Green Infrastructure Impacts on Urban Stream Hydrology: Dashboard Visualization

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GEOG 6165: Data Visualization

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Introduction

- Landscape Lab
  - Green infrastructure facility
  - Construction completed Nov. 2020
- Research questions
  - Hydrology
  - Ecology
  - Wildlife
  - Community

What is lacking?

- No central database
- Redundant analysis by different research groups
- No easy way to share information with stakeholders and community

Data

Hydrographs

- Stream and storm drain discharge

Sensor Sites

- Stream and storm drain sensor locations

Estimated Irrigation Water Use

- Calculate irrigation water use and cost from invoices

Pollutant Monitoring

- Metal pollutant monitoring database

Methods

RShiny App

ui object – dashboard layout

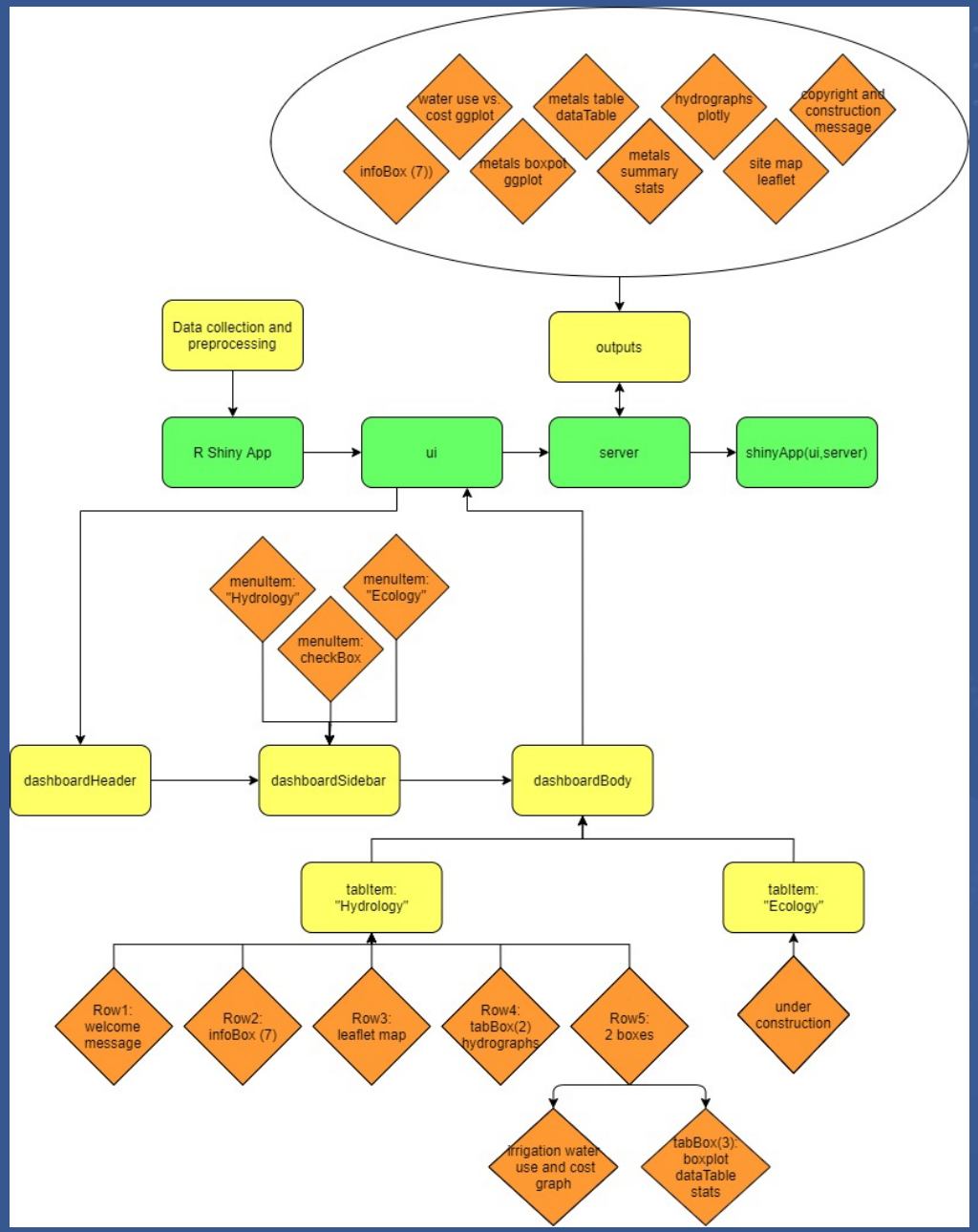
- Header
- Sidebar
  - 2 menuItem
  - checkbox
- Body
  - 5 rows – 1 text, 4 fluidRow
    - infoBox – current discharge at gage sites
    - Leaflet site map
    - Hydrograph tabBox - checkboxGroupInput, dateRange, plotlyOutput
    - Estimated irrigation water use and cost box plotOutput
    - Metal pollutant monitoring tabBox – plotOutput, data table, summary statistics

Methods cont.

Server object – reactive codes

- ui output
  - Reactive infoBox
  - ggplot boxplot and line/bar graphs
  - Plotly
  - leaflet

shinyApp(ui,server)



Results


Current Discharge
0.0958 cms
0.0663 cms
0.0198 cms
0.0357 cms
Not Active
Not Active
Not Active
Wasatch Environmental Observatory Sensors
Hydrographs
Red Butte Creek Hourly Storm Drain Discharge

Next Steps

1

Set up

- Set up a shared drive for hydrology sensor data

2

Add

- Add run-off efficiency data to hydrology page

3

Add

- Add ecology data to dashboard when available

4

Investigate

- Investigate Google Earth API or create custom basemap

5

Launch

- Launch shiny app


Questions?