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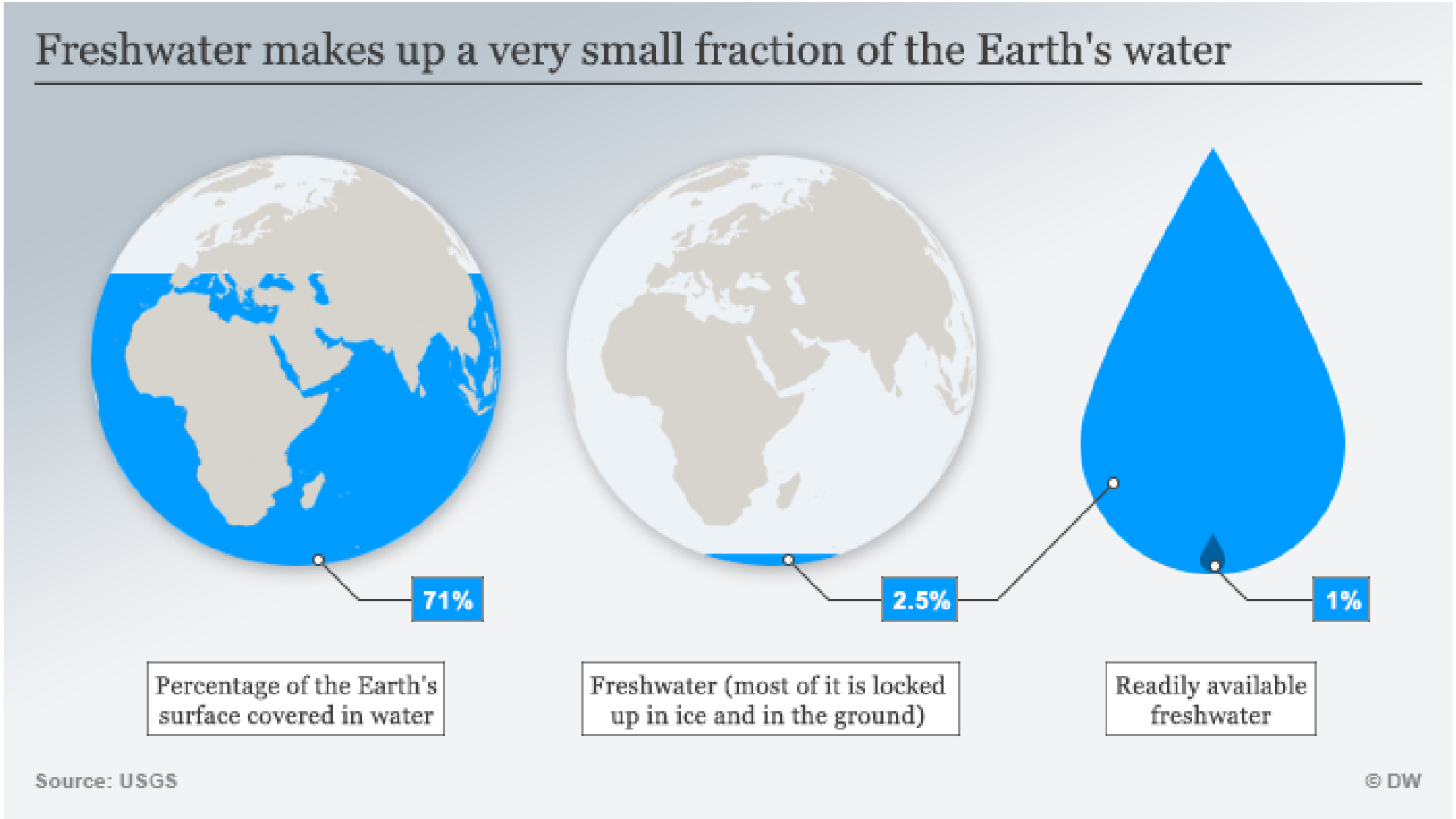
Water Conservation & How to make your HOA Landscape Sustainable

Pop Quiz

What percentage of the water on earth is readily available freshwater?

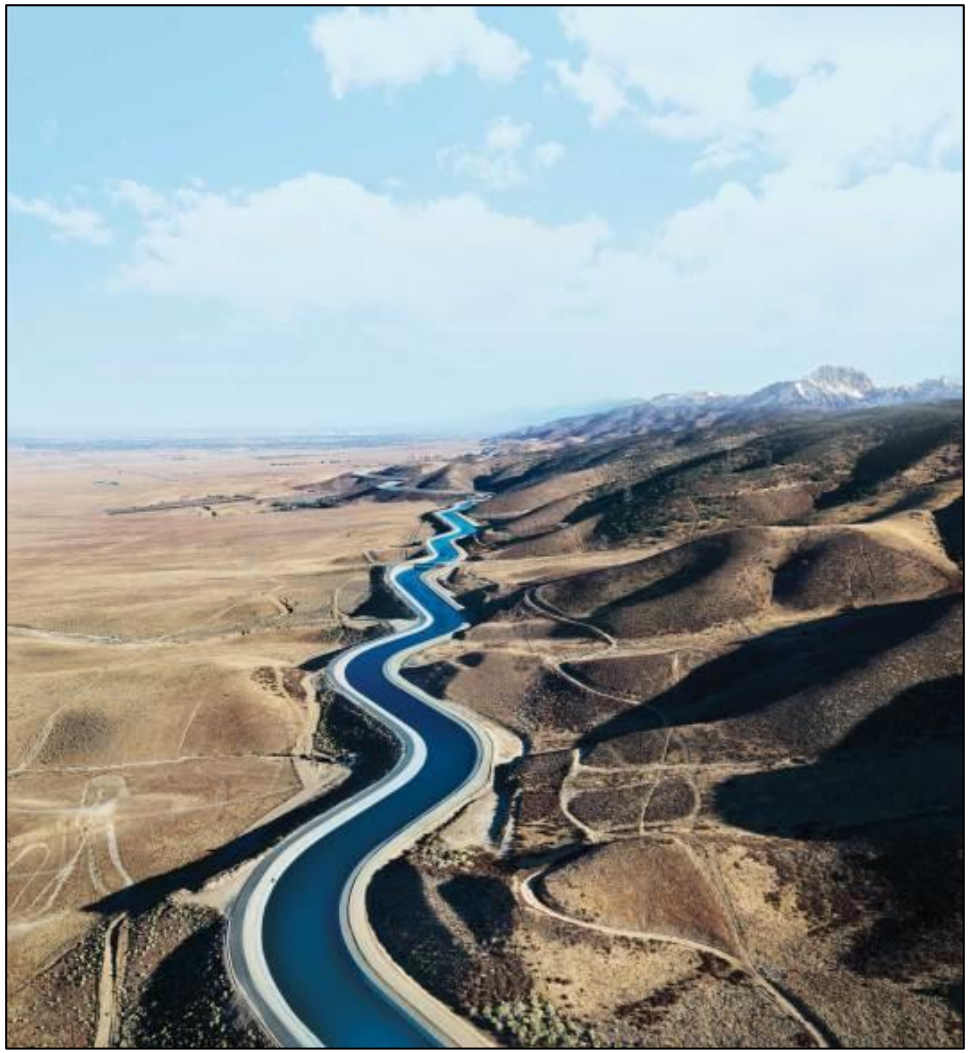
What percentage of OC's domestic water is imported?

Question: What percentage of water on Earth is readily available freshwater?
Answer: ONLY 1%!



Question: What percentage of South Orange County's water is imported?
Answer:

"South Orange County residents depend in large part on imported and recycled water, as the major groundwater basin is beneath the northern part of the county." Bob Muir MWD



Presentation Overview

Case Study

Strategies for Adaptation in an HOA landscape

Incentives and tools available

Objective: To identify solutions for water savings at Colinas de Capistrano.

Irrigation Solutions and Observations

Based on the field assessment, Monarch identified the top five strategies for increasing the efficiency of the irrigation system throughout the community. These key solutions are specific to the conditions at Colinas de Capistrano.

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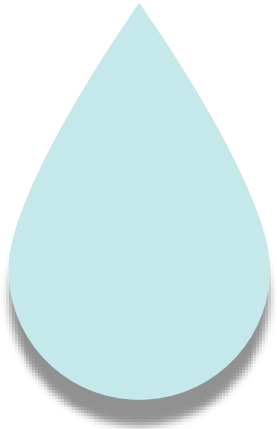
moulton niguel water district



Objective: To identify solutions for water savings at Colinas de Capistrano.

1. Repair Broken Equipment
2. Remedy Blocked Heads
3. Controllers
4. Turf Reduction
5. Mixed Equipment

Prioritize

Water Meter Report Cards

Water Meter Report Card

Lanscape Sq. Footage Source: MNWD
$2.10 per billing unit, Usage based on average water use from January 2017-January 2019
Account. 60952 / Meter 536243
Report History: Initial Water Usage Report.

Association:	Colinas de Capistrano HOA	Water District:	MNWD
Landscape Area (sf):	99,996	Prepared by:	Monarch Environmental, Inc.
Acres:	2	Date Prepared:	06.28.2019
LTM HCF Units:	1,119	Signature:	Matt Davenport

HOA Water Usage Grade: B+

8 gals/sq.ft.

Water Usage Classifications Table

Grade	Ideal Water Usage
A	<= 12 gals/sq.ft/year
B	13-19 gals/sq.ft/year
C	20-25 gals/sq.ft/year
D	26-31+ gals/sq.ft/year

Based upon conversion of water consumption in hcf units to 748 gallons and classification table above.

Current Water Costs and Savings Potential

Annual Total Costs	Costs Per Acre	Estimated Savings*
$2,683	$1,169	$725

Water Costs Classifications Table

Grade	Ideal Water Usage
A	$853 Dollars/Acre
B	$1,024 Dollars/Acre
C	$1,194 Dollars/Acre
D	$1,280 Dollars/Acre

*Based upon achieving ideal water efficiency with an HOA water usage Grade "A" when compared to the actual Annual Total Cost. MNWD is a tiered rate system and there are fixed costs associated with each water meter. Decreasing water usage may not result in net reduced water costs due to anticipated rate increases. However, reductions in water use will result in avoided future costs.

Water Meter Report Card

Lanscape Sq. Footage Source: MNWD
$2.10 per billing unit, Usage based on average water use from January 2017-January 2019
Account. 60998 / Meter 536690
Report History: Initial Water Usage Report.

Association:	Colinas de Capistrano HOA	Water District:	MNWD
Landscape Area (sf):	136,770	Prepared by:	Monarch Environmental, Inc.
Acres:	3	Date Prepared:	06.28.2019
LTM HCF Units:	1,982	Signature:	Matt Davenport

HOA Water Usage Grade: C

11 gals/sq.ft.

Water Usage Classifications Table

Grade	Ideal Water Usage
A	<= 12 gals/sq.ft/year
B	13-19 gals/sq.ft/year
C	20-25 gals/sq.ft/year
D	26-31+ gals/sq.ft/year

Based upon conversion of water consumption in hcf units to 748 gallons and classification table above.

Current Water Costs and Savings Potential

Annual Total Costs	Costs Per Acre	Estimated Savings*
$5,082	$1,619	$2,404

Water Costs Classifications Table

Grade	Ideal Water Usage
A	$853 Dollars/Acre
B	$1,024 Dollars/Acre
C	$1,194 Dollars/Acre
D	$1,280 Dollars/Acre

*Based upon achieving ideal water efficiency with an HOA water usage Grade "A" when compared to the actual Annual Total Cost. MNWD is a tiered rate system and there are fixed costs associated with each water meter. Decreasing water usage may not result in net reduced water costs due to anticipated rate increases. However, reductions in water use will result in avoided future costs.

Overall Savings Potential and Prioritization Schedule

Monarch has analyzed 3 years of water use data from MNWD and put together a prioritization schedule indicating the order in which the HOA can implement our solutions community wide.

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Savings Potential and Prioritization Schedule (Entire HOA Landscape - Long Term)

Priority	Meter Account #	Controller Number	Irrigated Area (square feet)	Controller Number	*Estimated Annual Savings
1	60998	2	136770	2	$2,404.00
2	61062	16	117379	16	$2,360.00
3	61079	19	115340	19	$2,270.00
4	61084	13	46621	13	$1,624.00
5	61059	15	19535	15	$1,441.00
6	60967	7	25600	7	$1,285.00
7	61083	12	50891	12	$1,272.00
8	61080	18	34500	18	$1,248.00
9	60969	11	19874	11	$1,234.00
10	60968	8	86897	8	$1,125.00
11	60952	4	99996	4	$725.00
12	60954	10	213601	10	($4.00)
13	60999	1	114581	1	($166.00)
14	61095	14	144453	14	($710.00)
15	60970	11	183457	11	($768.00)
16	60953	5	256930	5	($1,156.00)
17	60973	3	320100	3	($2,904.00)
18	61078	17	539701	17	($4,521.00)

*Available savings based on water meter report cards

Recommendations, Analysis and Opportunities

Irrigation Tune Up

Proposal #: **6951300**
Scope: (Controller #5 and #8) This proposal includes modifications and adjustments to the existing irrigation on the controllers that were inspected in the field with Monarch. Scope includes head replacement, addressing mixed equipment zones, replacing riser assemblies and angling heads as needed to increase efficiency and reduce runoff.
Amount: **$5,785.45**
Rebate: **$840.00**
Net Cost: **$4,945.45**

NOTE: Monarch recommends at least one controller be inspected per month and a proposal with a similar scope be implemented until all HOA controllers are up to a decent level of efficiency. Use the water meter report cards and address the lowest grades first.

Turf Removal

Proposal #: **50516**
Scope: (Bella Loma) Remove unnecessary turf along the bottom of the slope and plant attractive, California friendly plant material (species TBD). This includes modification of the irrigation system to increase efficiency.
Amount: **$7,287.50**
Turf Removal Rebate: **$6,696.00**
Nozzle Rebate: **$450.00**
Net Cost: **$141.50**

Scope: Turf Removal and planting enhancement at the corner of Loma Linda and Paseo de Colinas. Scope includes the addition of a swale that is required for rebate approval.
Amount: **$8,175.00**
Turf Removal Rebate: **$2,724.00**
Nozzle Rebate: **$180.00**
Net Cost: **$5,451.00***
*Note: Monarch recommends the rebate application be submitted with a smaller scale swale to qualify for the rebate and reduce labor/equipment costs.

Controller Upgrade

Proposal #: **29576**
Scope: Replace all master association controllers with WeatherTrak LC smart timers.
Amount: **$51,097.11**
Estimated Rebate: **$24,300.00**
Net Cost: **$26,797.11**

Return on investment for controllers with 10%annual water savings: 4.6 Years

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Strategies for Adaptation

LANDSCAPE ANALYSIS: Analyze the landscape and consider…

- Value
- Function
- Labor
- Fire risk
- Water

ACTION: What is required to adapt your landscape?

- **A TUNE UP**: Improve management practices, repair/replace faulty equipment, remove failing plant material
- **A TRANSFORMATION**: Capital Investment, renovation, enhancements

Correct & Connect

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Landscape Analysis- Water

- Water Use Report Card
  - Each Meter Avg. Actual Costs (how much you spent)
  - Each Meter Avg. Usage (how much water was used)
- Identify the meters with the highest potential for savings (Actual - ETWU) and map them out
- Prioritize the meters/landscape areas
- Develop an action plan and budget
  - TUNE UP
  - TRANSFORMATION
- Implement
- Measure Success and Repeat

Water use report card

Water Usage Report
Common Interest Development

SUMMARY

Lanscape Sq. Footage Source: MNWD
$2.10 per billing unit, Usage based on average water use from January 2017-January 2019
Account. 61064 / Meter 1592752
Report History: Initial Water Usage Report.

Association:	Typical HOA	Water District:	MNWD
Landscape Area (sf):	120,621	Prepared by:	Monarch Environmental, Inc.
Acres:	2.8	Date Prepared:	06.12.2019
LTM HCF Units:	3,946	Signature:	Matt Davenport

HOA Water Usage Grade:
C
24 gals/sq.ft.

Water Usage Classifications Table	
Grade	Ideal Water Usage
A	<= 12 gals/sq.ft/year
B	13-19 gals/sq.ft/year
C	20-25 gals/sq.ft/year
D	26-31+ gals/sq.ft/year

Based upon conversion of water comsumption in hcf units to 748 gallons and classification table above.

Current Water Costs and Savings Potential

Annual Total Costs
$12,165
Costs Per Acre
$4,393
Estimated Savings*
$7,441

Water Costs Classifications Table	
Grade	Ideal Water Usage
A	$1,706 Dollars/Acre
B	$2,047 Dollars/Acre
C	$2,388 Dollars/Acre
D	$2,559 Dollars/Acre

*Based upon achieving ideal water efficieny with an HOA water usage Grade "A" when compared to the actual Annual Total Cost. MNWD is a tiered rate system and there are fixed costs associated with each water meter. Decreasing water usage may not result in net reduced water costs due to anticipated rate increases. However, reductions in water use will result in avoided future costs.

Tune-up

Action: Repair of broken equipment

Impact: HIGH

Landscape Analysis - Labor

- Does the current maintenance specification fit the needs of the HOA?
- Are expectations clear between board and contractor?
- Identify landscapes that add value to HOA
- Identify areas that require the most labor
- Form vs. Function

Tune-up - Labor

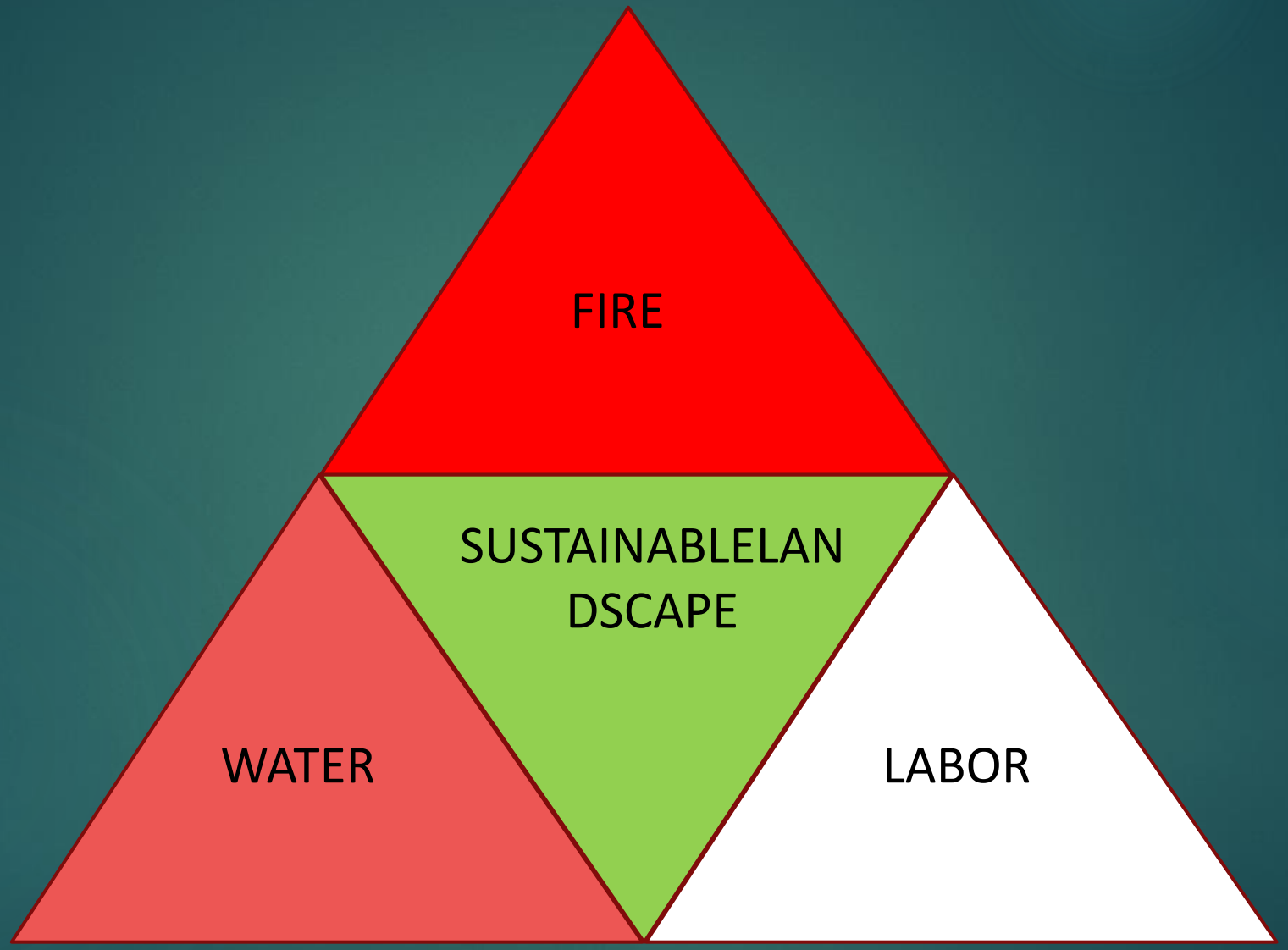
- Develop a specification that meets the needs of the community
- Performance based contract
- Rotation Schedule
- MGMT processes (prevent whack a mole)
- Overlapping vendor responsibility
- Irrigation terms

Landscape Analysis - Fire

- Are we in a fire risk zone?
- Defensible space vs. fuel modification
- Contact the OCFA
- Understand the OCFA maintenance guidelines

Tune-up - Fire

- Have an approved working plan
- Dead and dying material removal
- Invasive species management
- Maintenance practices on areas adjacent to open space and interior common areas
- Tree care, reforestation



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INTERCONNECTED

- LOW WATER USE
- APPROPRIATELY SPACED
- CORRECT CHOICE FOR THE REGION
- PROPERLY IRRIGATED
- SUSTAINABLY MAINTAINED

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SUSTAINABLE LANDSCAPE

FORM VS FUNCTION

FORM

FUNCTION

STRIKE A BALANCE

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Transformation Process

- Assemble A Team!
- Understand the Need
- Prioritize the Opportunities
- Create a Vision
- Create a Budget
- Create an Action Plan
- Implement
- Measure Success
- Repeat

Water Management

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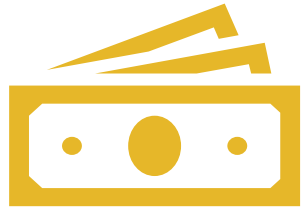
Incentives and Tools Available

Irrigation Audit/Assessments

Sometimes provided by your local water district!



MWDOC Rebates!

Turf removal $3/SF

Drip conversion .40/SF

Smart Controllers $35/station

Quiz

- What percentage of South Orange County's water is imported?

Quiz

- Name one rebate offered by MNWD to help HOAs adapt their landscapes?