PGA VILLAGE

IRRIGATION UPGRADE

2014

Ryan McKuhen – Field Manager
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EXISTING INFRASTRUCTURE

- 1.8 MILE MAIN ROADWAY (ORIGINAL ENTRY AND EXIT, 30 + YEARS)
- 39 ACRES OF IRRIGATED LANDSCAPE, MOSTLY TURF
- USAGE: 51 MGY (ADDITIONAL 15M FROM RECHARGE WELLS)
- 4 PUMPS; 1-20 HP, 1-15 HP, 2 LAKE RE-CHARGE PUMPS
  - PRESSURE LOSS FROM BEGINNING TO END OF ZONE WAS 40 PSI

EXISTING INFRASTRUCTURE

- 11 INTERSPERSED CONTROLLERS, 106 ZONE VALVES (VARIOUS MANUFACTURERS)
- NO WATER SAVING TECHNOLOGY
  - FREQUENT UNDETECTED BREAKS
  - FREQUENT OVERLAPING OF ZONES REDUCING VOLUME

PROJECT IMPROVEMENTS

- INSTALLED (1) RAIN BIRD ESP-LXM IQ CONTROLLER AND DECODER SYSTEM
- DIRECTIONALLY BORED 15,000 FEET 2 WIRE MAXI-CABLE
- INSTALLED PULL BOXES AND CONDUIT FOR 2 WIRE CABLE
- INSTALLED NEW ZONE VALVES WITH DECODERS, SURGE PROTECTION AND GROUNDING RODS
- INSTALLED 1,545 PRS HEADS (RAIN BIRD 5000 SERIES)

PROJECT IMPROVEMENTS

- RE-LOCATED 1-20 HP PUMP; INSTALLED 230 FEET OF HDPE DISCHARGE PIPE
- COMBINED 3 SEPARATE SYSTEMS INTO 1; 240 FEET OF 4 INCH MAINLINE CONNECTIONS
- ADDED VFD'S AND FILTRATION TO BOTH MAIN PUMP STATIONS
- ELIMINATED 2 LAKE RE-CHARGE PUMPS

RESULTS

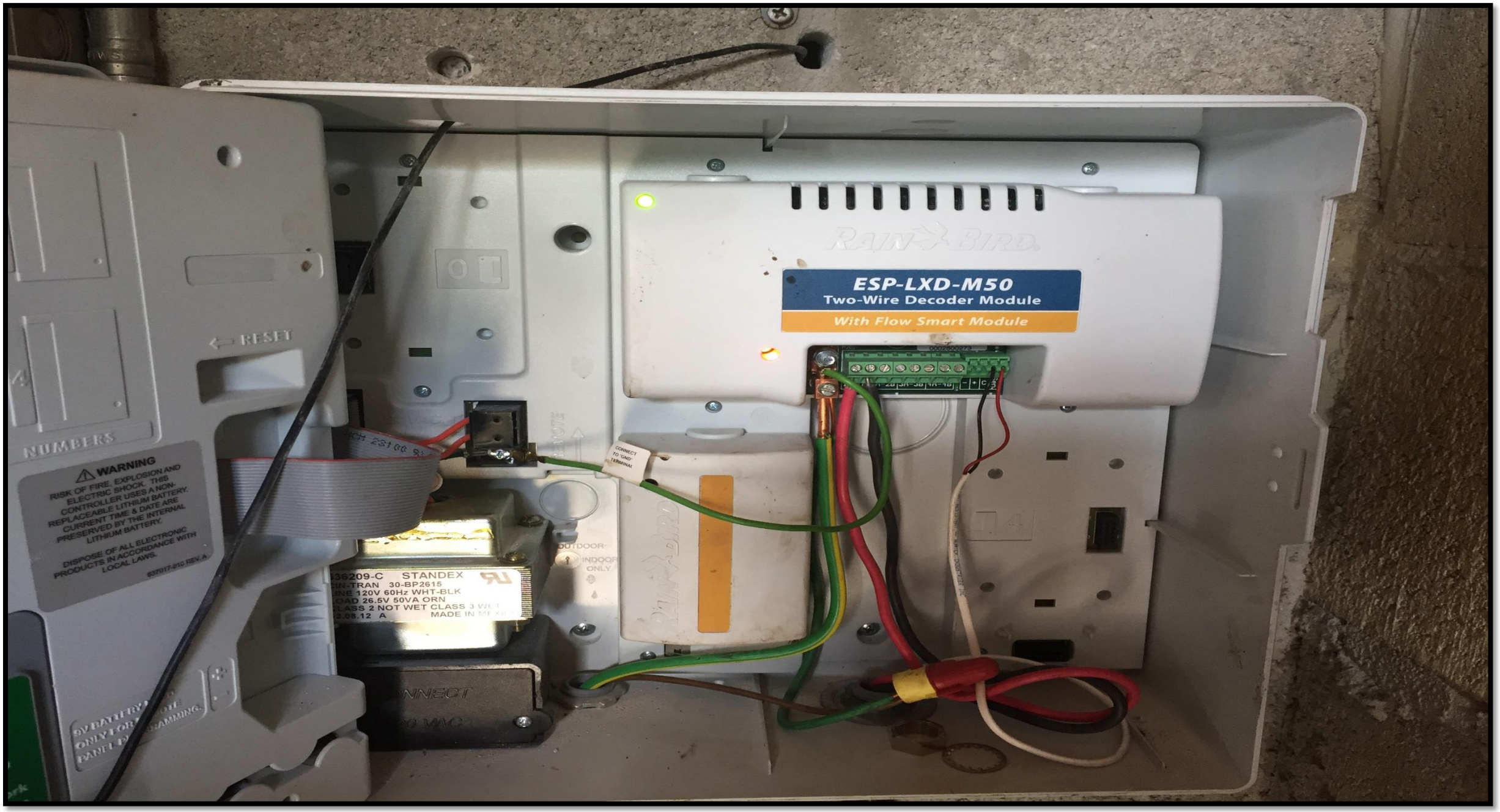
PRIOR USAGE:		**51 MGY**
SAVINGS:	**CONTROL SYSTEM**	**15 MGY**
	PRS HEADS	**8 MGY**
TOTAL ANNUAL SAVINGS:		**24 MGY (47%)**

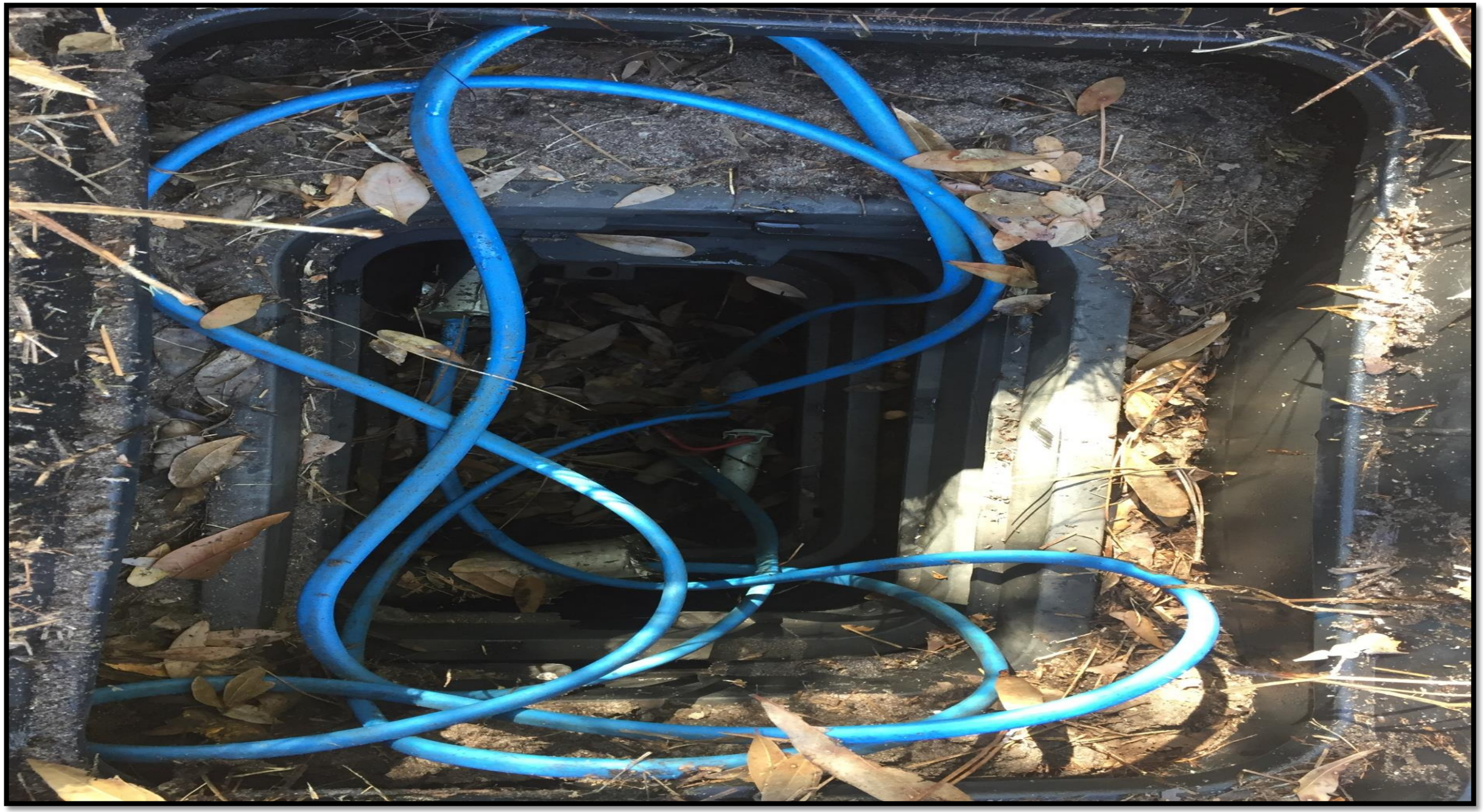
NOTE: ESTIMATED ADDITIONAL ANNUAL SAVINGS FROM 2 ABANDONDED RE-CHARGE PUMPS- 15 MGY


VLT
AQUA Drive
954-971-7350
HOOVER
PUMPING SYSTEMS


Hoover
CHALLENGER
Hoover


ESP-LXD
OFF
AUTO
Manual Watering
Clear Programs
Optional
ETM™/IQ™/PBC™ Settings
Flow and Smart Modules™
Module Status
Module Programming
Special Features
Station Settings
Watering Cycles
Delay Watering
Advanced Programming
Seasonal Adjust %
Set Current Date and Time
Setup Wizards
Set Watering Start Times
MON 1
TUE 2
WED 3
THU 4
FRI 5
SAT 6
SUN 7
Custom Cycle
Select Days to Water
Basic Programming
Set Station Run Times
Test All Stations / Check System
Weather Sensors
Bypassed
Active
Program
A B C D
ATTENTION
A Weather Sensor is wired to this timer-controller and may prevent sprinkler operation due to sufficient rainfall or other condition.
See instructions for details.
Auto
000.0 GPM
Mon 2:59 PM
Alarm
RAIN BIRD


ESP-LXD-M50
Two-Wire Decoder Module
With Flow Smart Module
RESET
NUMBERS
WARNING
RISK OF FIRE, EXPLOSION AND ELECTRIC SHOCK. THIS CONTROLLER USES A NON-REPLACEABLE LITHIUM BATTERY. CURRENT TIME & DATE ARE PRESERVED BY THE INTERNAL LITHIUM BATTERY.
DISPOSE OF ALL ELECTRONIC PRODUCTS IN ACCORDANCE WITH LOCAL LAWS.
637017-01C REV. A
36209-C STANDEX
30-BP2615
120V 60Hz WHT-BLK
26.5V 50VA ORN
CLASS 2 NOT WET CLASS 3 WET
MADE IN MEXICO
OUTDOOR
INDOOR ONLY



THE END

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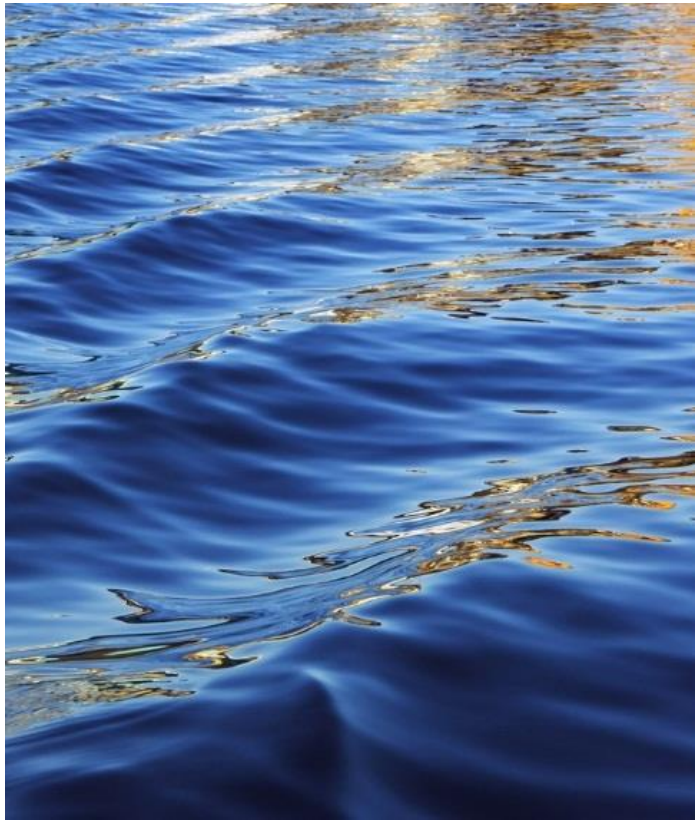


Cooperative Funding Program

Nursery Overhead Efficiency Project

Sponsored by
South Florida Water Management District
&
Palm Beach Soil and Water Conservation District

Nursery Overhead Efficiency Project Background

* The Palm Beach Soil and Water Conservation District has been conducting irrigation system evaluations on plant nurseries in Palm Beach and Broward counties since 2007.
* During those evaluations we have realized the need for greater efficiency in the overhead systems.
* With the Cooperative funding program we have an opportunity to make a difference.

Nursery Overhead Efficiency Project

* Exchange 3000 Nelson whiz heads at local plant nurseries with Senninger Mini Wobblers to improve efficiency, reduce water use, and decrease runoff.
* Estimated Water Savings for the Project 22.7 MGY
* 113.5 MG with 5 year service life.

Nursery Overhead Efficiency Project Criteria

* The layout of the system had to be within the manufactures spacing guidelines.
* The pressure had to be under 35psi with Mini Wobblers installed (manufactures recommendation)
* There had to be no less than 20% deviation in pressure on heads operating together.
* Distribution Uniformity had to measure at least 75%.

Testing

All potential irrigation systems had to be tested to ensure they met the criteria for the project.

Testing the System

Changing of the Heads

Changing of the Heads

Testing the New Heads

Progress to date

* 11 Sites on 30 acres
* 19% average reduction in flow rate
* Average 23% improvement in Distribution Uniformity

* Pressure variation with whiz heads at 11 sites averaged 28%
* Pressure variation with mini wobbler heads at 11 sites averaged 9%
* **(Rule of thumb is no more than 20% deviation)**

Success Story

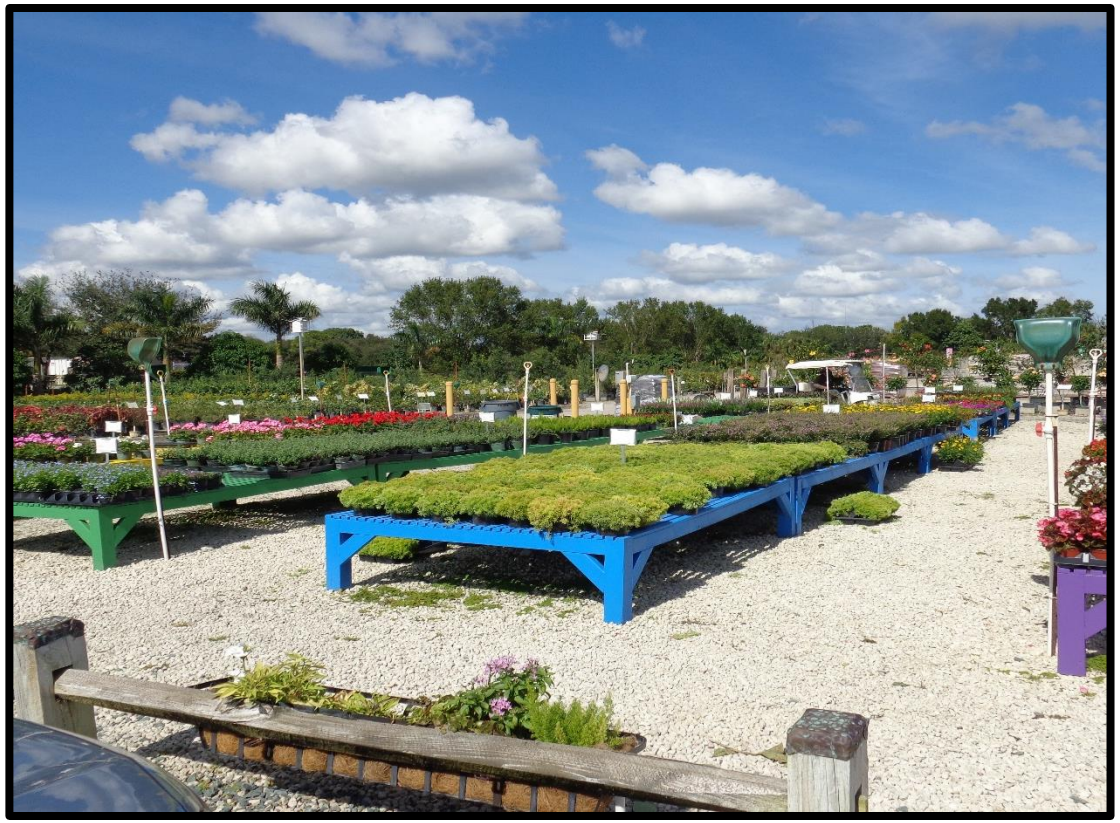
* The goal of the program was to improve efficiency and reduce water use, even with lower flow rates the efficiency would compensate for the reduced flow.
* In many cases the efficiency jump was drastic enough to actually reduce runtime based on the effective application rate.

Success Story

* One of the properties that we worked with was a 5 acre retail nursery.
* We replaced heads in three sections of the nursery, the showcase area, the shade house, and the field grown areas.

Showcase area

This area is very important to the business, it’s the first area the customers see and it holds plants that are ready for sale.



Show case Results

Pre Testing

* Average application rate- .55 inches per hour
* Distribution uniformity- 63%
* Effective application rate- .35 inches per hour
* **45 min run time** - .26 inches per application
* Annual water use- 963,900

Post Testing

* Average application rate- .66 inches per hour
* Distribution uniformity- 86%
* Effective application rate- .56 inches per hour
* **35 min run time** - .32 inches per application
* Annual water use- 661,500

Field Grown area

This area is where the majority of the plants are grown.

Field Area Results

Pre Testing

* Average application rate- .69 inches per hour
* Distribution uniformity- 52%
* Effective application rate- .36 inches per hour
* **45 min run time** - .27 inches per application
* Annual water use- 4,918,725

Post Testing

* Average application rate- .52 inches per hour
* Distribution uniformity- 82%
* Effective application rate- .43 inches per hour
* **35 min run time** - .25 inches per application
* Annual water use- 3,318,525

Shade House

The shade house is utilized to grow plants that will not thrive in the full sun.

Shade House Results

Pre Testing

* Average application rate- .1.91 inches per hour
* Distribution uniformity- 69%
* Effective application rate- .1.32 inches per hour
* **45 min run time** - .44 inches per application
* Annual water use- 1,593,900

Post Testing

* Average application rate- .1.58 inches per hour
* Distribution uniformity- 86%
* Effective application rate- .1.36 inches per hour
* **45 min run time** - .45 inches per application
* Annual water use- 1,234,800

Results (Conclusion)

* Annual water savings **2,261,700 gallons per year**
* With 5 year service life **11,308,500 gallons**
* Application efficiency **24% improvement**
* Reduction in pumping **105 hours**

Nursery Overhead Efficiency Project

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Excess Irrigation Corrections

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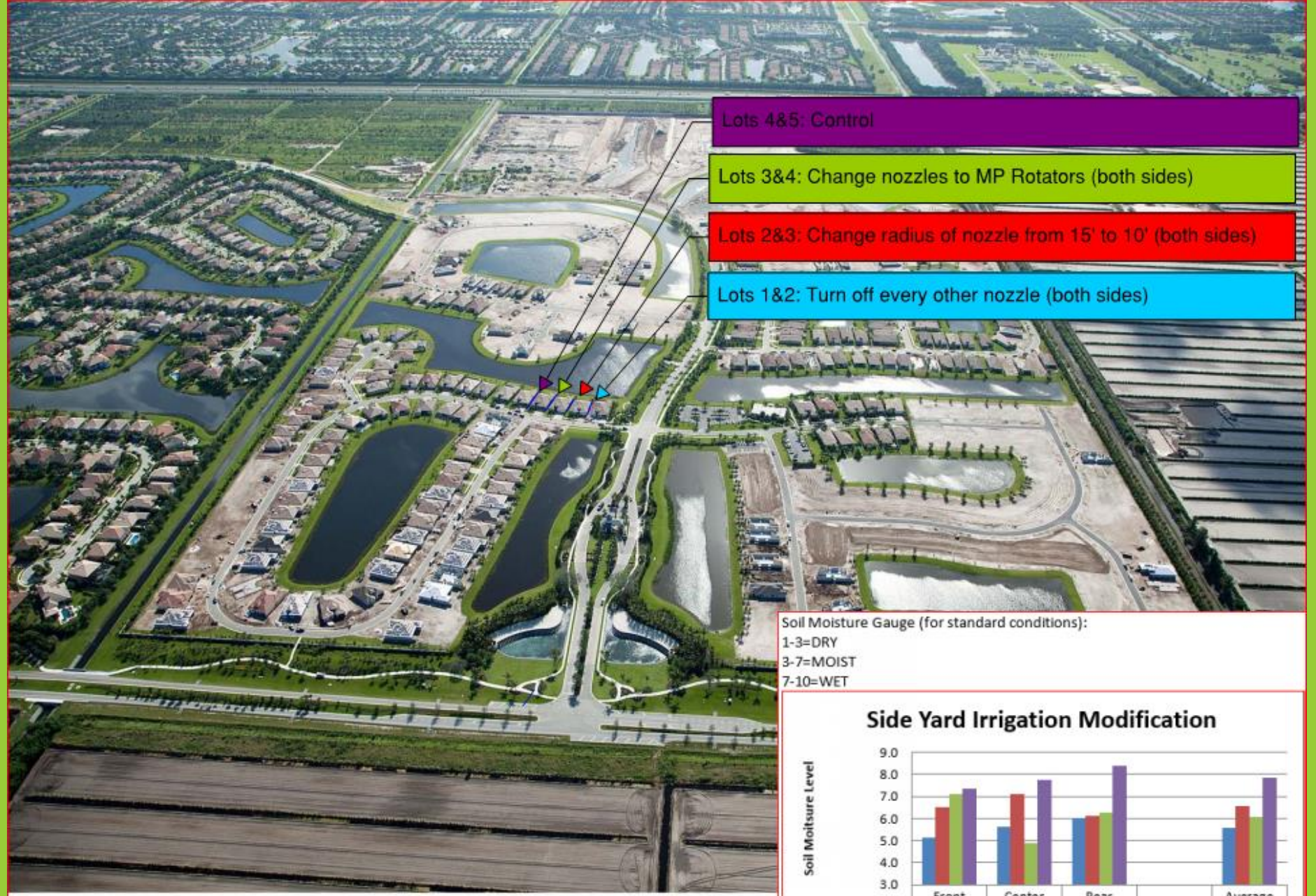

Soil Moisture Gauge (for standard conditions):
1-3=DRY
3-7=MOIST
7-10=WET

Side Yard Irrigation Modification

	Front	Center	Rear		Average
1/2 Off	5.1	5.6	6.0		5.6
Reduce Radius	6.5	7.1	6.1		6.6
MP Rotators	7.1	4.9	6.3		6.1
Control	7.4	7.8	8.4		7.8

GLHOMES® Discover the Difference℠

Valencia Cove

Before

After

Below is a side-by side comparison of the two nozzles operating simultanously.

Questions?

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GL Homes

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Palm Beach Soil & Water Conservation District

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