# Assessing Trash Accumulation in Tributaries of the Santa Cruz River to Inform Mitigation Strategies

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# Who are we?

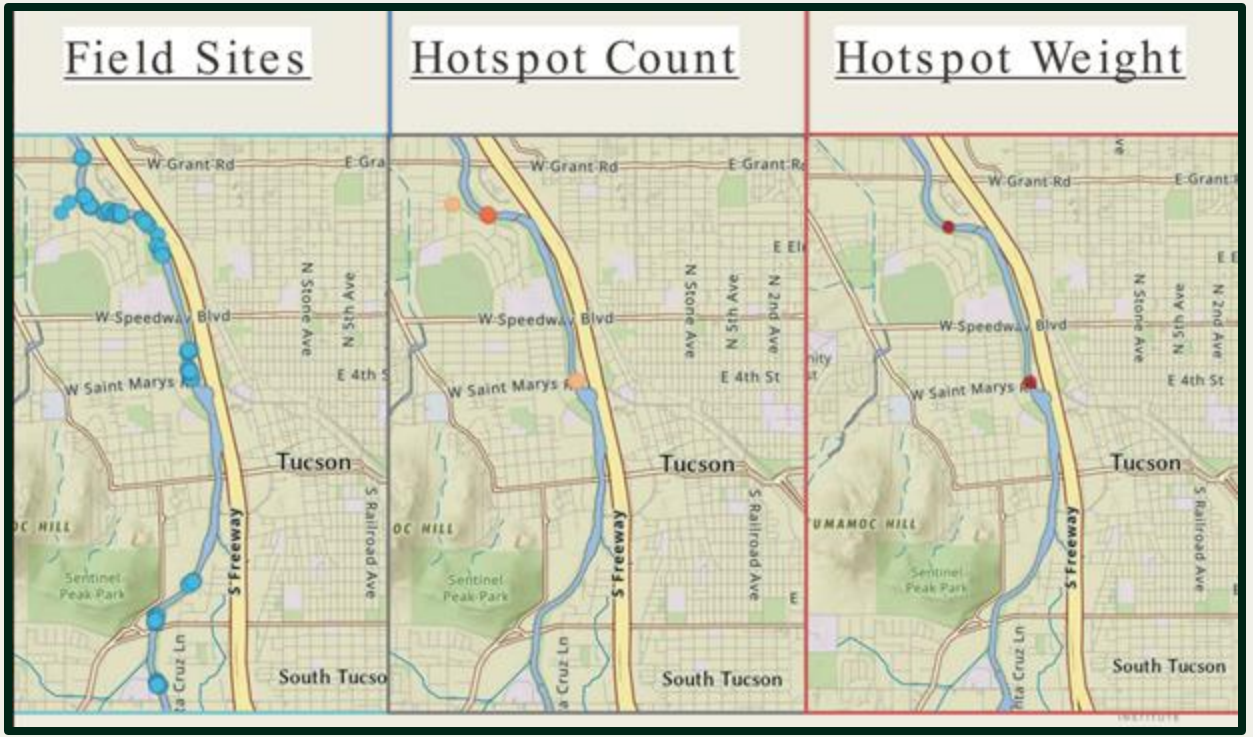

Julius Schlosburg/Sonoran Institute

# Why care?

- ❏ Amazing historical significance
- ❏ Beautiful desert green space, we should maintain it that way
  - ❏ Scenery of The Loop!
- ❏ Unique ecosystem & species!
  - ❏ Trash is a major contaminant that harms both humans and wildlife

# Past project phases

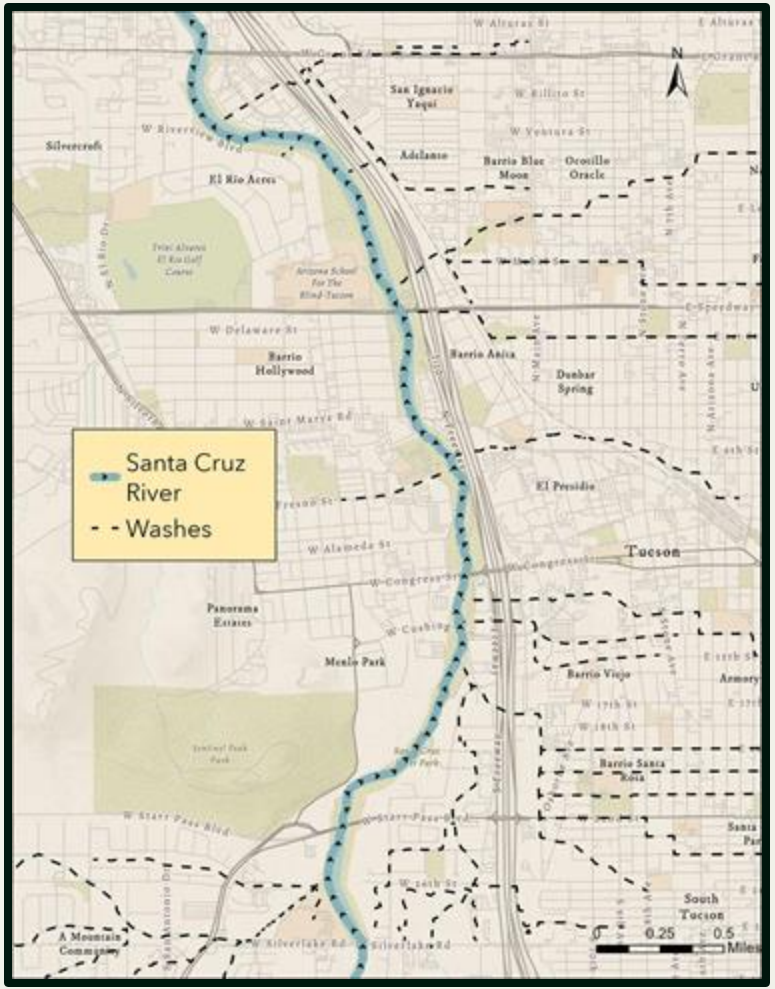
- Our research is adding on to a randomized statistically powerful study of ~3yrs
  - Trash throughout the river
  - We're narrowing to potential sources




Hot spot map from riverbed sites as of 2023-2024

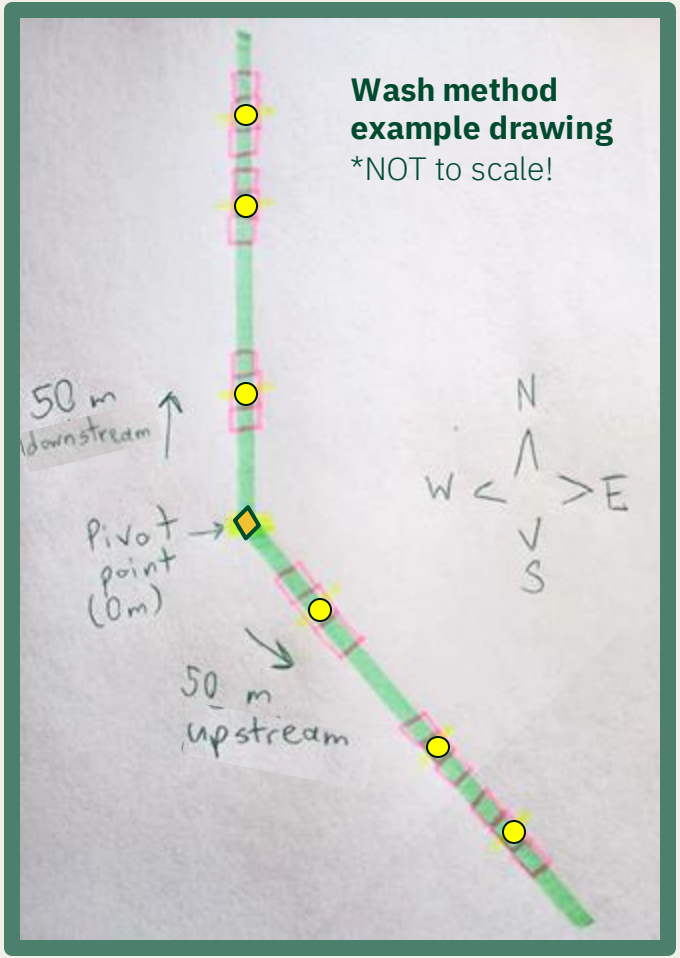
# Washes That Flow Into The River

Sampled **8** washes
**18** upstreams
**15** downstreams
**32** total number of individual sites



# Methods

- ❏ Find “pivot” point
- ❏ Measure out 50m up/down stream (following flow direction)
  - ❏ Randomly generate 3 points along 0-50m
    - ❏ These mark the center point of the center transect, create ~10x10m central square, as well as one upstream and one downstream
- ❏ Record all types and quantities of trash, as well as vegetation status & other important geographical info



# Old Julian Wash: From the Air to the Field

# Challenges

- People seek shelter in the wash
  - We want to avoid potential conflict
  - Many of them are still using items ≠ trash
- Vegetation & natural topography
- Small dangerous items (glass shards, needles, etc)
- Weather
- Wildlife

Like walking through a haystack

SNAKES!

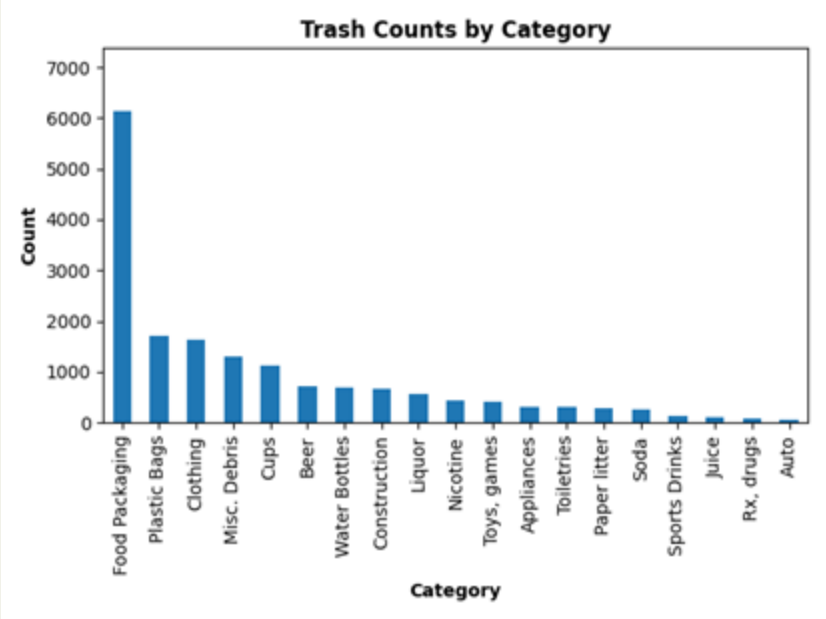
# Diving Into The Data: Total Weight and Counts

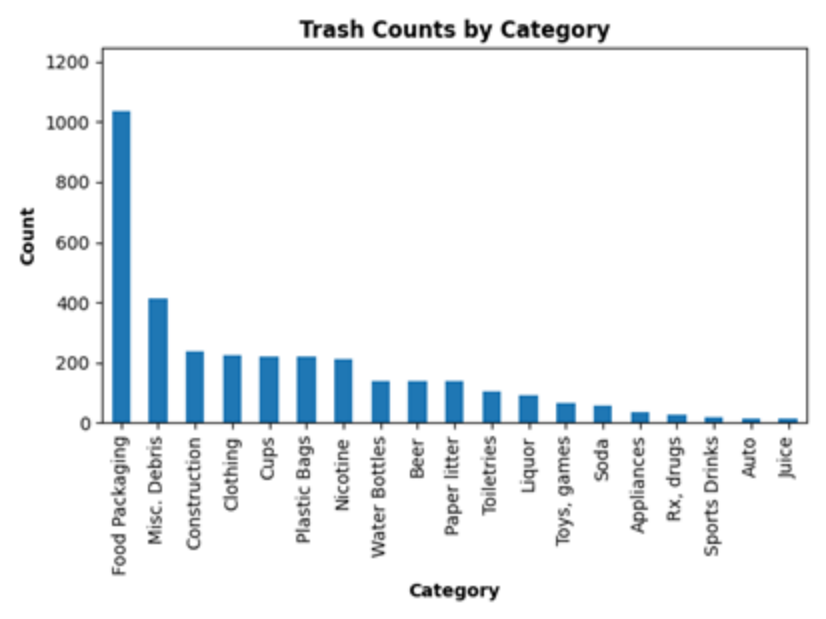
(All graphs created by Jacob E. Taylor!)

Riverbed

Washes/tributaries

Counts



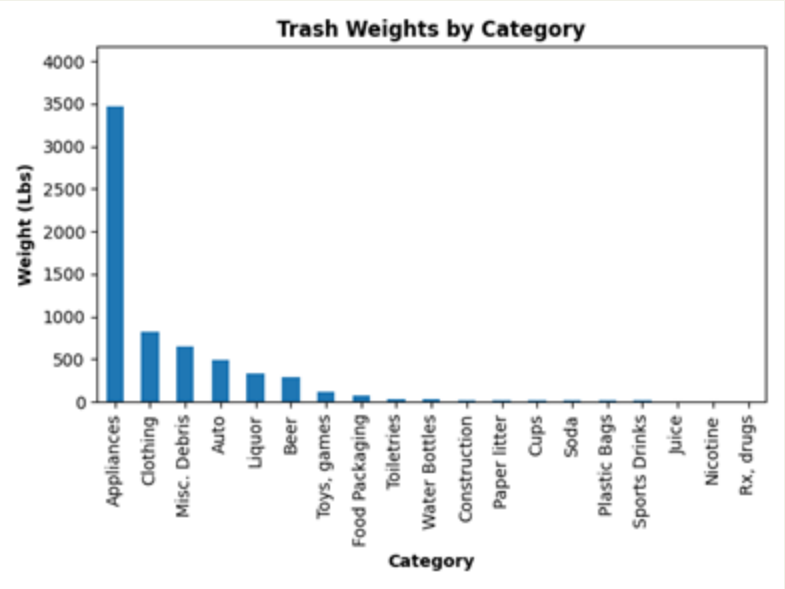

- FOOD PACKAGING #1 in BOTH areas
- Clothing, misc debris, & cups also rank top 5 in both
- Plastic bags rank proportionally higher (#2) in river than washes (#6)
- Construction ranks lower proportionally (#7) river than washes (#3)
- Higher nicotine products in washes (#10 in river yet #6 in washes)

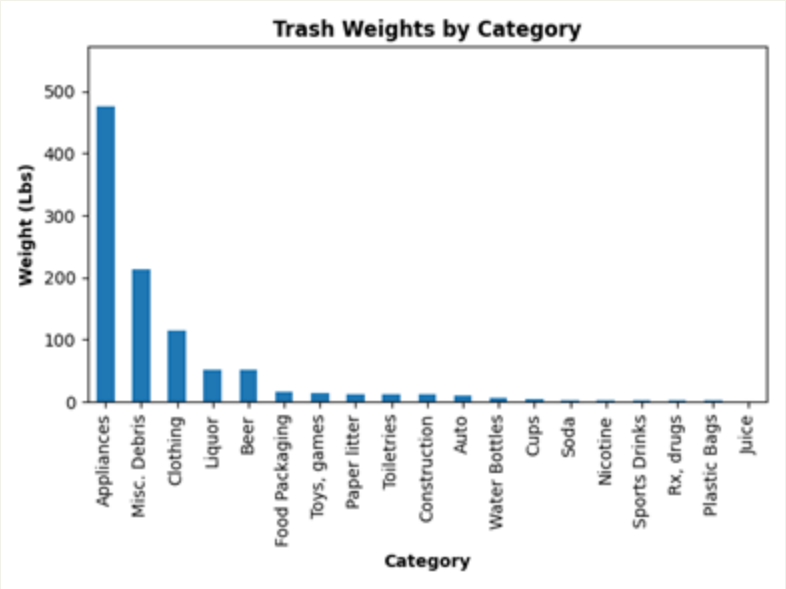
(All graphs created by Jacob E. Taylor!)

Riverbed

Washes/tributaries

Weights

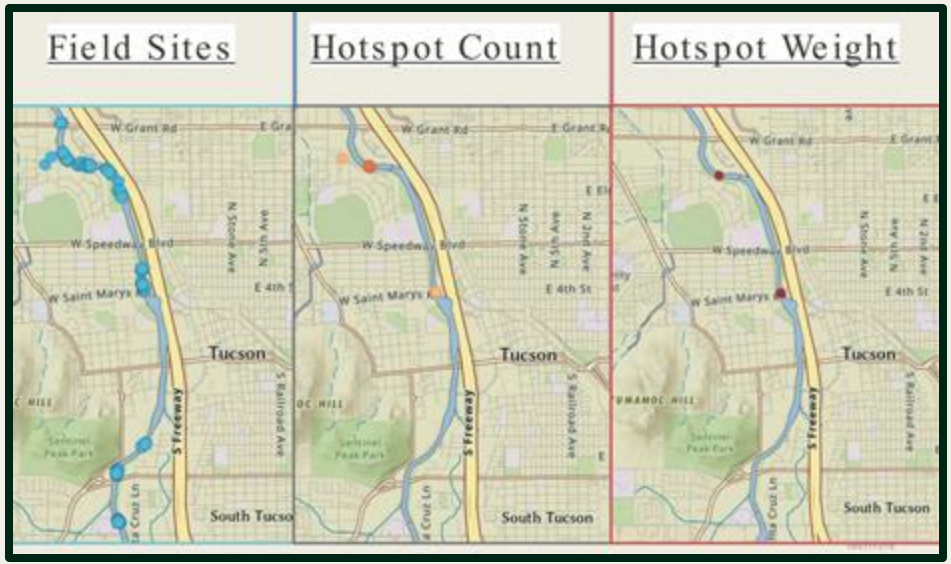


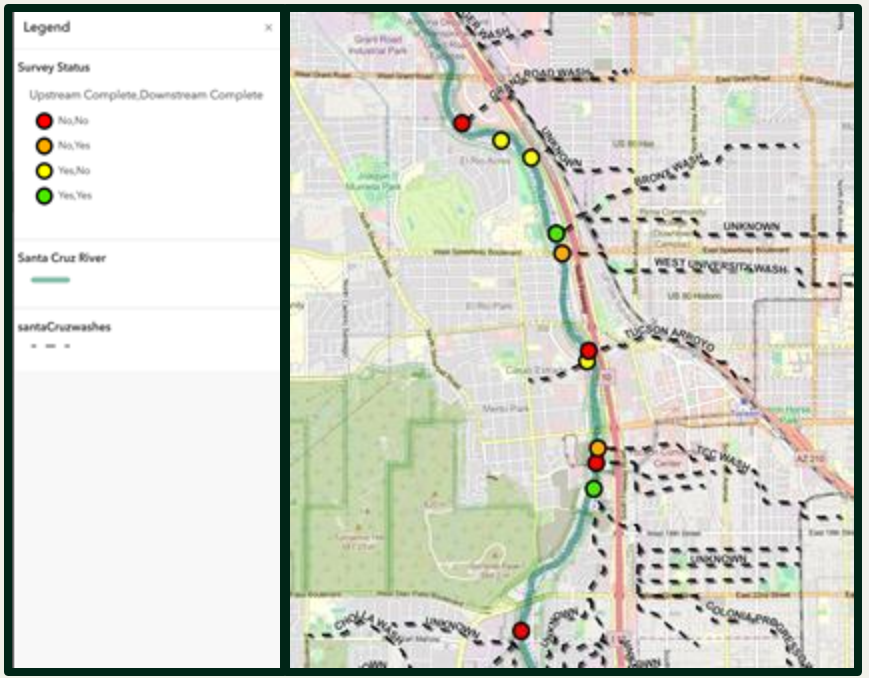

- ❏ Appliances, clothing, liquor, & misc debris all somewhere in top 5 proportionally
- ❏ Greater weight proportion of auto in River > Washes

# Results: Maps

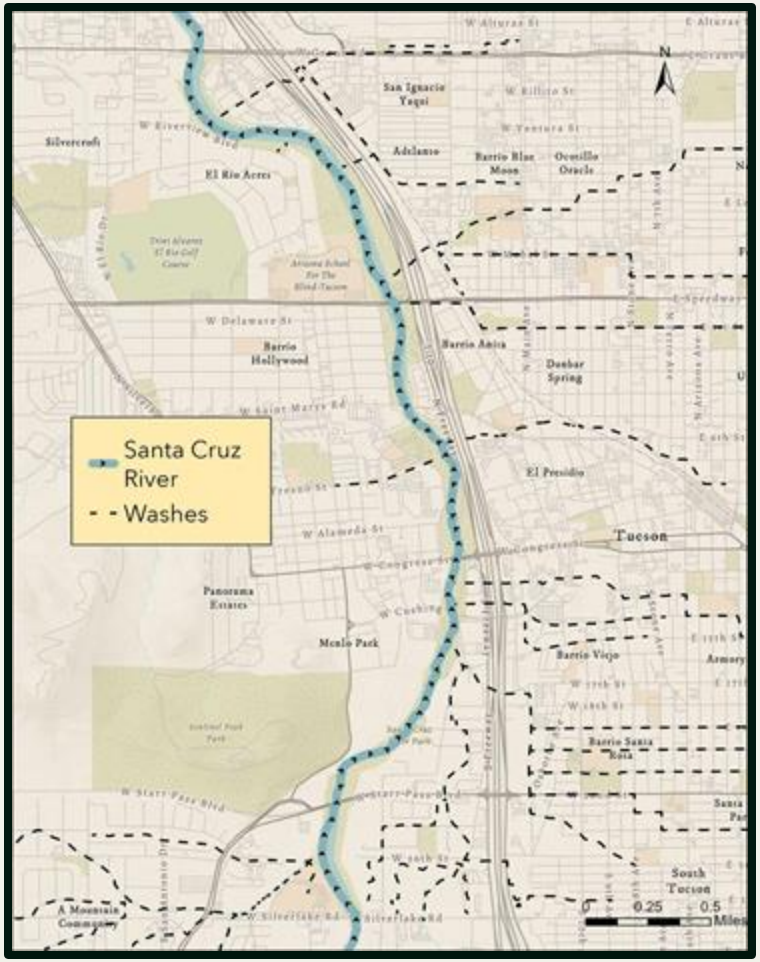
Riverbed




Washes/tributaries



# Results




- While statistical comparison tests have yet to be conducted, there are notable visible similarities between most common trash in the main riverbed & washes
  - Can trash in a wash predict what will be found in the downstream river?
  - Can what is found in the downstream river predict what is in a wash?
  - Currently we can't predict either for certain, but we now have the data for this step to happen!
- Study limitations:
  - Not all washes sampled fully: topography & residents
  - No wash hotspot map yet

# Future directions

- ❏ Use data to inform city & county of areas of greatest concern, get our own Tucson trash traps!
- ❏ Accountability towards parties/areas that produce disproportionate trash into the river
- ❏ Ongoing clean up volunteer efforts!
- ❏ Before/after surveys?
  - ❏ River clean ups
  - ❏ Trash trap installation(s)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# More future direction epic time

- Currently have 1 very effective trash trap in Nogales!
- Is downstream trash representative of trash in wash?
  - Calculate trash load entering river wash by wash
  - Installation of trash traps in washes → sample wash trash loads

# Be a Part of the Action!

https://tucsoncleanandbeautiful.org/events/

https://sonoraninstitute.org/events/