

This presentation premiered at WaterSmart Innovations

watersmartinnovations.com



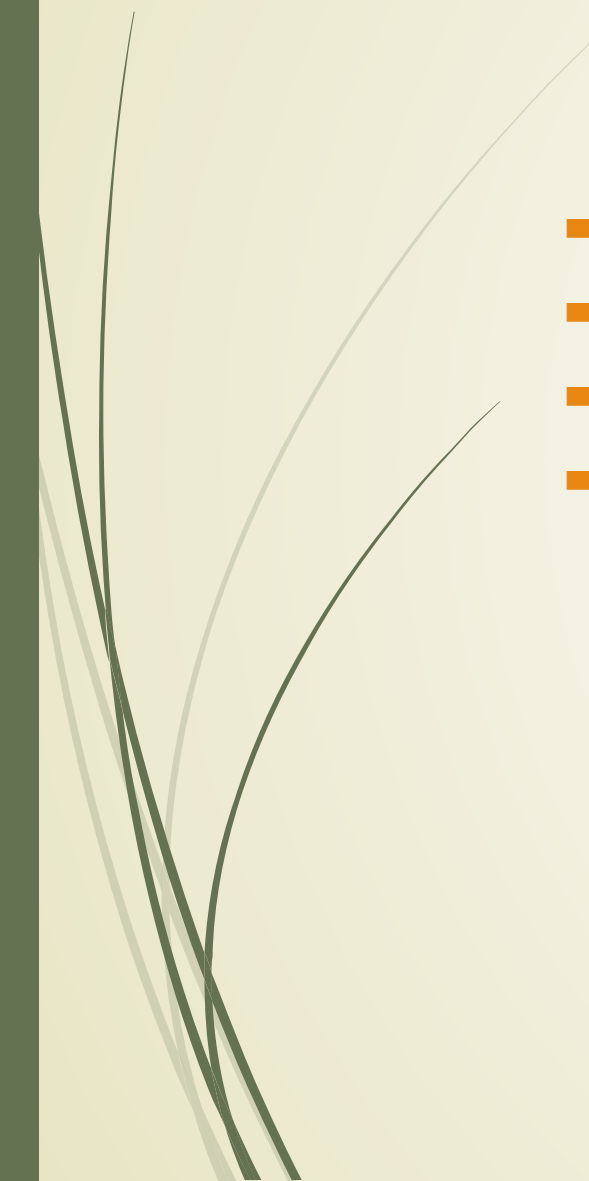


Bad to the Blade

Is artificial turf a legitimate alternative to real grass?



Presentation Outline

- ▶ Water Smart Landscapes (WSL) overview
 - ▶ Water savings of a conversion (with and without artificial turf)
 - ▶ Artificial turf durability
 - ▶ Examples of good and bad
- 

Water Smart Landscapes Program

History

- ▶ Program started roughly in 2000
- ▶ Rebate has ranged from \$.40 to \$2 per sq ft
- ▶ Over 57,000 total projects completed
- ▶ Approximately 180,000,000 square feet converted
 - ▶ Equivalent to 57,000 football fields
- ▶ About 10 billion gallons saved each year



Water Smart Landscapes Program

Program Requirements

- ▶ Plant Coverage
 - ▶ 50% living plant cover
- ▶ Irrigation System
 - ▶ Low-flow drip system
 - ▶ Pressure regulator and filter
- ▶ Mulch
 - ▶ Rock, bark, synthetic turf, un-grouted pavers, etc.
 - ▶ Plastic weed barriers not allowed
 - ▶ Concrete not rebated
- ▶ Minimum Conversion Size
 - ▶ 400 square feet minimum for partial conversions



Water Smart Landscapes Program



- ▶ In 2005 artificial turf was added as an option for mulch
- ▶ From July 1, 2005 through June 30, 2016
 - ▶ 36,860 SF Res Projects Completed
 - ▶ 5,861 included artificial turf in conversion

A major adjustment!



- ▶ 2005 – outside pressure to program conditions regarding plant material requirement
- ▶ Up until 2005, 50% canopy requirement for plants was required WITHIN grass area converted to desert landscaping
- ▶ However, as artificial turf properties started to emerge in our program, many customers wanted to simply replace grass with artificial turf and not add additional plants
 - ▶ Creation of an alternative type of conversion that we call 'Special Consideration'
- ▶ **As a result: one of our primary hypothesis of this research effort was that artificial turf conversions would save more water than traditional conversions – but did they?**

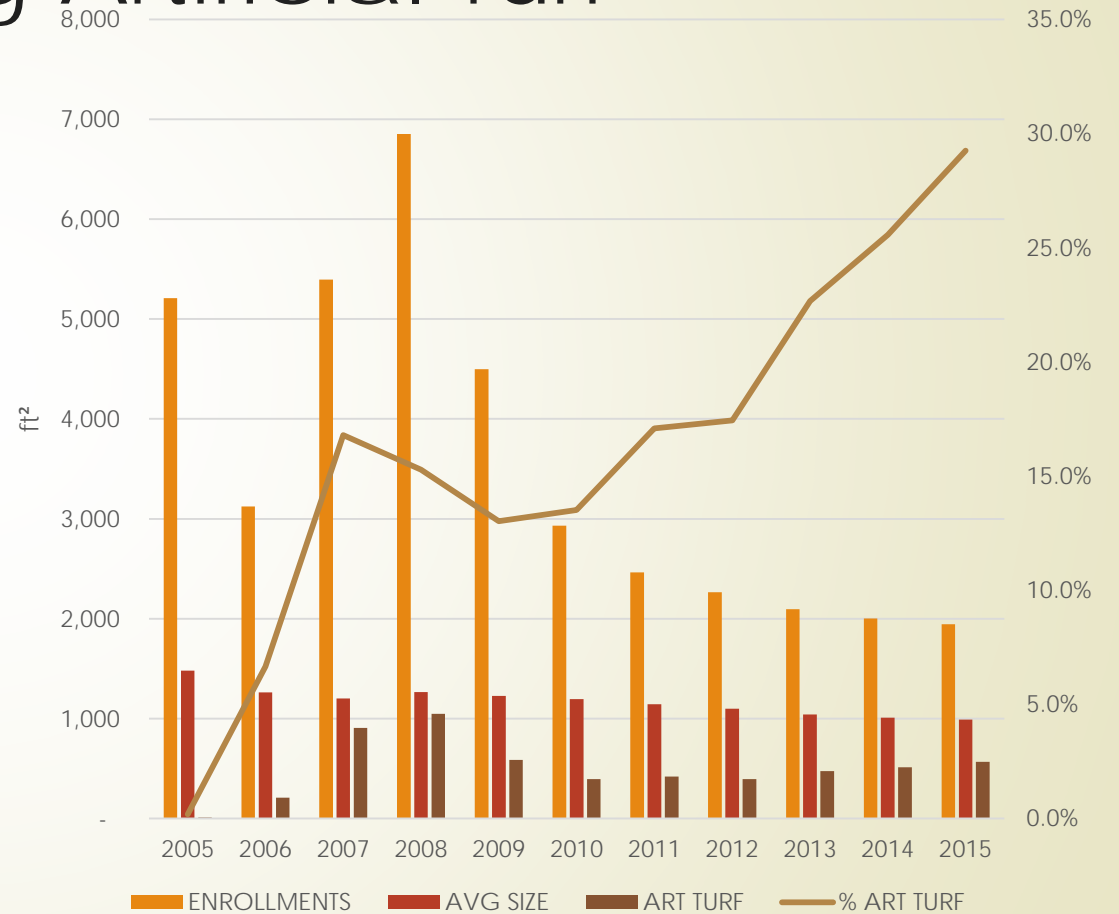
Water Savings of a Conversion

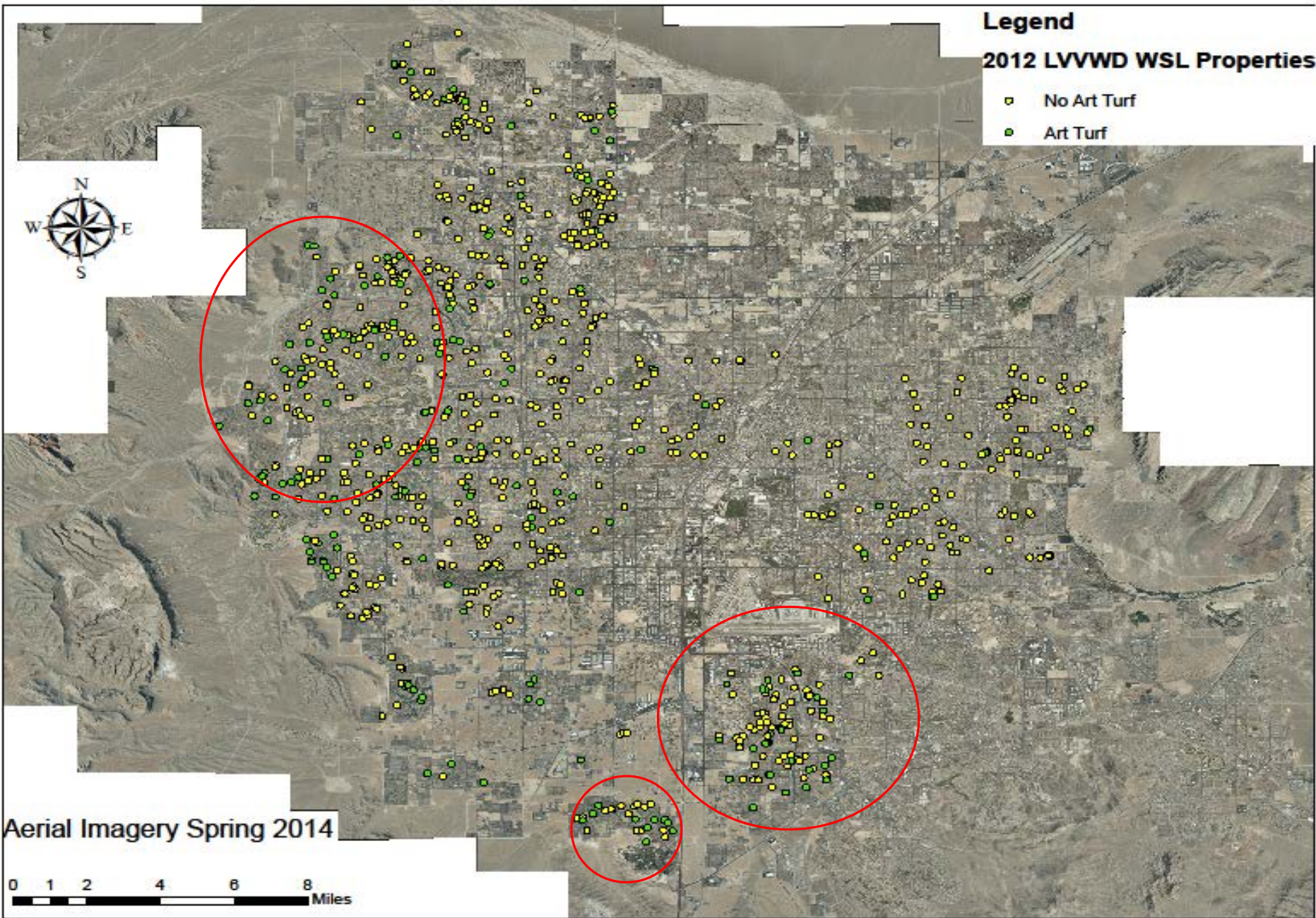
- ▶ Started with properties enrolled in WSL in 2012 and 2013
 - ▶ Most recent years with 2 years of pre- and post-conversion usage for analysis
 - ▶ Expanded to include 2011 and 2014
- ▶ Recent trends in WSL merit investigation
 - ▶ Smaller average conversion sizes
 - ▶ Increased installation of artificial turf as part of conversion
- ▶ How do these influence water savings compared to previous analyses?



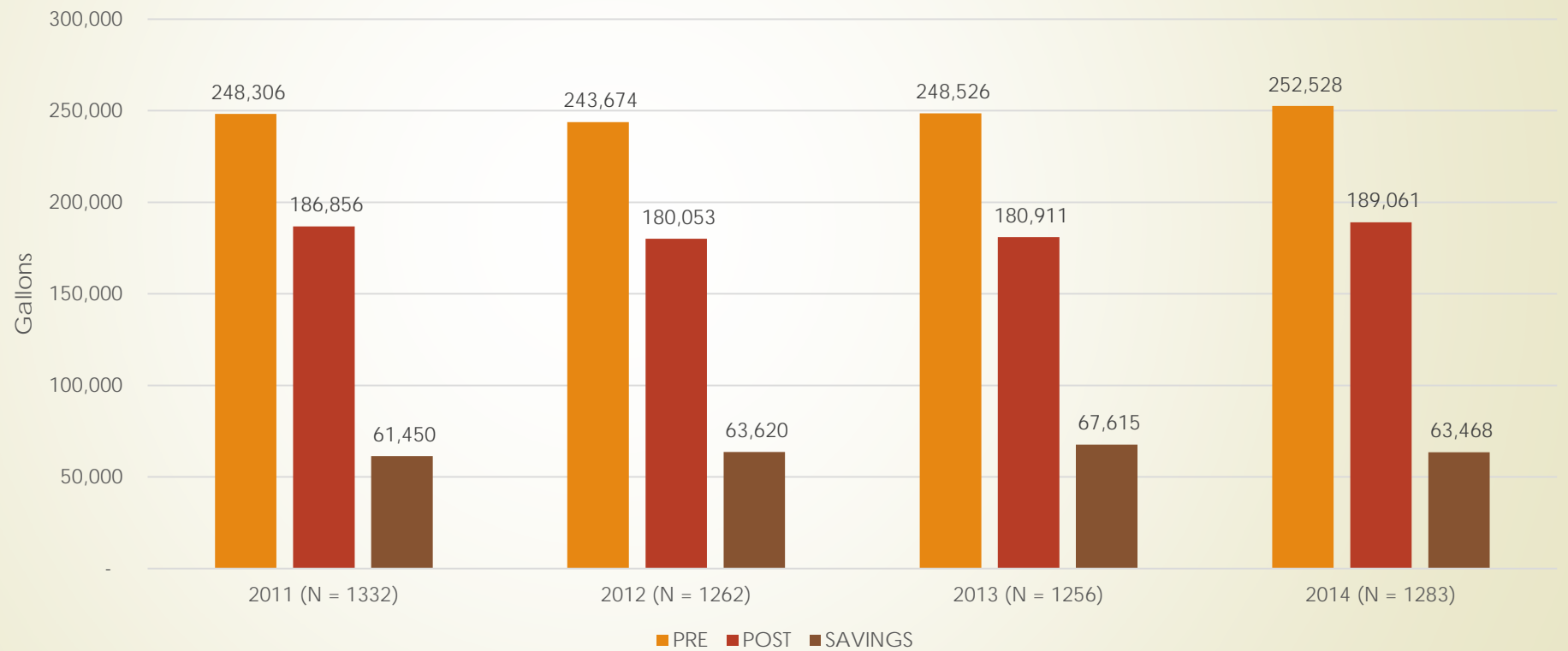
Number and Percentage of Enrollments Using Artificial Turf

YEAR	ENROLLMENTS	AVG SIZE	ART TURF	% ART TURF
2005	5,210	1,479	10	0.2%
2006	3,125	1,263	208	6.7%
2007	5,395	1,201	906	16.8%
2008	6,853	1,265	1047	15.3%
2009	4,498	1,226	586	13.0%
2010	2,931	1,195	396	13.5%
2011	2,463	1,145	421	17.1%
2012	2,266	1,096	395	17.4%
2013	2,096	1,041	475	22.7%
2014	2,003	1,009	512	25.6%
2015	1,945	991	569	29.3%



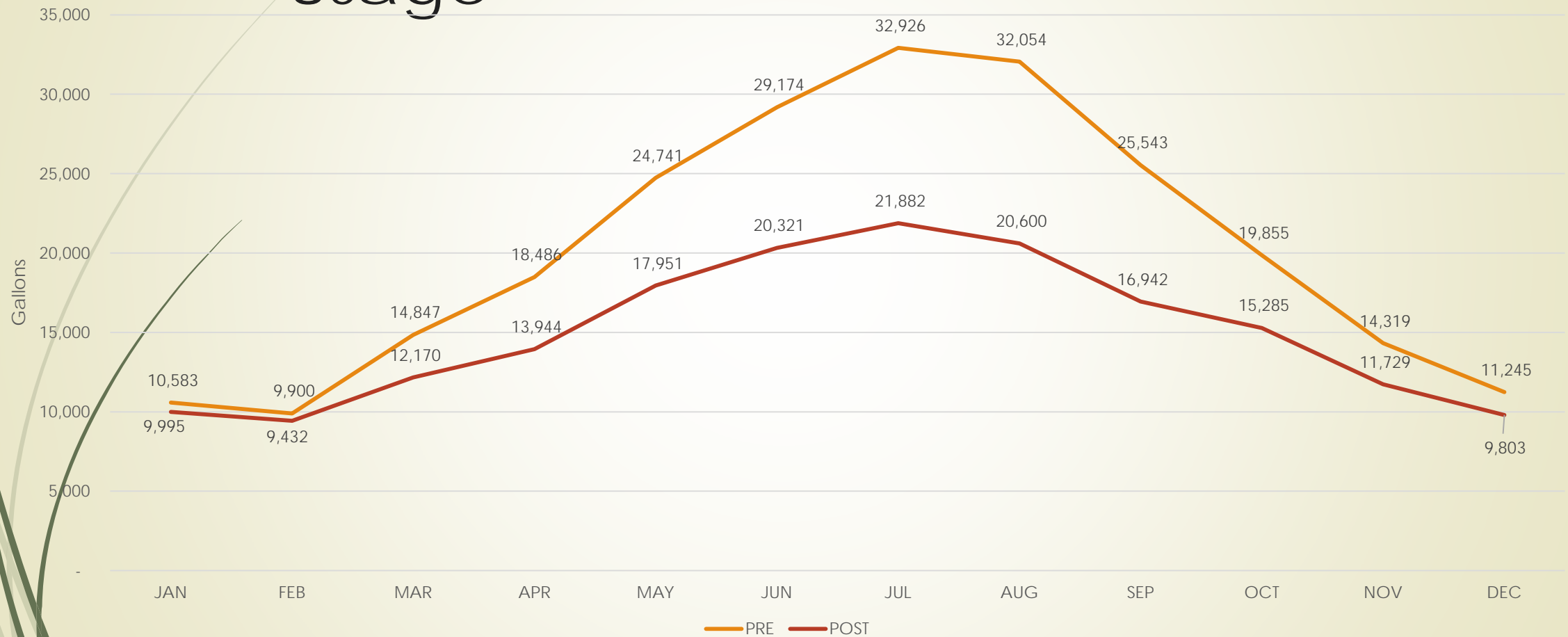


2011-2014 Pre and Post WSL Enrollment Water Usage

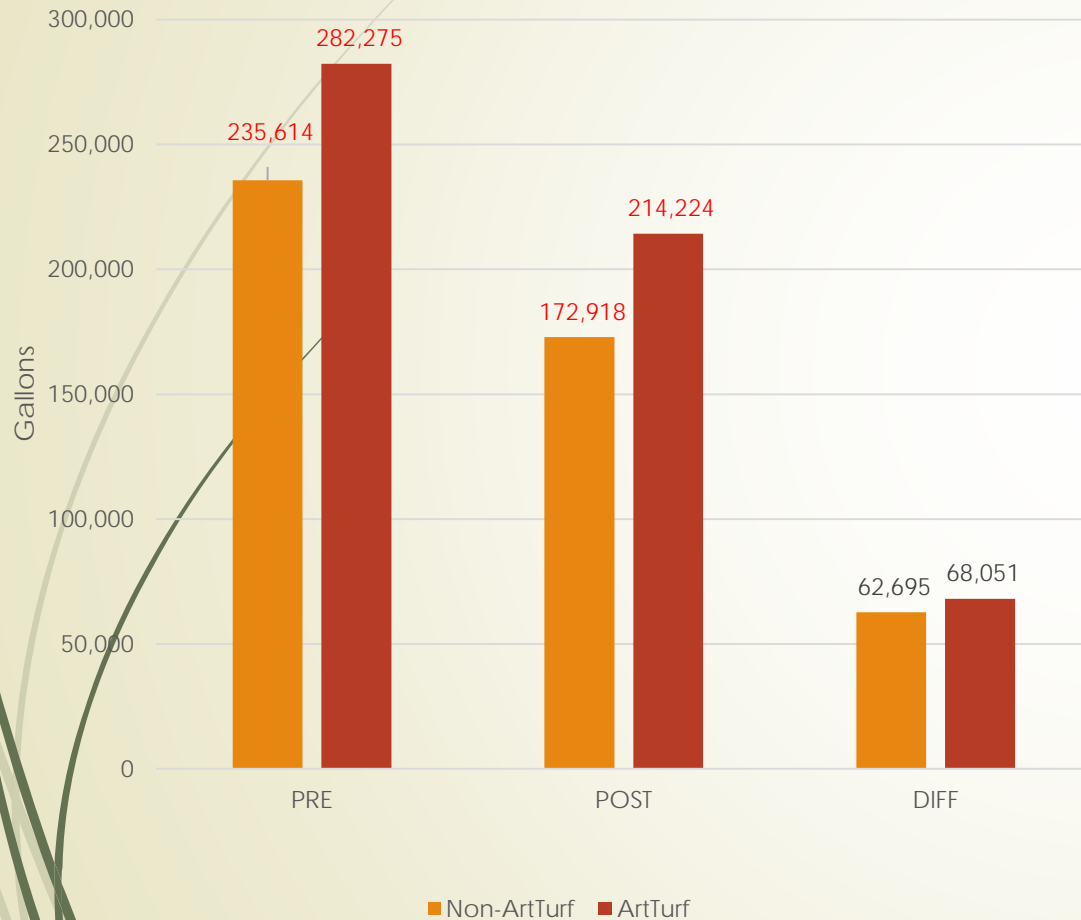


p > 0.05 across all years

2012 Enrollments Average Monthly Usage



2012 Artificial Turf Savings



- 218 properties with artificial turf
- Average savings of **68,051** gallons
 - 24% reduction in usage
- Average conversion size of **1,135** ft²
- Average savings of **59.97** gallons per ft²
- 1044 properties w/o artificial turf
- Average savings of **62,695** gallons
 - 27% reduction in use
- Average conversion size of **1,234** ft²
- Average savings of **50.79** gallons per ft²



2012 Artificial Turf Breakdown

"Normal"

- ▶ 119 properties
- ▶ 75,104 average savings
 - ▶ 25% reduction
- ▶ 1,429 ft² average conversion
 - ▶ 52.56 gallons per ft²
- ▶ Average canopy coverage of 81%
- ▶ 21 non-savers, 18% of the group

Special Consideration

- ▶ 99 properties
- ▶ 59,574 average savings
 - ▶ 23% reduction
- ▶ 781 ft² average conversion
 - ▶ 76.28 gallons per ft²
- ▶ Average canopy coverage of 79%
- ▶ 22 non-savers, 22% of the group



2012 No Artificial Turf Breakdown

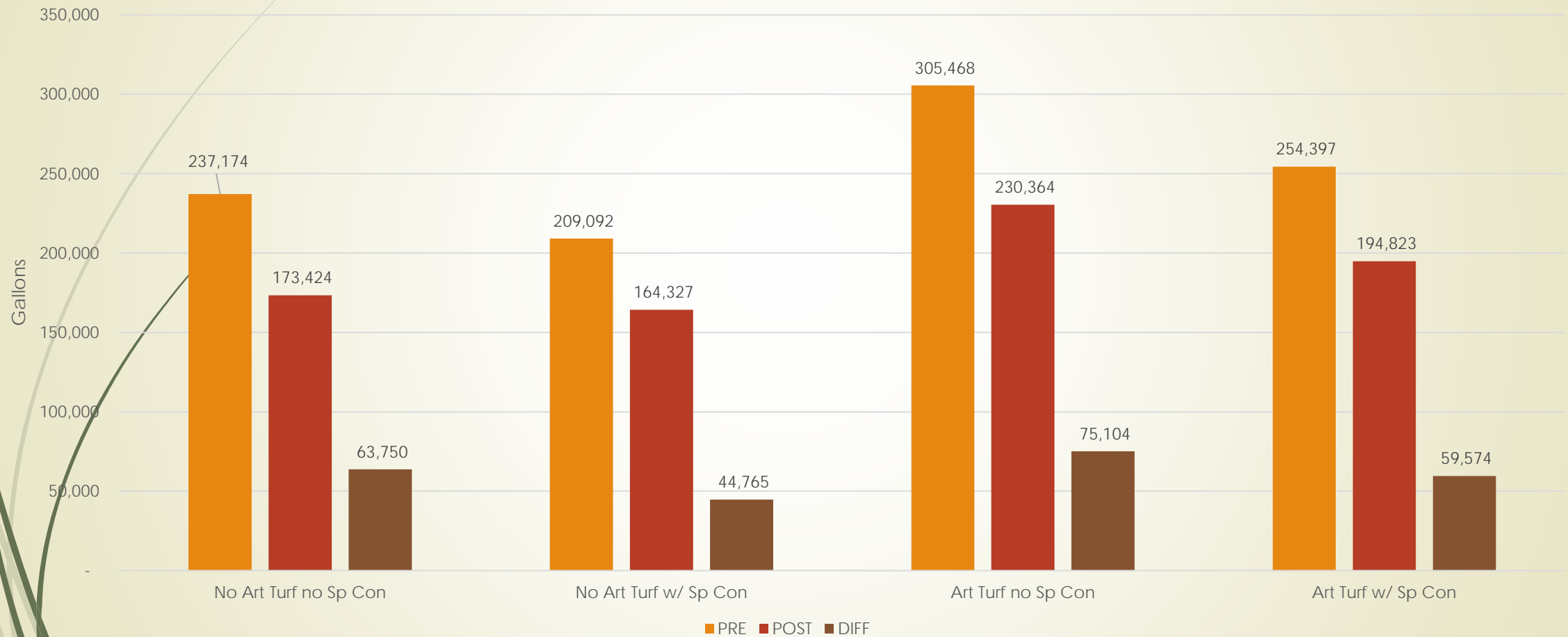
"Normal"

- ▶ 986 properties
- ▶ 63,750 average savings
 - ▶ 27% reduction
- ▶ 1,254 ft² average conversion
 - ▶ 50.82 gallons per ft²
- ▶ Average canopy coverage of 90%
- ▶ 166 non-savers, 17% of the group

Special Consideration

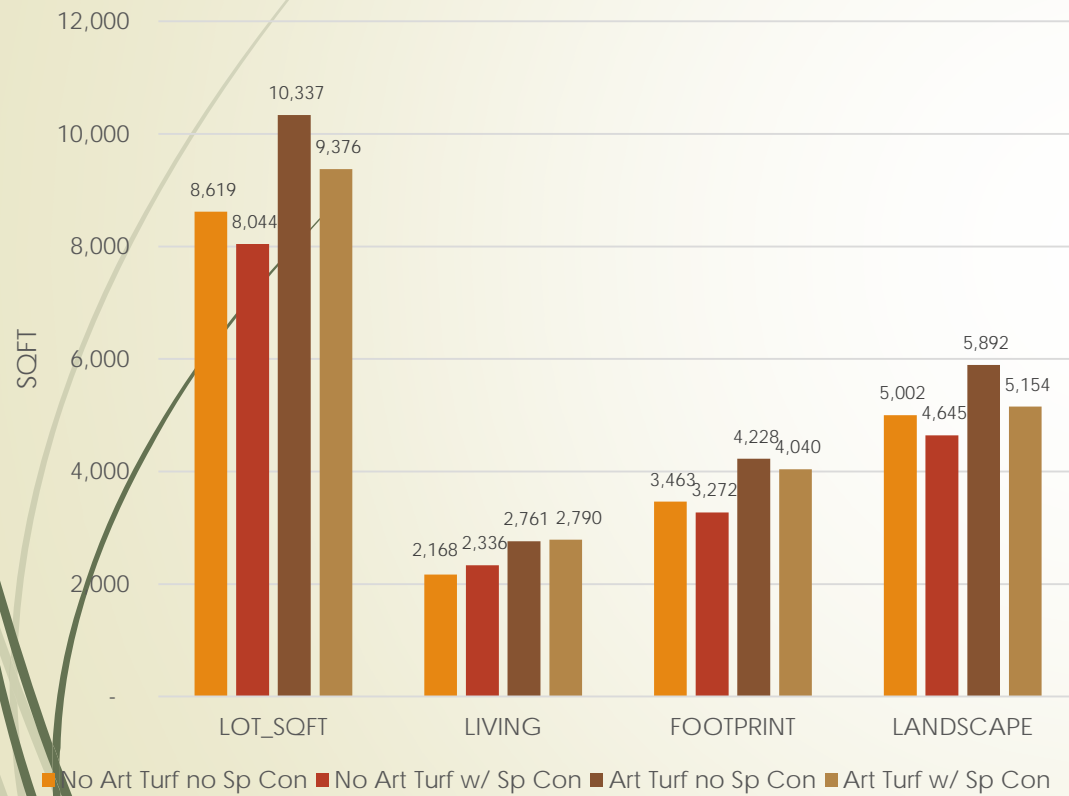
- ▶ 58 properties
- ▶ 44,765 average savings
 - ▶ 21% reduction
- ▶ 891 ft² average conversion
 - ▶ 52.56 gallons per ft²
- ▶ Average canopy coverage of 74%
- ▶ 16 non-savers, 28% of the group

2012 Usage Comparison

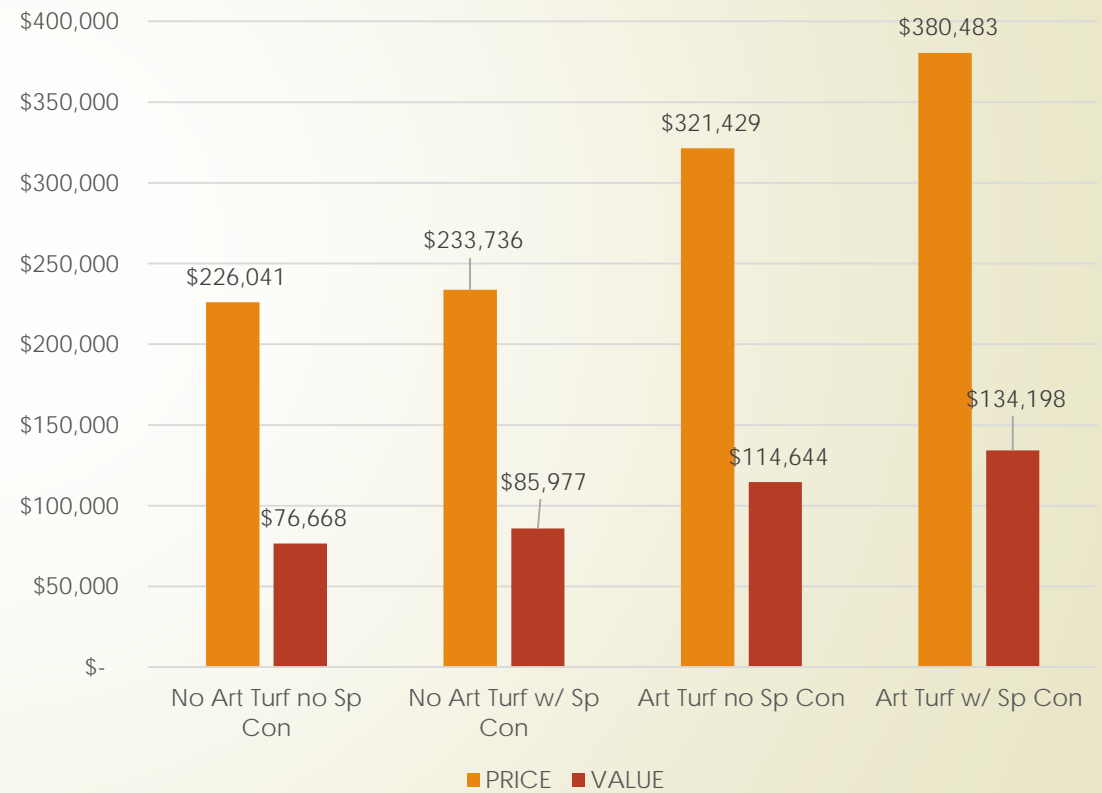


2012 Property Comparison

Home Size



Home Value and Price





Is there a difference in 2012?

Artificial Turf

- ▶ No difference in savings between those with and those without artificial turf
 - ▶ $p = 0.4282$
- ▶ Difference in PRE and POST usage between those with and those without artificial turf
 - ▶ $p < 0.0001$

Special Consideration

- ▶ No difference in SAVINGS between those who used and those who did not use special consideration
 - ▶ $p = 0.1602$
- ▶ No difference in PRE and POST usage between the two groupings

Does artificial turf last over time?

- ▶ Subjective pre-bias from conservation/horticulture types that aesthetic look would not survive time
- ▶ Las Vegas would be strong test of durability
 - ▶ Almost 300 days a year of sunshine
 - ▶ About 130 days a year that reaches 90 degrees
 - ▶ About 70 days a year that reaches 100 degrees



10 Years in Vegas

2006



2016

Edges fading?
No – crabgrass!

10 Years in Las Vegas



2006



2016

10 Years in Las Vegas

2006



2016



Does 10 years make a difference?



2016



2006

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Durability Results

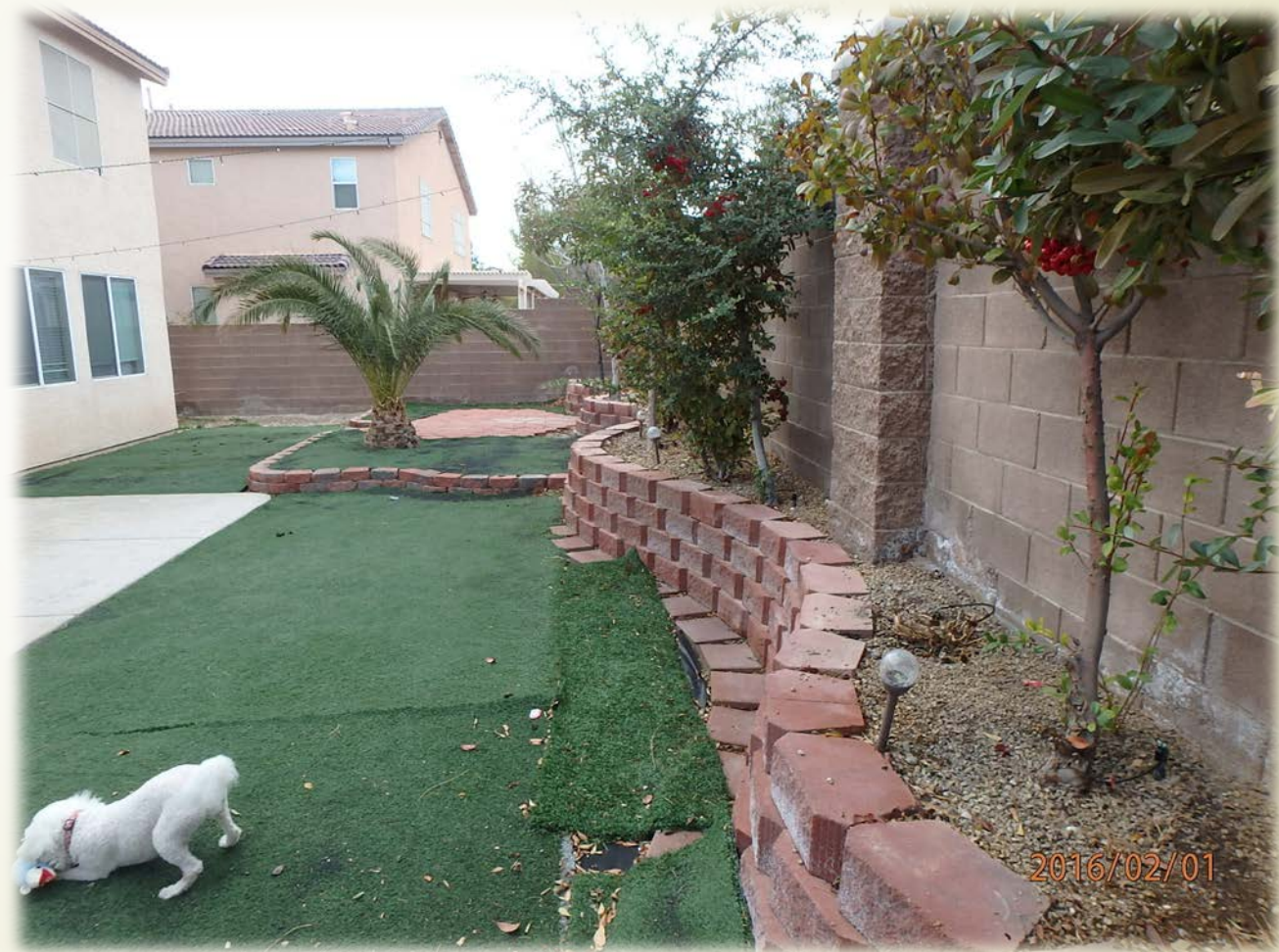


- ▶ Visited 20 properties that converted in 2006 and used artificial turf
 - ▶ 12 properties rated 'good' in that the appearance did not noticeably change in the 10 years of elapsed time
 - ▶ 5 properties rated 'fair' in that there was some fading and/or weeds that have developed since the conversion in 2006
 - ▶ 3 properties were rated 'bad' in that weed management or plant growth forecasting was poor
- ▶ Overall, degradation was minimal and turf has maintained aesthetic look over time. Weeds and some minor fading have occurred but not significantly different than what is seen in regular desert landscape conversions.



The Good, Bad and Interesting!

➤ The Ugly





The bad –
artificial turf
or outdoor
carpet?





The Interesting



The Interesting





The Good





The Good





Questions?