

A History of Land Cover Change at Rio Vista Park

Julia Fonseca, Madrean Resources

June 2023

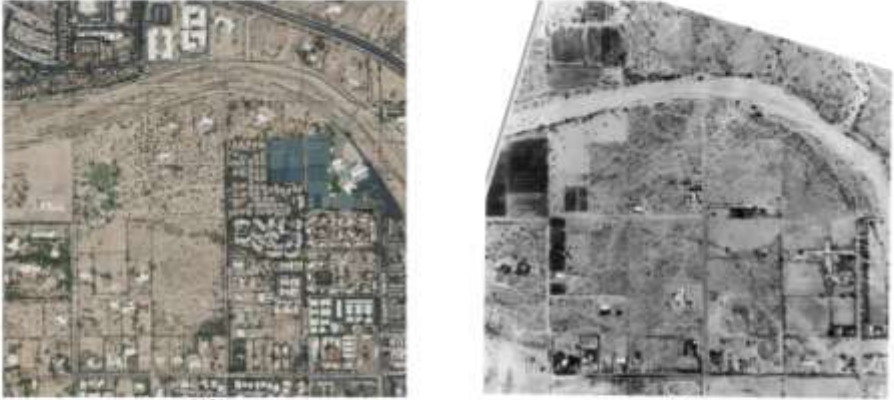


Photo: RillitoBend NA

Outline

- PimaMaps
- Aerial photographic interpretation
- Setting
- Land cover changes
- Big trends

**Rio Vista Natural Resource Park, 1936–2021:
A History of Land Cover Change**




2021

1959


By Julia Fonseca
Madrean Resources, LLC
julia@madreanresources.com

February 2023

Report submitted to:
Friends of Rio Vista
P.O. Box 65693
Tucson, Arizona 85728
Report RVCP 23-01



Madrean Resources



Friends of Rio Vista

Posted at https://friendsofrio Vista.org/wp-content/uploads/2023/03/Fonseca_J_2023_Rio_Vista_Land_Cover_RVCP_23-01.pdf

PIMAMAPS

- MAPS
- ANNOUNCEMENTS
- GETTING STARTED
- HELP
- TRAINING VIDEOS
- LEGACY

For **PimaMaps classes/training** see the [schedule](#).

- [PimaMaps - Main](#) - limited core data layers for streamlined performance
- [PimaMaps - Survey](#) - includes additional layers useful for survey and other professions that need more detailed information
- [PimaMaps - SDCP](#)
 - [Sonoran Desert Conservation Plan](#)
- [PimaMaps - Arizona](#)
- [PimaMaps - Rosemont Mine](#)

Email:
[Email GIS Webmaster](#)
[Email PimaMaps](#)
[Email Acquiring GIS Data](#)

Phone:
520-724-6670

Fax:
520-791-6588

Address:
33 N Stone Ave
14th Floor
Tucson, AZ 85701-1404
[Link to Map](#)

[Staff Directory](#)



PimaMaps - Survey

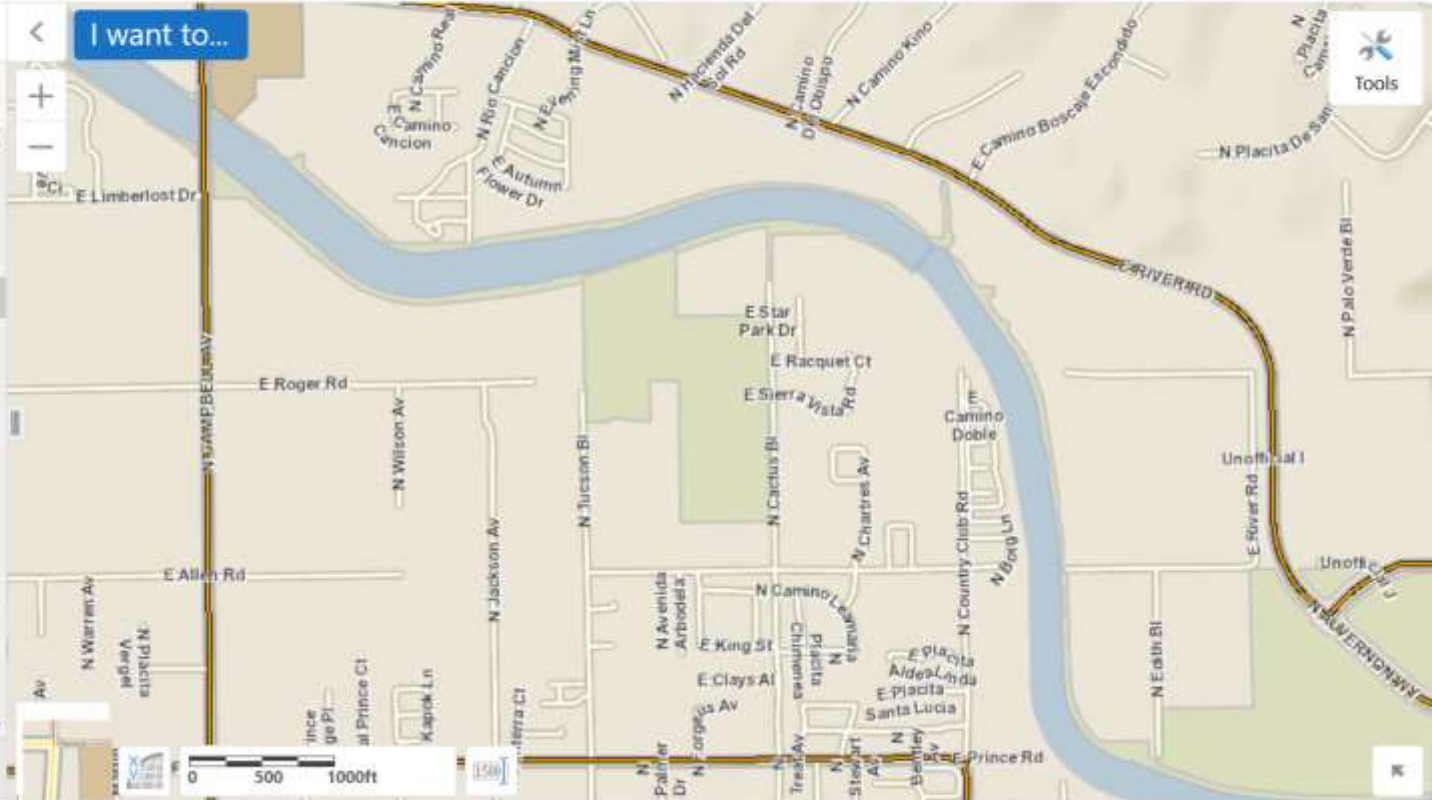
Search...

Layers

Filter Layers... Filter

- PC Major Streets Plan
- PC Scenic Routes Plan
- Roadway Traffic Counts - PAG
- Roads Accepted for Maintenance - Pima County DOT
- + Road Proceedings
- + Streets - 2nd Additional
- + Parcels Group
- + Parcels Group - Additional
- + Administrative Boundaries
- + Associations

Welcome to PimaMaps Layers



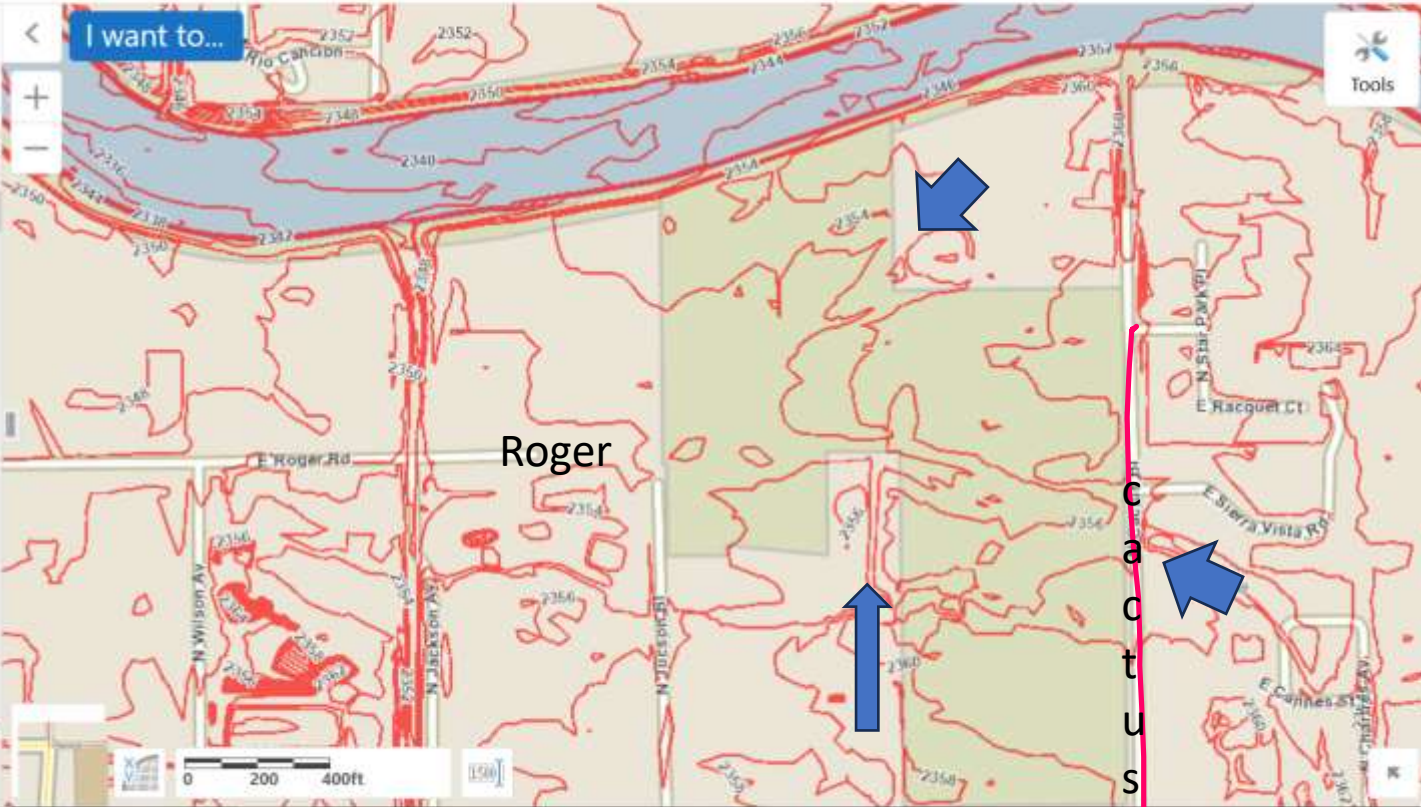
PimaMaps - Survey

Layers

Filter Layers... Filter

- Topography - USGS Clip (for areas outside PAG contour range)
- All 10-foot Contours
- Topography - NAVD88
 - All 2-foot Contours
- Topography - NAVD88
- Contours - Additional
 - Topography 2015 - RFCD Generated
 - Topography 2014 - Green Valley Basin Management Study
 - Topography 2005 - NAVD88
 - Topography 2003 - Ajo

Welcome to PimaMaps Layers



PimaMaps - Survey

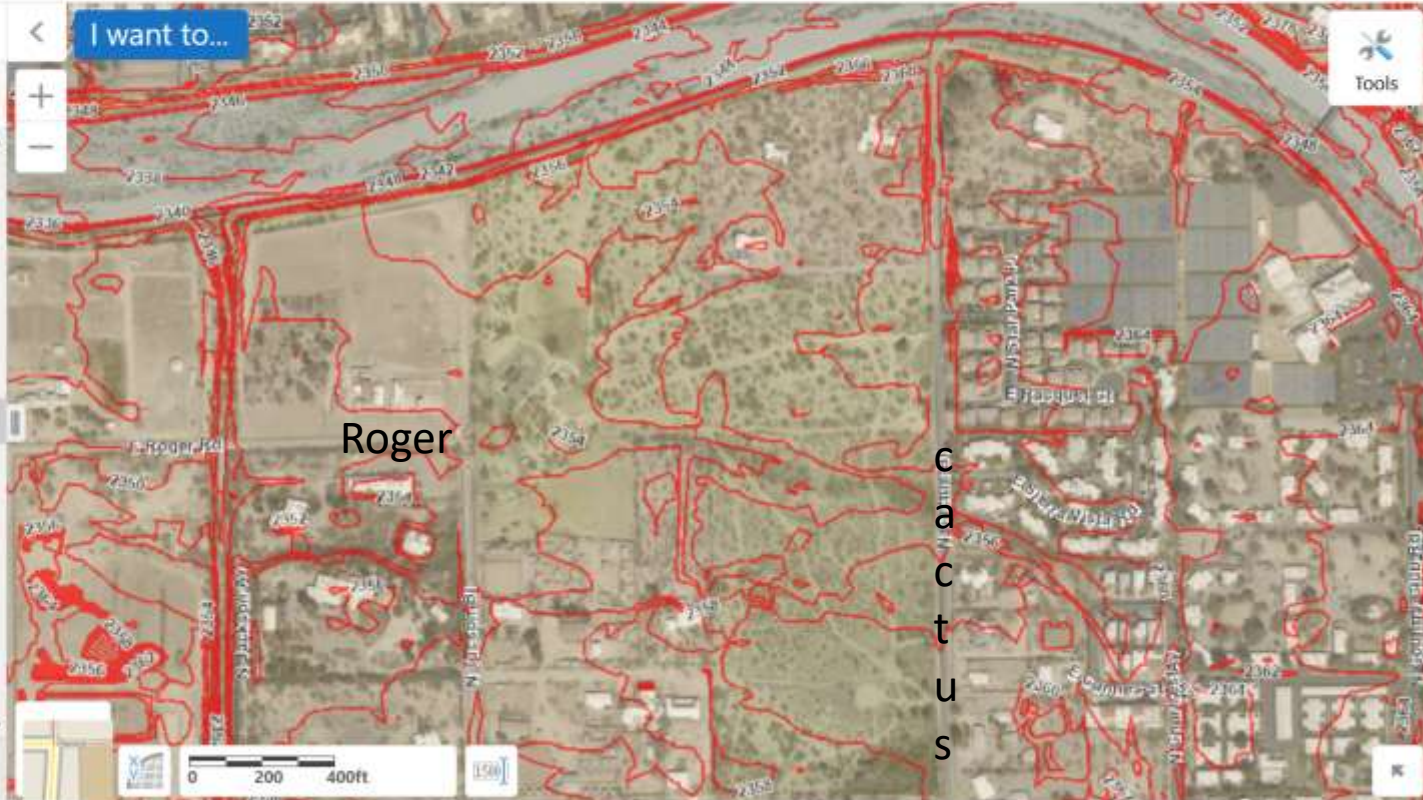
Search...

Layers

Filter Layers...

Filter

- Zoning
- Latest Orthophoto Imagery
- 2022 Spring Pictometry Color
- 2021/05 PAG Color Orthophoto Imagery
- 2020 Bighorn Fire Pictometry Orthophoto Imagery
- 2020 Mid-Year Pictometry Color Orthophoto Imagery
- 2019 PAG Color Orthophoto Imagery



Tools

0 200 400ft

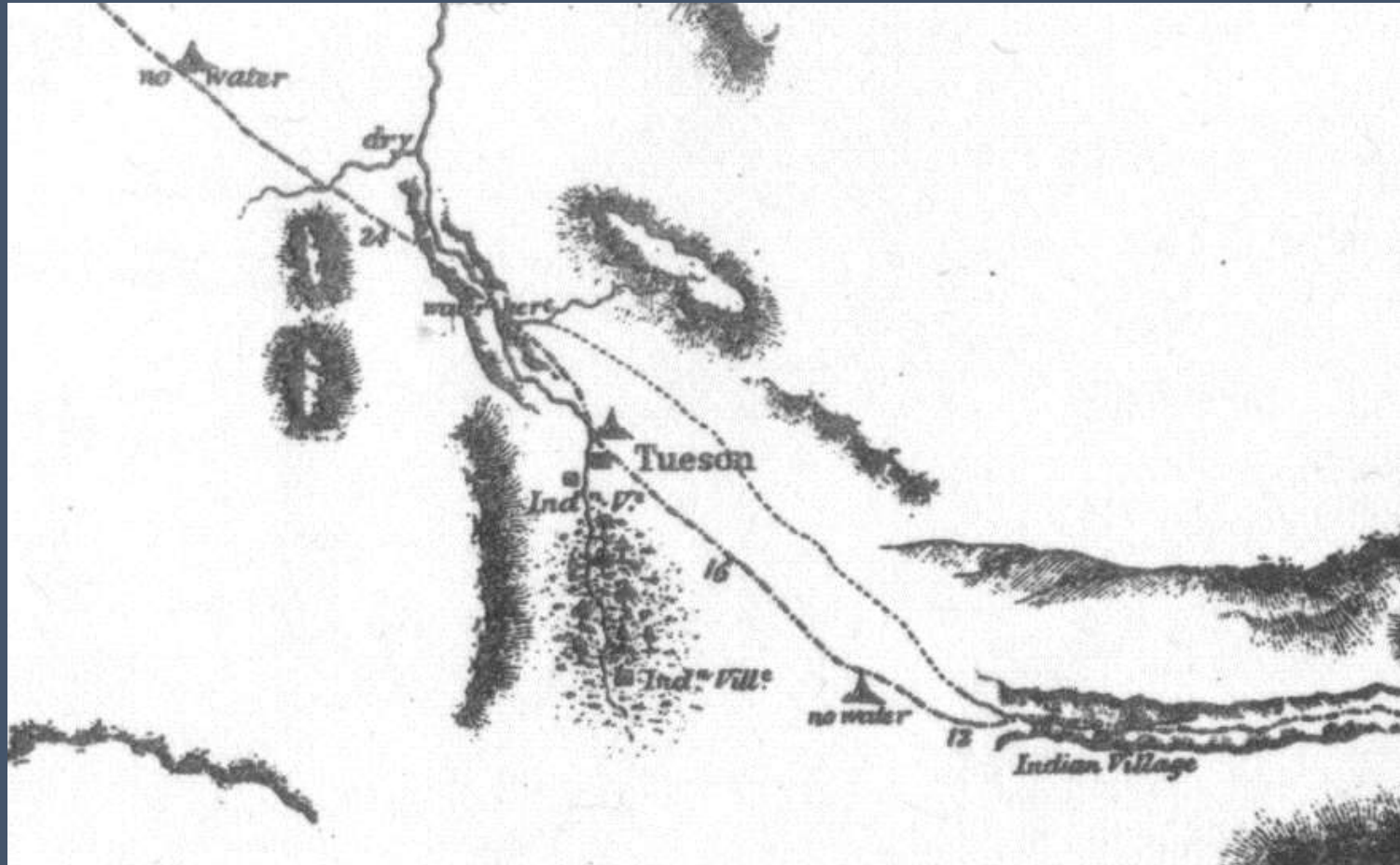
Welcome to PimaMaps Layers

Interpretation of Aerials

- Tone, texture
- Color
- Scale
- Context
- 3D and oblique views
- Ground truth



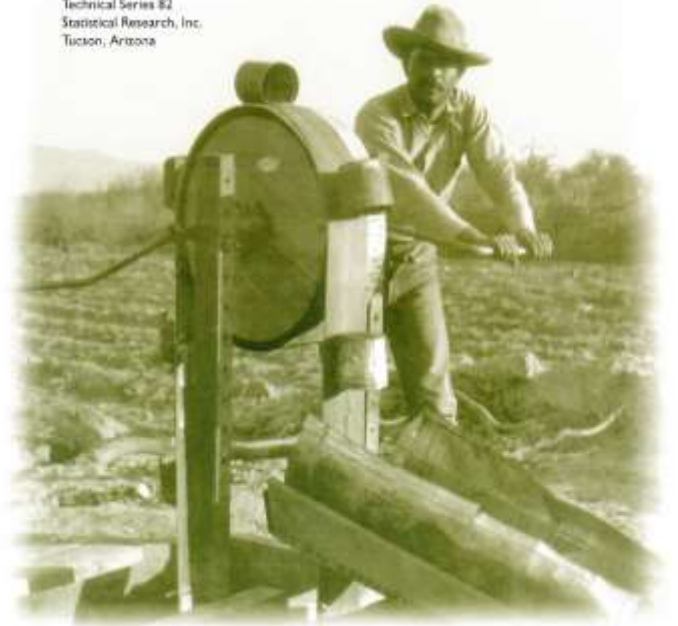
Geographic Setting



Col. Cooke's route through Sonora in 1846



Technical Series 82
Statistical Research, Inc.
Tucson, Arizona



Underflow ditch and flume, Rillito, Special Collections, University of Arizona circa 1908



1936

- Flows
- Livestock trails
- Pits
- Swale
- Clearing

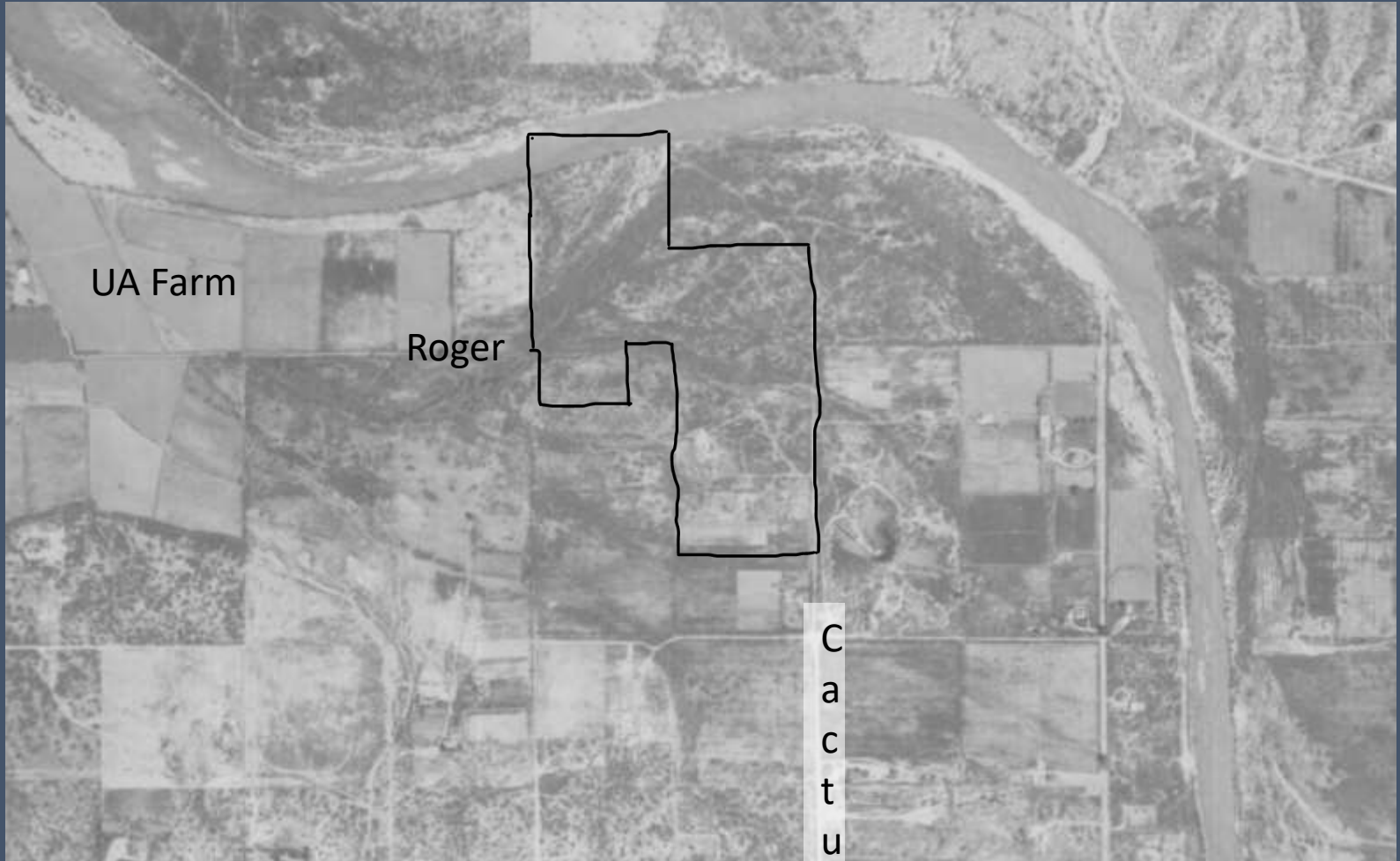
Roger

Binghampton

C
a
c
t
u
s

1941

Livestock
Clearing
Roads

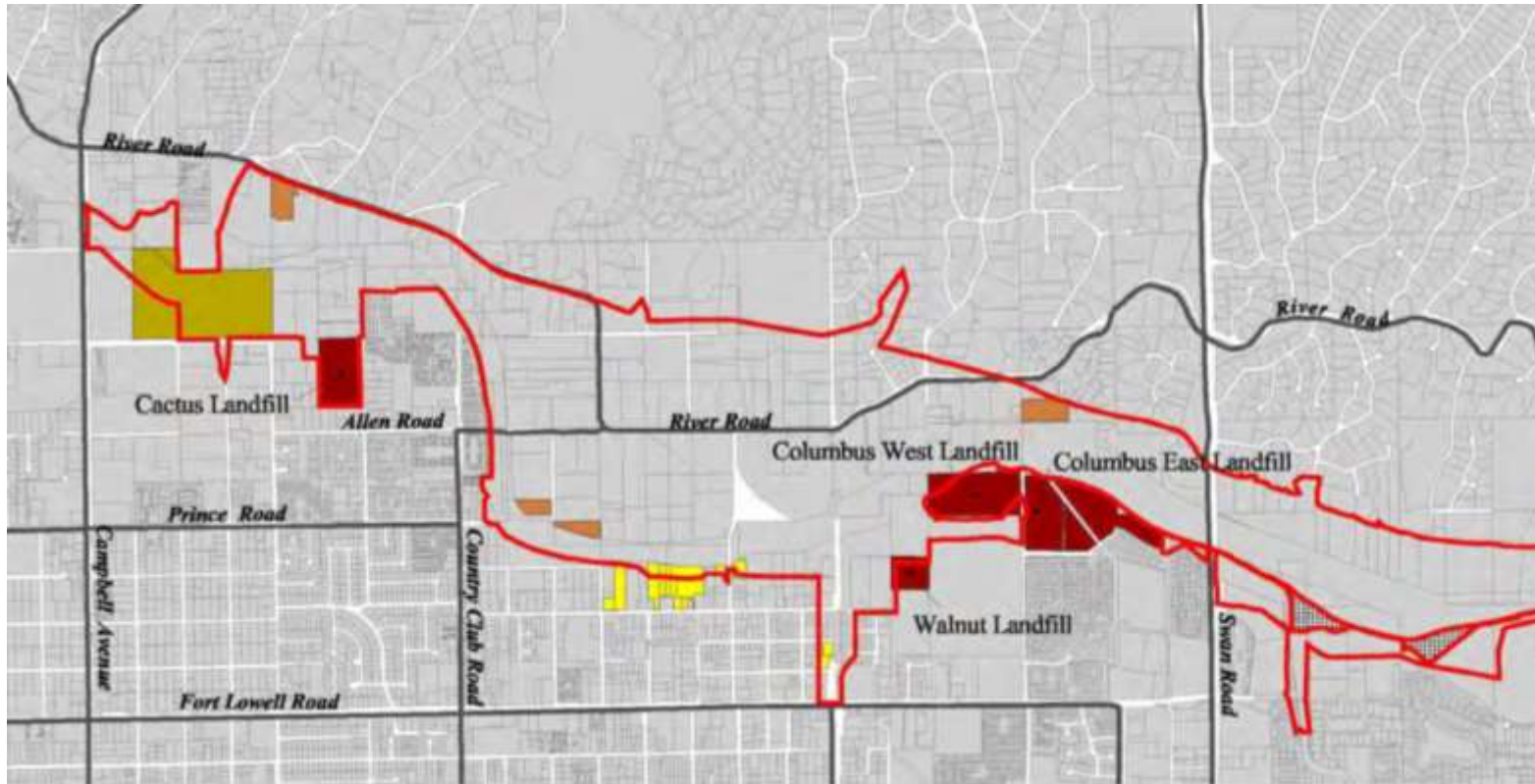


1959

No flow
Reduced cover
Clearing
Irrigation
Row crops?
Structures
Tucson Blvd
.Roger Rd.
Landfill



Landfills along the Rillito



Data: USACE 2004 Rio Antiguo report



1974
New bldgs
More roads
Horse pens
Irrigated
lawns/gardens

Roger

C
a
c
t
u
s



Clearings, more intensive horse use, Tucson Blvd. widened

1980





Pima County photo

October 1983 flood, Rillito near 1st Avenue



Pima County photo

1983

TUCSON FLOOD

OCT. 3,

Roger

C
A
C
T
U
S

More clearing
Domestic and
livestock use
continue
Sand bar



Soil-cement embankments along Santa Cruz and Rillito

1998

Soil cement
Sand bar
growth
Vegetation
Recovery
Thicker
riparian



2002

Removal of
some horse
facilities
Veg loss
More sand in
river



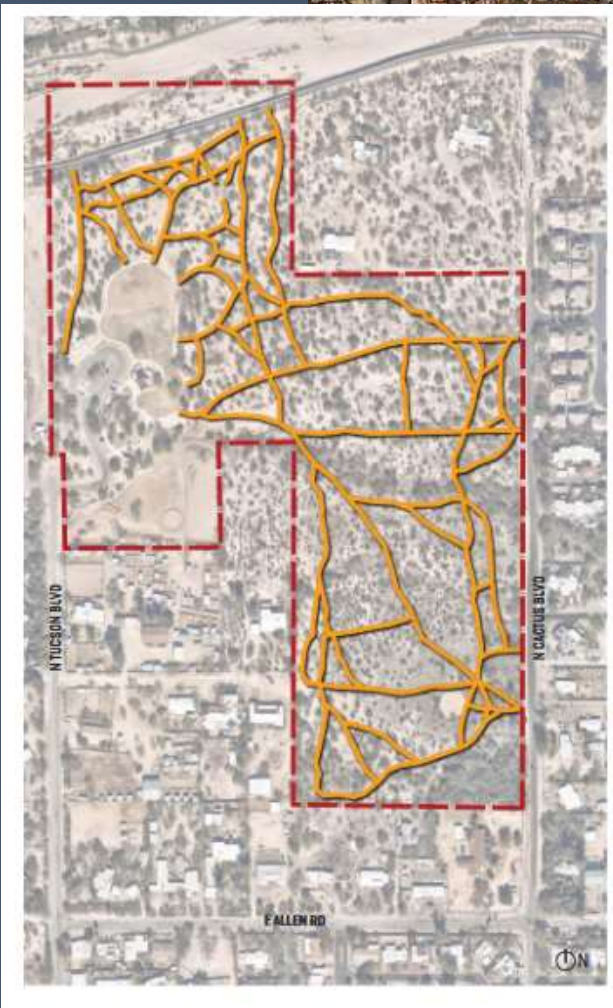
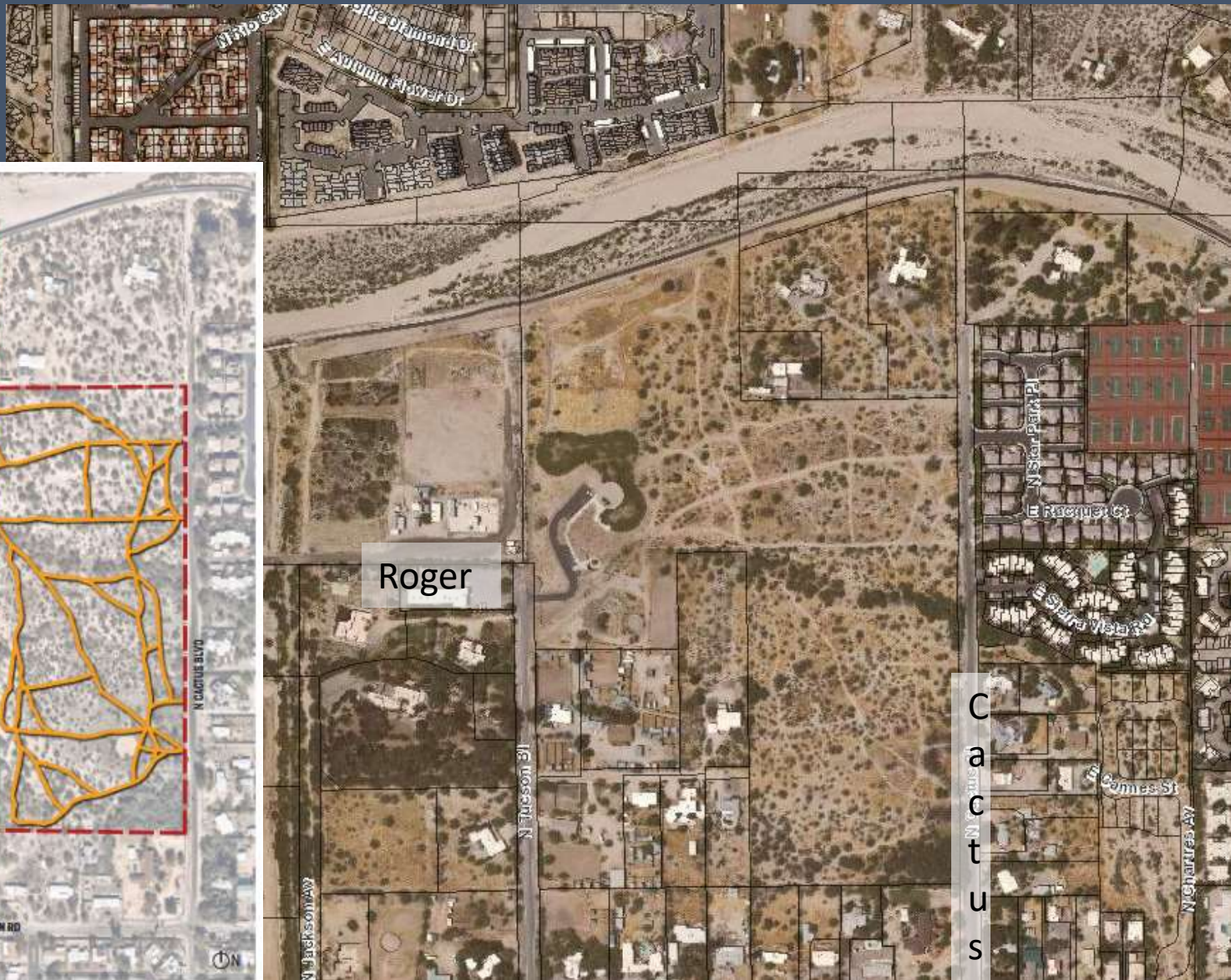
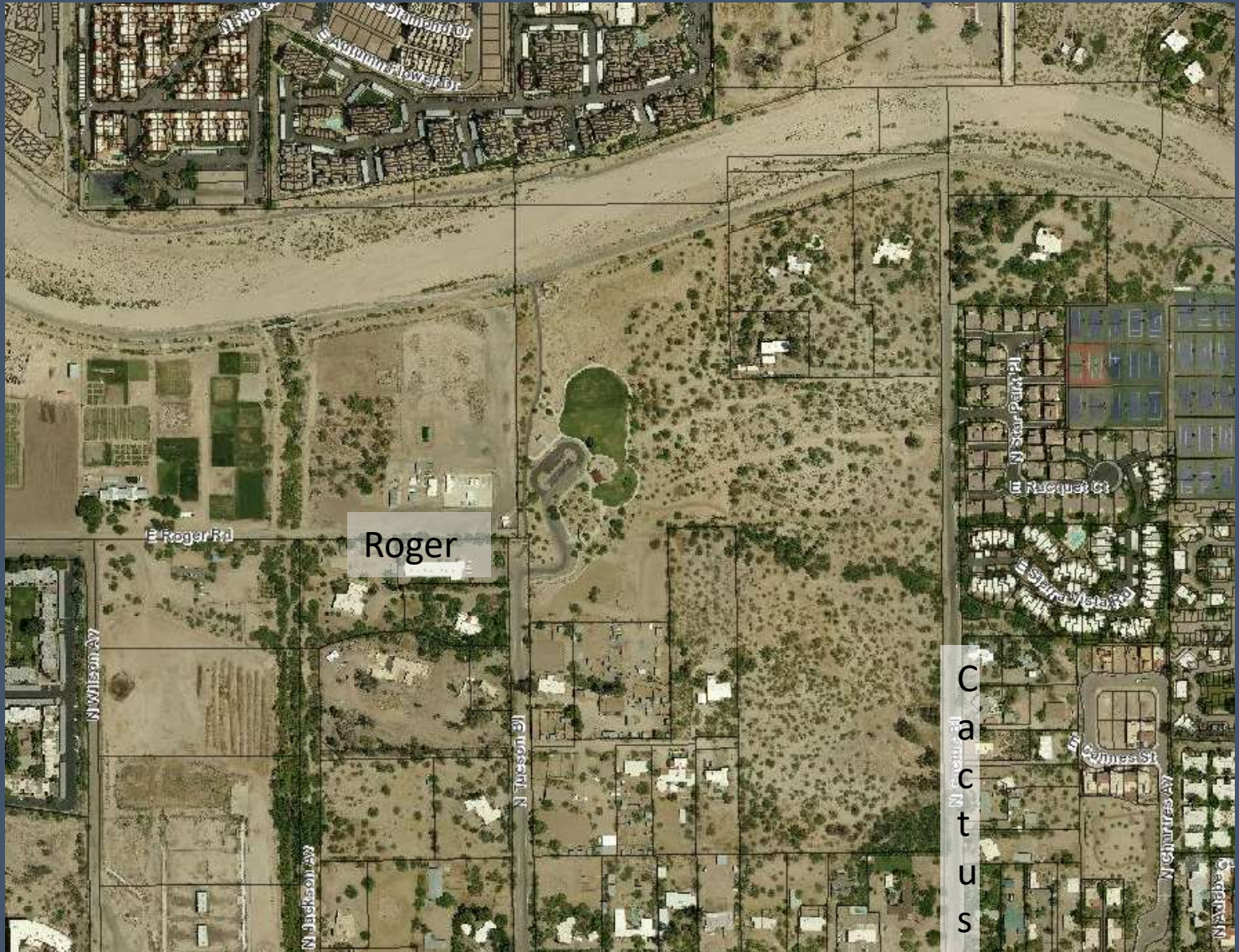


Image from Tucson Parks

2010

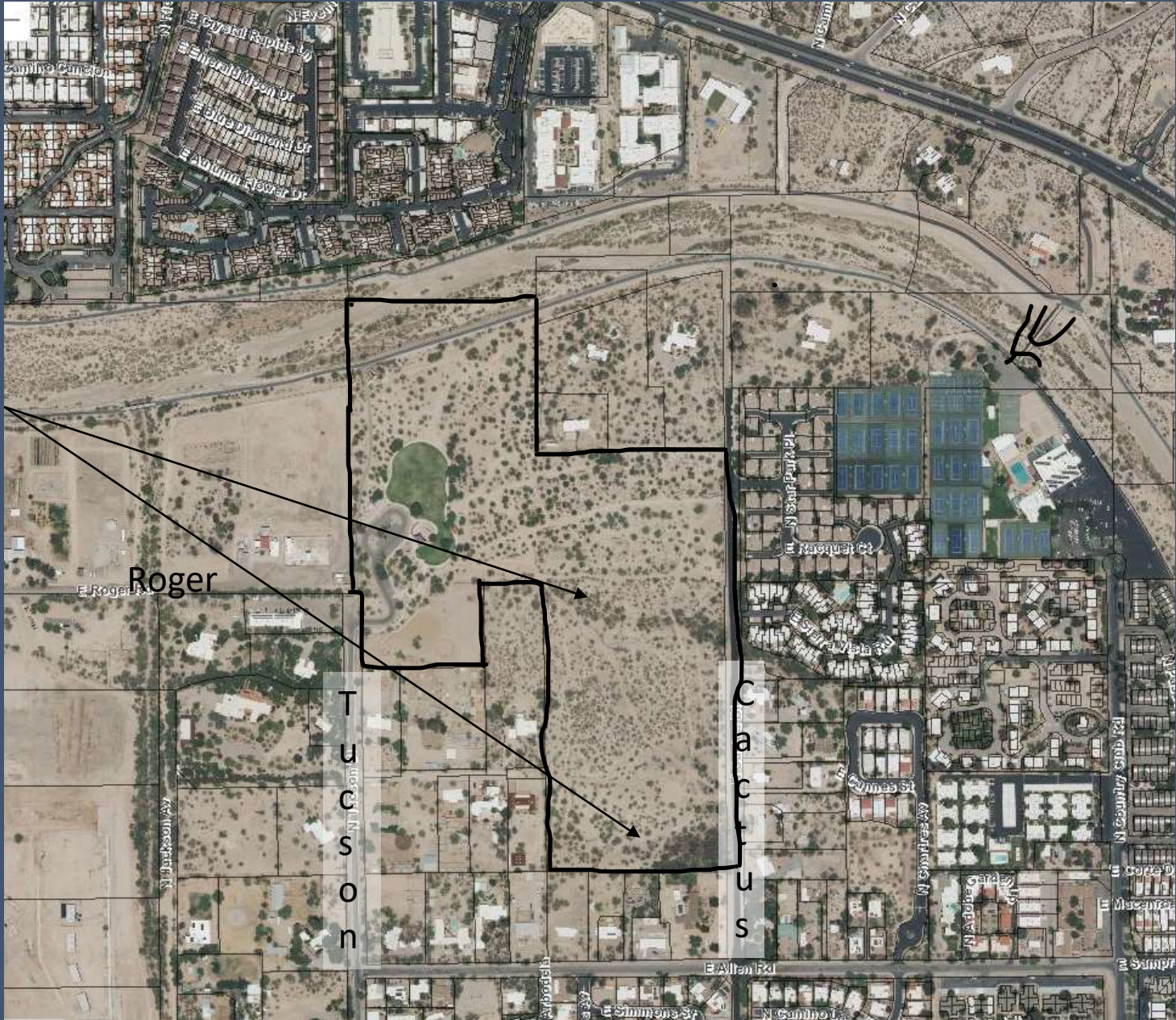
Channel
widening
Turf
expansion



C
a
c
t
u
s

2021

Less riparian
vegetation
More veg
in Rillito



Factors affecting Land Cover

Aridification

- Downtcutting of Rillito and tribs
- Grazing and soil disturbances
- Loss of groundwater
- Increasing temperatures and megadrought
- Sediment deposition in Rillito

Urbanization

- Grading and compaction of soils
- Importation of new plant species
- Increased runoff in tribs, confinement of flow paths
- Changes in land use: removal of livestock and homes for park