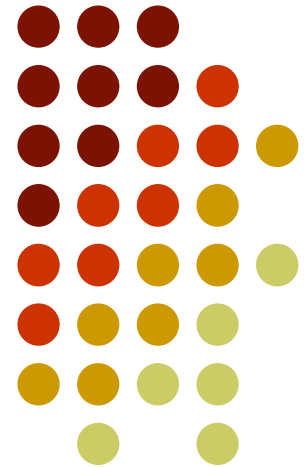


# Fancher Creek Bridle Trail

Master Plan

## Fresno County

March 16, 2016



LARS ANDERSEN &  
ASSOCIATES, INC.

# INTRODUCTIONS



## County of Fresno

David Chavez – Parks Manager

Department of Public Works & Planning - Resources

Dale Siemer, PE – Senior Engineer

Department of Public Works & Planning - Design



## Consultants

Lars Engineers – Civil Engineers

Dan Zoldak, PE, CASP – Engineer in Charge



LARS ANDERSEN &  
ASSOCIATES, INC.

Sierra Designs Inc. Landscape Architects

Daniel M. Veyna, ASLA – Principal in Charge

Kay Hutmacher, ASLA - Principal



## Partner Organizations

Tree Fresno

Sunnyside Property Owners Association

High Sierra Volunteer Trail Crew

# Project Overview



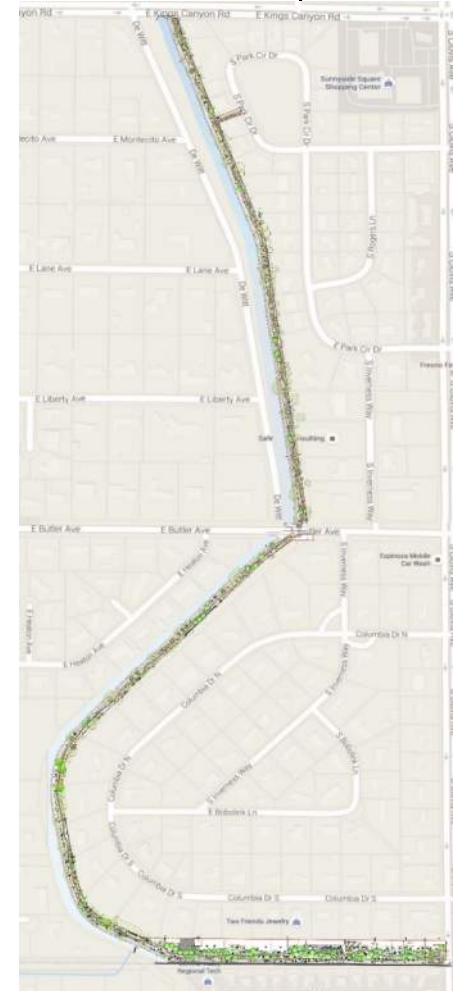
## A. Project History

- ❑ Fancher Creek Bridle Trail was platted the early 1940s
  - ❑ The trail was active from the 1950's to the early 1980's due to multiple 'horse properties' and a commercial boarding stable just to the south on Clovis Ave.
  - ❑ Use as a bridle Trail diminished, most likely in the '80's and early '90's and greatly reduced when the commercial boarding stable closed.
  - ❑ At some point the lack of use as an 'Equestrian Trail' declined to the point that the trail became over grown.
  - ❑ Pedestrians and occasional equestrians currently use the FID Service Road on the North/South portion of the trail a East/West 'service road' on the East/West alignment.

## B. Project Funding Source

## C. Project Design Process to Date

## D. Project Design Process Moving Forward



# I. Project Overview

- ❑ Fancher Creek Bridle Trail was platted the early 1940s
- ❑ A Landscape Design completed and installed at some point
  - ❑ Probably in the 1950's
    - ❑ Many/most of the trees appear to have been planted within 3 – 10' of the western edge of the easement
  - ❑ Mostly non native tree species popular at that time, American Elm, Cork Oak, Eucalyptus, Acacia, Coast Live Oak, Locust, and Carob
  - ❑ Multiple other trees appear to have colonized or been bird seeded: Privet, Mulberry, Native Cottonwood, Valley Oak, Almond, Peach, Native Black Willow and Palms
    - ❑ Some very desirable habitat – Native Oak, Cottonwood, Willow -
    - ❑ Some naturalized and provide habitat, shade and substance – Mulberry
    - ❑ Some are weeds – Privet,
    - ❑ Some are neutral - Almond, Peach
    - ❑ Neighbor plantings – Citrus
  - ❑ Currently Mixed Maturing Urban Forest planting :
    - ❑ Short 15 – 25 years
    - ❑ Medium 25 – 75 years
    - ❑ Long 75 – 200+ years

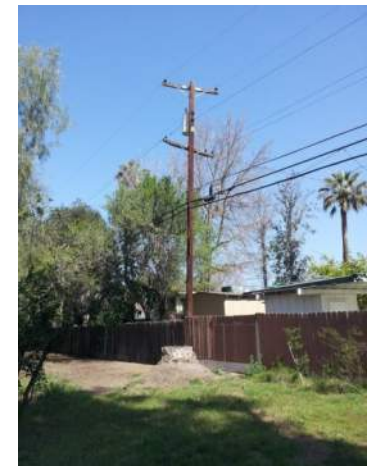




## II. Project Overview - Existing Conditions



- ❑ Some Neighbors have planted trees, shrubs and vines on both sides of the easement line.
  - ❑ Over the years some neighbors have planted screening plants & hedges: Carolina Cherry, Pittosporum, Citrus, Privet, Oleander, etc.
  - ❑ Vines are Star Jasmin, Algerian Ivy, Creeping Fig, and Grape
  - ❑ Larger properties planted larger trees, redwoods, cedars and fruit trees.
  - ❑ Apparently some of the plantings of screening material and other plants on the Fancher Creek Equestrian Trail have been planted by adjacent private property owners.
- ❑ Major Clean up Effort in the Last 2 – 3 years
  - ❑ Clean up spear headed by SPOA, Tree Fresno, High Sierra Volunteer Trail Crew with assistance from the County of Fresno
  - ❑ Major progress in the last year
    - ❑ Clearing out weeds, downed tree limbs, weeds, weed trees
    - ❑ Major clearing under the powerlines located mostly on the N/S alignment

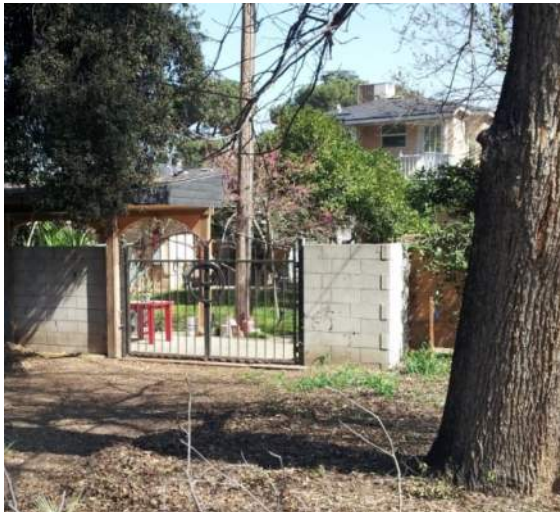


# Existing Conditions, continued



## ❑ Encroachments

- ❑ Some of the adjacent property owners have encroached into the FCET Easement
- ❑ The encroachments vary from minor, a fence line wavering back in forth across the property line by 6" or less to major, encroaching by 15' on the N/S alignment to as much as 35' – 45' on the E/W alignment.
- ❑ Encroachments include structures: fences, block walls, arbors, and sheds, mostly on the N/S alignment – entire structures, barns, garages and other structures on the E/W alignment.





# Existing Conditions, continued



## □ Trees:

- Trees over 8" diameter at Breast height, have been evaluated by an arborist
- Trees are a mix of short, medium and long lived trees.
  - Many of the short and medium lived trees are at or nearing the end of their life span.
- Based on the arborists evaluation approximately 80+ larger trees and multiple smaller and sapling trees will be removed
- All trees have been evaluated by the arborist and all are in need of pruning, and have been prioritized for pruning;
  - Safety and trail clearance pruning are priority 1,
  - other pruning has been prioritized and recommended to be completed in 1 – 4 years.
- There are multiple tree stumps, not in the trail alignment will remain.
  - Sprouted suckers to be removed if they are in or near or trail alignment.

## □ Shrubs:

- There are shrubs, mostly along the fence line.
- Some are in the easement, others in the easement but behind fences that encroach into the easement and others that are behind the property line
- Many of the shrubs are overgrown.
- Volunteers have pruned many, however there is still a fair amount of pruning needed.



# Existing Conditions - continued

## □ Ground Plane:

- The ground plane is a mix of bare soil, leaf mulch (2"-12" thick), weeds, grass, ground cover (vinca major), and trailing vines (grapes & Algerian ivy).
- On the southern portion of the N/S section of the trail the grass (presumably Bermuda grass) is still green even during the drought.

## □ Water:

- The site is not irrigated and there is no evidence of irrigation within the easement
- It appears that a few of the neighbors have augmented their plantings and naturalized plantings within the FCETE with overhead spray and/or manually from hose bibs.

## □ Trail Use:

- There is a significant amount of pedestrians using the FID service road along Fancher Creek as a walking jogging trail, baby carriages and occasionally bicycles.
- Per some users there is use by equestrians on a very limited bases.
- It appears that the E/W portion of the trail, from Clovis avenue to Fancher Creek is rarely used by pedestrians, those using it appear to be property owners that live on that portion.
- Both the City of Fresno and FID use the E/W gravel road for access.
- Multiple adjacent property owners use the trail easement and the FID service road for vehicle access to the back of their properties.
- There are a few homeless that use the trail as a path of travel and portions of the easement as a place to sleep, less now that there is less cover





# III. Project Criteria & Requests



- ❑ Provide an Equestrian Trail:
  - ❑ 10' wide trail surface with 2- 1' shoulders and 10' head clearance 12' overall
  - ❑ Surface to be suitable for Equestrian use – No concrete or asphalt
  - ❑ Desirable for the Trail to also be usable by pedestrians & causal wheels
  - ❑ Partially or fully ADA accessible; All trail access points shall be meet ADA requirements
  - ❑ Preferably with long sweeping curves with long sightlines where feasible
  - ❑ Keep trail as far away as possible from private property
  - ❑ Schematic design for a safe crossing at Butler
  
- ❑ Trees and other Plantings:
  - ❑ Preserve as many of the existing trees as possible with the exception of weed trees, suckers sprouting from tree stumps, and smaller trees (4" DBH or less) to allow for trail construction.
  - ❑ Tree stumps not affecting the trail alignment during construction shall remain
  - ❑ New tree plantings to be enhance a 'natural' feel, preferably in groves or groupings.
  - ❑ New planting shall provide seasonal interest
  - ❑ New planting shall discourage homeless encampments
  - ❑ Trees to compliment/support Valley Arboretum concept
  - ❑ Screen private property from the trail
  - ❑ FID will not allow any portion of tree canopy to encroach property easement
  - ❑ Use drought tolerant planting (low to medium water use per WOLCOLS)
  
- ❑ Irrigation:
  - ❑ Provide Partial Irrigation for new plantings
  - ❑ Provide permanent irrigation for trees
  
- ❑ Safety:
  - ❑ Design to be a safe for Equestrian use
  - ❑ Removal of hazardous trees and limbs (as recommended by arborist)
  - ❑ Design to reduce the use of the site by homeless for encampments
  
- ❑ Encroachments:
  - ❑ Encroachments are not to be considered or hinder the design of the trail.
  - ❑ Encroachments are only going to be removed when there is a conflict with path alignment and existing trees to remain.

# IV. Project Constraints Impacting the Design & Trail Alignment



- ❑ Existing Tree Protection – Per Arborist Recommendations
  - ❑ Maintain a minimum distance for trail compaction of 9' from Cork Oaks and 6' from Eucalyptus and other trees, more if possible
  - ❑ Trail subgrade compaction should be no more than 6" within the tree drip line
  - ❑ Do not cut roots larger than 1" in diameter
  - ❑ Pothole within the tree drip line prior to trenching to determine root size and depth Hand trenching shall be required under the drip line, unless specifically waived on a case by case, tree by tree basis by either the Arborist or the Landscape Architect, based on exploratory pot holing in the trench alignment
  - ❑ Pruning and limb removal per Arborist recommendations.
  - ❑ Remove all Dead, Nearly Dead and Dangerous Trees
  
- ❑ Encroachments of the FID & RR:
  - ❑ The Trail shall not encroach into the FID Easement
  - ❑ The Trail shall not encroach into the Railroad Easements
  
- ❑ Trail Alignment:
  - ❑ Due to tree protection requirements, the trail alignment ignores encroachments and may traverses through some fences, walls and structures that some neighbors have built as needed.
  - ❑ Due to tree protected requirements and the desire to maintain as many existing trees as possible, in many locations the trail is forced to come very near and/or abut, existing fences and the easement property line.
  - ❑ No healthy larger trees are to be removed to accommodate the trail
  - ❑ Minimum 2' clearance from any vertical object (i.e. Fence, structure, pole, guy wire, tree, etc.)
  - ❑ To miss trees the trail alignment is not able to have long sweeping curves.
  - ❑ The trail alignment will not be prejudiced by encroachments
  - ❑ Provide recommended trail crossing at Butler Ave within COF Easement
  - ❑ Trail location at the south end will be in a swale as directed by COF.
  - ❑ At the E/W section maintain trail in the southern 45' width of the easement
  - ❑ Trail alignment, where possible or necessary, shall be placed where the least amount of grading is needed.

# Trail Design Concepts - 2



- ❑ Trail Surfaces Options:
  - ❑ Native Soil
  - ❑ Compacted Native Soil
  - ❑ Slightly Compacted Decomposed Granite on Native
  - ❑ Slightly Compacted Decomposed Granite on Compacted Native
  - ❑ Compacted Base Rock over Compacted Native
  - ❑ Compacted DG over Compacted Base Rock over Compacted Native
  
- ❑ Other Potential Trail Amenities:
  - ❑ Irrigation – None - Revegetation type effort only
  - ❑ Irrigation – establishment only
  - ❑ Irrigation – Permanent - Partial Site
  - ❑ Irrigation – Permanent – Entire Site
  
- ❑ Other Potential Trail Amenities
  - ❑ Signage – Regulatory
  - ❑ Signage – Interpretive
  - ❑ Bollards at Entries
  - ❑ Bollards or Boulders at Power Pole Obstructions
  - ❑ Hitching Posts
  - ❑ Benches
  - ❑ Trash Cans
  - ❑ Cross Walk at Butler
  - ❑ Activated Warning Lights or other safety crossing feature(s) at Butler





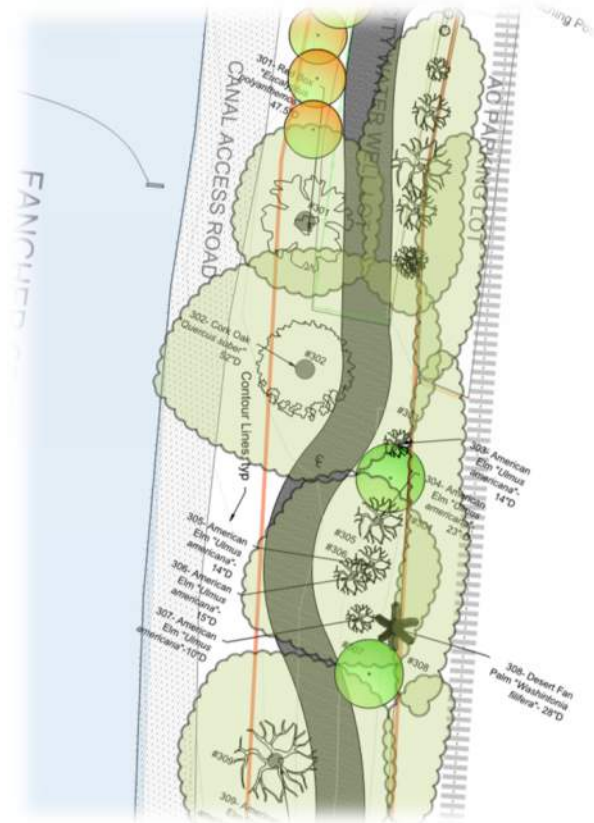
# Alternative Path Alignment Differences



**Alternative Path  
Removes Several Healthy Trees**



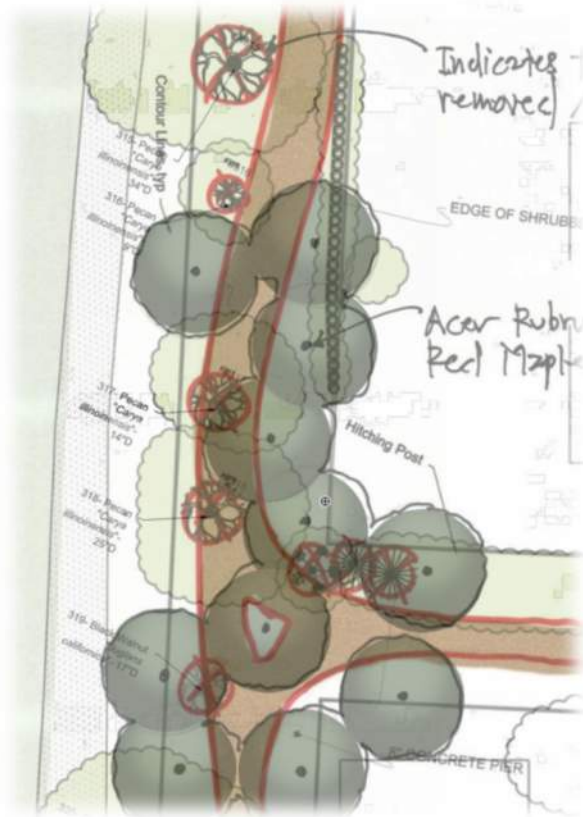
**Preferred Path  
Most Trees Remain**



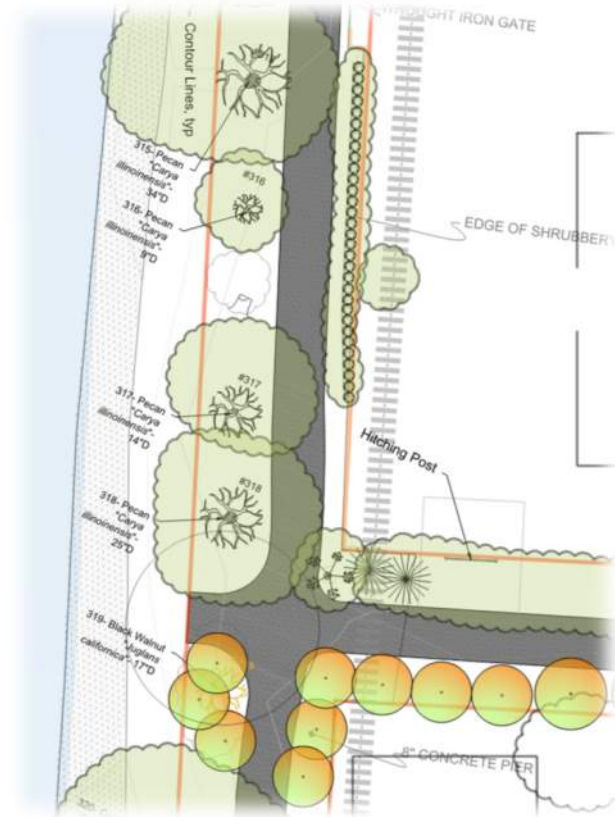


# Paths Adjacent to Private Property Tree Removal Implications

**Alternative Path  
Removes Healthy Trees**



**Preferred Alignment  
Trees to Remain**





# Design Process



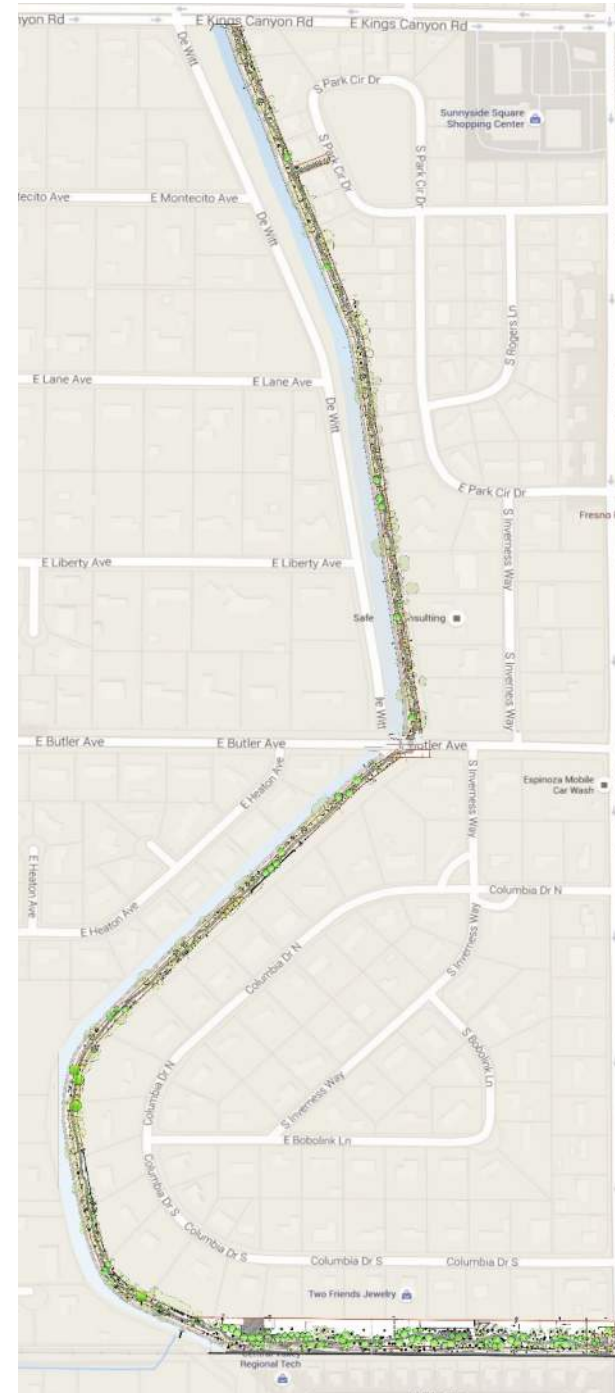
## Completed to Date

- ❑ Review of Budget
- ❑ Review of Existing Conditions
- ❑ List of “In Kind” items to be performed by County
- ❑ Site Survey of Existing Conditions
- ❑ Rough Conceptual Layout Designs
- ❑ Conceptual Budgets
- ❑ Refine to ‘Doable’ Schematic Design
- ❑ Preserve Opportunities
- ❑ Plan for Potential Future Improvements not funded
- ❑ Meetings to review concepts with Sunnyside Property Owners Association & Tree Fresno
- ❑ Refine Design to reflect ‘Doable’ consensus plan allowed within the Grant
- ❑ Estimate of Probable Construction Costs – based on Consensus Design
- ❑ Community Out Reach and Input

## Moving Forward

- ❑ Design Development Construction Drawings and Cost Estimate.....
- ❑ Bid Set Construction Drawings & Specifications.....
- ❑ Bidding & Construction Contract Award.....
- ❑ Construction by General Contractor.....
- ❑ Trail Re-Opening.....

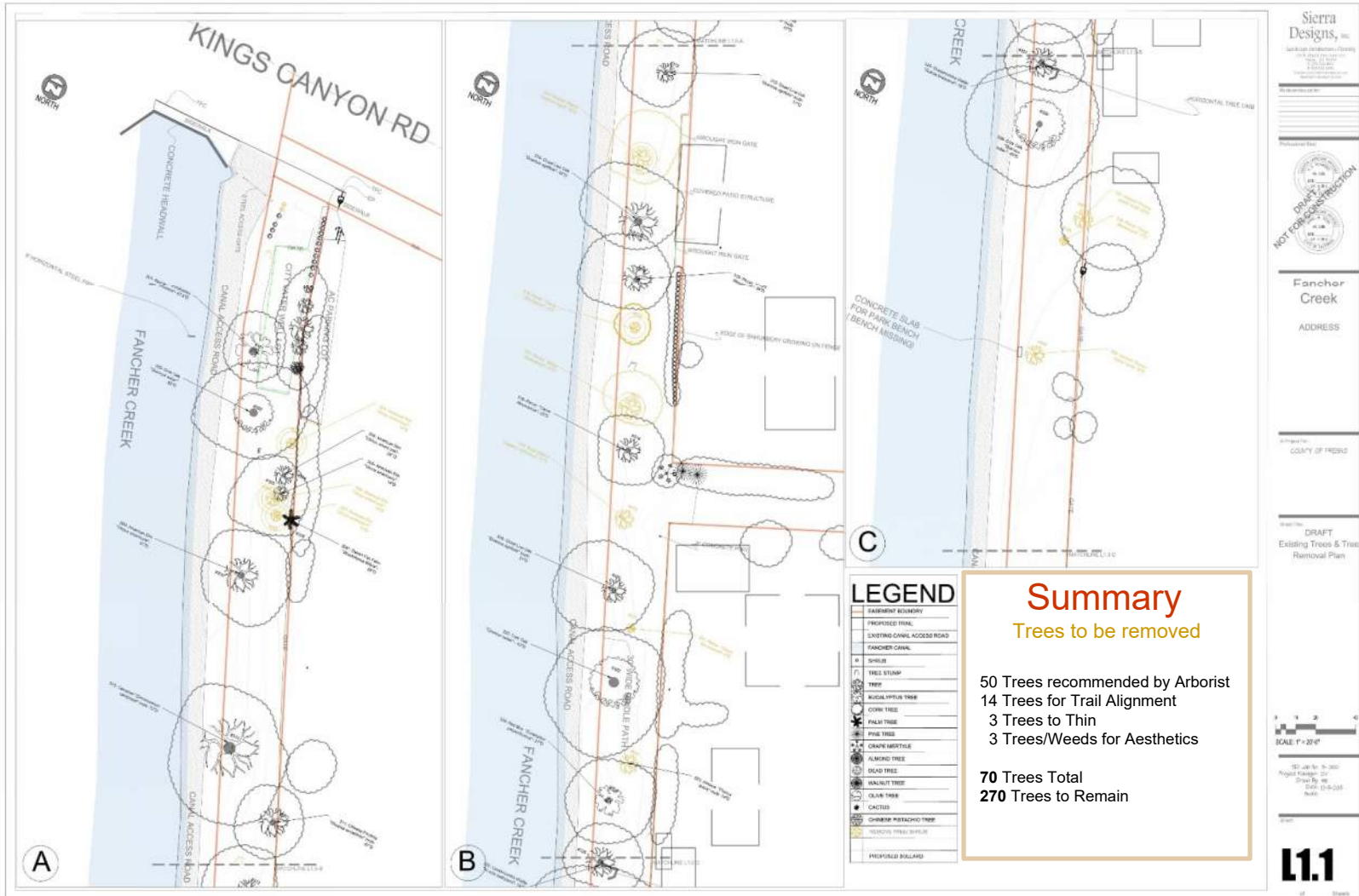
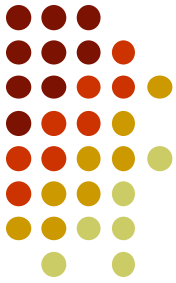
# Design Process by Dan Veyna Sierra Designs- Landscape Architecture



# Tree Removal

(Yellow to be Removed)

| Notes           | Diameter | Tree # | Species                                     |
|-----------------|----------|--------|---|
| Thinning        | 14       | 303    | American Elm " <i>Ulmus americana</i> "     |
| Thinning        | 15       | 306    | American Elm " <i>Ulmus americana</i> "     |
| Thinning        | 10       | 307    | American Elm " <i>Ulmus americana</i> "     |
| Trail Alignment | 9        | 316    | Pecan " <i>Carya illinoensis</i> "          |
| Trail Alignment | 14       | 317    | Pecan " <i>Carya illinoensis</i> "          |
| Arborist        | 17       | 319    | Black Walnut " <i>Juglans californica</i> " |
| Trail Alignment | 9        | 321    | Pecan " <i>Carya illinoensis</i> "          |
| Arborist        | 14       | 323    | Almond " <i>Prunus dulcis</i> " multi-trunk |
| Arborist        | 22       | 327    | Almond " <i>Prunus dulcis</i> " multi-trunk |
| Trail Alignment | 7        | 328    | Pecan " <i>Carya illinoensis</i> "          |
| Arborist        | 16       | 329    | Almond " <i>Prunus dulcis</i> " multi-trunk |

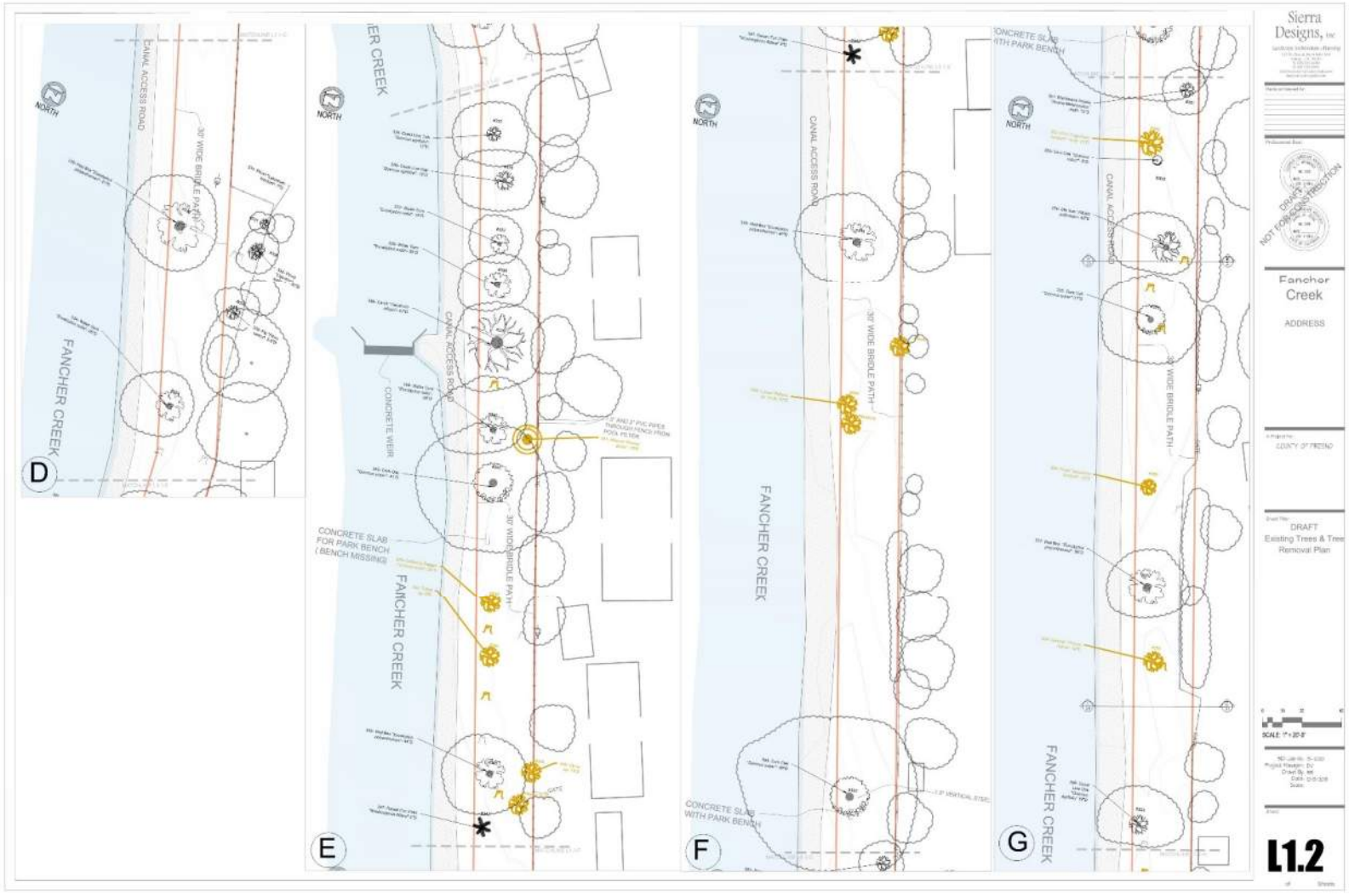




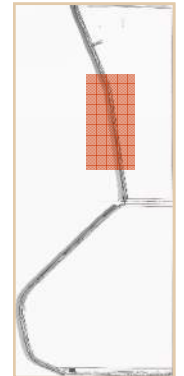
# Tree Removal

(Yellow to be Removed)

| Notes           | Diameter | Tree # | Species                                |
|-----------------|----------|--------|--|
| Trail Alignment | 10       | 341    | Almond "Prunus dulcis"                 |
| Arborist        | 26       | 343    | California Pepper "Schinus molle"      |
| Arborist        | 9        | 344    | Citrus sp.                             |
| Trail Alignment | 13       | 346    | Citrus sp.                             |
| Arborist        | 10       | 349    | Locust "Robinia sp." Multi-trunk       |
| Aesthetic/ Weed | 31       | 352    | Privet "Ligustrum lucidum" Multi-trunk |
| Aesthetic/ Weed | 12       | 356    | Privet "Ligustrum lucidum"             |
| Trail Alignment | 14       | 358    | Almond "Prunus dulcis"                 |



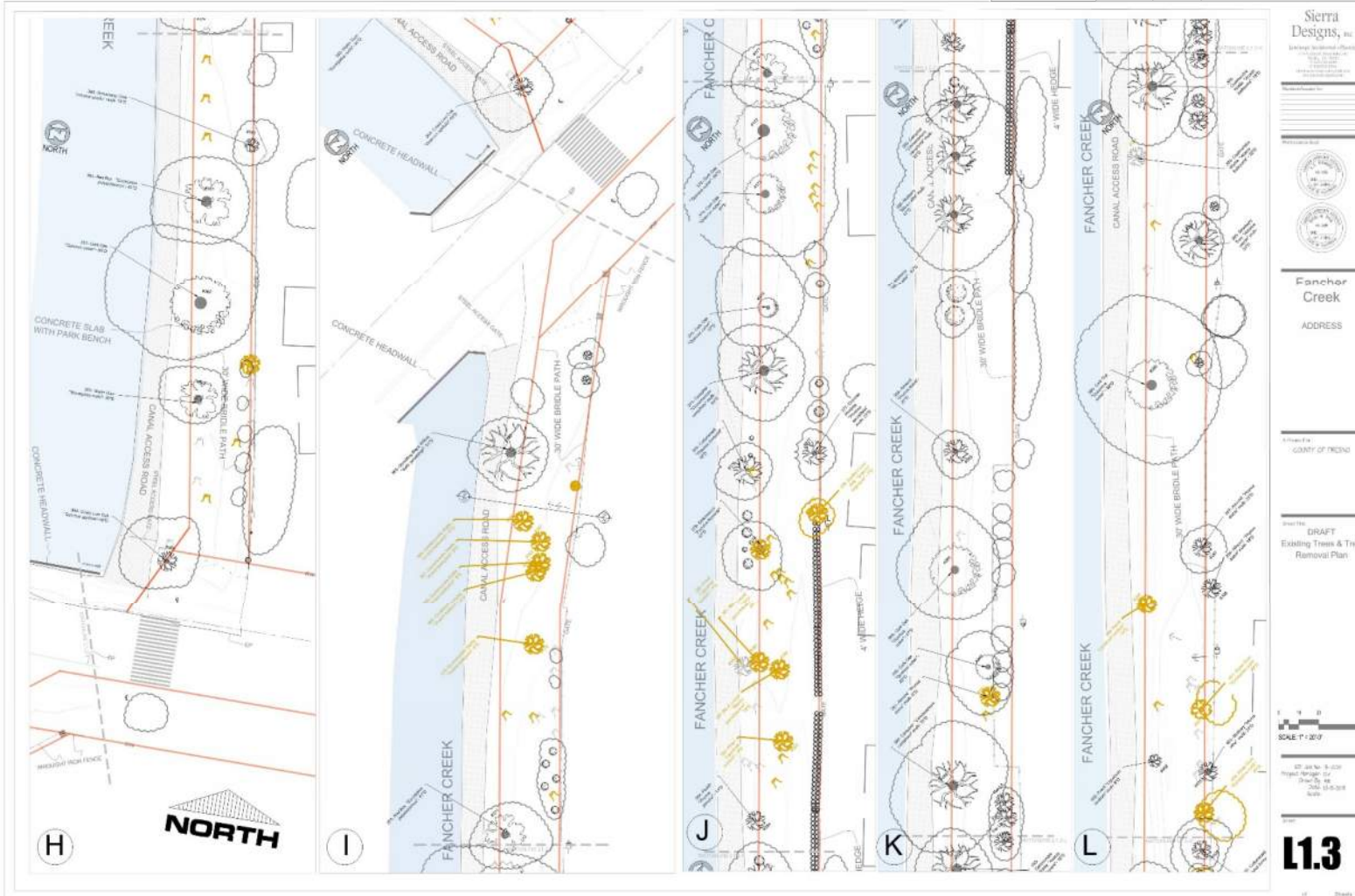
Vicinity Map



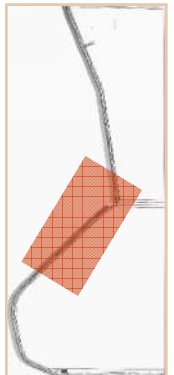
# Tree Removal

(Yellow to be Removed)

| Notes           | Diameter | Tree # | Species                                |
|-----------------|----------|--------|--|
| Trail Alignment | 15       | 366    | Coolamundra Wattle "Acacia baileyana"  |
| Arborist        | 8        | 367    | Coolamundra Wattle "Acacia baileyana"  |
| Arborist        | 8        | 368    | Coolamundra Wattle "Acacia baileyana"  |
| Arborist        | 8        | 369    | Coolamundra Wattle "Acacia baileyana"  |
| Arborist        | 6        | 370    | Coolamundra Wattle "Acacia baileyana"  |
| Arborist        | 7        | 378    | Southern Live Oak "Quercus virginiana" |
| Arborist        | 47       | 379    | Cottonwood "Populus fremontii"         |
| Arborist        | 16       | 380    | Black Locust "Robinia pseudoacacia"    |
| Arborist        | 24       | 381    | Black Locust "Robinia pseudoacacia"    |
| Arborist        | 5        | 382    | Privet "Ligustrum lucidum"             |
| Trail Alignment | 9        | 383    | Privet "Ligustrum lucidum"             |
| Arborist        | 6        | 391    | Almond "Prunus dulcis" multi-trunk     |
| Arborist        | 22       | 394    | Coolamundra Wattle "Acacia baileyana"  |
| Arborist        | 14       | 399    | Privet "Ligustrum lucidum"             |
| Arborist        | 29       | 401    | Water Gum "Eucalyptus rudis"           |
| Arborist        | 26       | 404    | Water Gum "Eucalyptus rudis"           |



Vicinity Map



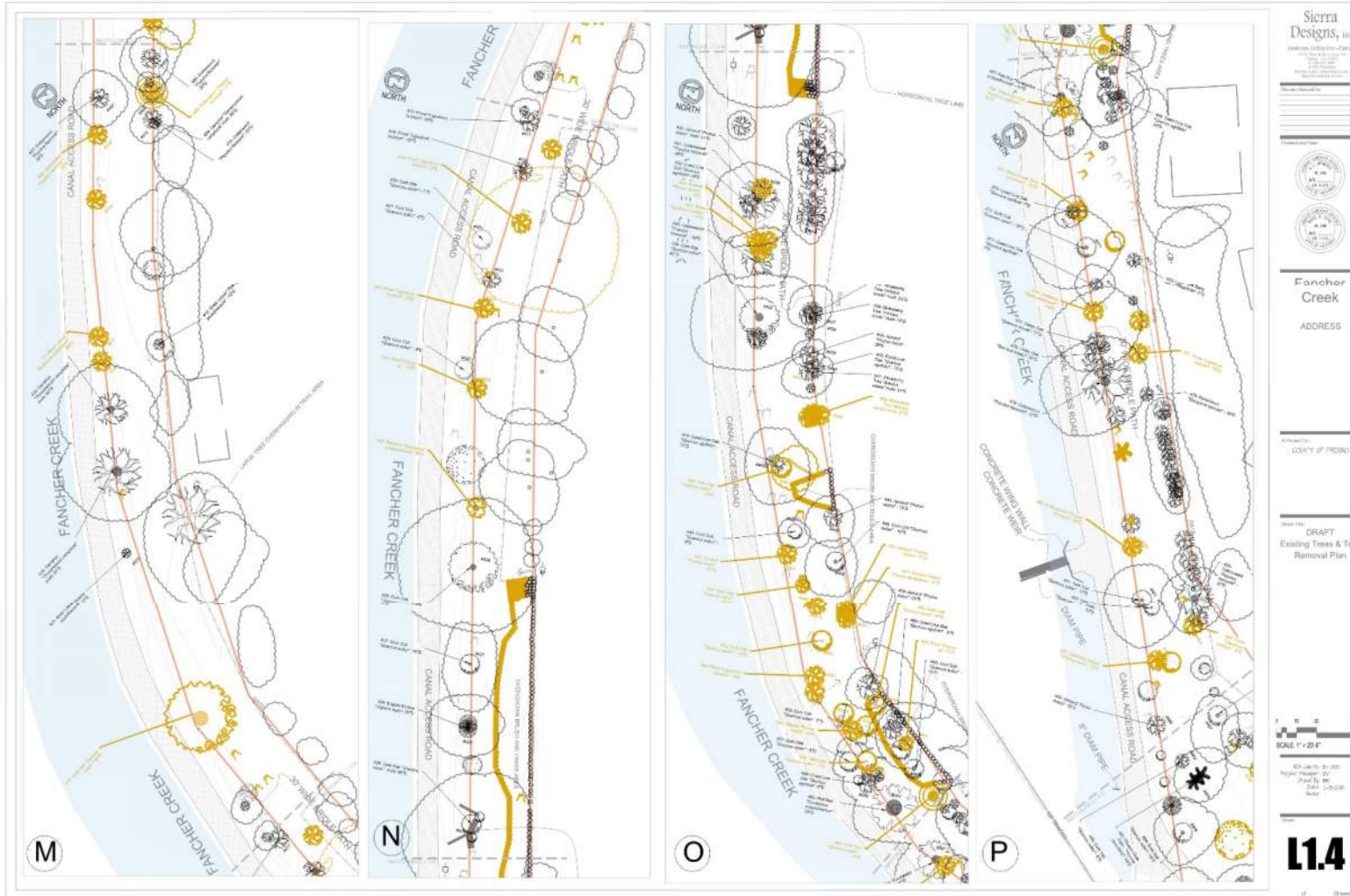
**L1.3**

# Tree Removal

(Yellow to be Removed)

| Notes           | Diameter | Tree # | Species                                     |
|-----------------|----------|--------|---|
| Arborist        | 21       | 406    | Cottonwood "Populus fremontii"              |
| Arborist        | 32       | 408    | Cottonwood "Populus fremontii"              |
| Arborist        | 20       | 411    | Black Locust "Robinia pseudoacacia"         |
| Arborist        | 63       | 416    | Cork Oak "Quercus suber" Multi-trunk        |
| Trail Alignment | 8        | 419    | Privet "Ligustrum lucidum"                  |
| Arborist        | 26       | 425    | Red Box "Eucalyptus polyanthemos"           |
| Arborist        | 11       | 430    | Almond "Prunus dulcis" multi-trunk          |
| Arborist        | 10       | 433    | Privet "Ligustrum lucidum"                  |
| Arborist        | 6        | 434    | Almond "Prunus dulcis"                      |
| Trail Alignment | 20       | 442    | Strawberry Tree "Arbutus unedo" Multi-trunk |
| Arborist        | 12       | 444    | Cork Oak "Quercus suber"                    |
| Arborist        | 16       | 447    | Almond "Prunus dulcis"                      |
| Trail Alignment | 4.5      | 449    | Cork Oak "Quercus suber"                    |
| Arborist        | 17       | 450    | Almond "Prunus dulcis" multi-trunk          |
| Arborist        | 10       | 451    | Carolina Cherry "Prunus caroliniana"        |

| Notes           | Diameter | Tree # | Species                              |
|-----------------|----------|--------|--------------------------------------|
| Trail Alignment | 10       | 452    | Cork Oak "Quercus suber"             |
| Arborist        | 6        | 453    | Privet "Ligustrum lucidum"           |
| Arborist        | 16       | 455    | Cork Oak "Quercus suber" Multi-trunk |
| Arborist        | 15       | 456    | Almond "Prunus dulcis" multi-trunk   |
| Arborist        | 7        | 458    | Cork Oak "Quercus suber"             |
| Aesthetics      | 10       | 461    | Plum "Prunus sp."                    |
| Trail Alignment | 7        | 465    | Cork Oak "Quercus suber"             |
| Arborist        | 10       | 468    | Coast Live Oak "Quercus agrifolia"   |
| Arborist        | 23       | 469    | Silver Maple "Acer saccharinum"      |
| Arborist        | 10       | 474    | Chinaberry "Melia azedarach"         |
| Arborist        | 15       | 477    | Privet "Ligustrum lucidum"           |
| Arborist        | 40       | 480    | Cottonwood "Populus fremontii"       |
| Arborist        | 8        | 484    | Privet "Ligustrum lucidum"           |
| Arborist        | 11       | 485    | California Pepper "Schinus molle"    |



Vicinity Map

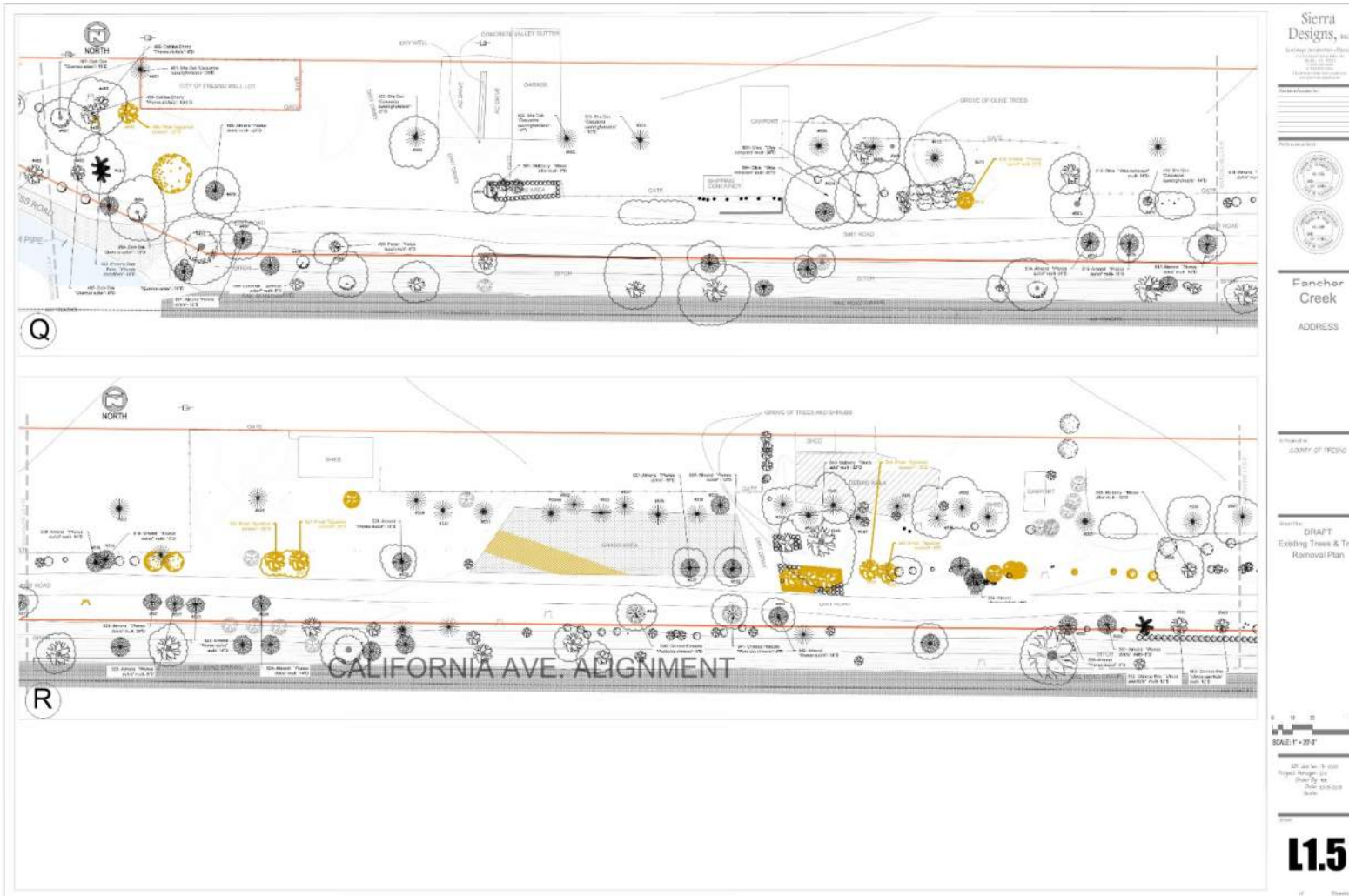
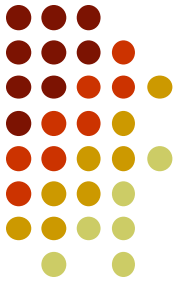




# Tree Removal

(Yellow to be Removed)

| Notes           | Diameter | Tree # | Species                            |
|-----------------|----------|--------|------------------------------------|
| Arborist        | 27       | 490    | Privet "Ligustrum lucidum"         |
| Arborist        | 21       | 512    | Almond "Prunus dulcis" multi-trunk |
| Arborist        | 20       | 526    | Privet "Ligustrum lucidum"         |
| Trail Alignment | 20       | 527    | Privet "Ligustrum lucidum"         |
| Arborist        | 16       | 548    | Privet "Ligustrum lucidum"         |
| Arborist        | 8        | 549    | Privet "Ligustrum lucidum"         |

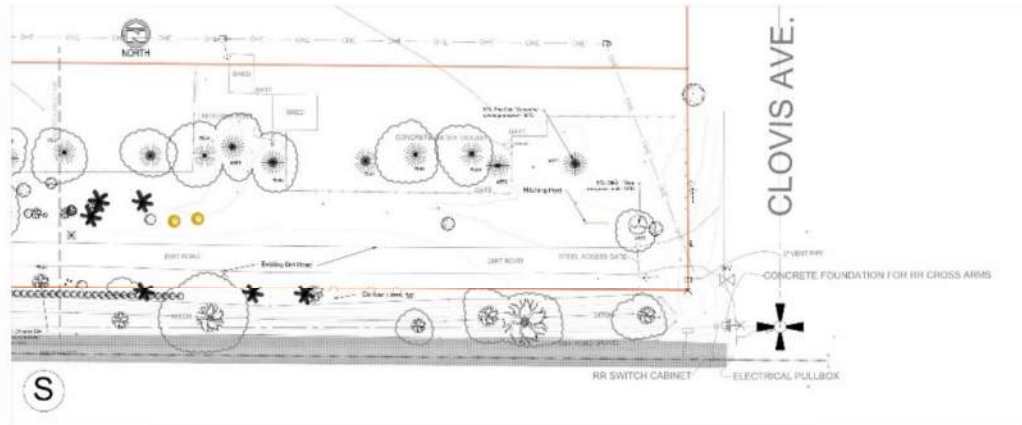


Vicinity Map





# Tree Removal



## Summary

### Trees to be removed

- 50 Trees recommended by Arborist
- 14 Trees for Trail Alignment
- 3 Trees to Thin
- 3 Trees/Weeds for Aesthetics

**70** Trees Total

**270** Trees to Remain

Sierra  
Designs, Inc.

10000 1st Street, Suite 100  
Clovis, CA 93611  
Tel: 505.251.1111  
Fax: 505.251.1112  
www.sierradesigns.com

Project Name:

Client:

Address:

City:

State:

Zip:

Scale:

Date:

Drawn by:

Checked by:

Approved by:

Project Name:

Client:

Address:

City:

State:

Zip:

Scale:

Date:

Drawn by:

Checked by:

Approved by:

Project Name:

Client:

Address:

City:

State:

Zip:

Scale:

Date:

Drawn by:

Checked by:

Approved by:

Project Name:

Client:

Address:

City:

State:

Zip:

Scale:

Date:

Drawn by:

Checked by:

Approved by:

Project Name:

Client:

Address:

City:

State:

Zip:

Scale:

Date:

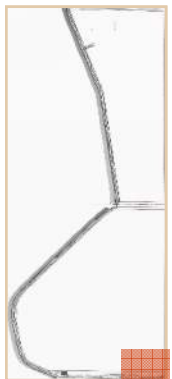
Drawn by:

Checked by:

Approved by:

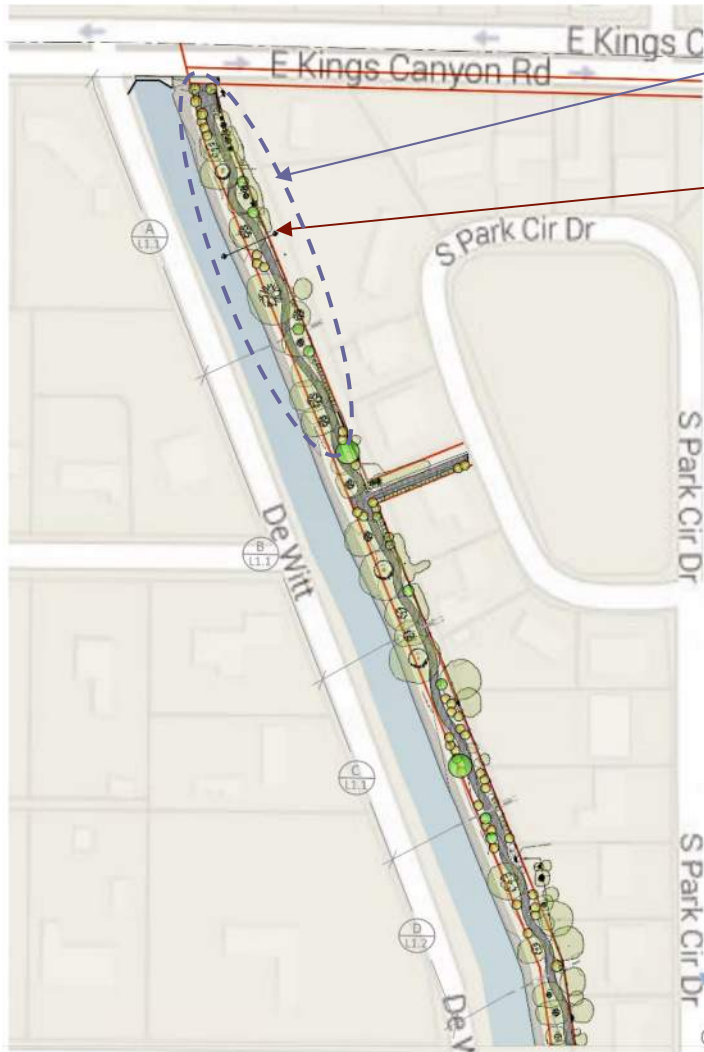
**L1.6**

Vicinity Map



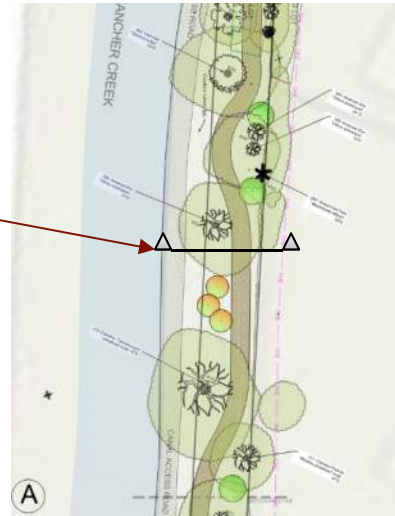
# New Trail Alignment

## Kings Canyon South (A-D)

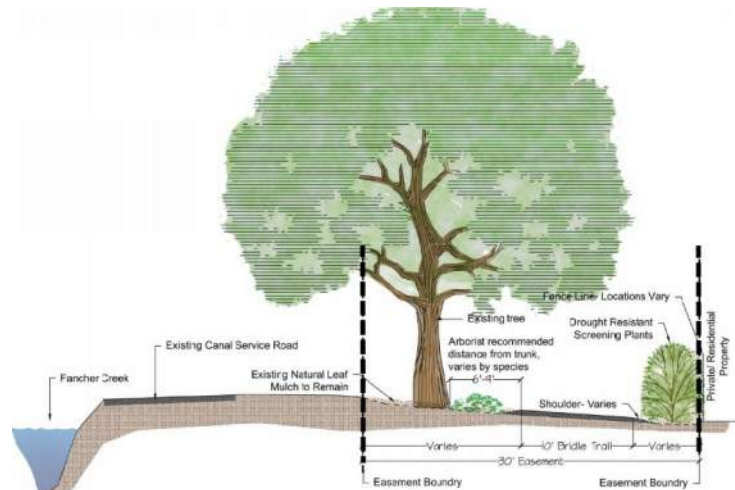


Irrigation Zone

Section 'A'



Vicinity Map



(A) Inside Slope Section

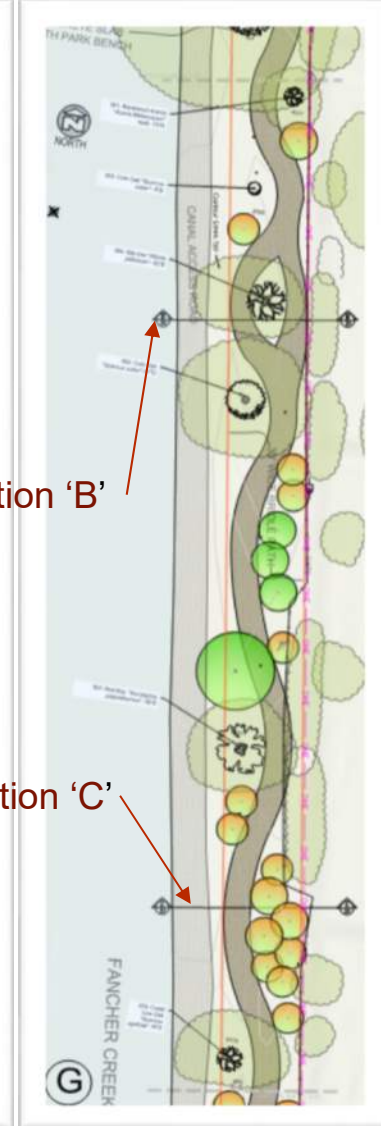
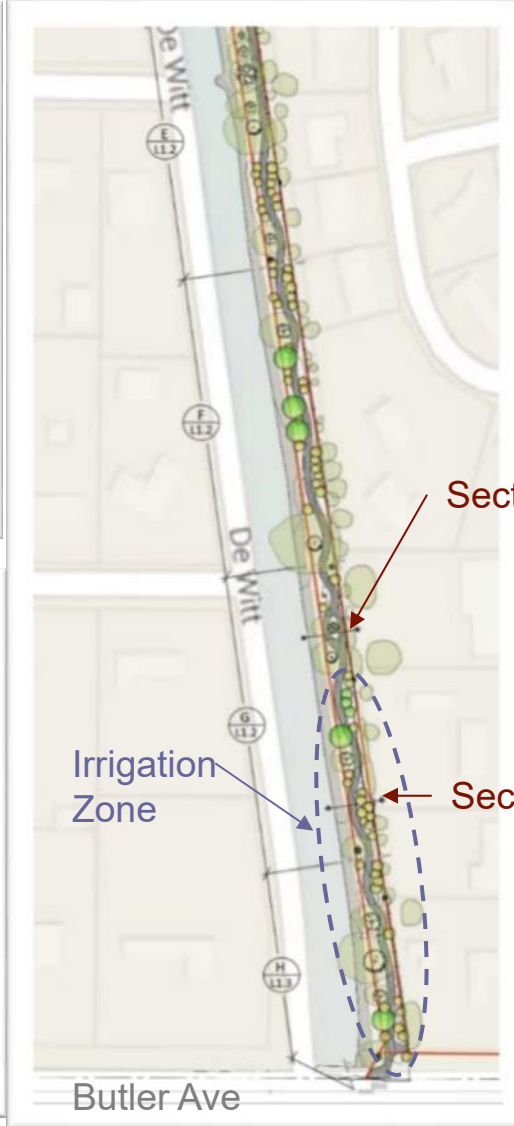
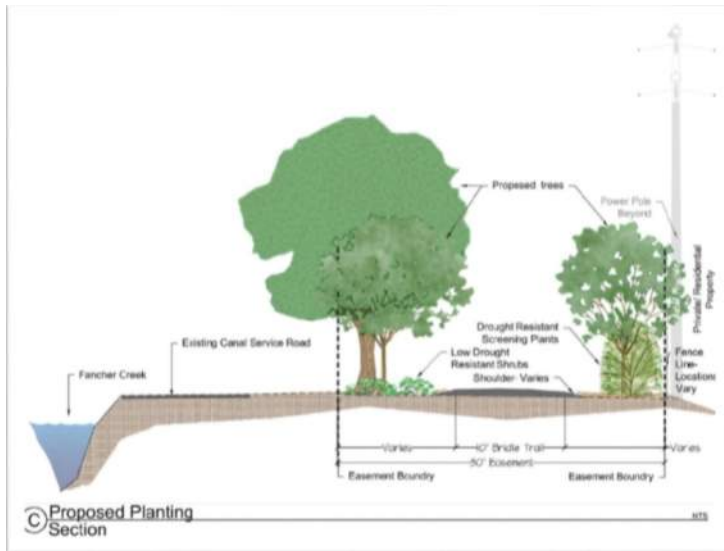
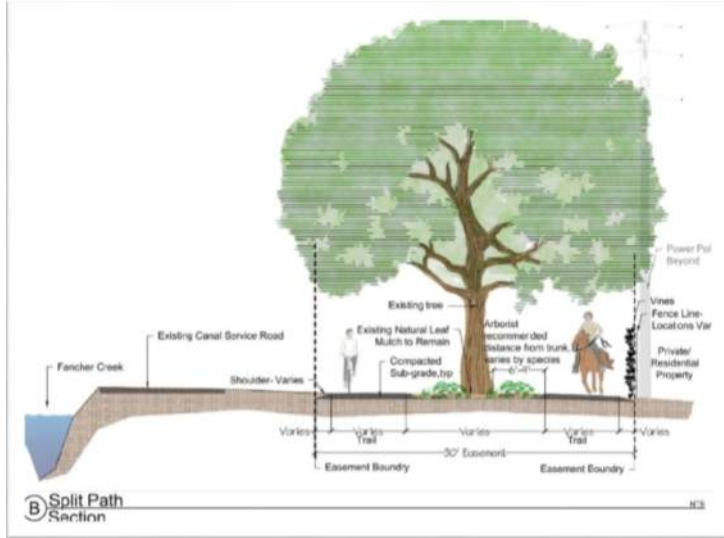
### LEGEND

|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | GRAPE MERTYLE              |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE/ SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED SOIL/LAND         |

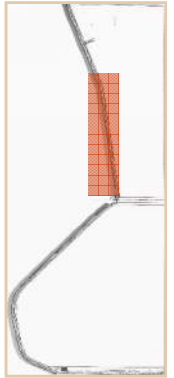
NTS

# New Trail Alignment

Butler North (E-H)



Vicinity Map



## LEGEND

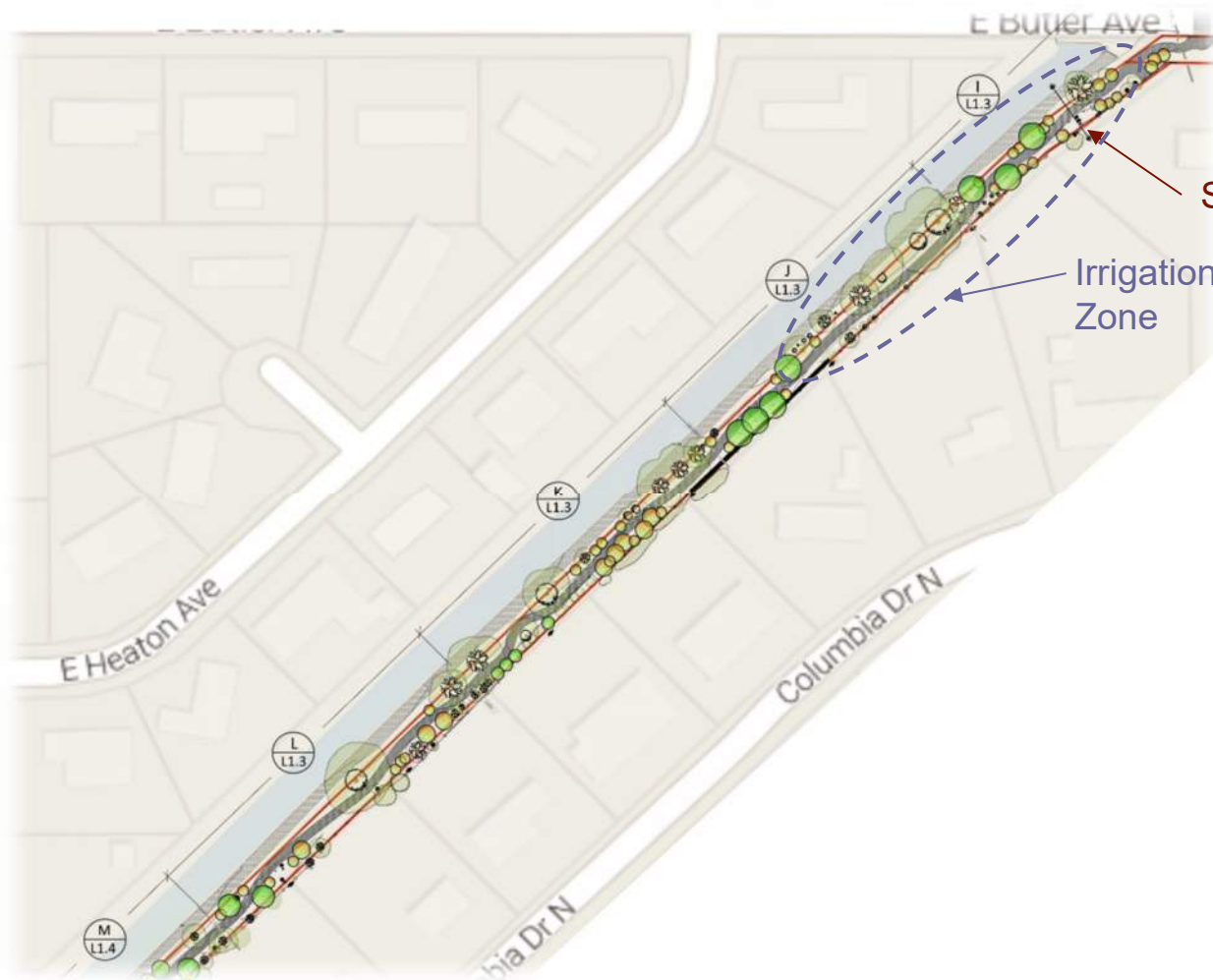
|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | GRAPE MERTYLE              |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE SHRUB          |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED BOLLARD           |

# New Trail Alignment

Butler South (I-M)

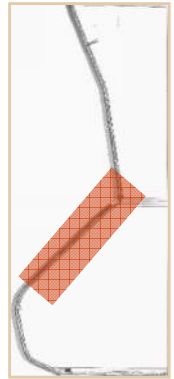


Vicinity Map



Section 'D'

Irrigation Zone



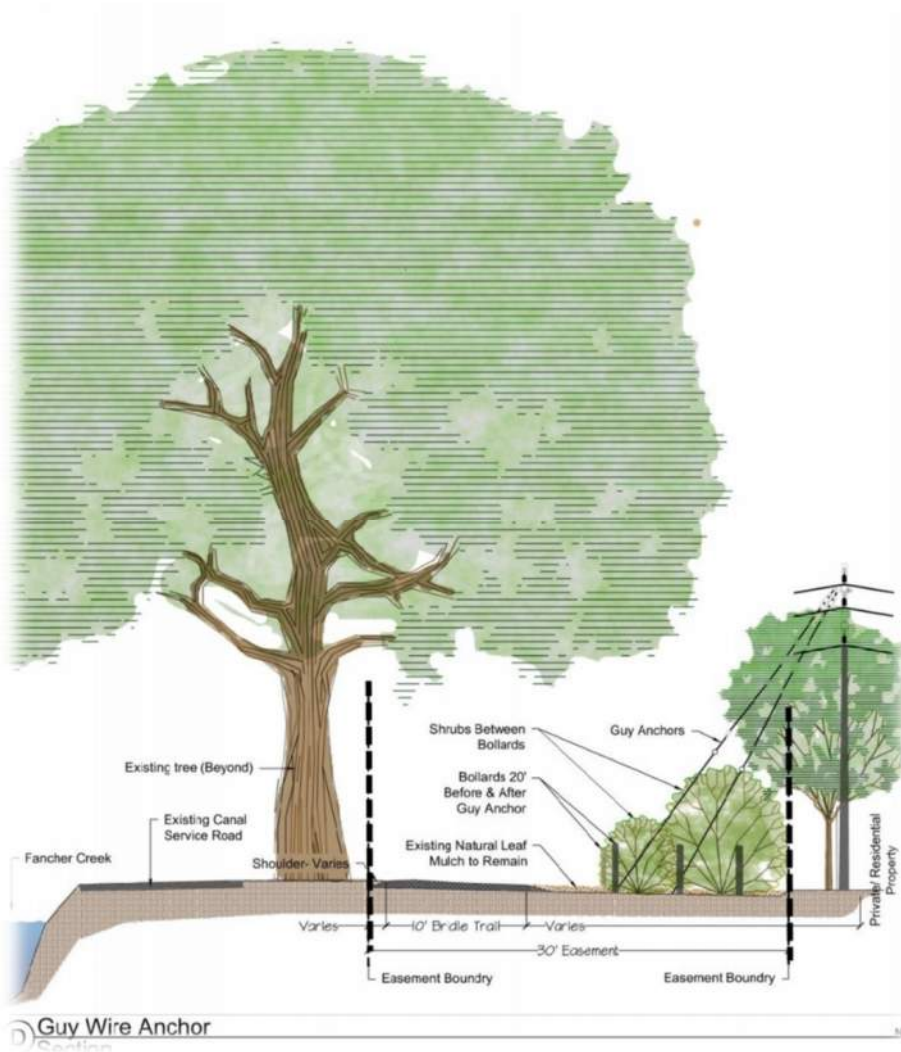
## LEGEND

|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | CRAPPE MERTYLE             |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE/ SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED BOLLARD           |

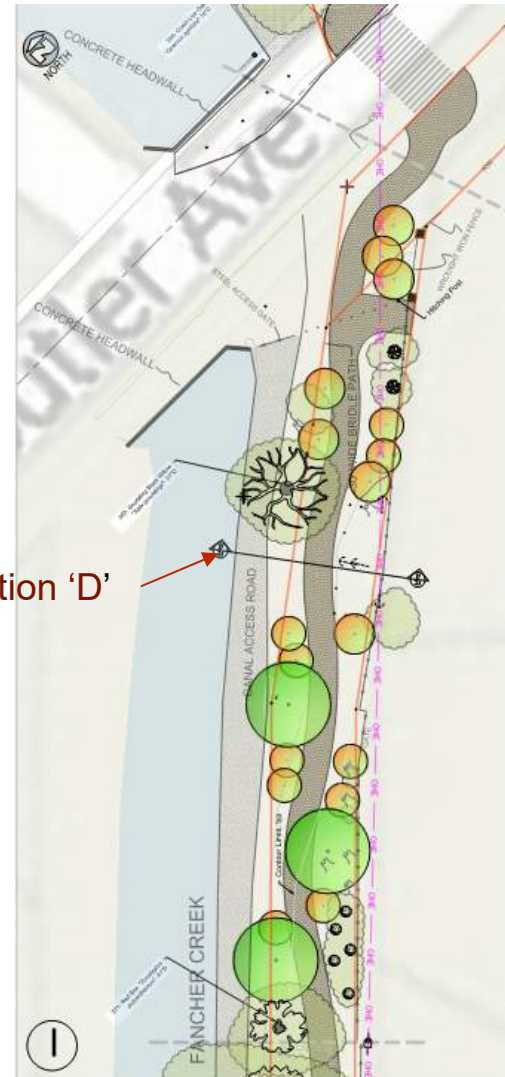


# New Trail Alignment

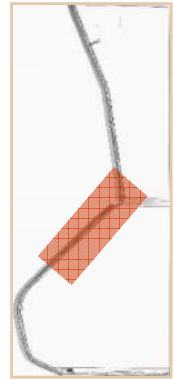
## Butler South (Cross Section D)



Section 'D'



Vicinity Map

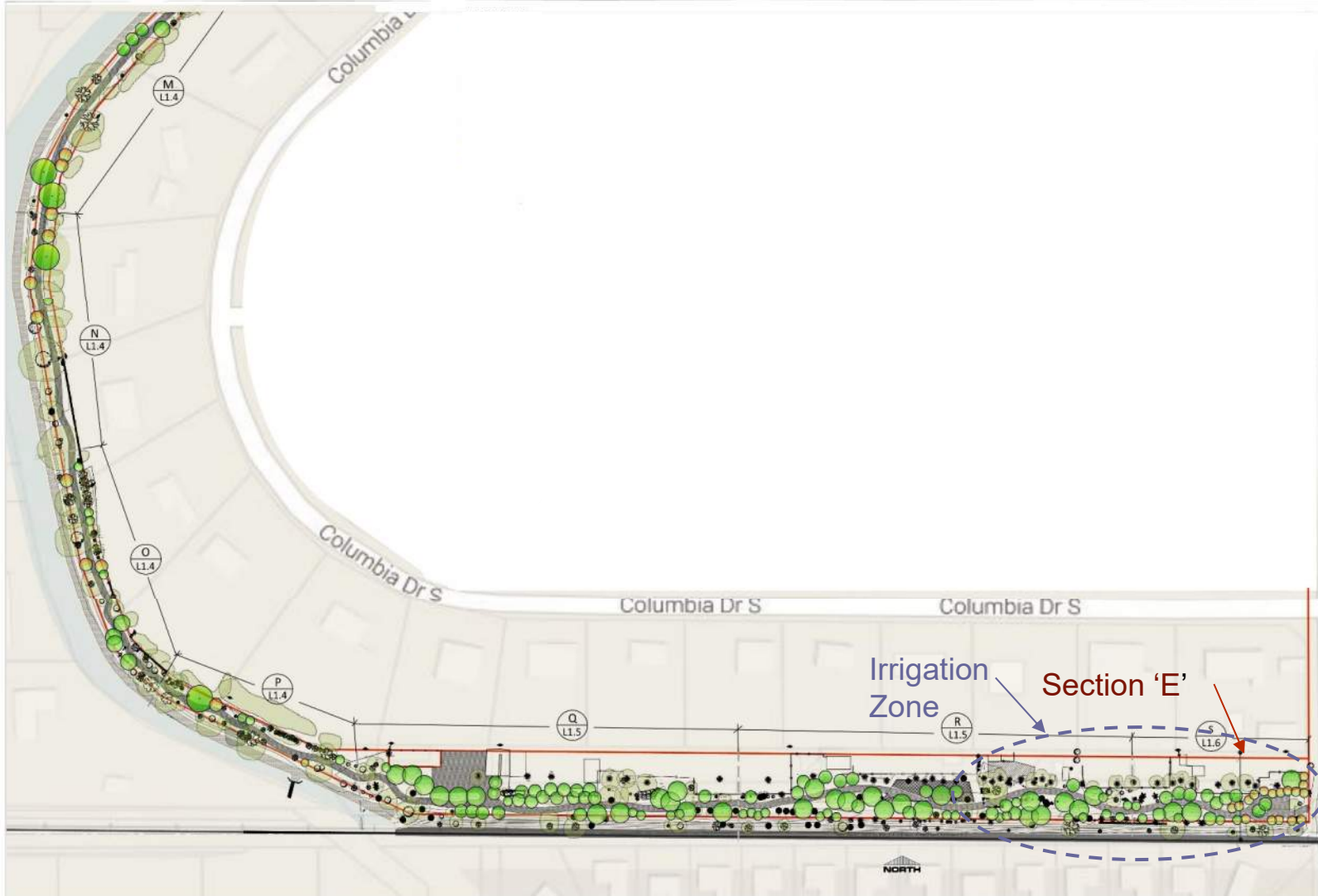
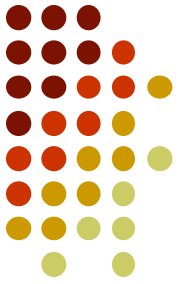


### LEGEND

|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | CRAPE MYRTLE               |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE/ SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED BOLLARD           |

# New Trail Alignment

West of Clovis Ave (M-S)



Vicinity Map



## LEGEND

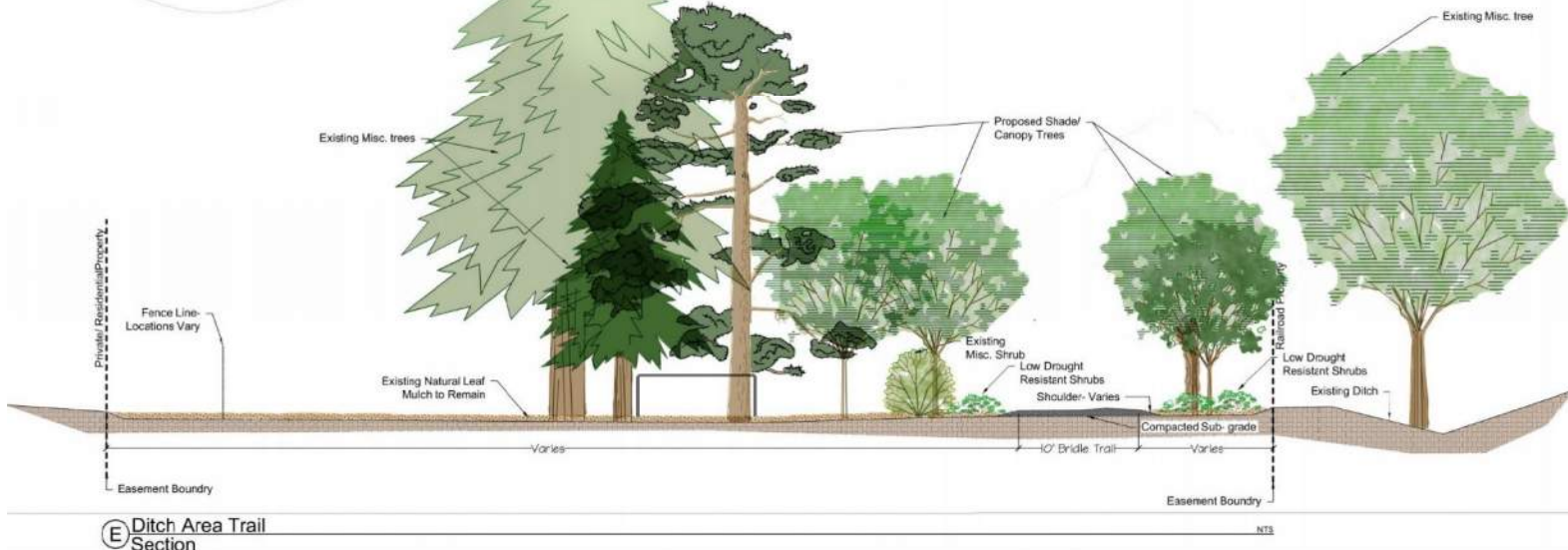
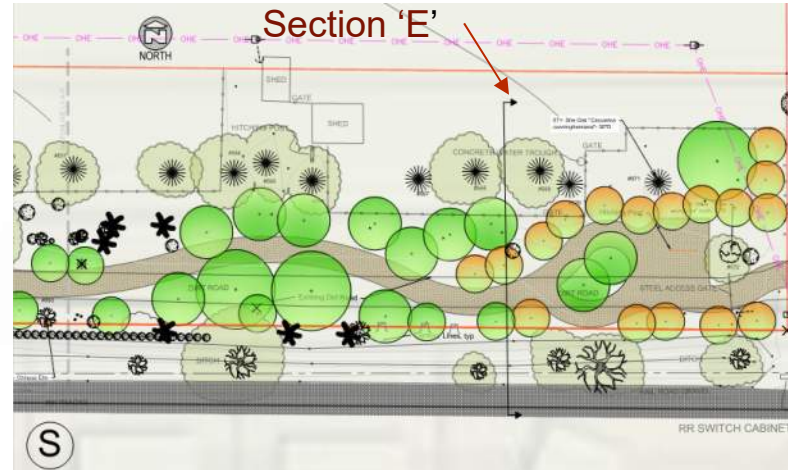
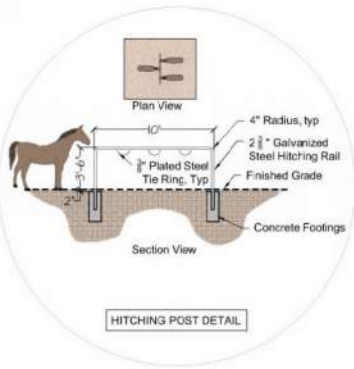
|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | CRAPE MYRTLE               |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE: SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED BOLLARD           |

# New Trail Alignment

West of Clovis Ave (Cross Section E)



Vicinity Map



## LEGEND

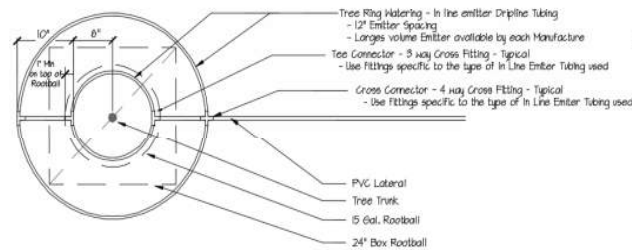
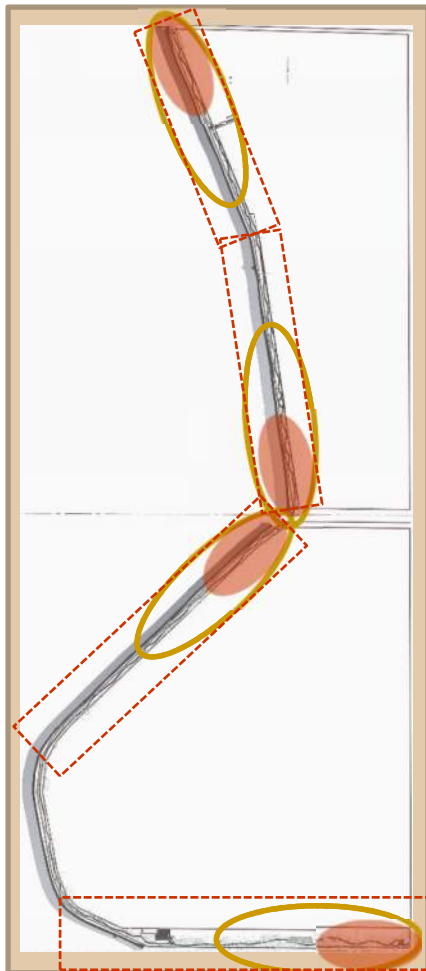
|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | CRAPE MYRTLE               |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE/ SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED SOLLARAD          |



# Option Coverage Areas

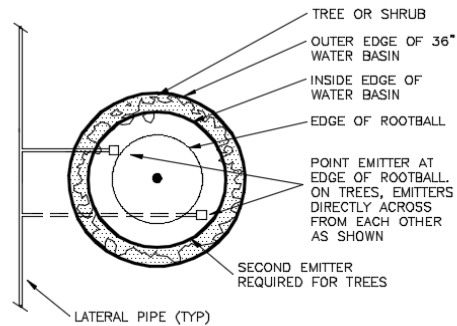
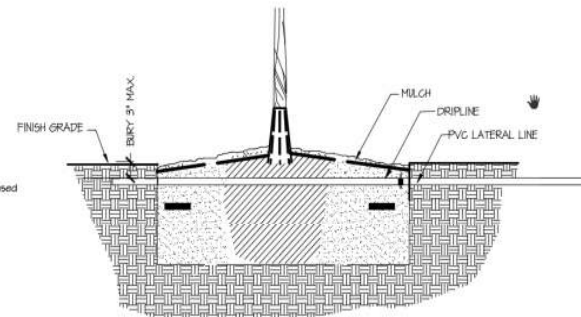
Entire Trail Options 1-3 – Large Booster Pump  
 Option 4 – Medium Booster Pump

Option 5 - 1000' – Small Pump  
 Option 6 – 500' – No Pump



A Drip Ring Detail

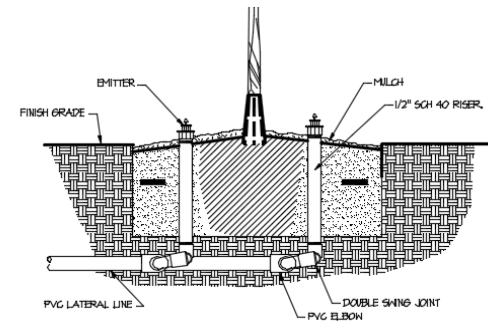
NTS



NOTE: DO NOT RUN INSTALL PIPE DIRECTLY UNDER TREE.

B Emitter Detail

NTS







# Planting Concepts

- ❑ Over All Planting Concept:
  - ❑ Utilize 90% +- California native plants
  - ❑ The vast majority of native plants being regionally native to Fresno County
    - ❑ Great Valley Oak Riparian, Foothill Woodland, Foothill Chaparral Communities
  - ❑ The balance of native plants are those which are climate adaptable
  - ❑ The non native tree plantings are limited to accent focal color at each street entry – selection based on available irrigation type and anticipated life cycle.
  - ❑ The non native tree and shrub plantings are limited to trees and shrubs that solve unique issues that can not be easily or confidently resolved by natives.
  - ❑ Explore Phased Planting of trees and shrubs based on funding and plant availability

# Trail Entry Sample

Butler North



Ceanothus



Rosemary



Crepe Myrtle



Redbud

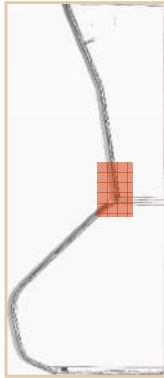


Carpet Rose



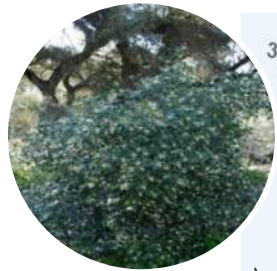
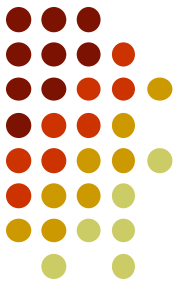
Oregon Grape

Vicinity Map



# Planting layout Sample

Unirrigated



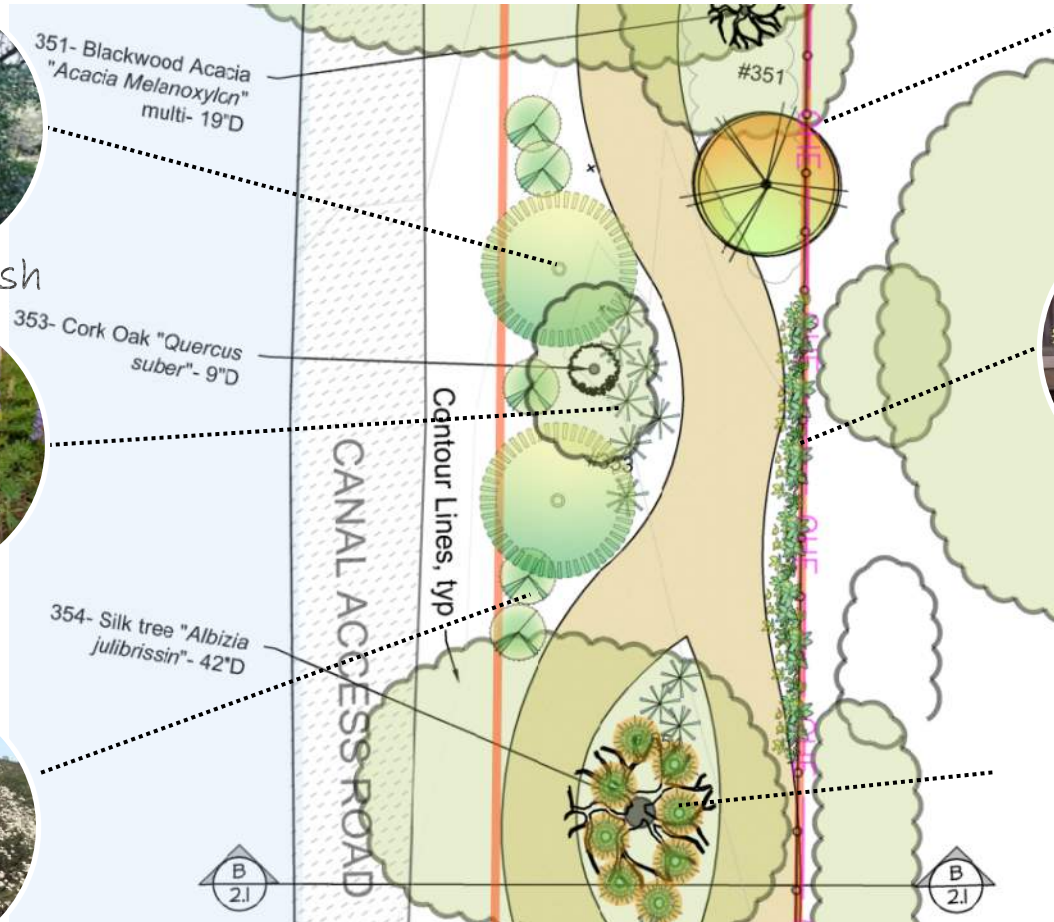
Sugar Bush



Lupine -  
annuals



Buckwheat



Mtn. Lilia  
tree form



Native  
Honeysuckle

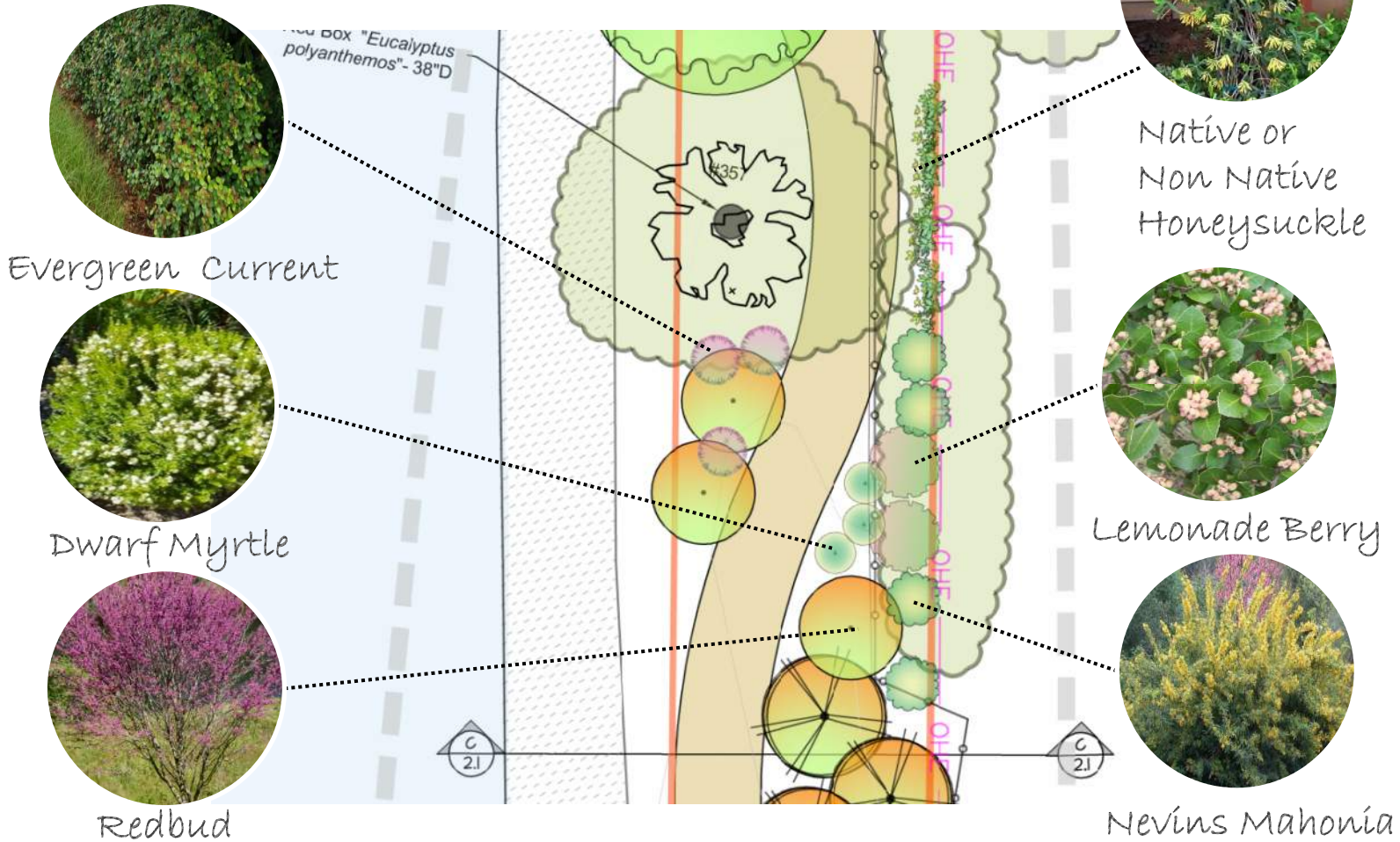


Evergreen Current  
Or Bare Soil



# Planting layout Sample

Irrigated - or Non Irrigated in Wetter Areas





# Full Sun Planting Sample

West of Clovis Avenue – Trail Turn Around



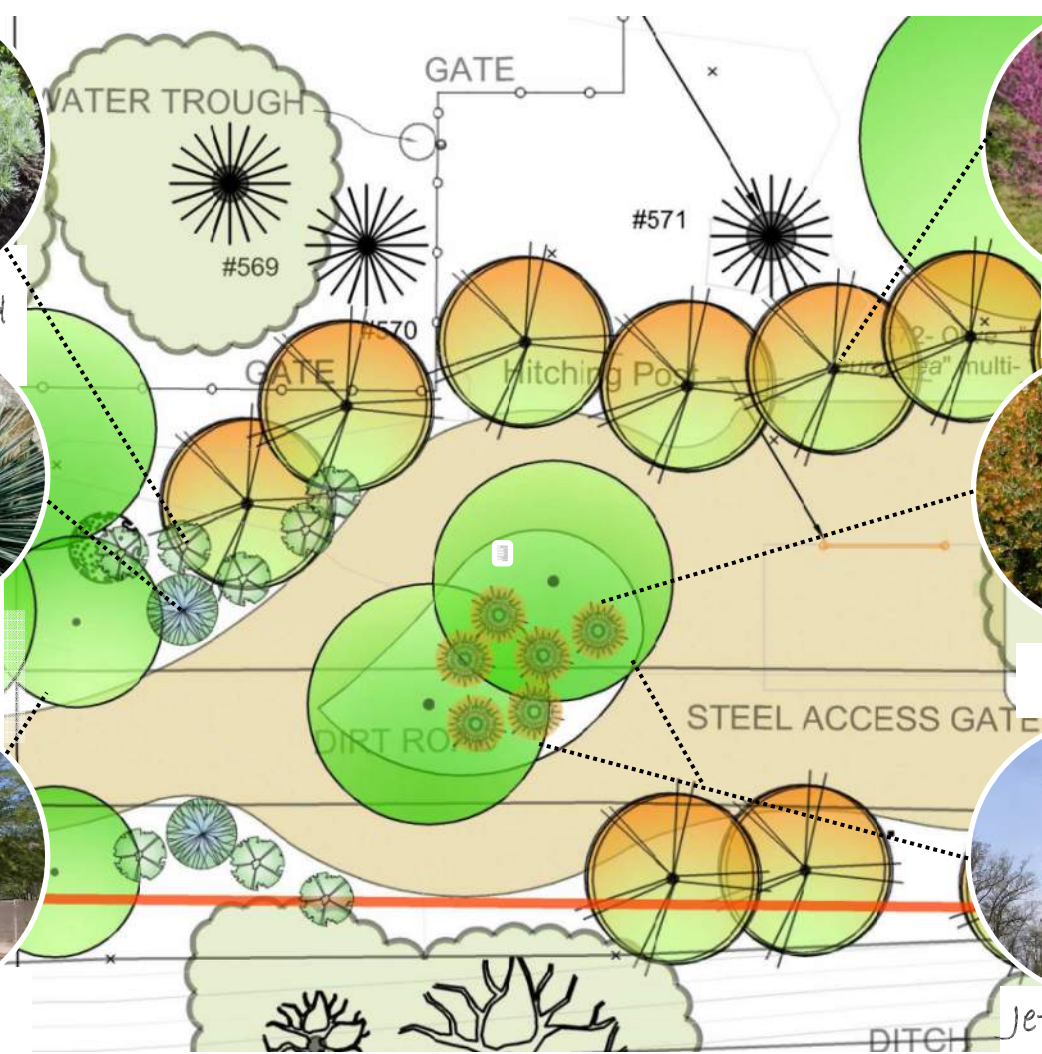
Wormwood



Our Lord's  
Candle



Mesquite  
Hybrid



Redbud



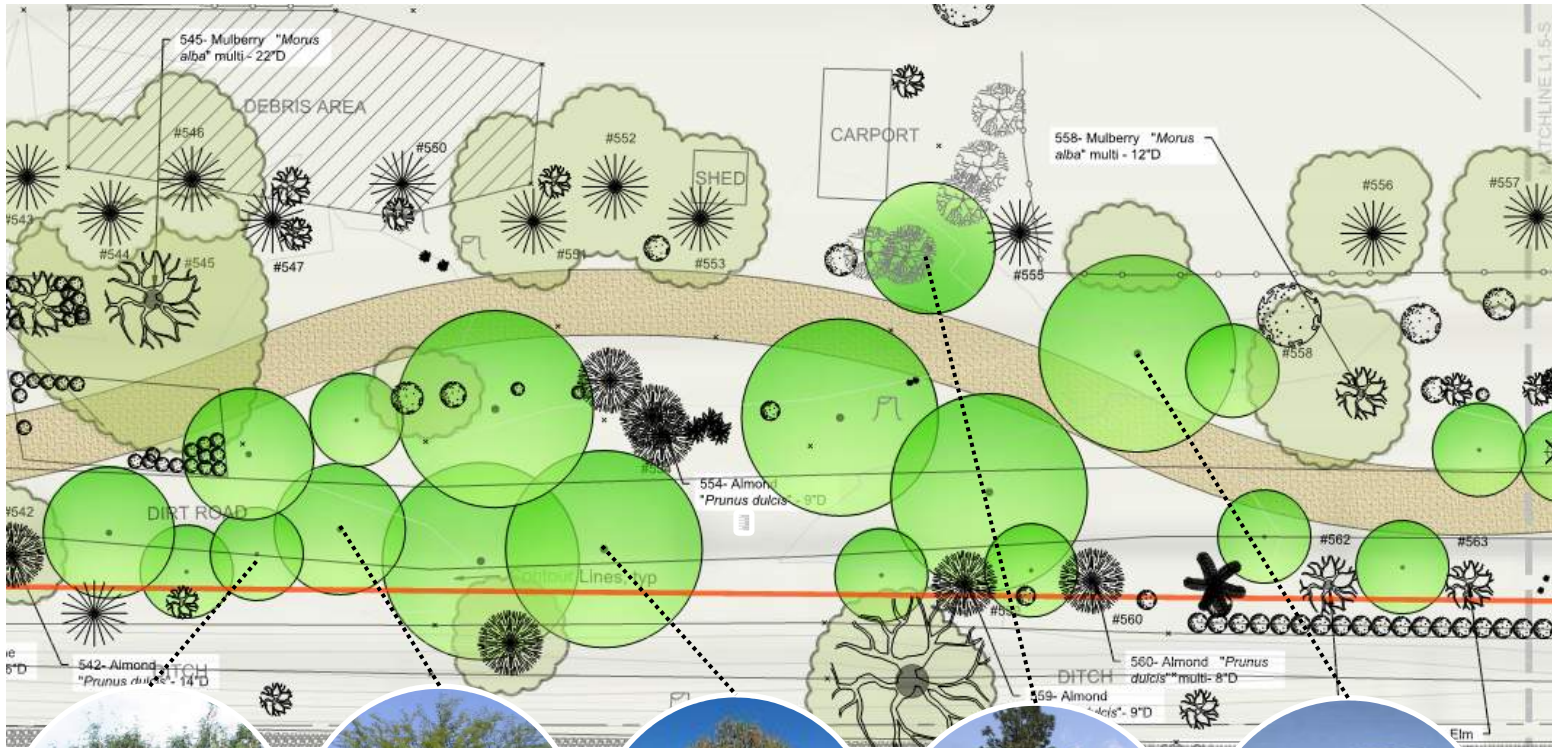
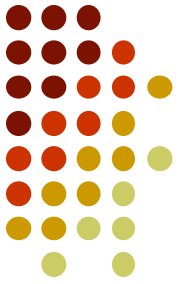
Sunset  
Manzanita



Jeffery Pine

# Tree Grouping Sample

West of Clovis Avenue



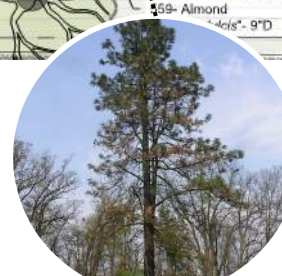
Honey Mesquite



Hybrid Mesquite



Blue Oak



Jeffery Pine



Interior Live Oak





# Project Probable Cost Summary

|   | <i>Extension</i> | <i>Cost</i> | <i>Running Total</i> | <i>Phase 1 (40%)</i> |
|---|------------------|-------------|----------------------|----------------------|
|   |                  |             |                      | Subtotals            |
| <i><u>Soft Costs</u></i>                                  |                  | \$100,000   | \$100,000            | \$40,000.00          |
| <i><u>Demolition</u></i>                                  |                  | \$275,600   | \$375,600            | \$110,240.00         |
| <i><u>Staking</u></i>                                     |                  | \$40,000    | \$415,600            | \$16,000.00          |
| <i><u>Sleeves</u></i>                                     |                  | \$5,000     | \$420,600            | \$2,000.00           |
| <i><u>Rough Grading &amp; Trail Construction</u></i>      |                  | \$593,980   | \$1,014,580          | \$237,592.00         |
| <i><u>Butler Crossing &amp; Water Connection</u></i>      |                  | \$60,000    | \$1,074,580          | \$24,000.00          |
| <i><u>Irrigation- (Option 6A)</u></i>                     |                  | \$111,000   | \$1,185,580          | \$44,400.00          |
| <i><u>Landscape &amp; Planting</u></i>                    |                  | \$172,253   | \$1,357,833          | \$68,901.00          |
|   | <i>TOTALS</i>    | \$ -        | \$1,357,833          | \$543,133.00         |
| <b>Future Items Not Included in Estimate</b>              |                  |             |                      |                      |
| <b>Replacement of Encroaching Fences &amp; structures</b> |                  |             |                      |                      |
| <b>Safety Indicators at Butler</b>                        |                  |             |                      |                      |
| <b>Traffic Signage</b>                                    |                  |             |                      |                      |
| <b>Electrical Transformers</b>                            |                  |             |                      |                      |
| <b>Year 2 - 4 pruning (\$ 55,000)</b>                     |                  |             |                      |                      |
| <b>County In House Soft Costs</b>                         |                  |             |                      |                      |
| <b>Inspections, Reviews, Testing</b>                      |                  |             |                      |                      |
| <b>Hand Trenching under trees</b>                         |                  |             |                      |                      |

**The End**





# New Trail Alignment

## Kings Canyon South (A-D)



Vicinity Map

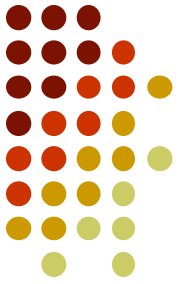


### LEGEND

|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | GRAPE MERTYLE              |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE/ SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED BOLLARD           |

# New Trail Alignment

## Kings Canyon South (A-C)



Vicinity Map



### LEGEND

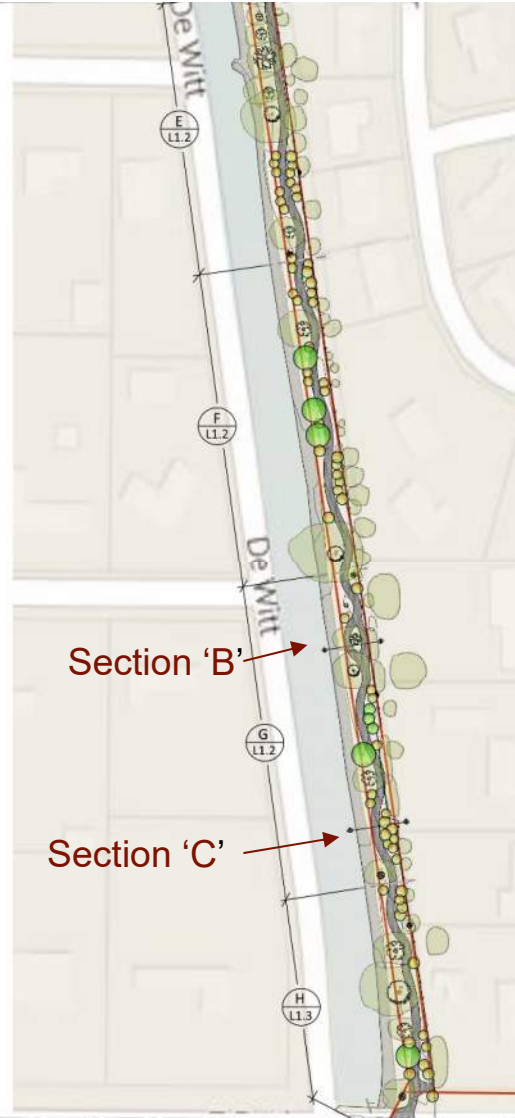
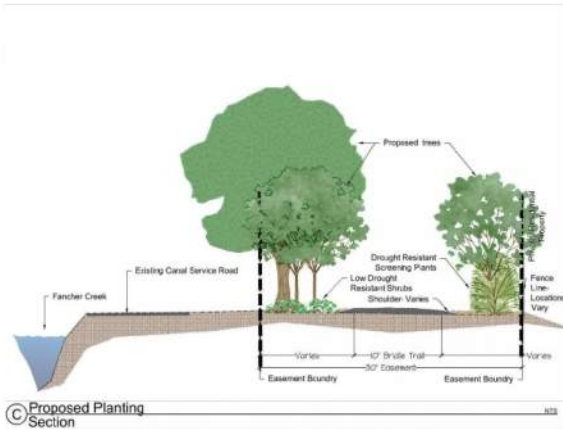
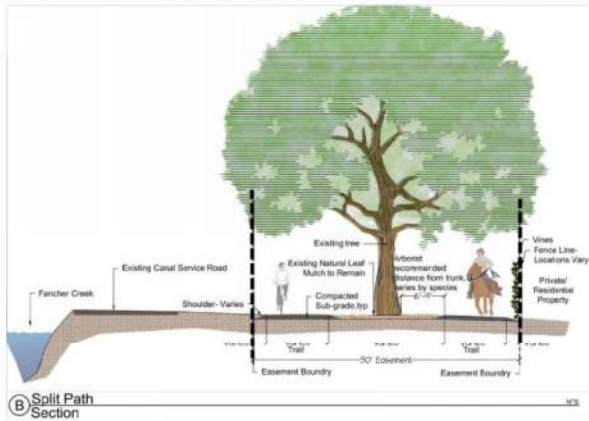
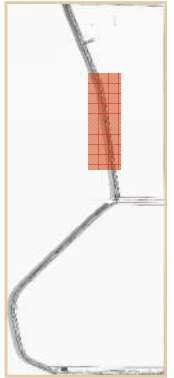
|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PINE TREE                  |
|  | GRAPE MERTYLE              |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE/ SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED BOLLARD           |

# New Trail Alignment

Butler North (E-H)



Vicinity Map



## LEGEND

|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | GRAPE MERTYLE              |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE: SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED BOLLARD           |

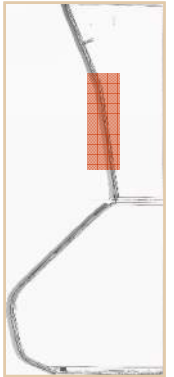


# New Trail Alignment

Mid Section- Kings Canyon to Butler (D-G)



Vicinity Map



## LEGEND

|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | CRAPE MYRTLE               |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE/ SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED ISLAND            |

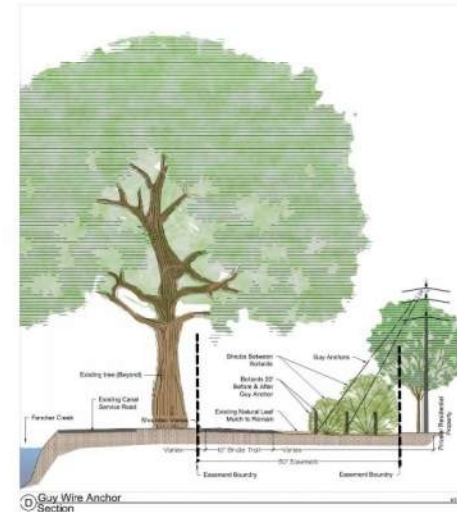
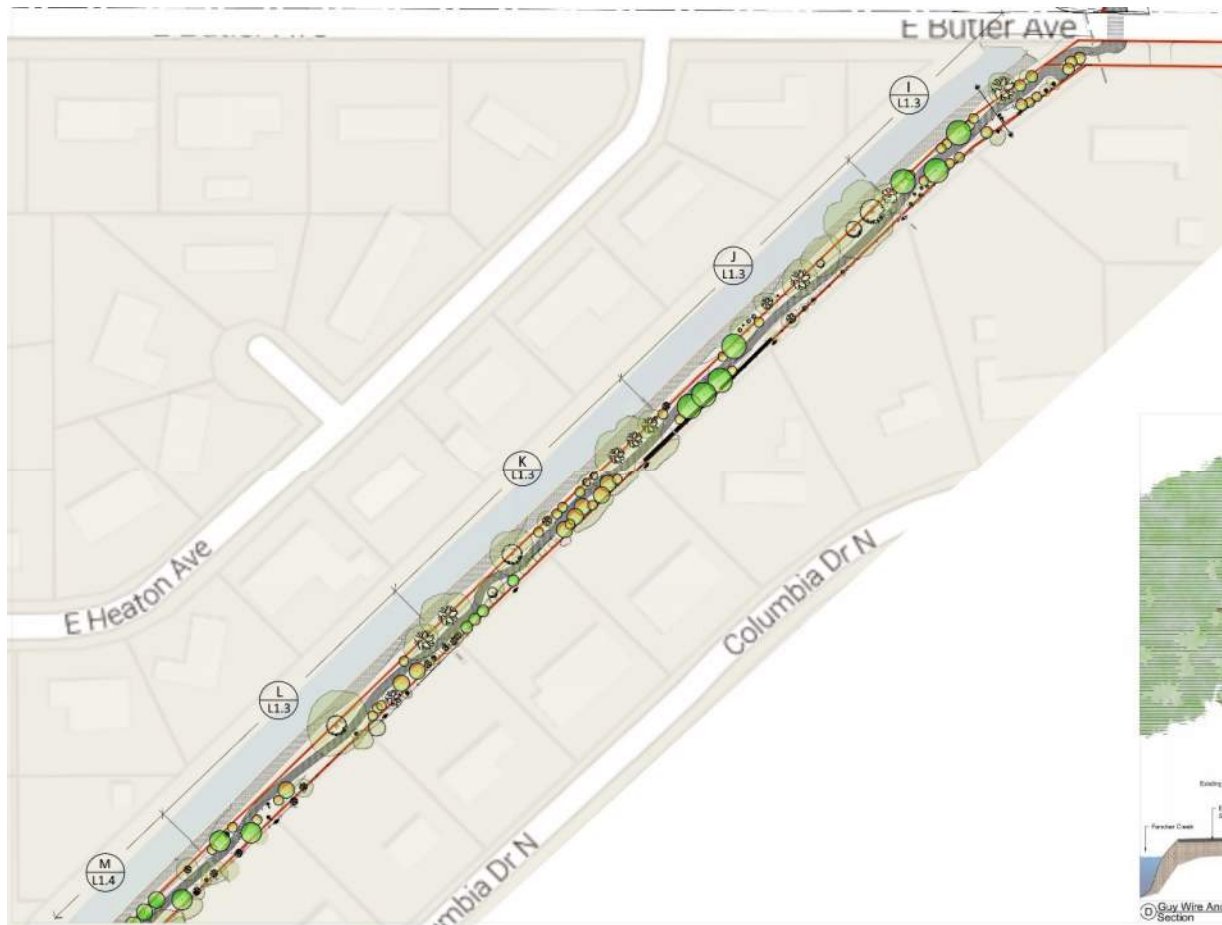
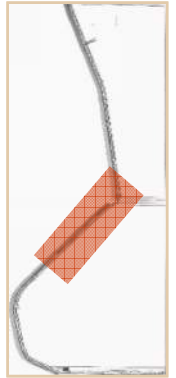


# New Trail Alignment

Butler South (I-M)



Vicinity Map



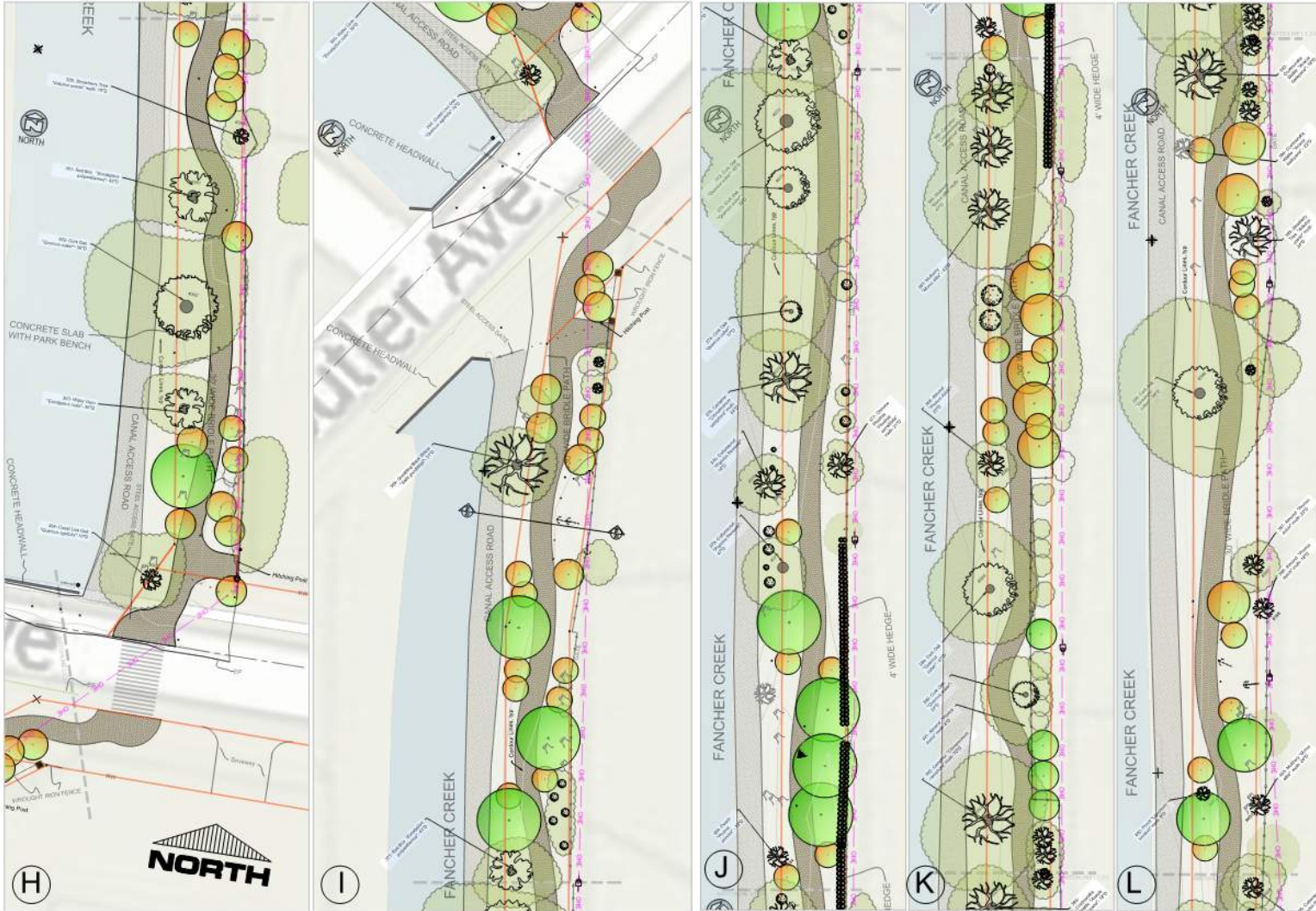
## LEGEND

|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | GRAPE MERTYLE              |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE/ SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED BOLLARD           |

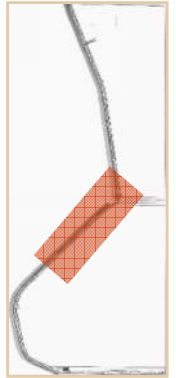
Guy Wins Anchor Section

# New Trail Alignment

North and South (H-L)



Vicinity Map



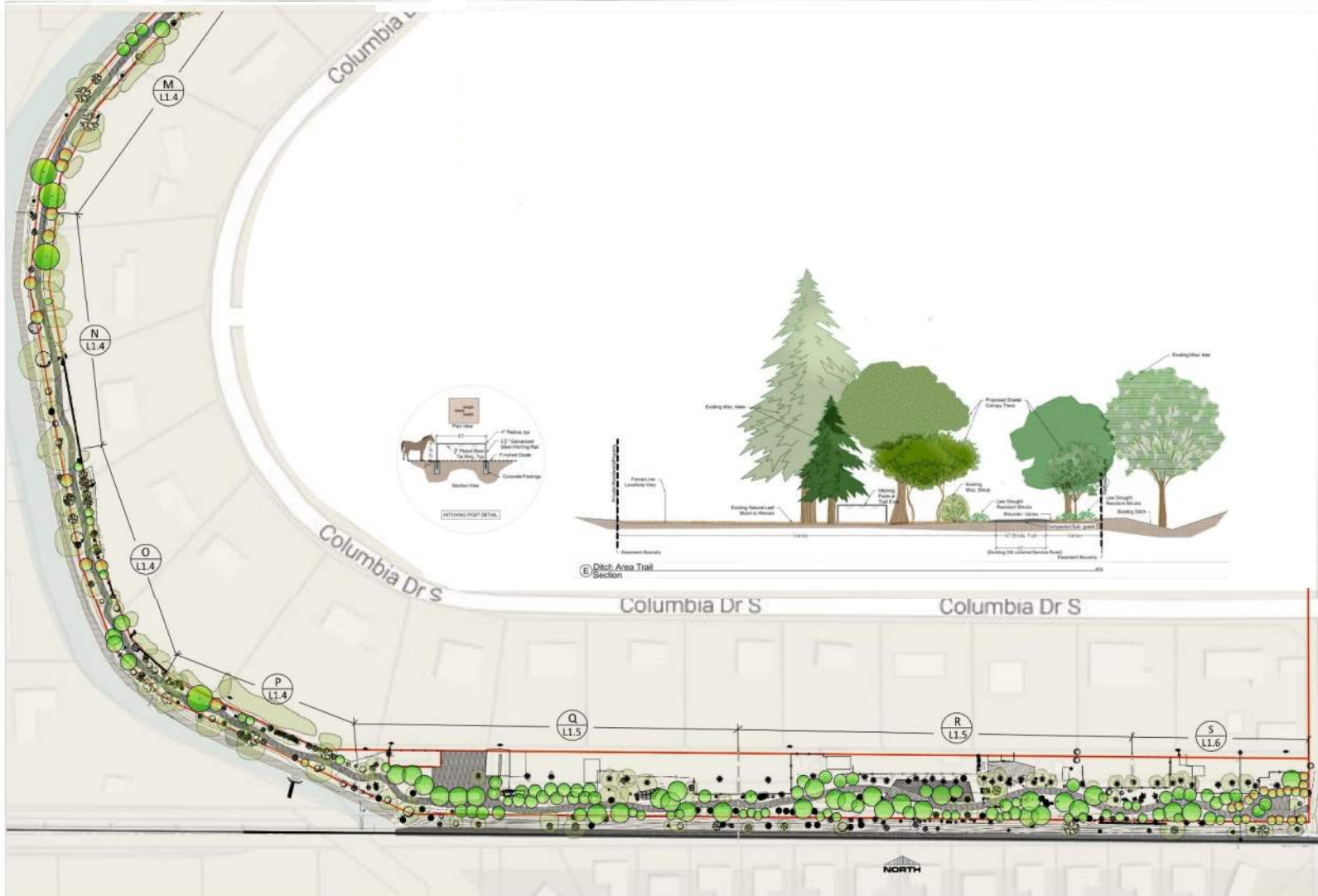
## LEGEND

|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | CRAPE MYRTLE               |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE/ SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED BOLLARD           |

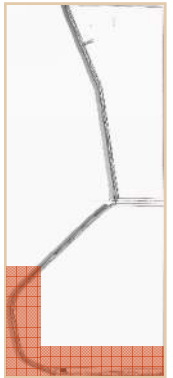


# New Trail Alignment

West of Clovis Ave (M-S)



Vicinity Map



## LEGEND

|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | GRAPE MERTYLE              |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE: SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED BOLLARD           |

# New Trail Alignment

## MidSection Butler South to Clovis (M-P)



Vicinity Map



### LEGEND

|                      |                            |
|----------------------|----------------------------|
| [Red line]           | EASEMENT BOUNDARY          |
| [Dashed line]        | PROPOSED TRAIL             |
| [Grey shaded area]   | EXISTING CANAL ACCESS ROAD |
| [Blue line]          | FANCHER CANAL              |
| [Black dot]          | SHRUB                      |
| [Black square]       | TREE STUMP                 |
| [Black circle]       | TREE                       |
| [Green circle]       | EUCALYPTUS TREE            |
| [Black circle]       | CORK TREE                  |
| [Black circle]       | PALM TREE                  |
| [Black circle]       | PINE TREE                  |
| [Black circle]       | GRAPE MERTYLE              |
| [Black circle]       | ALMOND TREE                |
| [Black circle]       | DEAD TREE                  |
| [Black circle]       | WALNUT TREE                |
| [Black circle]       | OLIVE TREE                 |
| [Black circle]       | CACTUS                     |
| [Black circle]       | CHINESE PISTACHIO TREE     |
| [Black circle]       | REMOVE TREE/ SHRUB         |
| [Green circle]       | PROPOSED DECIDUOUS TREE    |
| [Light green circle] | PROPOSED EVERGREEN TREE    |
| [Black square]       | PROPOSED ISLAND            |

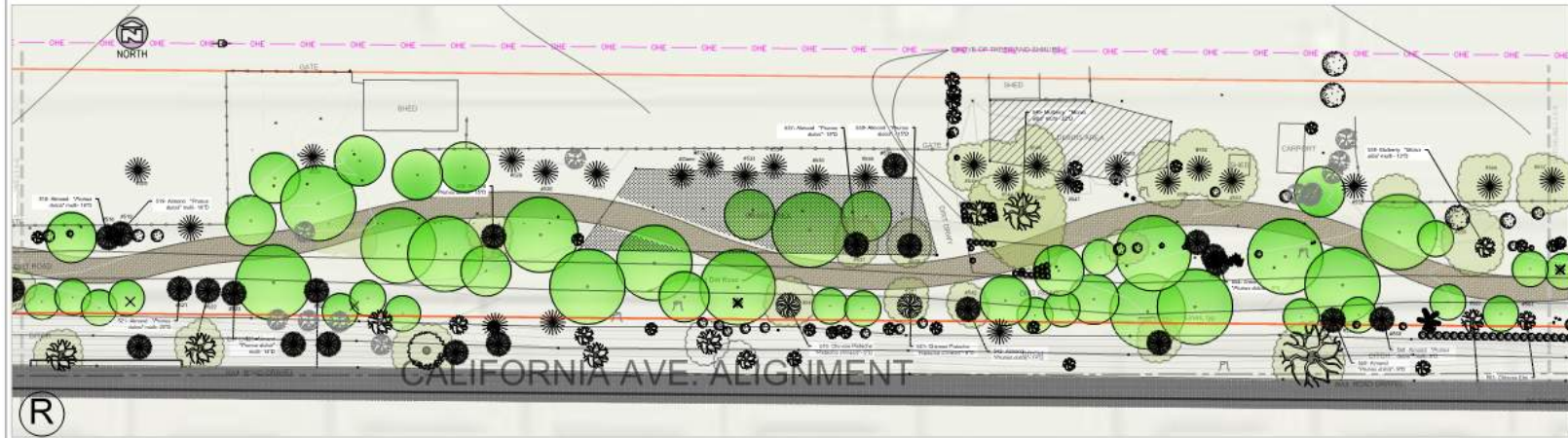
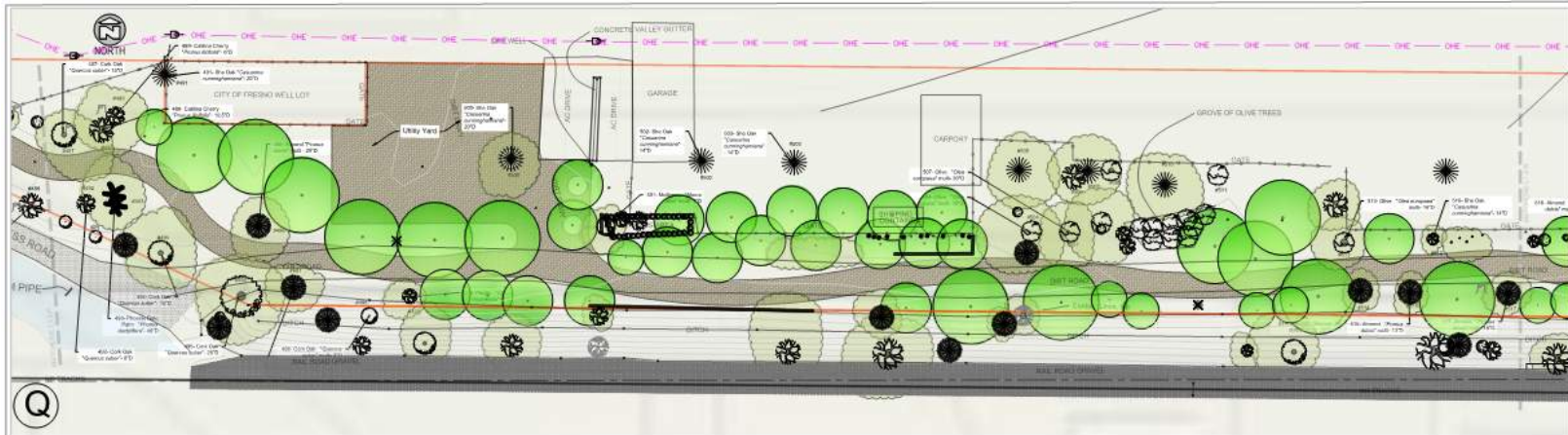
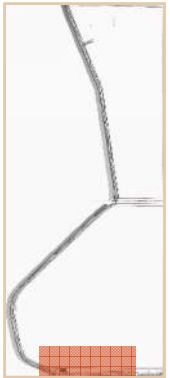


# New Trail Alignment

East of Clovis Ave (Q-R)



Vicinity Map

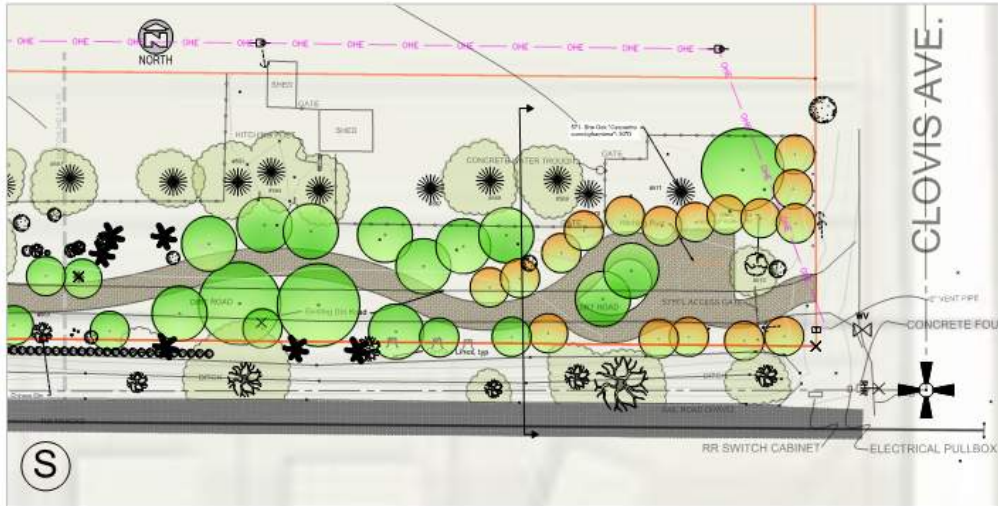
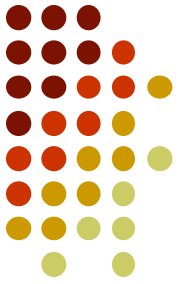


## LEGEND

|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | GRAPE MERTYLE              |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE/ SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED SOIL LAND         |

# New Trail Alignment

East of Clovis Ave (S)



Vicinity Map



## LEGEND

|  |                            |
|--|----------------------------|
|  | EASEMENT BOUNDARY          |
|  | PROPOSED TRAIL             |
|  | EXISTING CANAL ACCESS ROAD |
|  | FANCHER CANAL              |
|  | SHRUB                      |
|  | TREE STUMP                 |
|  | TREE                       |
|  | EUCALYPTUS TREE            |
|  | CORK TREE                  |
|  | PALM TREE                  |
|  | PINE TREE                  |
|  | CRAPE MYRTLE               |
|  | ALMOND TREE                |
|  | DEAD TREE                  |
|  | WALNUT TREE                |
|  | OLIVE TREE                 |
|  | CACTUS                     |
|  | CHINESE PISTACHIO TREE     |
|  | REMOVE TREE/ SHRUB         |
|  | PROPOSED DECIDUOUS TREE    |
|  | PROPOSED EVERGREEN TREE    |
|  | PROPOSED BOLLARD           |

**The End**



# Irrigation Math

## Drip Rings

Minimum Operating Pressure 10 PSI

At Full Build Out - 344 New Trees, 270 Existing and 3000 shrubs



| Item  | Loss Calcs      |
|---|-----------------|
| Pressure at Meter<br>(Assumed 1" meter)               | 35.0 psi        |
| Loss through meter<br>(Assumed 16 gpm)                | -1.4 psi        |
| Loss through Backflow Device<br>(Assumed 16 gpm)      | -12.0 psi       |
| Loss through Valve<br>(Assumed 1")                    | -3.0 psi        |
| Loss through Filter<br>(Assumed 1")                   | -0.2 psi        |
| Fitting Loss<br>(Assumed 10% of Total loss)           | -1.7 psi        |
| Mainline Loss<br>(Assumed 2" SCH 40 at 1400; .21x 14) | -3.0 psi        |
| Loss through Lateral Lines<br>(Assumed 1-1/2", 500')  | -4.5 psi        |
| 10% safety Margin                                     | -2.24 psi       |
| <b>Total Loss</b>                                     | <b>26.0 psi</b> |
| Available Operating Pressure<br>(35-24.6=)            | 9.0 psi         |



# Irrigation Math

## Drip Emitters

Minimum Operating Pressure 10 PSI

At Full Build Out - 344 New Trees, 270 Existing and 3000 shrubs



| Item  | Loss Calcs       |
|---|------------------|
| Pressure at Meter<br>(Assumed 1" meter)               | 35.0 psi         |
| Loss through meter<br>(Assumed 8 gpm)                 | -0.5 psi         |
| Loss through Backflow Devise<br>(Assumed 8 gpm)       | -12.0 psi        |
| Loss through Valve<br>(Assumed 1")                    | -2.5 psi         |
| Loss through Filter<br>(Assumed 1")                   | -0.2 psi         |
| Fitting Loss<br>(Assumed 10% of Total loss)           | -1.5 psi         |
| Mainline Loss<br>(Assumed 2" SCH 40 at 1400; .06x 14) | -.84 psi         |
| Loss through Lateral Lines<br>(Assumed 1-1/2", 500')  | -.14 psi         |
| 10% safety Margin                                     | -1.77 psi        |
| <b>Total Loss</b>                                     | <b>19.45 psi</b> |
| Available Operating Pressure<br>(35-19.45=)           | 15.55 psi        |