

Water Conservation Tools

Mike Hamilton

Irrigation Instructor

UA Division of Agriculture CES

NRCS

How much water is that?

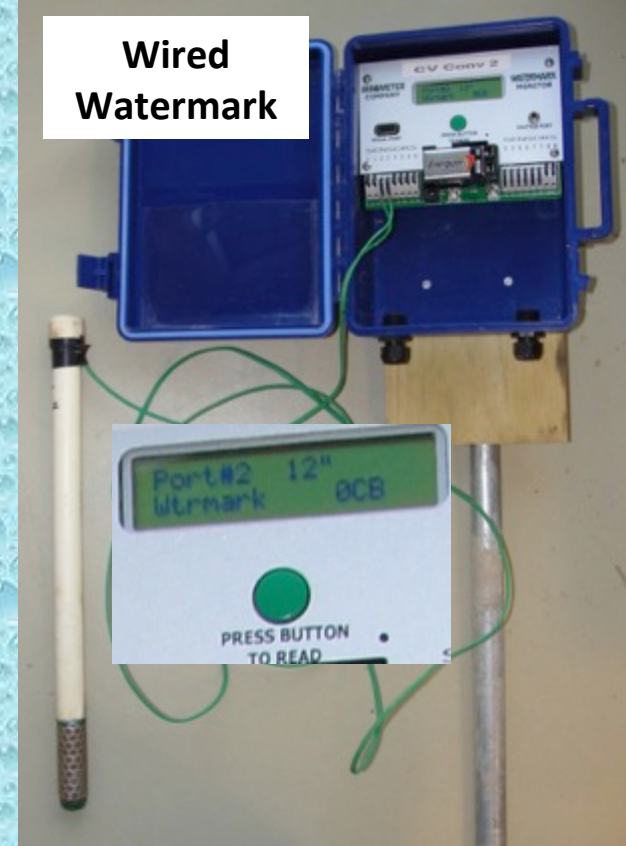
- 1 inch of rain on 1 Acre?
 - **27,154 gallons**
- 1 inch on 40 acres?
 - **Over 1 million gallons**
- 1 inch here on the 3000 ac station?
 - **Over 81 million gallons**
- 1 inch in Independence County?
 - **13.4 BILLION gallons**
- **Mississippi River flows @ 4.5 Million gallons per second!**

Wireless
Watermark



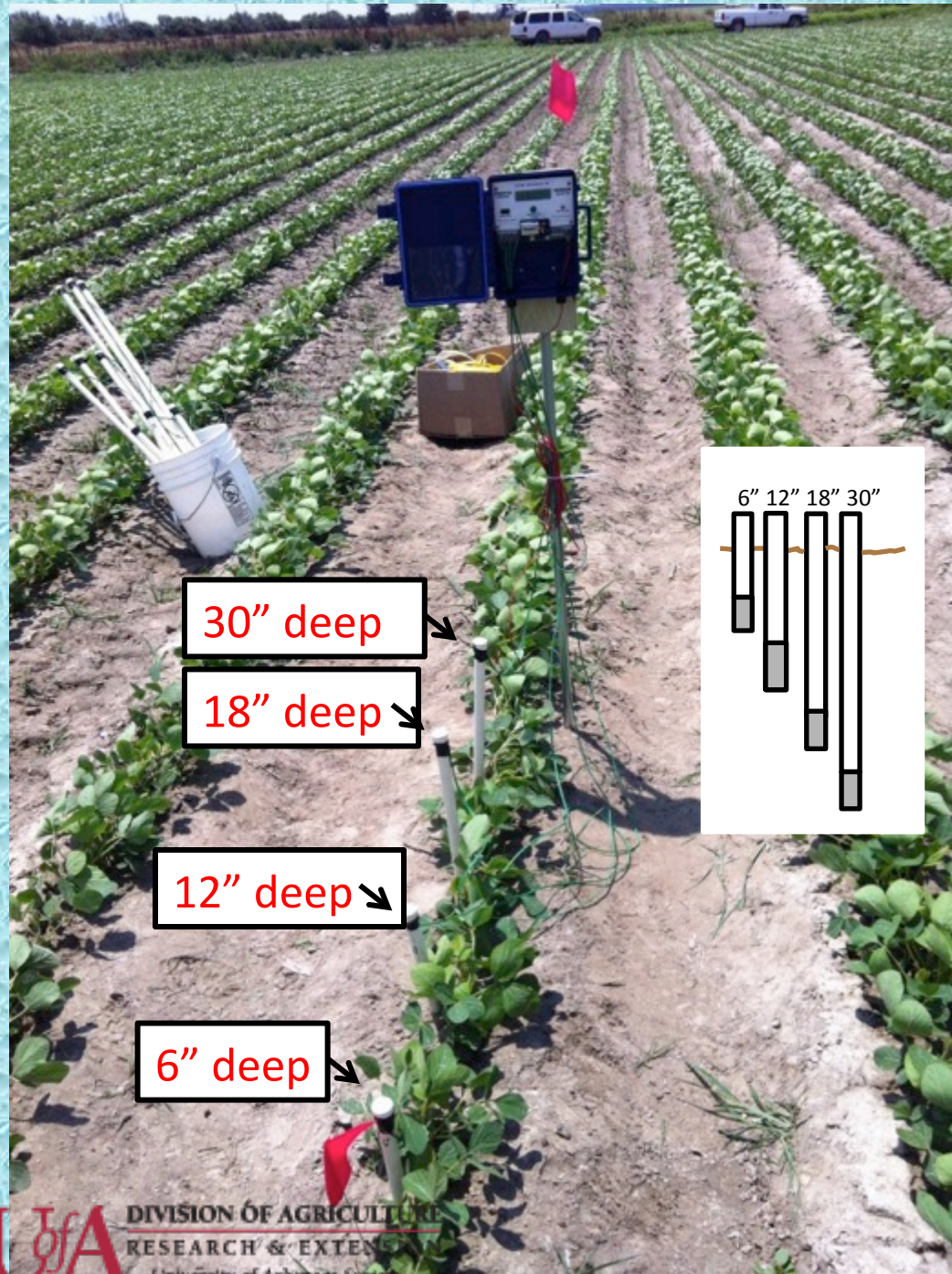
Watermark soil moisture sensors and dataloggers

Wired
Watermark



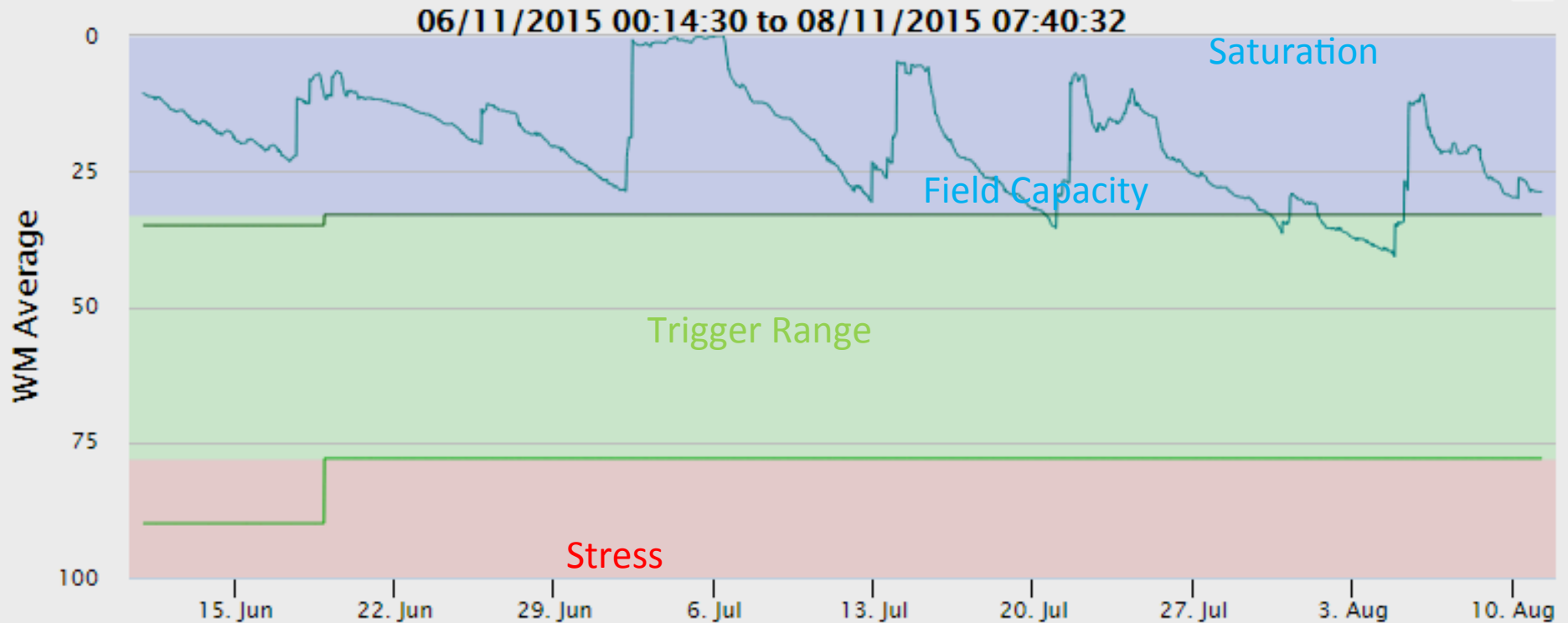
Manual read
Watermark





- Place sensors at depths of 6", 12", 18" and 30"
- 6-18" sensors represent rooting zone
- Use sensor depths that are representative of rooting depth at particular growth stage.
- 30 inch sensor is subsoil moisture monitor, sometimes it is available other times is not.
- Locate them 2/3 to 3/4 down a furrow field.

Weekly Irrigations...

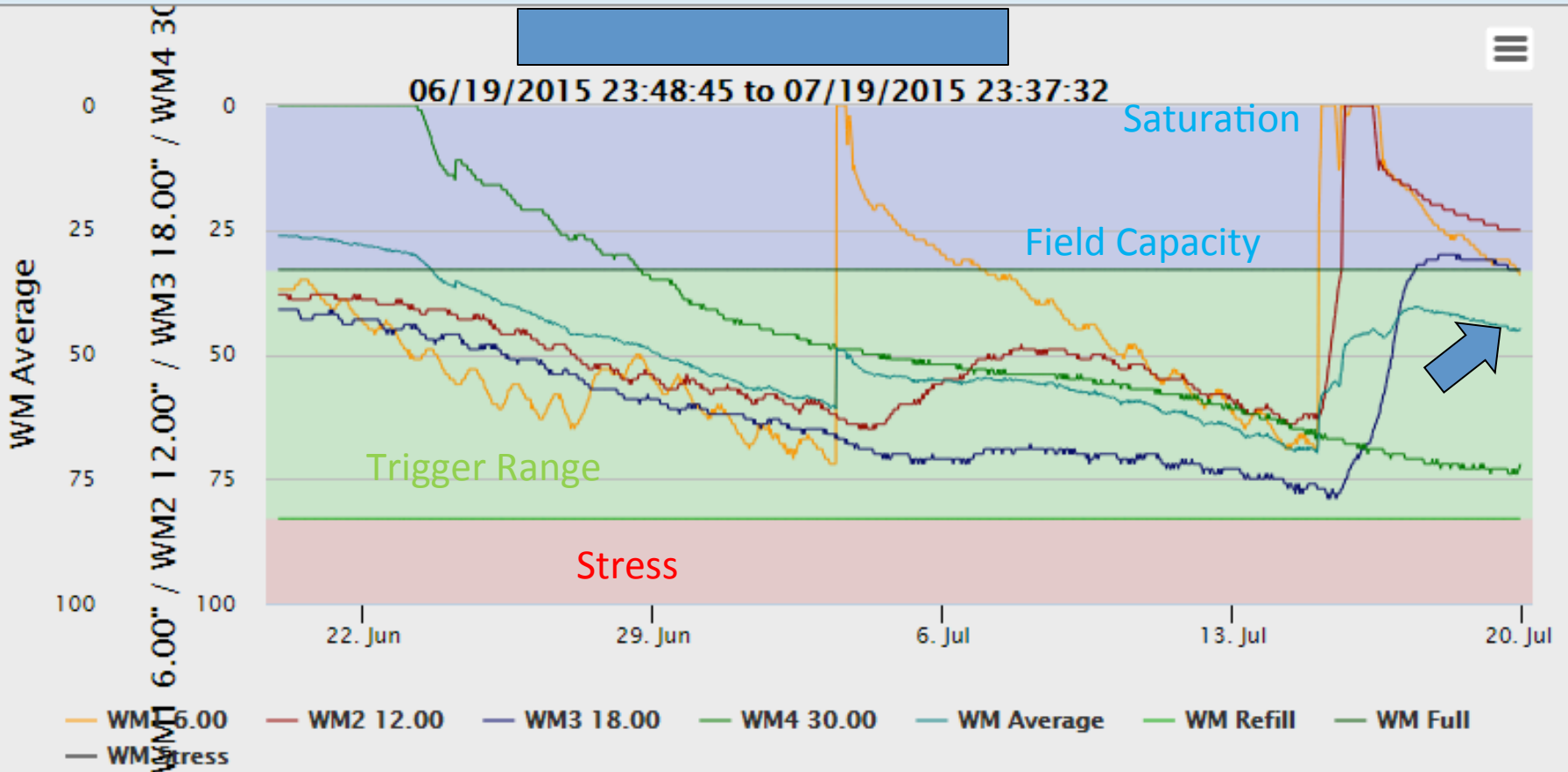


When updating graph options, give the chart a moment to update. Your choices are being saved and the data is being retrieved.

Refresh

Chart Options

[Click to Show](#)

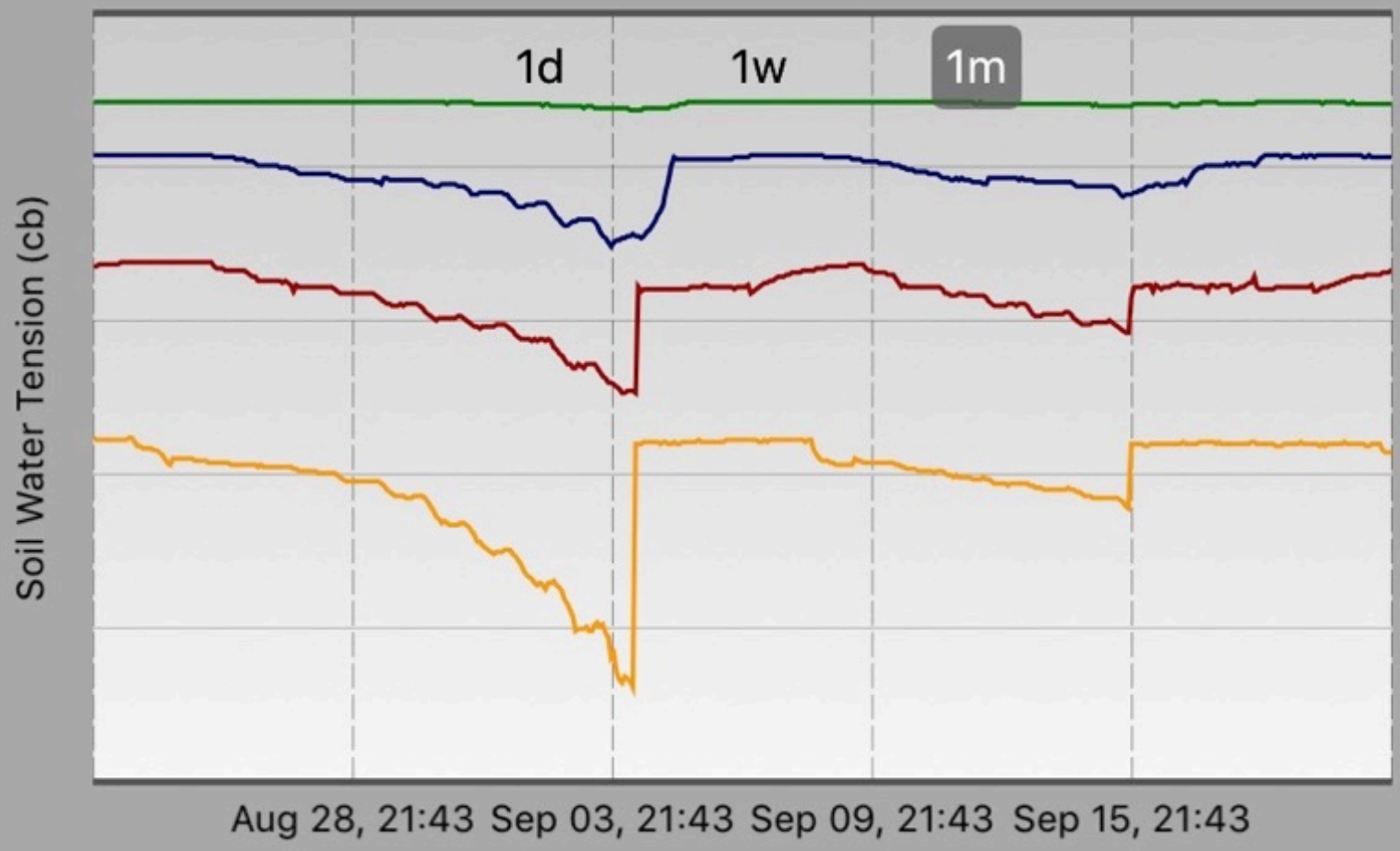


Highcharts.com

RANDOLF/ANDREWS/PEANUTS

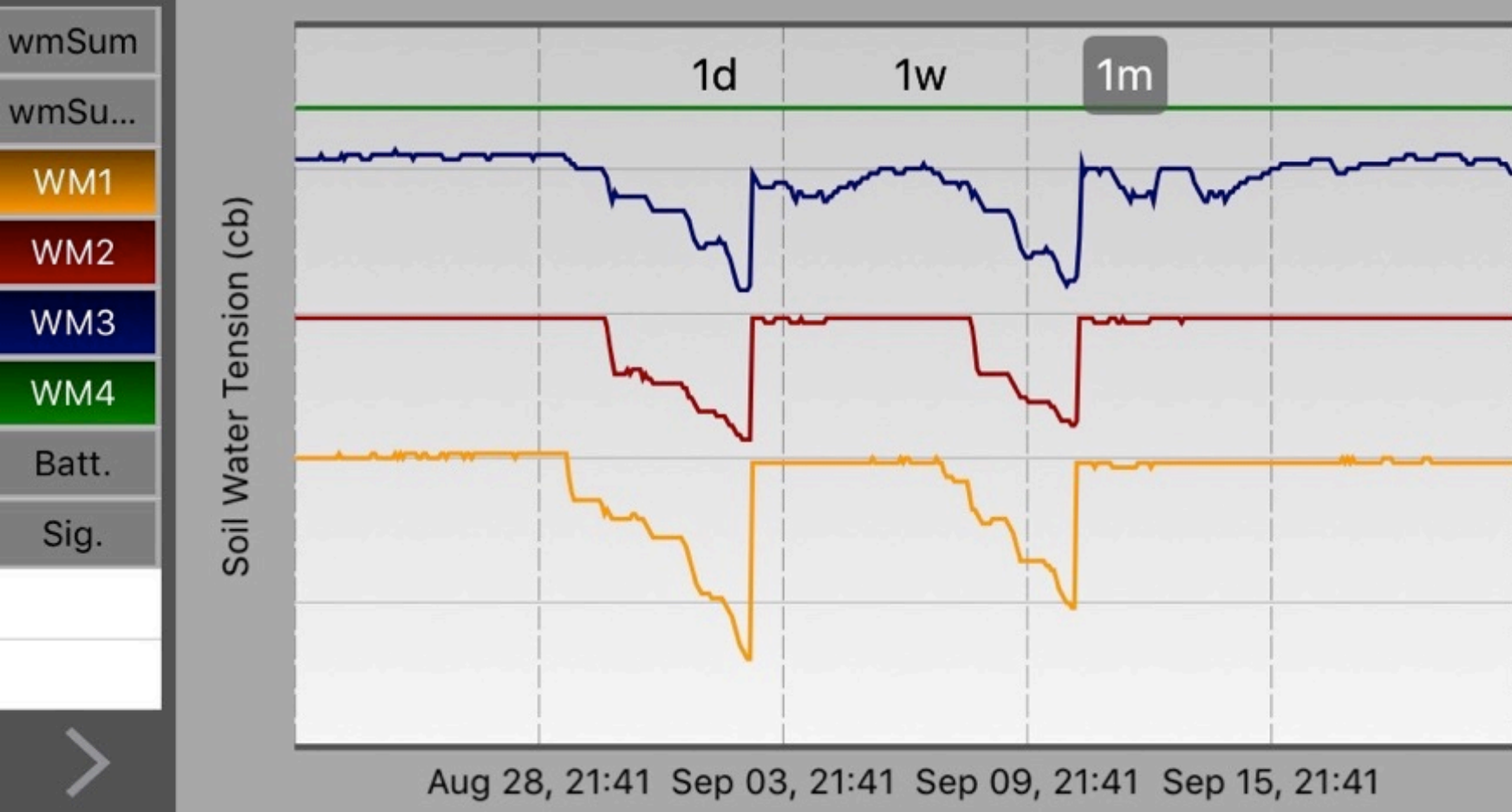
August 22, 21:43 CDT - September 21, 21:43 CDT

- wmSum
- wmSu...
- WM1**
- WM2
- WM3
- WM4
- Batt.
- Sig.

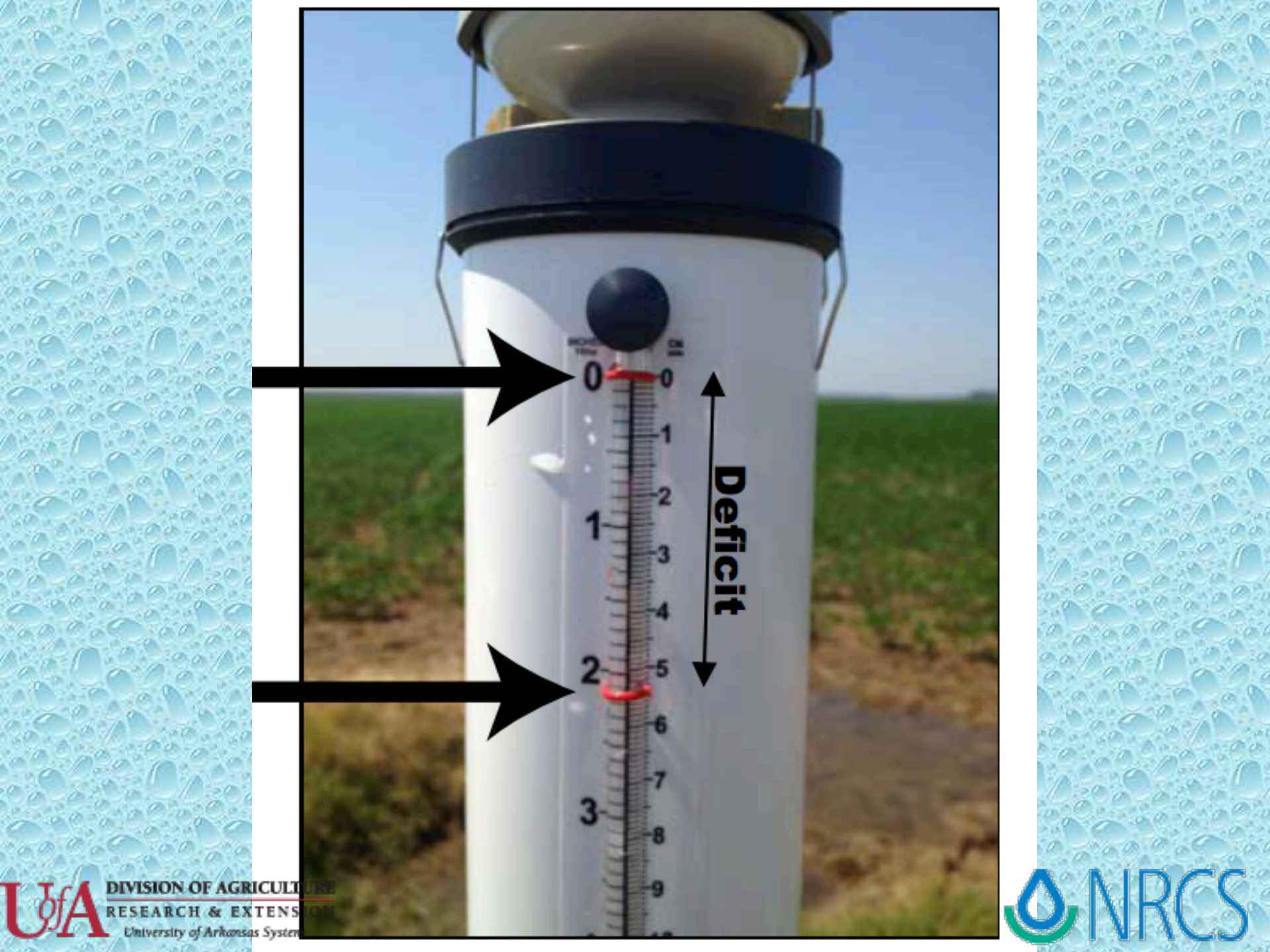


MISSISSIPPI/OSBORN/PEANUTS

August 22, 21:41 CDT - September 21, 21:41 CDT







Deficit







My Farms

Manage Account

PipePlanner Classic

Rwimberley! [Log Out](#)

PIPE PLANNER

Water Source	Field
Field: Field 1 (34.08 acs)	
Design: H34	
Field Layout - Furrows	
Irrigation Sections	
Pipe Layout	

Set 1 Set 2

[Open Set Summary](#)

Imboden Field 1 Pipe Layout

[Go](#)



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My Farms

Manage Account

PipePlanner Classic

PIPE PLANNER

Water Source

Field

Field: Field 1 (34.08 acs)



Design: H34



Field Layout - Furrows



Irrigation Sections



Pipe Layout



Set 1

Set 2

Open Set Summary

Imboden

Field 1

Pipe Lay

- Select Pipe
- Add Connectors
- Draw Pipe
- Add Elevation Points
- Measure Pipe

42



My Farms

Manage Account

PipePlanner Classic

PIPE PLANNER

Field 1: Set 2 (40 hrs)



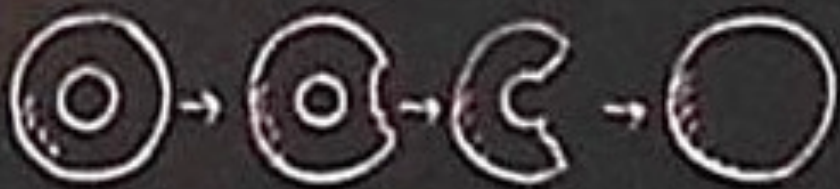
MATH



$$M(H^0) = \pi \left(\frac{1}{137} \right)^8 \sqrt{\frac{hc}{G}}$$

$$3987^{12} + 4365^{12} = 4472^{12}$$

$$\Omega(t.) > 1$$



Farm Name: Imboden
Field Name: Field 1
Set: Set 2 (40 hrs)
Set Area: 16 acre
Hole Spacing: Every Furrow

Distribution Uniformity: 90 %
Min Head Pressure: 0.74 ft
Max Head Pressure: 1.40 ft
Flow Per Outlet: 2.89
Flow In: 550 gpm

↓ XLS

↓ PDF

Email Address

✉ Email PDF

Update Design

View Map

Limit hole sizes used in generated designs to:

- 5/16
 3/8
 7/16
 1/2
 9/16
 5/8
 11/16
 3/4
 13/16
 7/8
 15/16
 1
 Enable Gates

Minimum Pressure : ft

Maximum Pressure : ft

Estimate of Irrigation Capacity for 550.00 gpm and 16 acre

Pipe Size	Pipe Function	Pipe Length	Hole Size (in)	Furrow Count	Build Up Height (ft)
12x10	Supply	0 - 436 ft			
10x10	Irrigation	436 - 729 ft	9/16	83	
10x10	Irrigation	729 - 852 ft	1/2	35	
10x10	Irrigation	852 - 943 ft	7/16	26	
10x10	Irrigation	943 - 1013 ft	3/8	20	
10x10	Irrigation	1013 - 1136 ft	5/16	35	
	Build Up	1136 ft			0.99



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PipePlanner Classic

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Flow In: 550 gpm

Limit hole sizes used in generated de

-
- Clear** 5/16 3/8 7/16 1/2 9/16 5/8 11/16 3/4

Minimum Pressure : ft

Maximum Pressure

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10x10	Irrigation	729 - 852 ft	1/2	35	
10x10	Irrigation	852 - 943 ft	7/16	26	
10x10	Irrigation	943 - 1013 ft	3/8	20	
10x10	Irrigation	1013 - 1136 ft	5/16	35	
	Build Up	1136 ft			0.99

Farm Name: Imboden
Field Name: Field 1
Set: Set 2 (40 hrs)
Set Area: 16 acre
Hole Spacing: Every Furrow

Distribution Uniformity: 67 %
Min Head Pressure: 1.43 ft
Max Head Pressure: 2.10 ft
Flow Per Outlet: 2.89
Flow In: 550 gpm

↓ XLS

↓ PDF

Email Address

✉ Email PDF

Update Design

View Map

Pipe sizes used in generated designs to:

Clear

- 5/16
- 3/8
- 7/16
- 1/2
- 9/16
- 5/8
- 11/16
- 3/4
- 13/16
- 7/8
- 15/16
- 1
- Enable Gates

Minimum Pressure : ft

Maximum Pressure : ft

Revise

Estimate of Irrigation Capacity for 550.00 gpm and 16 acre

Pipe Size	Pipe Function	Pipe Length	Hole Size (in)	Furrow Count	Build Up Height (ft)
12x10	Supply	0 - 436 ft			
10x10	Irrigation	436 - 592 ft	1/2	44	
10x10	Irrigation	592 - 785 ft	7/16	55	
10x10	Irrigation	785 - 1136 ft	3/8	100	
	Build Up	1136 ft			1.68

The build up information is available in the Complete Design Details section.

Use a round tool 1/8 inch in diameter to relieve air that forms at the top of the polytubing. Do not use a tool that could slice the polytubing. If faster furrow flow is detected in wheel-track furrows, punch a 1/8 inch smaller hole in these furrows to achieve more even water distribution. All other tips can be found at www.deltaol.com/irrigation-resources/

Farm Name: Imboden
Field Name: Field 1
Set: Set 2 (40 hrs)
Set Area: 16 acre
Hole Spacing: Every Furrow

Distribution Uniformity: 67 %
Min Head Pressure: 1.43 ft
Max Head Pressure: 2.10 ft
Flow Per Outlet: 2.89
Flow In: 550 gpm

Limit hole sizes used in generated de

Clear



5/16



3/8



7/16



1/2



9/16



5/8



11/16



3/4

Farm Name: Imboden
Field Name: Field 1
Set: Set 2 (40 hrs)
Set Area: 16 acre
Hole Spacing: Every Furrow

Distribution Uniformity: 57 %
Min Head Pressure: 1.07 ft
Max Head Pressure: 1.78 ft
Flow Per Outlet: 2.89
Flow In: 550 gpm

↓ XLS

↓ PDF

Email Address

✉ Email PDF

Update Design

View Map

Limit hole sizes used in generated designs to:

Clear

5/16

3/8

7/16

1/2

9/16

5/8

11/16

1 1/4

1 3/8

7/8

1 5/8

2

2 1/2

3

Enable Gates

Minimum Pressure :

ft

Maximum Pressure :

ft

Revise

Estimate of Irrigation Capacity for 550.00 gpm and 16 acre

Pipe Size	Pipe Function	Pipe Length	Hole Size (in)	Furrow Count	Build Up Height (ft)
12x10	Supply	0 - 436 ft			
10x10	Irrigation	436 - 592 ft	1/2	44	
10x10	Irrigation	592 - 1136 ft	7/16	155	
	Build Up	1136 ft			1.32

* The build up information is available in the Complete Design Details section.



My Farms

Manage Account

PipePlanner Classic

Farm Name: Imboden
Field Name: Field 1
Set: Set 2 (40 hrs)
Set Area: 16 acre
Hole Spacing: Every Furrow

Distribution Uniformity: 57 %
Min Head Pressure: 1.07 ft
Max Head Pressure: 1.78 ft
Flow Per Outlet: 2.89
Flow In: 550 gpm

Limit hole sizes used in generated d

Clear

- 5/16 3/8 7/16 1/2 9/16 5/8 11/16 3/4



My Farms

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Set: Set 2 (40 hrs)
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Limit hole sizes used in generated d

Clear

5/16

3/8

7/16

1/2

9/16

5/8

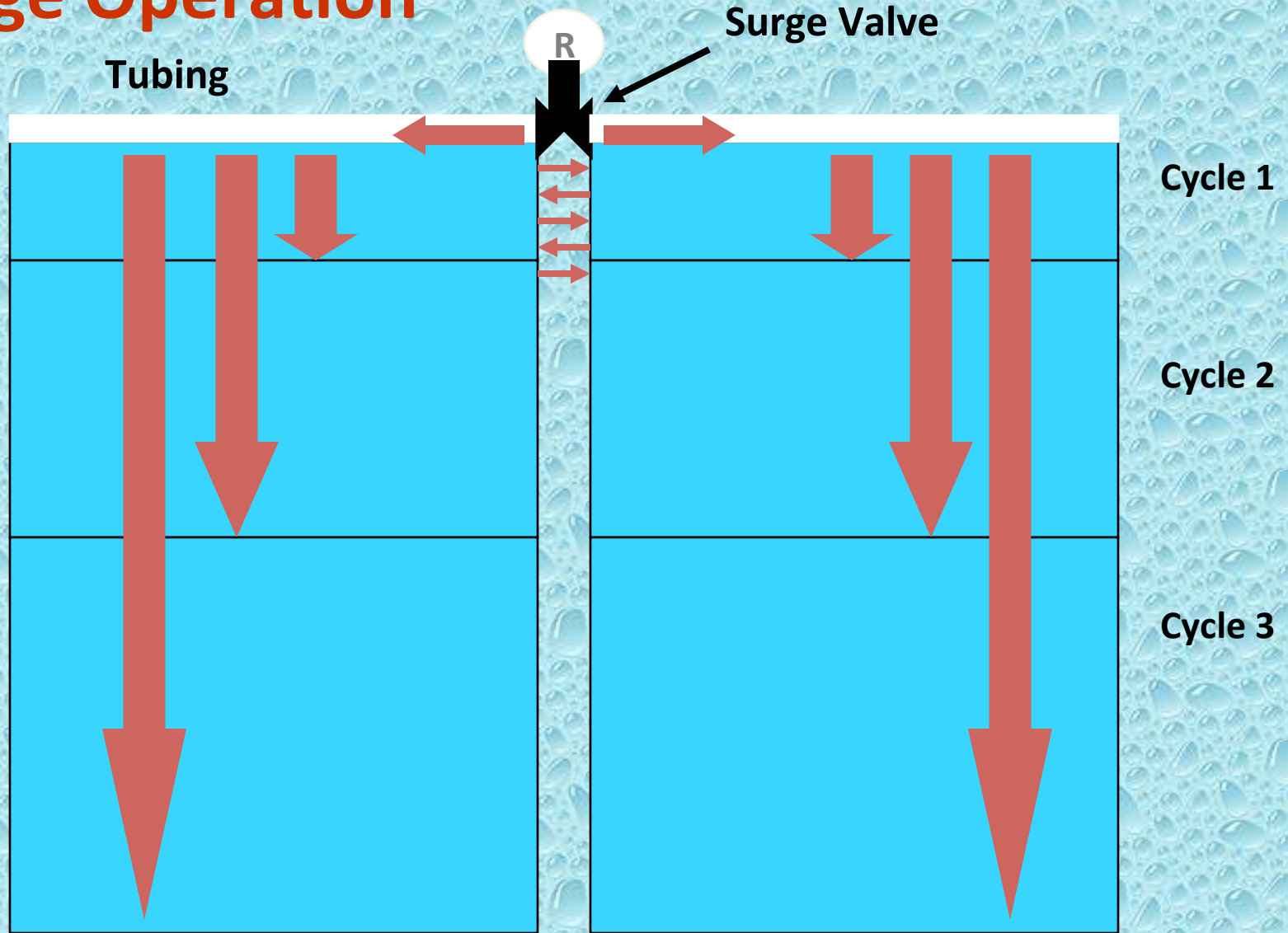
11/16

3/4

What if water is running out the bottom furrows at 20 hours???

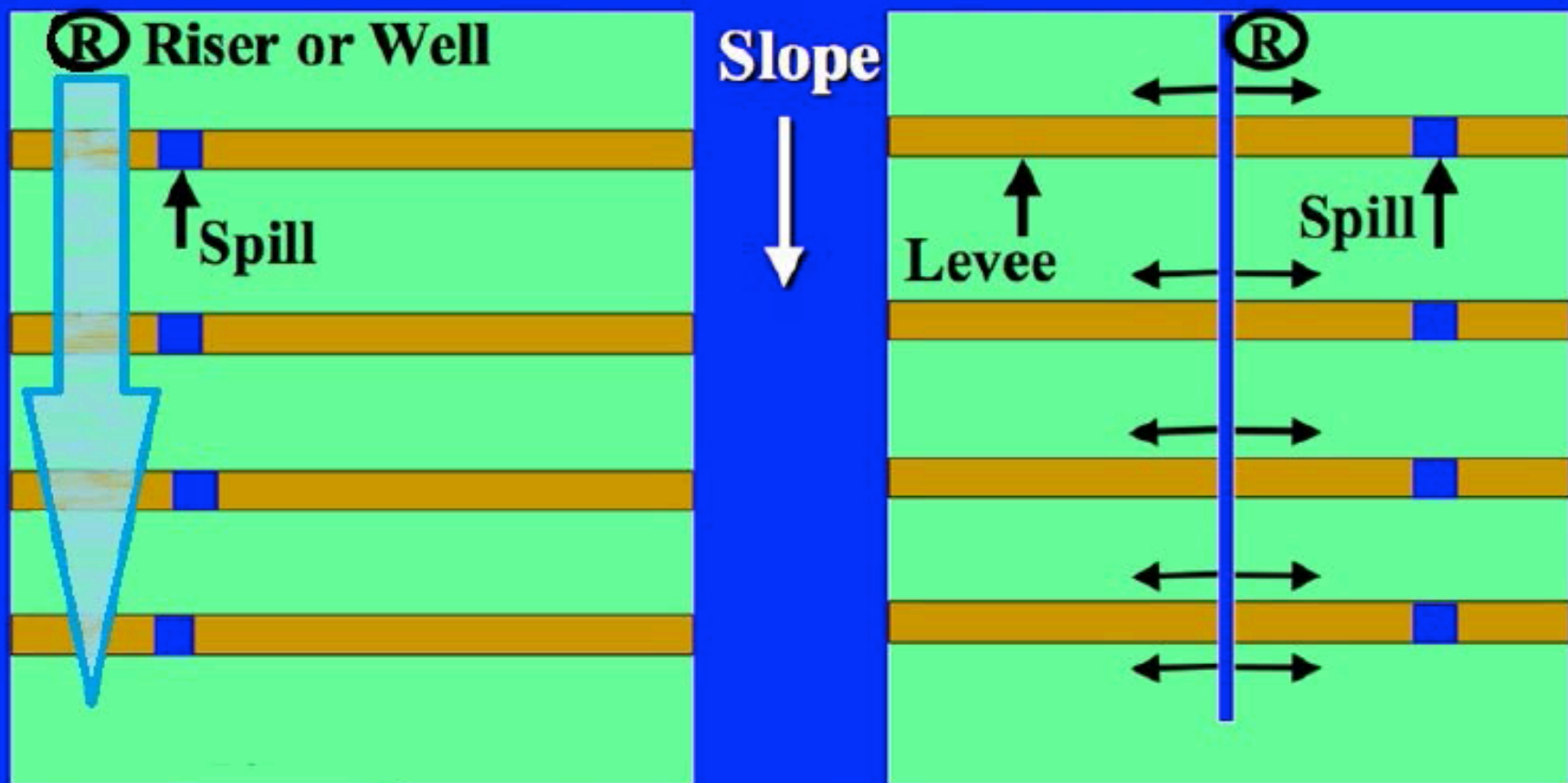


Surge Operation



Switches to soak cycle

Multiple Inlet Rice Irrigation









My Farms

Manage Account

Consultant User List

PipePlanner Classic

Update
Some a
prevent

mkhar

PIPE PLANNER

Water Source

Field

Field: MIRI (74.85 acs)



Design: MIRI



Field Layout - Levees



-Levee Attributes

Levee Height: Inches

Avg Fall per Levee: Inches

Levee Group Count: Groups

Total Levee Count: Levees

Irrigate Every Paddy

- Selected Group

No Levee Currently Selected

Save & Continue

Irrigation Sections



Pipe Layout



MIRI Levee Field Layout

Go





My Farms

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PipePlanner Classic

PIPE PLANNER

Water Source

Field

Field: MIRI (74.85 acs)



Design: MIRI



Field Layout - Levees



-Levee Attributes

Levee Height: Inches

Avg Fall per Levee: Inches

Levee Group Count: Groups

Total Levee Count: Levees

Irrigate Every Paddy

- Selected Group

No Levee Currently Selected

Save & Continue

Irrigation Sections



a MIRI Levee Field Layout

Draw Levees

Select Levees





So what?

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