

# Introduction

There is a hiking trail in Mission Trails Regional Park in the City of San Diego that has a seasonal, at-grade, San Diego River crossing over rocks and a concrete encased sewer main. The trail is referred to as “Crossing Trail” on the park map.

In the summer, the river water level is low and the passage over the rocks/concrete is feasible for pedestrian passage between both sides of the trail.

During periods of rainfall and snow melt, the water level and flow rate increase and are variable. The trail becomes more challenging and riskier to cross, if at all, making it dangerous or impassible.



# Site Conditions





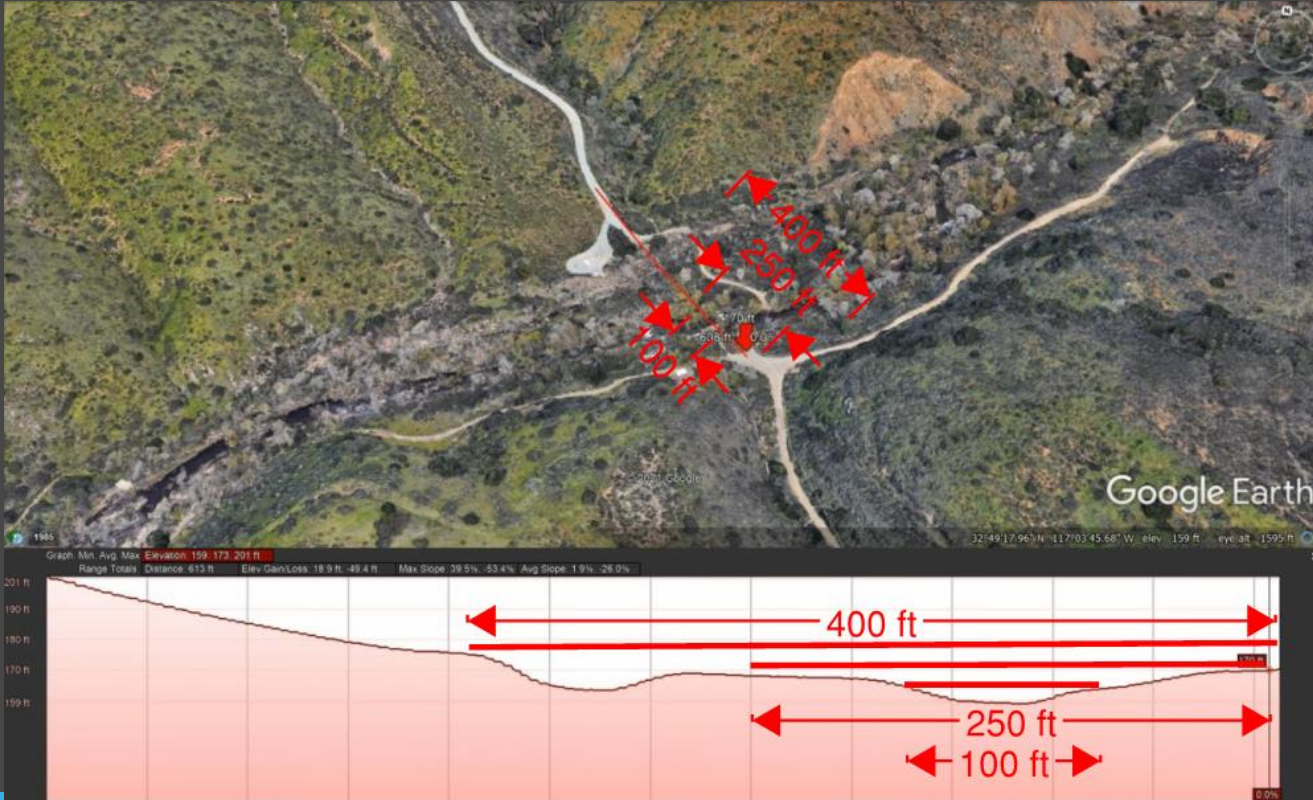
# Span Considerations – 100-Year Flood Plain

The screenshot displays the SANDAG GIS Parcel Lookup Tool interface. The main map area shows a satellite view of a park area with a blue line representing the 100-year flood plain. The interface includes a search bar at the top left with the text "Mission Trails Regional Park Vis X" and a search icon. A home button is located below the search bar. The top right corner features a "Mapping" tab and a "Help" link. On the right side, there is a "Layers" panel with the following settings:

- APN Labels:
- Parcel Polygon:
- Jurisdictions:
- Census Boundaries and Zip Codes:
- Community Planning Areas:
- District:
- SRA and MSA:
- Ecology: 
  - Vegetation (Western SD 2012):
  - Vegetation (County):
  - Flood Plain ZONE X: 
    - FP100:
    - FP500:
    - FW100:
- Water Quality Sensitive Areas:

Below the layers panel, there are three buttons: "Export Parcel Table", "Export Parcel Features", and "Print Map". The bottom left corner of the map area shows the coordinates "-117.061, 32.821".

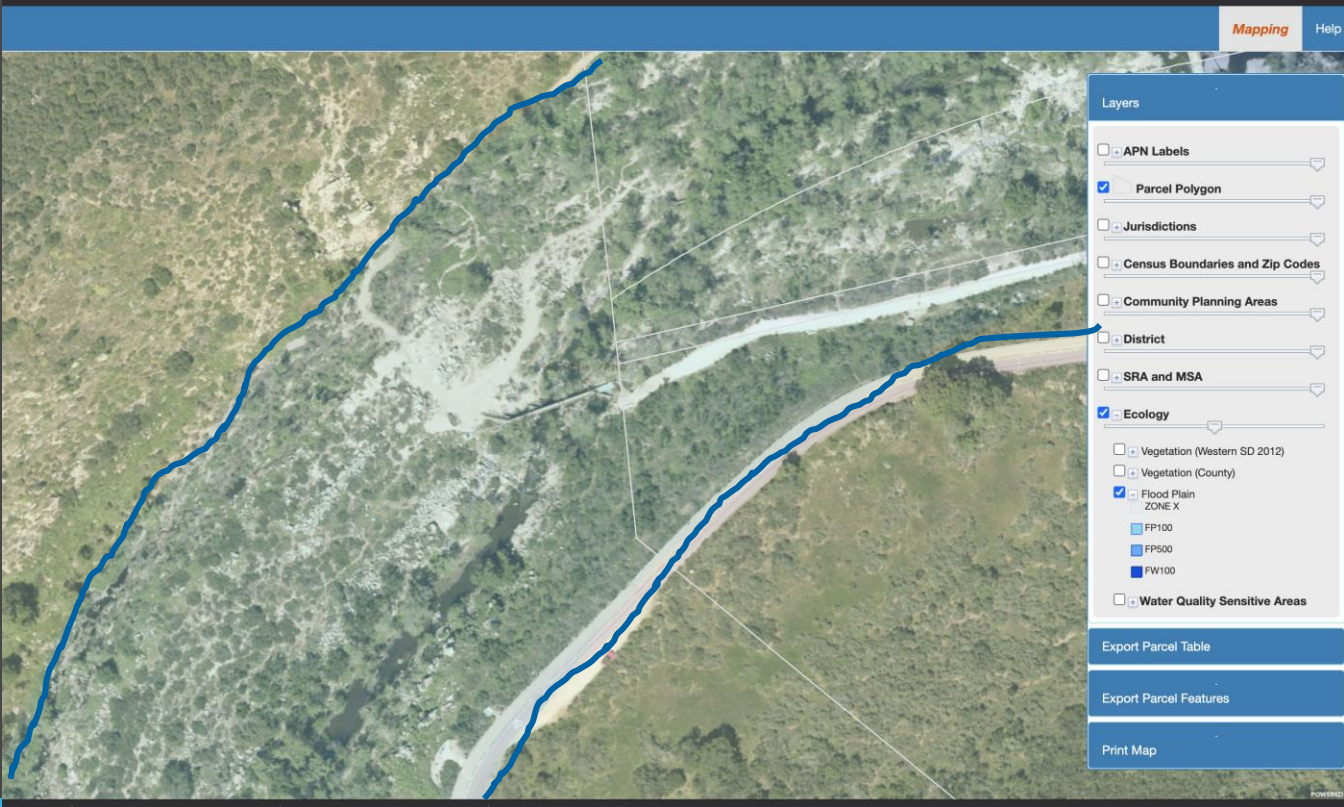
# 100-Year Flood Plain



- Estimate a 400ft Bridge Length



# 100-Year Flood Plain – Existing Bridge



# 2019 Master Plan Update

## 2019 MASTER PLAN UPDATE

**MG-R2:** Improve the connection between the San Diego River Crossing staging area and the Deerfield Bike Skills Area as part of the San Diego River Pathway improvements within the park. Due to the volume of storm water runoff within the drainage during the wet season, a significant bridge crossing or benched trail adjacent to Mission Gorge Road is recommended.



*Drainage requiring improved bridge crossing or trail reroute as part of the San Diego River Trail improvements (MG-R2)*

**MG-R3:** Improve the section of the Visitor Center Loop trail from the San Diego River Crossing staging area to the Visitor and Interpretive Center to a wider, more accessible trail to facilitate the use of the San Diego River Crossing staging area as overflow parking for the Visitor and Interpretive Center. This section of trail is also included as part of the proposed San Diego River Pathway alignment through the park.

**MG-R4:** Construct an all weather suspension or truss pedestrian and bicycle bridge across the San Diego River near the San Diego River Crossing trail.



*General location of recommended bridge over the San Diego River (MG-R4)*

**MG-R5:** Construct an improved low-flow crossing or seasonal removable bridge structure at the San Diego River Crossing to remove the unauthorized existing use of the concrete encased sewer main, while a bridge option (MG-R4) is developed.

**MG-R6:** Improve the surfacing of the Oak Grove trail to provide all weather access. Improvements may require some localized rerouting to lessen trail gradient.



*The use of the concrete encase sewer main as a pedestrian crossing is unauthorized and unsupported by the City of San Diego PUD (MG-R5)*



# Precedent Bridges in the Park

## ACCOMPLISHMENTS



West Fortuna



# Construction Considerations

- Crane access
- Long-Span Bridges
- Conventional Bridge Types





# Option 1

Prefabricated Steel Bridge – 100-foot span, 8 feet wide

## Pros:

- Economical
- Short erection time
- Durable

## Cons:

- Single span doesn't clear 100-year floodplain – multi span options though
- Not as natural or monumental as some options



# Option 1 - Construction Costs

Preliminary Cost Estimate: Below are the estimated construction costs for this option.

|                                     |                     |
|-------------------------------------|---------------------|
| Construction                        | \$ 1,071,900        |
| Design                              | \$ 256,200          |
| Design and Construction Contingency | \$ 337,200          |
| Construction Mgt & Other Soft Costs | \$ 384,300          |
| <b>TOTAL COSTS</b>                  | <b>\$ 2,049,600</b> |





# Option 2

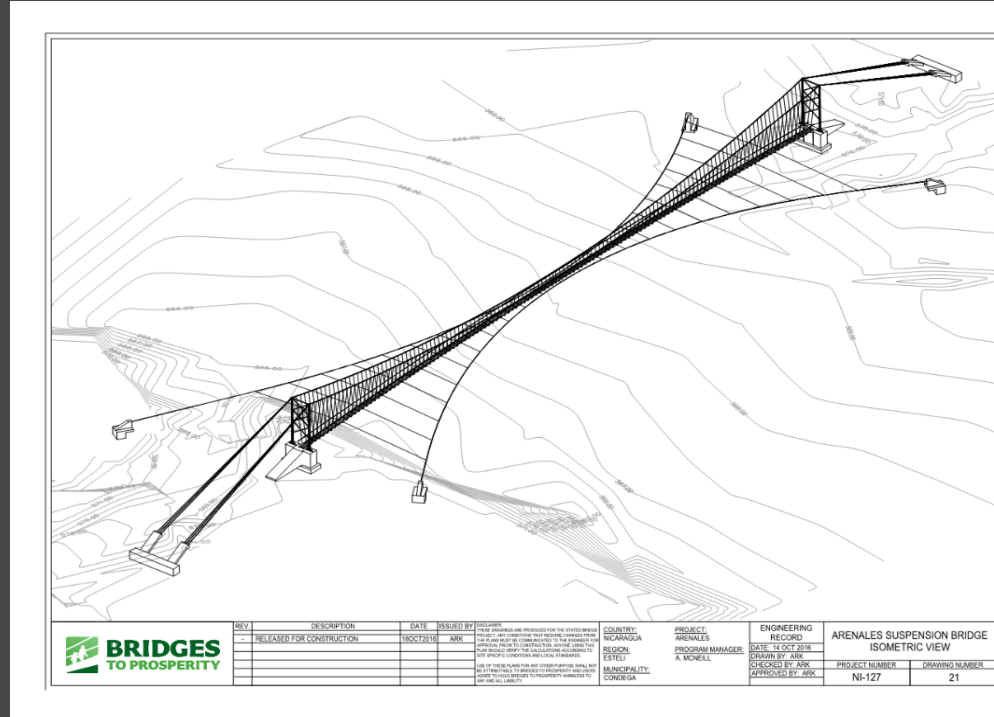
## Suspension Bridge – 400-ft span, 8-ft wide

### Pros:

- 400-ft clear span
- Elegant but delicate aesthetic
- Landmark

### Cons:

- More expensive
- Longer construction period
- More complex construction - Requires specialty contractor



# Option 2 - Construction Costs

Preliminary Cost Estimate: Below are the estimated construction costs for this option.

|                                     |                     |
|-------------------------------------|---------------------|
| Construction                        | \$ 2,744,100        |
| Design                              | \$ 655,800          |
| Design and Construction Contingency | \$ 862,800          |
| Construction Mgt & Other Soft Costs | \$ 983,700          |
| <b>TOTAL COSTS</b>                  | <b>\$ 5,246,400</b> |





# Option 3

Log Bridge, 100-ft span, 2-ft wide

## Pros:

- Most economical
- Natural and simple
- Engaging

## Cons:

- Span is limited
- Less durable
- More difficult for high volume



# Option 3 - Construction Costs

Preliminary Cost Estimate: Below are the estimated construction costs for this option.

|                                     |                     |
|-------------------------------------|---------------------|
| Construction                        | \$ 525,600          |
| Design                              | \$ 125,600          |
| Design and Construction Contingency | \$ 165,200          |
| Construction Mgt & Other Soft Costs | \$ 188,400          |
| <b>TOTAL COSTS</b>                  | <b>\$ 1,004,800</b> |



# Summary and Next Steps

| Bridge Type  | Preliminary Cost Estimate |           |             |                         |             |
|--|---------------------------|-----------|-------------|-------------------------|-------------|
|  | Construction              | Design    | Contingency | Construction Management | TOTAL       |
| <b>Option 1 –</b><br>Prefabricated Steel Truss (100ft) | \$2,049,600               | \$256,200 | \$337,200   | \$384,300               | \$2,049,600 |
| <b>Option 2 –</b><br>Suspension Bridge (400ft)         | \$2,744,100               | \$655,800 | \$862,800   | \$983,700               | \$5,246,400 |
| <b>Option 3 –</b> Log Bridge (100ft)                   | \$525,600                 | \$125,600 | \$165,200   | \$188,400               | \$1,004,800 |

Opportunities for Community Involvement...

# Community Involvement