Landscape Performance Case Study
Underwood Family Sonoran Landscape Laboratory
Tucson, Arizona

Olivia Sievers Ross
LARC 2402
Dr. Yi Luo
January 29, 2015
Landscape Performance Case Study
Underwood Family Sonoran Landscape Laboratory
Tucson, Arizona

Project
Underwood Family Sonoran Landscape Laboratory
1040 N Olive Road, University of Arizona, Tucson, Arizona 85721

Project Type
Courtyard/Plaza
School/University

Climate Zone
Hot semi-arid

Budget
$1,050,000

Size
1.2 acres

Designer
Ten Eyck Landscape Architects, Inc.

Completion Date
2007

Former Land Use
Greyfield

Project Overview:
This project reclaimed and converted 1.2 acres of a parking lot into a usable plaza with interpretation, outdoor classroom space, and on-going monitoring by the university.

Challenges and solutions:
One of the challenges with this site was in converting a parking lot with runoff that drained into the new building entry area, into a fun, usable space for students and professors doubled as an interpretive area with a range of materials. The solution was to create an entry with a cleansing biosponge garden and interpretive space.
Cost comparison:
The cost of the project was relatively low-cost with a large volunteer-base to pull from. Materials, as well as, labor for planting, irrigation, and lighting were donated (estimated value: $650,000). The hardscape construction cost was $400,000.

Lessons learned:
- Appropriate plant selection reduces maintenance and long-term cost
- Despite the high traffic urban area, wildlife habitat can be created and utilized in an opportunistic way
- Integration of social and educational spaces increases learning opportunities

Sustainable features summary:
- Five Sonoran Desert biomes are represented
- Stormwater runoff is reduced with two desert arroyo micro-basins and the lower patio with a 5,500 gallon retention capacity total
- A sunken court, made of permeable stabilized decomposed granite and concrete, is multi-use and serves as an outdoor classroom, gathering space, and wet-weather retention pond
- The landscape is irrigated with the reused water consisting of roof runoff, HVAC condensate, and drinking fountain greywater
- Native vines help cover southern exposure reducing solar heat and building costs
- A bosque of native mesquite creates a shady entry plaza
- A high-efficiency drip irrigation system was used
- Terrestrial and aquatic wildlife habitat was created with the introduction of two threatened and endangered fish.
- Brick and concrete was reused from the on-site partial building demolition
- Extensive cooperative efforts among landscape architects, the university, and the Arizona green industry allowed for materials and labor to be donated
**Performance benefits and methodology:**

**Sustainable feature:**
- Reclaimed 1.2 acres of former university parking lot to create a viable Sonoran Desert landscape

**Performance benefit:**
- Created an outdoor usable space using rainwater harvesting, water reuse

**Method:**
- Based on scope of work and installation

**Sustainable feature:**
- Reduced potable water use for the initial planted establishment period (first 1-5 years)

**Performance benefit:**
- Potable water use was reduced by 87% (280,000 gallons) annually
- After the establishment period, irrigation with potable water should be eliminated

**Method:**
- Based on design estimates, calculated overall landscape water needs in comparison to potential capture and storage of non-potable water sources

**Sustainable feature:**
- Utilizes university well water backwash from sand filter well that was previously sent to stormwater drainage system

**Performance benefit:**
- Reduces potable water use by up to 250 gallons/day which helps maintain pond water levels that supports the wetland vegetation and fish habitat

**Method:**
- Based on university and design data
Sustainable feature:
- Sourced all materials and labor from within Arizona with few exceptions

Performance benefit:
- Kept materials more localized
- Reduced project cost

Method:
- Based on project and designer data and installation
"Landscape Performance Series: Underwood Family Sonoran Landscape Laboratory."
