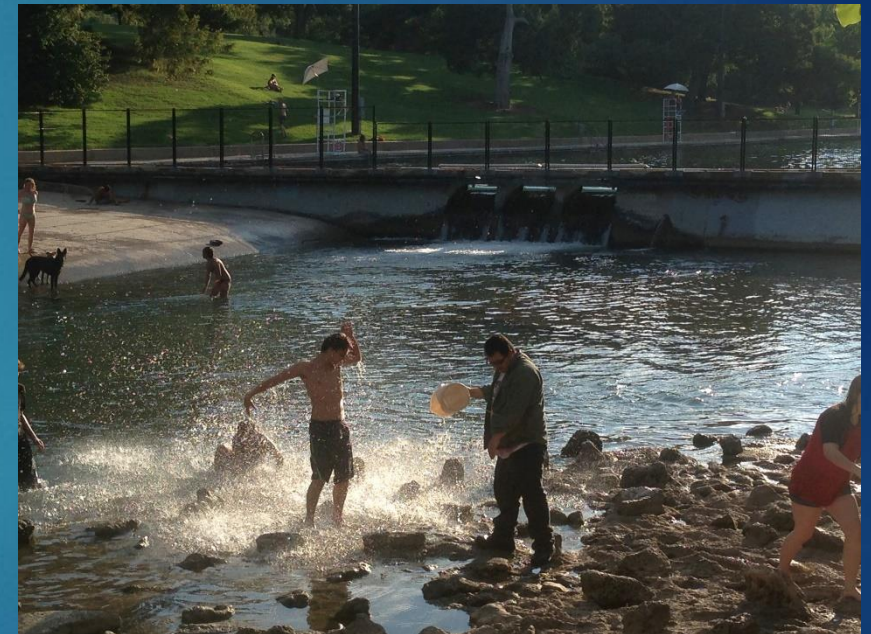


Austin Youth River Watch:

Aquatic Ecosystem Ecology and Management



TAMARA SEVIER
PROGRAM COORDINATOR

What is River Watch?



- ▶ Non-profit organization
- ▶ High school students conduct water quality tests at creeks, lakes, and rivers in Austin

Weekday:	North:	South:
Mondays	Eastside Memorial	Crockett
Tuesdays	Lanier	Austin
Wednesdays	Reagan	Akins
Thursdays	McCallum	Travis
Fridays	LBJ/ LASA	Manor





Mission

Austin Youth River Watch advances personal and academic achievement through environmental monitoring, education and adventure.



Do you really “watch” rivers?

- ▶ Students at River Watch learn various water chemistry tests and biological monitoring
- ▶ Regular monitoring, nearly 25 years
- ▶ Provide the COA via the LCRA a valuable environmental service



Verizon LTE 10:03 73%
crwn.lcra.org
CRWN DATA ENTRY FORM

COLORADO RIVER WATCH NETWORK

DATA SHEET

Logged in as: elisabethwelsh Click [here](#) if you need help entering data online. Logout

Monitors: Site Name: Sample Date: MM/DD/YYYY

Sample Time (military): Sample Depth not total depth (meters): Total Depth (meters):

Meter Calibration Log: Store and calibrate standard at room temperature. Calibrated within 24 hours of sampling?

Meter Type: Standard Value: Actual Meter Reading: Post Test Reading:

Conductivity: pH 7.6:

Reagents: Are any reagents or standards expired?

List expired supplies:

Core Tests and Measurements:

Air Temperature (°C):

Water Temperature (°C):

Average Dissolved Oxygen (all values within 0.5 mg/L):

1st titration: 2nd titration:

3rd titration: 4th titration:

Specific Conductance:

pH (standard units):

Transparency Tube (meters):

Secchi Depth (meters):

Additional Tests Conducted:

1. Nitrate Nitrogen: mg/L

2. Flow: cfs

Coastal Area Salinity Tests:

Sample Temperature (°C):

Salinity (ppt):

Tide Stage:

Comments, Other Supply Needs, Field Observations:

E. coli bacteria:

Reading #1: Sample size: mL (colonies counted): x (dilution factor*) = cfu/100mL average E. coli

Reading #2: Sample size: mL (colonies counted): x (dilution factor*) = cfu/100mL

*dilution factor = 100 divided by volume of sample processed (e.g. 1 mL sample = dilution factor 100, 5 mL sample = dilution factor 20)

Minutes sampling and traveling: Miles traveled (round trip): Number of participants:

Two photographs can be uploaded with each data sheet entered online. All fields in RED are required fields.

SUBMIT Cancel

Please review the data you have entered before submitting.



For the Austin community:

- ✓ Monitoring water quality at 25 sites
- ✓ Providing water data to the City of Austin, LCRA, and others
- ✓ More “disadvantaged” students graduating from high school
- ✓ Training the future’s nature stewards

For our students:

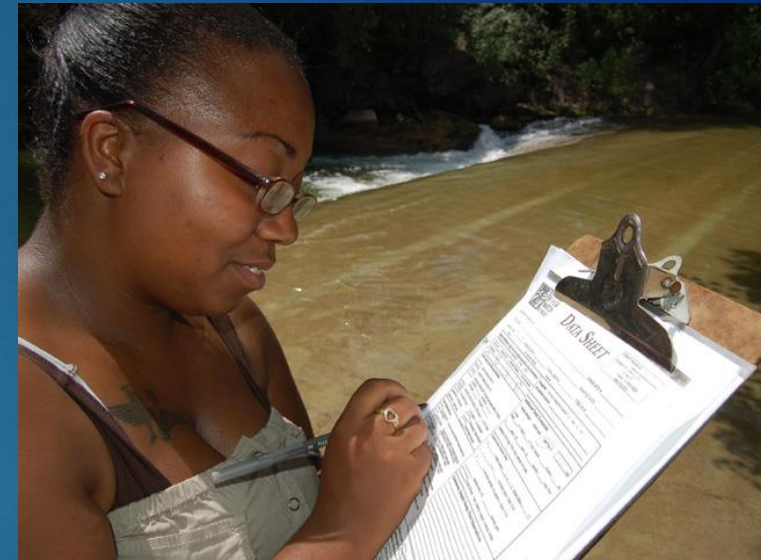
- ✓ Offering productive after-school activities
- ✓ Supporting students in graduating
- ✓ Providing a safe space to study and learn from each other, along with having fun

Monthly monitoring sites

1. Lady Bird Lake @ Redbud Isle
2. Lady Bird Lake @ 2.5 mile marker on Hike and Bike Trail
3. Barton Creek below Barton Springs
4. Barton Creek at Barton Creek Habitat Preserve
5. Barton Creek at Lost Creek Blvd.
6. Lady Bird Lake @ West Bouldin Creek
7. East Bouldin Creek @ Dawson Park
8. Blunn Creek @ Blunn Creek Preserve
9. Waller Creek @ Waller Creek Center
10. Waller Creek @ Lady Bird Lake
11. Shoal Creek @ 34th Street
12. Bright Leaf Preserve
13. Lady Bird Lake @ Austin Youth Hostel
14. Colorado River @ Montopolis
15. Oak Springs, Tributary to Boggy Creek
16. Boggy Creek @ US 183
17. Boggy Creek @ M Station Sustainable Food Center
18. Little Walnut Creek @ Peyton Gin Rd.
19. Wells Branch @ Metropolitan Park
20. Buttermilk Creek @ Bethune
21. Colorado River @ Old Ford on Hornsby Bend
22. Williamson Creek @ Dove Springs Park
23. Onion Creek @ Lower Falls, McKinney Falls State Park
24. Colorado River @ Little Webberville Park
25. Colorado River @ Webberville Park

Parameters

- ▶ Physical Observations – clarity, land usage, etc
- ▶ Meters – Conductivity and pH, Temperature
- ▶ Chemical Tests – Dissolved Oxygen, Nitrates
- ▶ Biological Observations – Birds, Fish, Plants, Amphibians, Benthic Macroinvertebrates, Freshwater mussels, *E. coli*



Physical Assessment

- ▶ Rain amounts
- ▶ Flow
- ▶ Water Color
- ▶ Clarity
- ▶ Odors
- ▶ Substrate Composition
- ▶ Land Use
- ▶ Habitat
- ▶ Other Observations – Morphology of streambed, people or animals swimming at the site, etc.

Meters

- ▶ Conductivity – measurement of electrical current passing through water
- ▶ Higher readings indicate greater ion concentration
- ▶ Sources? – What increases conductivity?



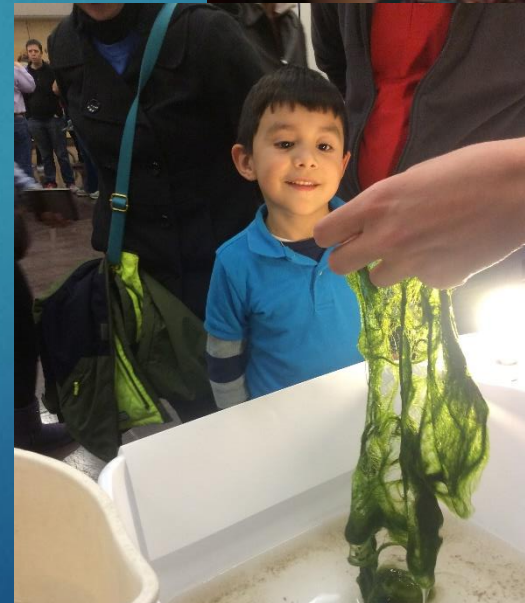
Meters, continued

- ▶ pH – Range in our area 6.5 – 8.5
- ▶ Reasons for this range?
- ▶ Air and Water Temperature

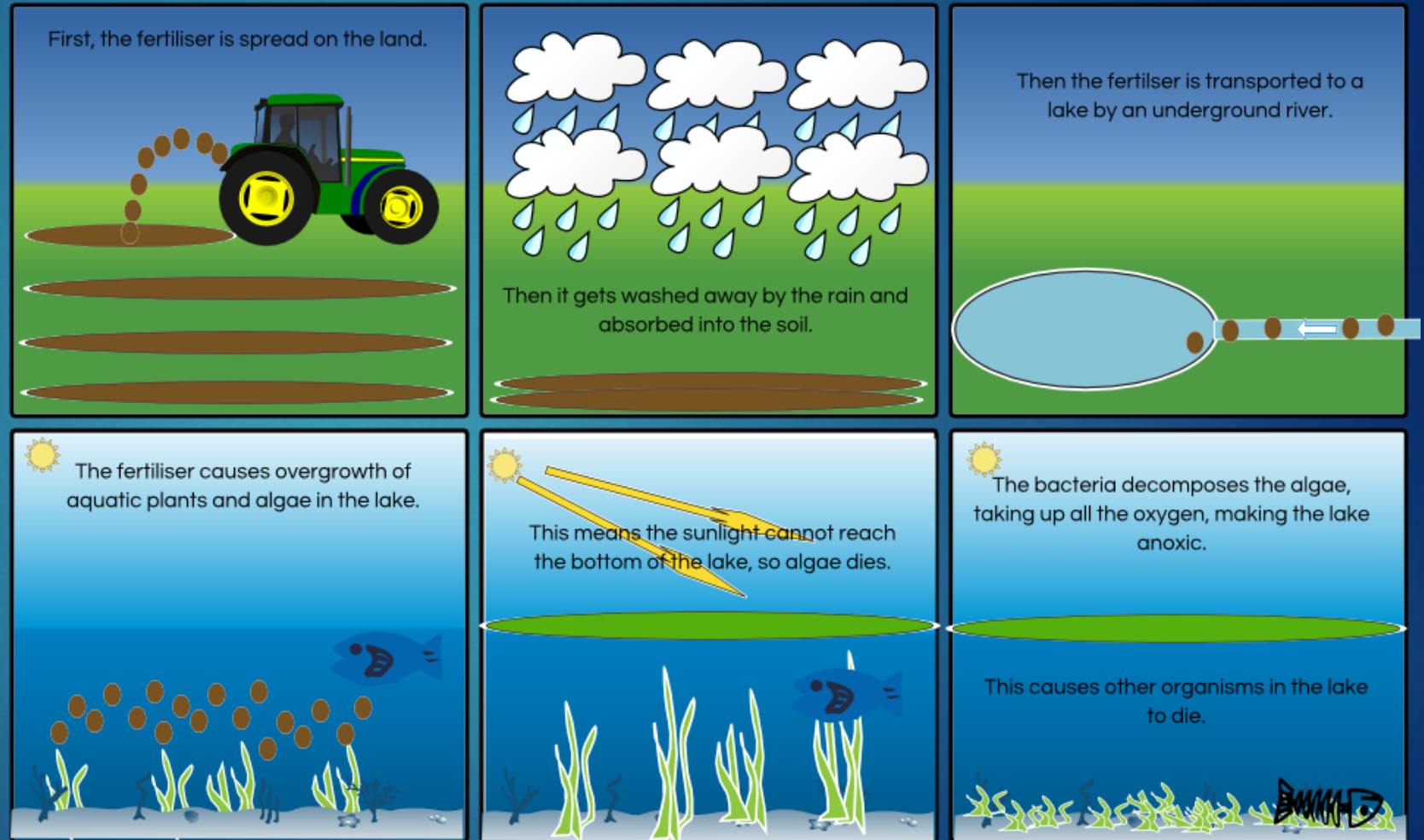


Nutrients: Nitrates

- ▶ Natural Sources
- ▶ Artificial Sources
- ▶ Blue baby syndrome and the 10mg/L (ppm) EPA standards for public water supplies

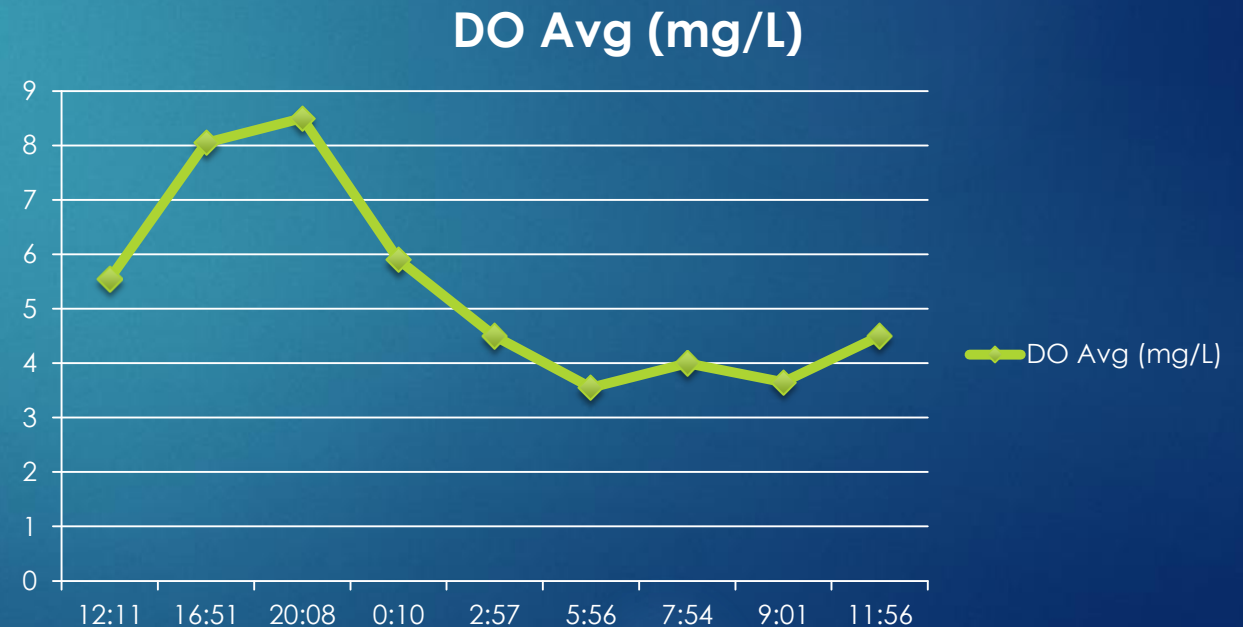


Nitrates and Eutrophication



Dissolved Oxygen


- ▶ Cold water holds more D.O.
- ▶ Dissolved Oxygen
 - ▶ 4 – 12 mg/L normal, minimum 3 – 4.5mg/L depending on flow and season
- ▶ Below 4 stresses fish
- ▶ Below 2 can threaten their lives
- ▶ Respiration – lower D.O. at night
- ▶ Photosynthesis – higher D.O. during the day, diel cycle





Little Walnut Creek @ Peyton Gin Rd.



What's the water like in your neighborhood?

Peer mentoring with intensive environmental education.



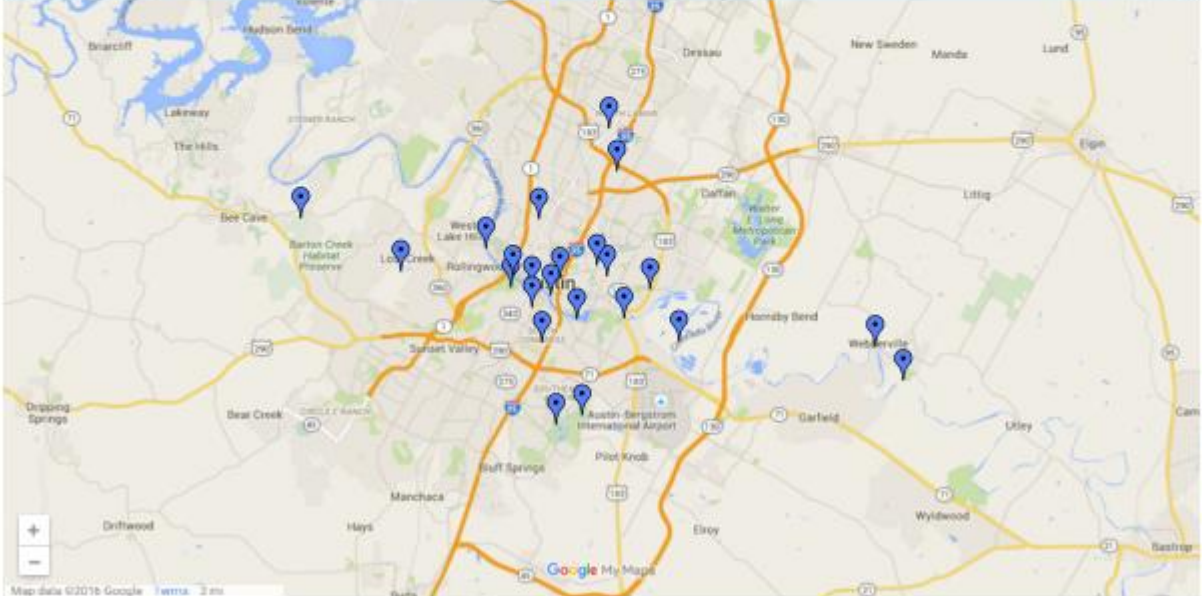



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Water Quality Data

Click on any of our testing sites below to see its name and a link to data from that site. (Our data is maintained and managed by LCRA, so these links go to LCRA's website.) On each site's LCRA data page, note the option in the upper-right corner to see graphs of the site data — pretty cool!

LCRA testing sites





Map data ©2016 Google [Terms](#) 2 mi

[View](#) [In a larger map](#)

What is my neighborhood watershed?

www.austintexas.gov/GIS/FindYourWatershed/

AUSTINTEXAS.GOV | AIRPORT | LIBRARY | AUSTIN ENERGY | AUSTIN WATER | CONVENTION CENTER | VISITORS BUREAU

austintexas.gov
the official website of the City of Austin

Pay Online | Services | Calendar | Media Center |

To Find Your Watershed, enter a street address:

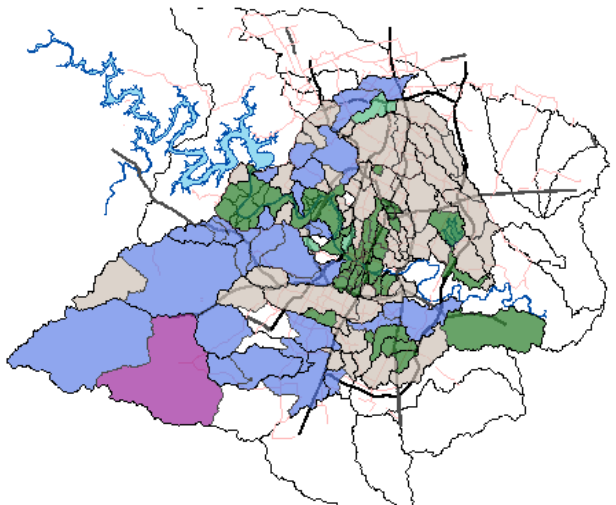
505 barton springs rd Find Watershed

Watershed found:
no watershed selected

Or double click inside map to Find Your Watershed.

Watershed Integrity Scores

- Excellent
- Very Good
- Good
- Fair
- Marginal
- Poor
- Bad
- Very Bad
- No Data

A map of the Austin area showing various watershed boundaries. The watersheds are color-coded according to their integrity scores: purple for 'Excellent', blue for 'Very Good', tan for 'Good', green for 'Fair', light green for 'Marginal', yellow for 'Poor', orange for 'Bad', red for 'Very Bad', and white for 'No Data'. The map includes major roads and water bodies.

► <http://www.austintexas.gov/GIS/FindYourWatershed/>

Biological Observations: Natural History

-Monitoring for shifting communities and signs of stress



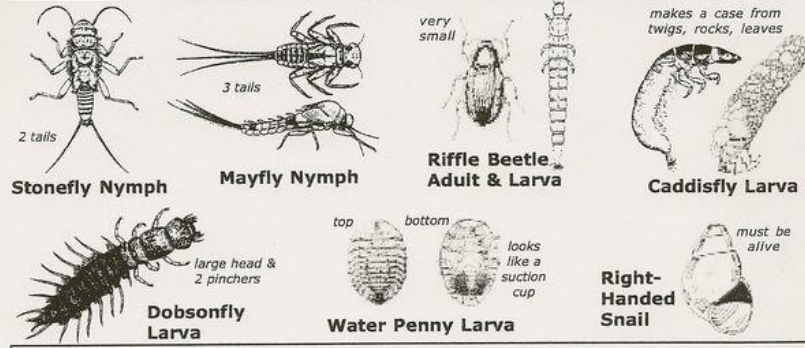
E. Coli and Biological Community Monitoring

- Algae
- Fish
- Benthic Macroinvertebrates
- Mussels
- Amphibians and Reptiles
- Plants
- Birds
- Mature Insects

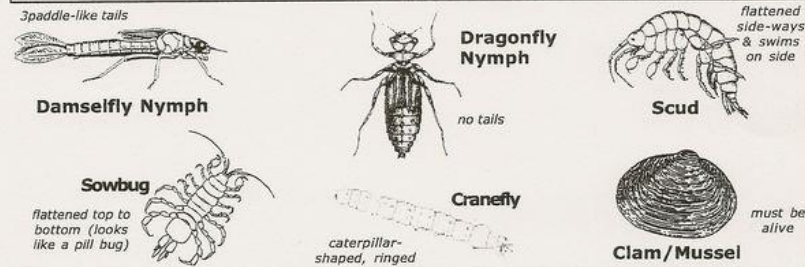


Macroinvertebrate Identification Key

GROUP 1 – Very Intolerant of Pollution



GROUP 2 – Moderately Intolerant of Pollution



GROUP 3 – Fairly Tolerant of Pollution



GROUP 4 – Very Tolerant of Pollution



www.HoosierRiverwatch.com

Macroinvertebrates



Right-handed snails at Barton Creek



Snails: left-handed snails



Water penny and leach Opposite ends of the Water quality Spectrum



Current Events

Flooding Events:

Halloween Flood of 2013

Memorial Day Flood – 2015

October 30th Flood – 2015



Impacts of increased urbanization and



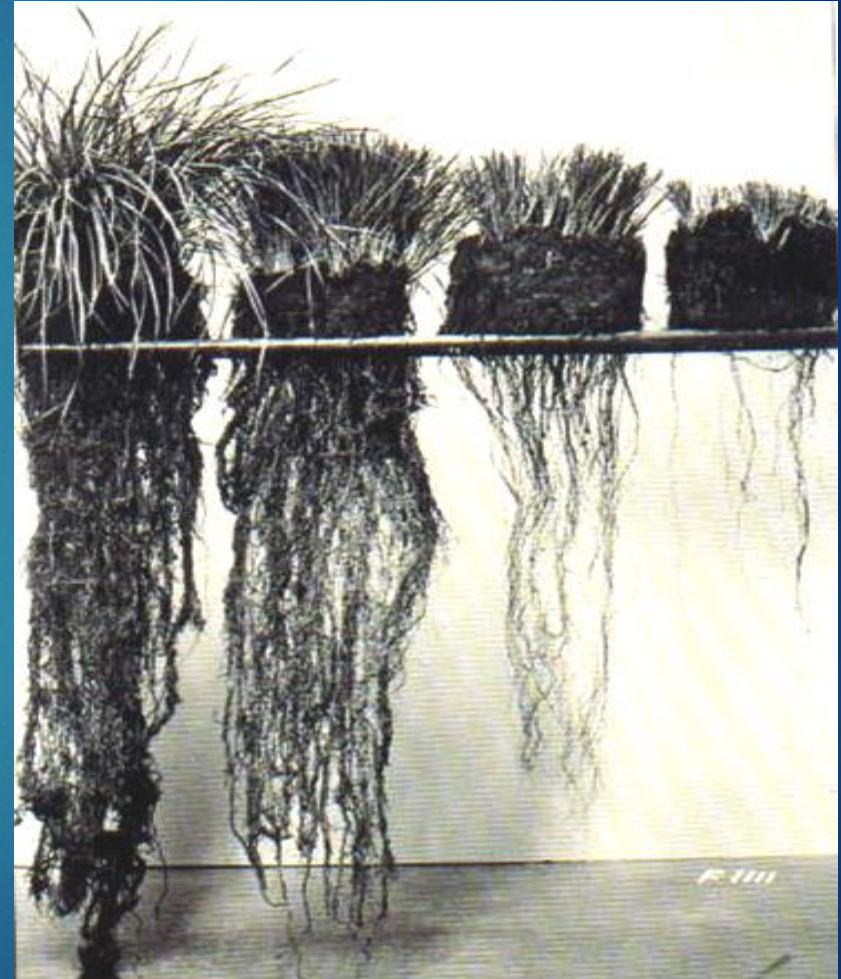
Service Learning

- ▶ Ecological Function
- ▶ Hydrological Function
- ▶ Eco/Hydro Enhancement Projects
- ▶ Efficacy in the drought



Riparian Areas and Wetlands :

- slow down the water during flooding - reducing erosion and improving water quality;
- improve ground-water recharge;
- develop root masses that hold together streambanks during scouring floods;
- develop wetlands that provide habitat for fish, waterfowl, and other wildlife;
- support biodiversity
- Effects of impervious cover and hard ground



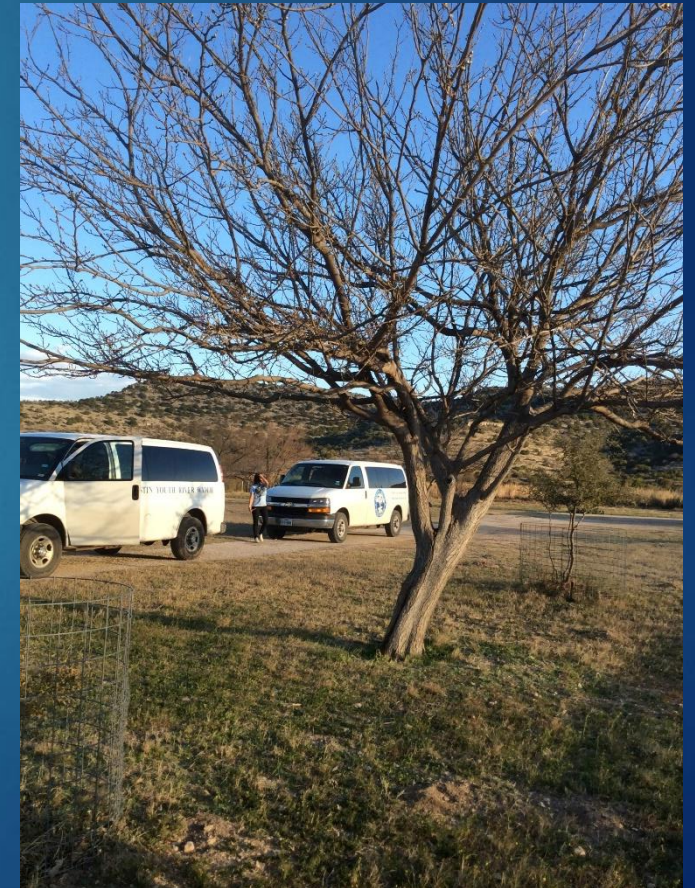
Real World Impact

- ▶ More water more of the time
- ▶ Hope for the future of our community



A typical day at River Watch:

- ▶ Meet after-school and look for the van
- ▶ Test the water at creek or on the Colorado River
- ▶ Return to our Eco-House for snacks, studying/ homework, games, and hanging-out
- ▶ Students are returned to their homes



Other opportunities :

- ▶ Camp-outs
- ▶ Sleepovers
- ▶ Spring Break Adventure
- ▶ Canoe/ Camping Trips
- ▶ College Visits
- ▶ Service Learning Program
- ▶ Summer Leadership Program



Questions:



► Contact:
Tamara Sevier
Program Coordinator
512-921-5247
tamara@riverwatchers.org

► Find us online:
www.riverwatchers.org

► Social media:

Facebook:

www.Facebook.com/AustinYouthRiverWatch

Twitter: @RiverWatchers

Instagram: Riverwatchers

► Get involved:

www.RiverWatchers.org/how-you-can-help
Attend a one-hour info session, "Next Steps"