

# Zavala Elementary School 🐎 Rainscape for ‘The Habitat’

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## BACKGROUND

Erosion caused flooding of basement from inner courtyard occurred during heavy rain. Teachers did everything they could to convey the water toward the storm drain. School also has rich gardening culture. Students in the civil engineering senior capstone class tasked with real world project.

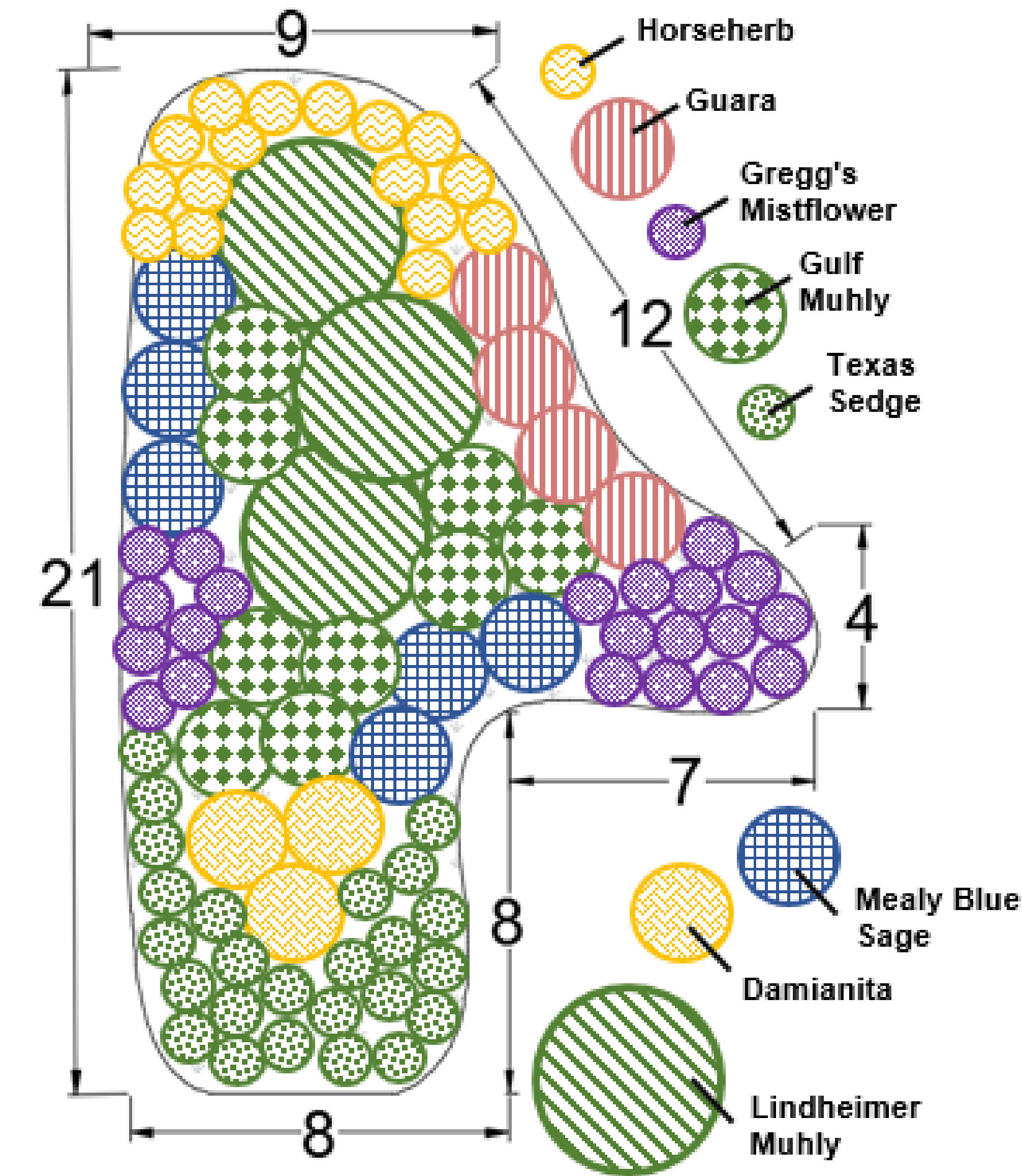
## VEGETATION

Plant criteria:

- Drought resistant
- Handles periodic inundation
- Does not require constant sunlight

Arrangement:

- Longest root systems in deep center
- Colorful plants outside for vibrancy



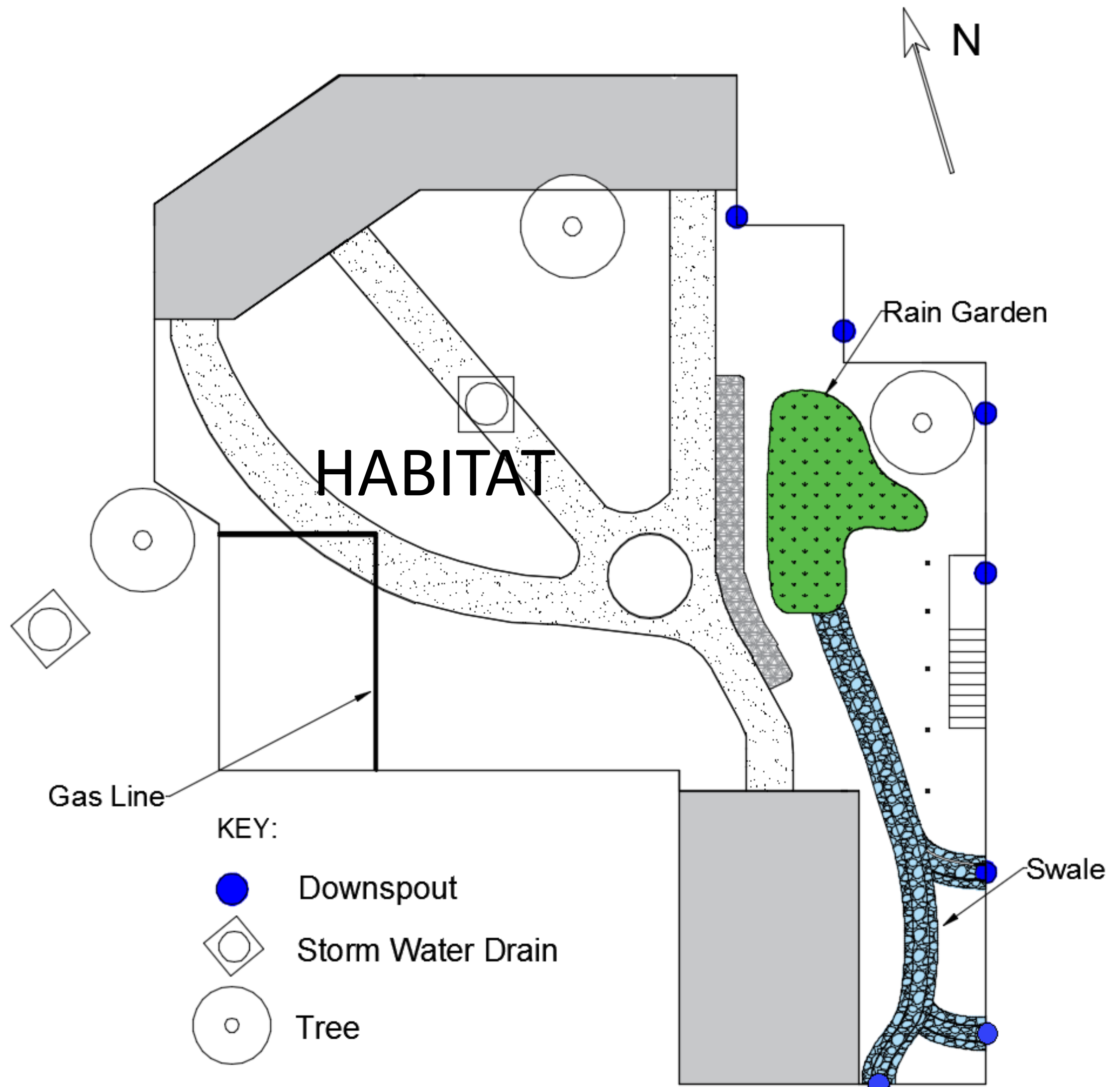
## DESIGN

- Measured topography & infiltration
- Rocky swale conveys water to (~200 sq. ft.) vegetated infiltration rain garden bordered by berm
- Austin design criteria used for ensuring treatment of the first one inch of rainfall
- Oregon State's Rain Garden Calculator using rational method for 25 yr. - 24 h.r storm (7.6 in.) to check overflow

## CONSTRUCTION

American Society of Civil Engineers brought out student and professional volunteers to join teachers and community members.

- Moved over 200 cu. ft. of soil and topsoil
- Planted over 50 plants
- 6 in. ponding depth and 6 in. freeboard
- Total Cost roughly \$1,000



## COMPLETION

Rainscape fits the space perfectly and handles heavy rainfall well.

April 17-18, 2016: 6<sup>th</sup> event over the last 12 months that some part of SE TX received 10 in. of rain or more within a 24 hr. period (NOAA)

Received a garden sign from Austin recognizing educational value.



## REFERENCES

- City of Austin:
- "Earth-wise Guide to Rain Gardens: Keeping Water on the Land" (2014). Watershed Protection Department
  - Environmental Criteria Manual, Section 1.6
  - Land Development Code, Section 25-8-211
  - Drainage Criteria Manual

## ACKNOWLEDGMENTS

- Instruction of Dr. Bob Gilbert & Asitha Senanayake (University of Texas at Austin)
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- Professional review by Jessica Wilson (Watershed Protection Department)
- Austin Independent School District