

Urban Sustainability Course: Providing Value and Service to AZ communities



NALINI CHHETRI, PH.D
SENIOR SUSTAINABILITY SCIENTIST
SCHOOL OF SUSTAINABILITY

Fall 2014



SOS 594/SOS 498

Urban sustainability: Best Practices/Case Studies

Fall 2014 (3 credit hours)

Thursday 4:30 p.m. to 7:15 pm. EDBL 1-24

8/21 – 12/05

Instructor : Dr. Nalini Chhetri

In conjunction with the Sustainable Cities Network

<https://sustainablecities.asu.edu/resources/student-resources/>

Deliverables



- 13 projects
 - ADOT
 - Maricopa county
 - Mesa, Tucson, Goodyear
 - Luke Air Force Base
 - Walton Sustainability Solutions Service (Feedstock, Economic impacts, circular economy)
- Research and fleshing out of new initiatives,
- Documentation of best practices
- Development of case study
- Dissemination materials for decision makers & public

Example



- **City of Goodyear: Constructed Wetlands for Brine Water Management**
- With a projected increase in population of 115,300 total residents by 2020 and 167,700 residents by 2030 (City of Goodyear, 2014), the city of Goodyear will need to meet the demands of potable water for its growing community. Given that the city currently depends solely on groundwater to meet this demand and will remain heavily reliant, future pressures of limited supply will require innovative and effective means of treating and reusing this supply throughout the city. In light of these challenges, the City of Goodyear has embarked upon an experimental wetland system as a potential means to treat brine concentrated wastewater to be discharged into s

- [Summary Report](#)

- [Full Report](#)
- [Presentation](#)
- [Infographic](#)
- [Video of Presentation](#)

CONSTRUCTED WETLANDS FOR BRINE WATER MANAGEMENT

ASU SCHOOL OF SUSTAINABILITY
Goodyear

A CASE STUDY OF BILLARD REGULATING WETLAND (GOODYEAR, AZ)

INTRODUCTION

With a projected increase in population of 115,300 total residents by 2020 and 167,700 residents by 2030 (City of Goodyear, 2014), the city of Goodyear will need to meet the demands of potable water for its growing community. Given that the city currently depends solely on groundwater to meet this demand and will remain heavily reliant, future pressures of limited supply will require innovative and effective means of treating and reusing this supply throughout the city. In light of these challenges, the City of Goodyear has embarked upon an experimental wetland system as a potential means to treat brine concentrated wastewater to be discharged into s

Table 1. Economic comparison of brine management alternatives.

Alternative	Estimated Cost of \$/MGD
Brine Disposal	~\$1.5
Brine Evaporation	~\$2.5
Brine Treatment	~\$3.5
Brine Reuse	~\$4.5

ECONOMIC ANALYSIS

The US Basin of Reclamation, 700000, noted that the most cost-effective means of brine management is to reuse the brine. The cost of this option is estimated to be \$4.5 per gallon. The most cost-effective means of brine management is to reuse the brine. The cost of this option is estimated to be \$4.5 per gallon. The most cost-effective means of brine management is to reuse the brine. The cost of this option is estimated to be \$4.5 per gallon.

City of Goodyear Water Services Department | 1300 N. Linn Road, Goodyear, AZ 85331 | phone 623.700.2000

Advantages for and commitments of “Clients’



Advantages

- Free service with mostly graduate students of SOS
- Having students explore/ investigate potential projects/ ideas that have been shelved due to band-width issues
- Platform to build relationships with ASU
- Value addition with ASU’s Sustainable Cities Network

Commitments

- Pitching and presentation of their projects in the beginning
- 5-6 hours over a semester to talk to students
- Email correspondence & site visits

Benefits to students



- Real life situations and life experiences
- Building networks and relationships
- Pathway to potential future careers/ internships
- Bolsters their resumes

Fall 2015 ?



SOS 594/SOS 498
Urban sustainability
Fall 2015 (3 credit hours)

Modifications



- More collaborative course design
- Not just case studies
- Research
- Allow students only one project