEOSYNTEC CONSULTANTS

Mark Hanna  
Ken Susilo  
Najwa Pitois  
Al Preston  
Joe Goldstein  
Paul Senker  
Daniel Lee  
Nami Tanaka  
Curtis Fang  
Stephanie Tong  
Yoshi Andersen  
Mustafa Ghuneim  
Randy Brandt  
Lea Kane  
Stacy Luell  
Keith Hudson

**FACILITATION:**  
**KEARNS & WEST**  
Joan Isaacson  
Jack Hughes  
Jenna Tourje  
Taylor York

**WEB DESIGN:**  
**MOSAIC**

Jessica Henson, Project Manager

### LANDSCAPE ARCHITECTURE, URBAN DESIGN, AND PLANNING: OLIN

Laurie Olin  
Richard Roark  
Jessica Henson  
Andrew Dobshinsky  
Nate Wooten  
Joanna Karaman  
Rebecca Klein  
AJ Sus  
Claire Casstevens  
Diana Jih  
Kate Lawler  
Michael Miller  
Danielle Toronyi  
Alexa Vaughn-Brainard  
Sarah Swanseen  
Evangeline Sheridan  
David Armbruster  
Megan Hedges

**BRANDING:**  
**72&SUNNY**

**AFFORDABLE HOUSING:**  
**STREET LEVEL ADVISORS**  
Rick Jacobus

### ARCHITECTURE AND PLANNING:

**GEHRY PARTNERS**  
Frank Gehry  
Tensho Takemori  
Meaghan Lloyd  
Anand Devarajan  
Shuo Zhai  
Dana McKinney

### ENGAGEMENT: RIVER LA, DAKELUNA

Ed Reyes  
Angela Barranco  
Lou Pieh  
Jon Switalski  
Natalie Gonzalez  
Jason Foster  
Miguel Luna  
Bridgette Calderon

**WATER RESOURCES:**  
**KRIS HELM**

### MEDIA RELATIONS:

**MERCURY**  
Glenn Gritzner  
Abby McRae





**Figure 335. Steering committee members listen and discuss Master Plan items at the 8th Steering Committee Meeting.** Source: OLIN, 2019.

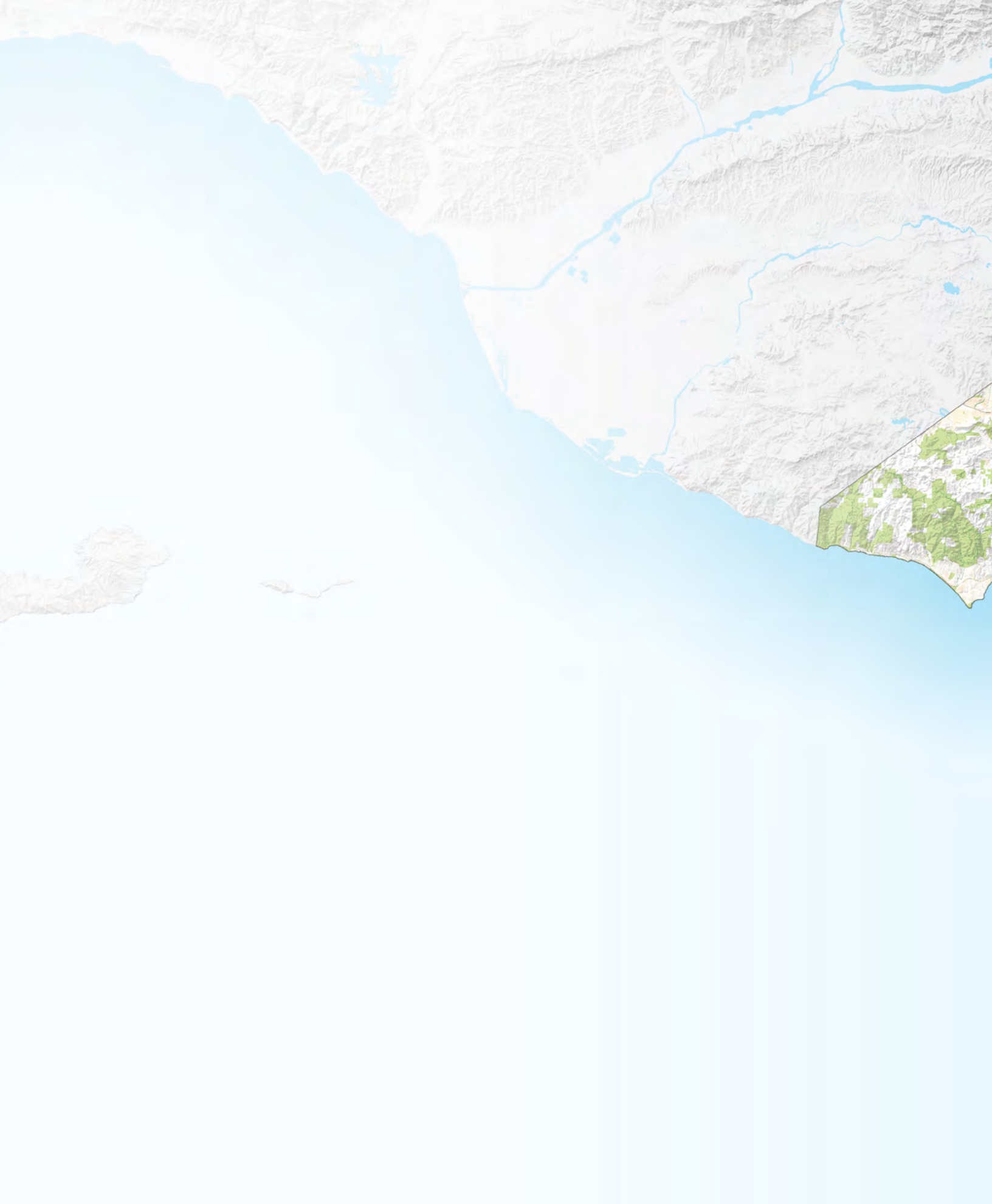
The 2020 LA River guidelines are an update of the 2004 Landscaping Guidelines and Plant Palettes. The original 1999 and 2004 guidelines were prepared by:

**Jill Benshoof  
Jan Sandgren  
Lacey Withers  
Verna Jigour**

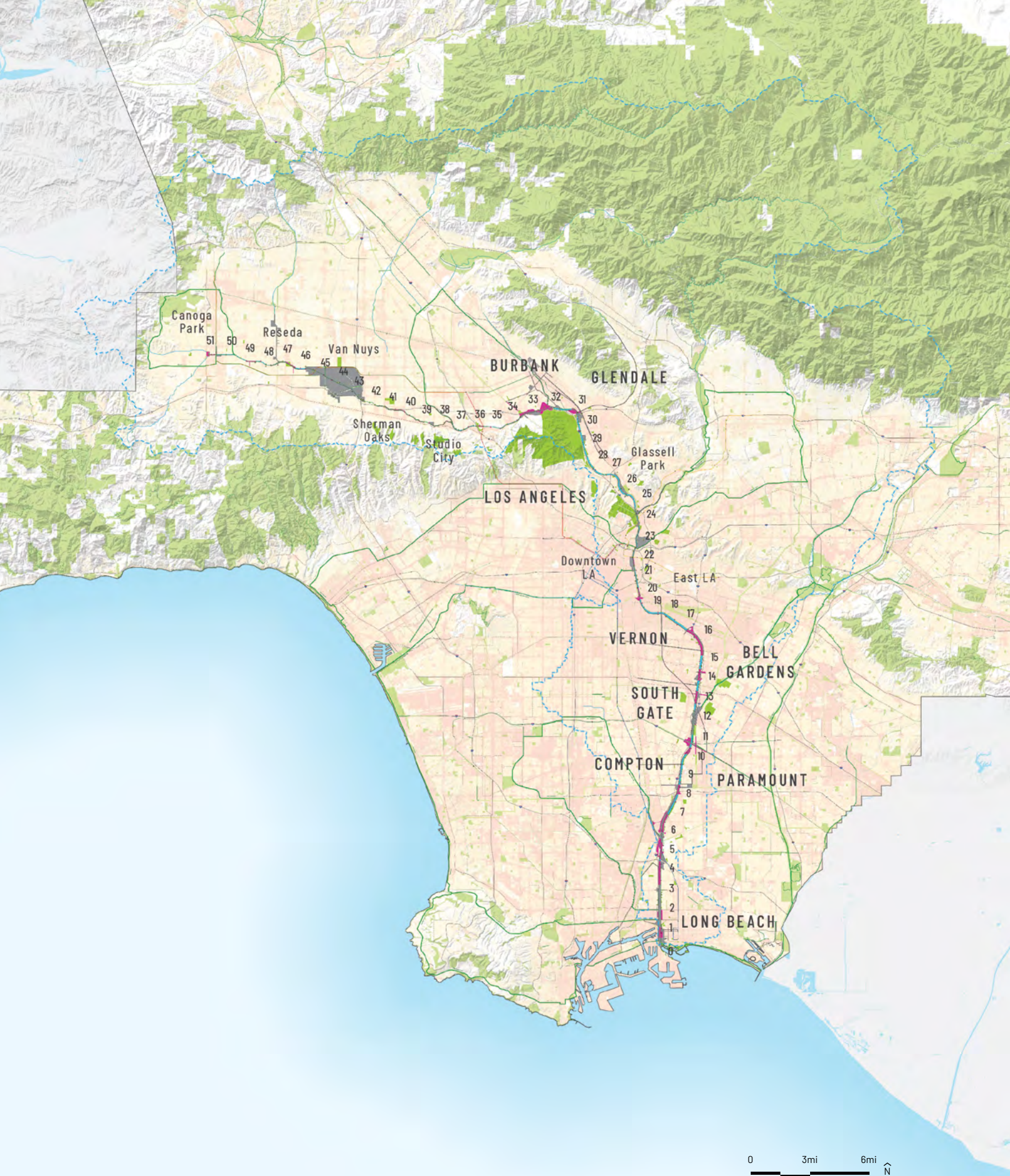
**Robert Perry  
Bart O'Brien  
Ellen Mackey  
Barbara Eisenstein**

**Maria Lopez  
Jason Casanova**











Geosyntec<sup>®</sup> **OLIN** Gehry Partners, LLP

**PUBLIC DRAFT**