

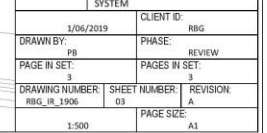
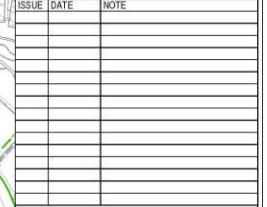
The background of the slide is a light gray gradient, decorated with numerous realistic water droplets of various sizes. Some droplets are large and prominent, while others are small and subtle. They are scattered across the slide, with a higher concentration in the top-left and bottom-right corners, creating a fresh and clean aesthetic.

# SUSTAINABLE AND EFFECTIVE IRRIGATION STRATEGIES

PRESENTED BY

PETER BRUECK

WATER WISE CONSULTING





# SUSTAINABLE AND EFFECTIVE IRRIGATION?

## THE GOAL

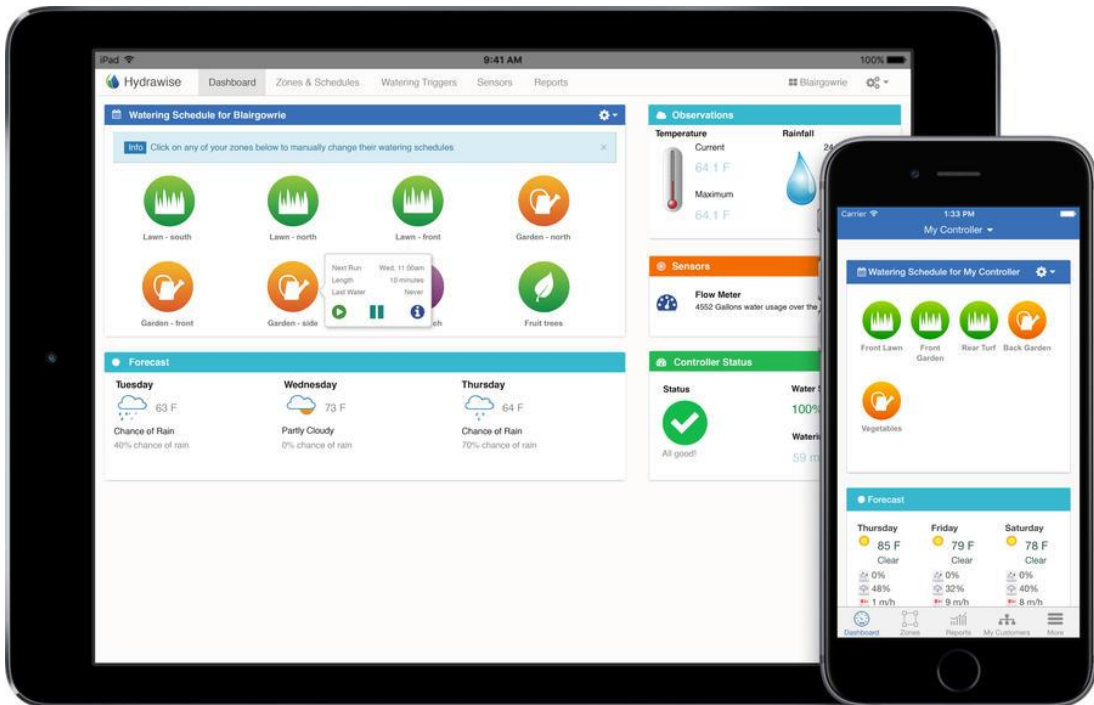
MAINTAIN A LANDSCAPE TO A  
STANDARD THAT IS ACCEPTABLE,  
WHILE USING THE LEAST AMOUNT OF  
RESOURCES .



The image features a light gray background with a subtle gradient. In the top-left and bottom-right corners, there are several realistic water droplets of varying sizes, some overlapping. In the center of the image, the word "CONTROL" is written in a bold, black, sans-serif font.

# CONTROL

# “SMART” WI-FI ENABLED IRRIGATION CONTROLLERS





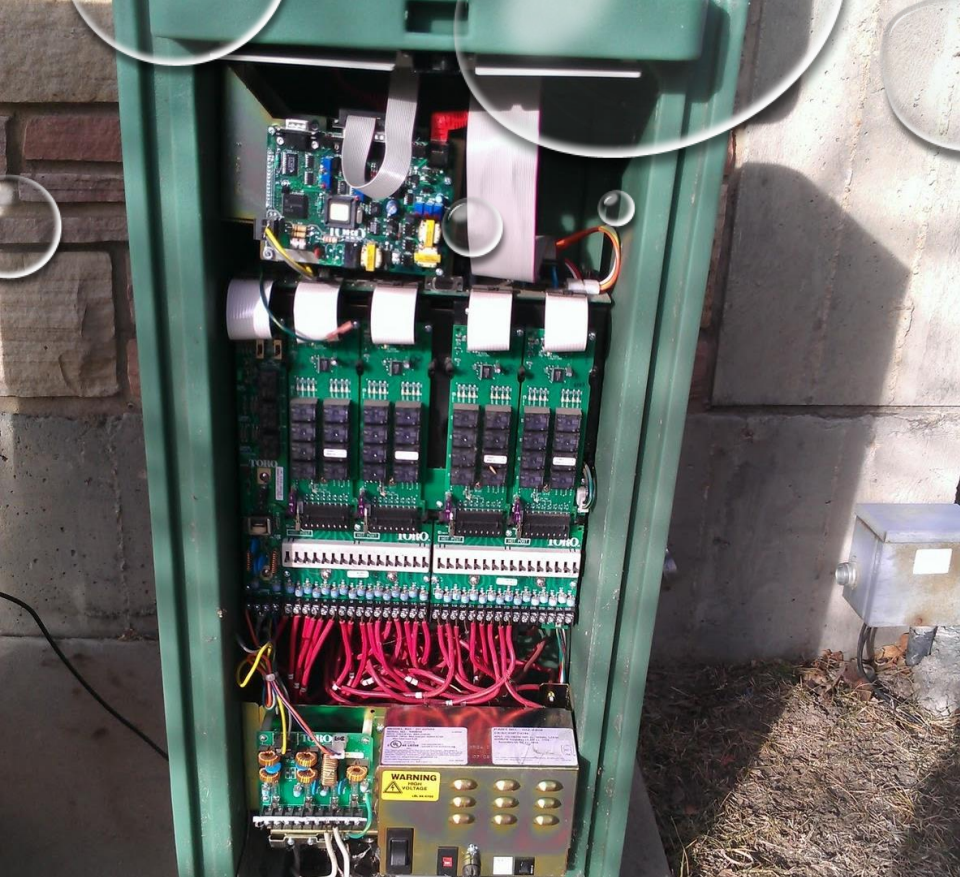
## PC OR CLOUD BASED SYSTEMS WITH MAPPING



## BATTERY OPERATED CONTROLLERS







TRADITIONAL WIRED CONTROL



DECODER OR TWO WIRE CONTROL





RAIN SENSOR



STAND ALONE  
WEATHER STATION

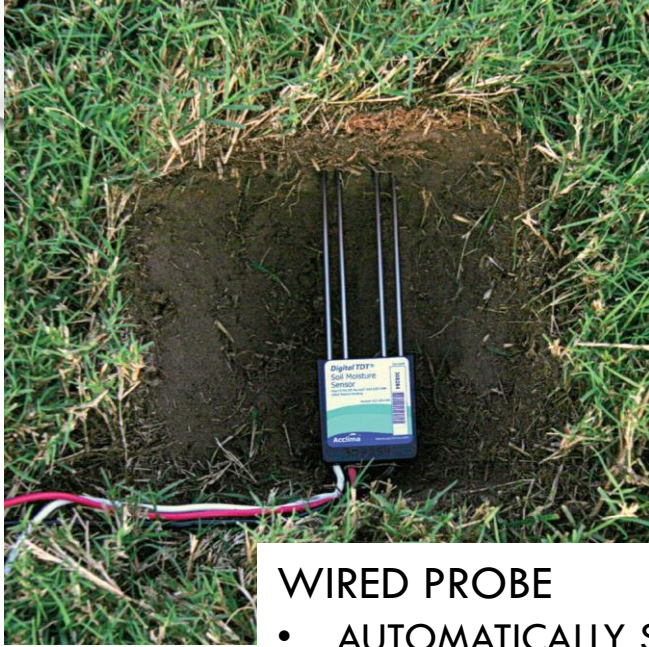


INTEGRATED  
WEATHER STATION



MINI WEATHER  
STATION

# WEATHER SENSORS



#### WIRED PROBE

- AUTOMATICALLY SHUTS DOWN IRRIGATION
- MONITORS MOISTURE LEVEL



#### HAND-HELD PROBE

- INDICATES MOISTURE AND
- PH



#### HAND-HELD PROBE

- DATA LOGGING & GPS
- RECORDS
  - MOISTURE
  - SALT
  - TEMPERATURE

# MOISTURE SENSORS



#### WIRELESS PROBES

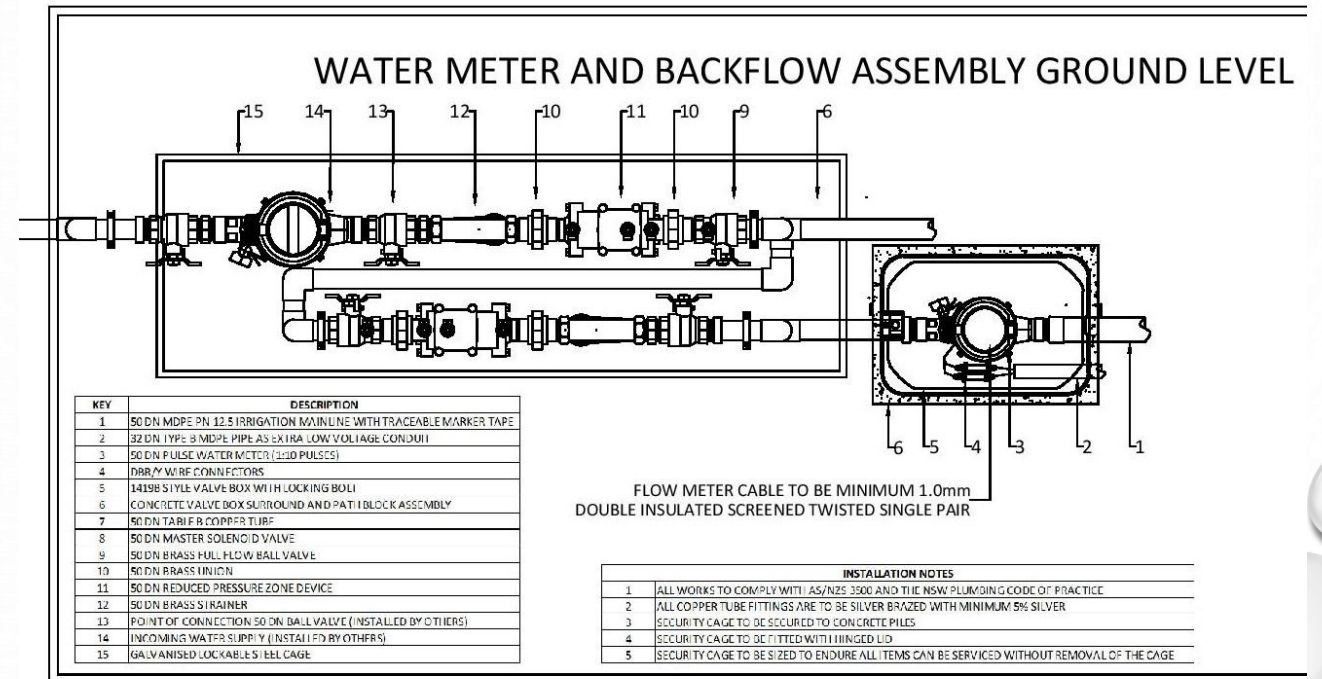
- PC LINK WITH DATA LOGGING
- AUTOMATICALLY INTERACTS WITH IRRIGATION CONTROL SYSTEM
- RECORDS AND REACTS TO
  - MOISTURE
  - SALT
  - TEMPERATURE





## FLOW METER / SENSORS

- AUTOMATICALLY SHUTS DOWN IRRIGATION CONTROL SYSTEM
- WIFI VERSION AVAILABLE

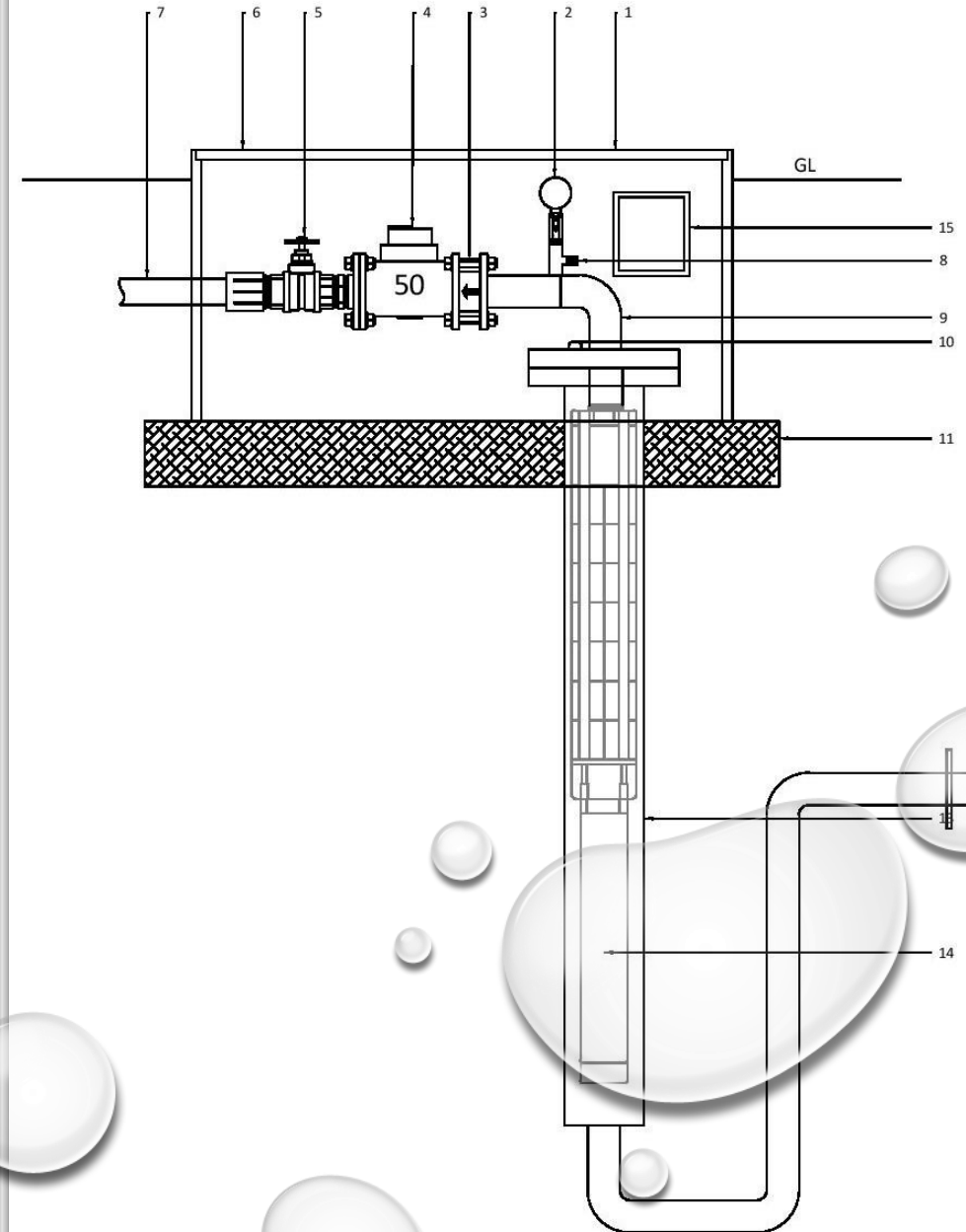




# PUMPS



## BOOSTER PUMP INSTALLATION







# SPRINKLERS LAYOUT EVALUATION



# SPRINKLERS LAYOUT EVALUATION

## COEFFICIENT OF UNIFORMITY CU

- PRIMARILY USED FOR AGRICULTURAL SYSTEM

## DISTRIBUTION UNIFORMITY (DU)

- COMPARES THE AVERAGE OF THE LOWEST 25% OF MEASUREMENTS
- TO THE OVERALL AVERAGE
- FOR SPRINKLERS WE EXPECT GREATER THAN 75%
- AND DRIP GREATER THAN 85%

## SCHEDULING COEFFICIENT (SC)

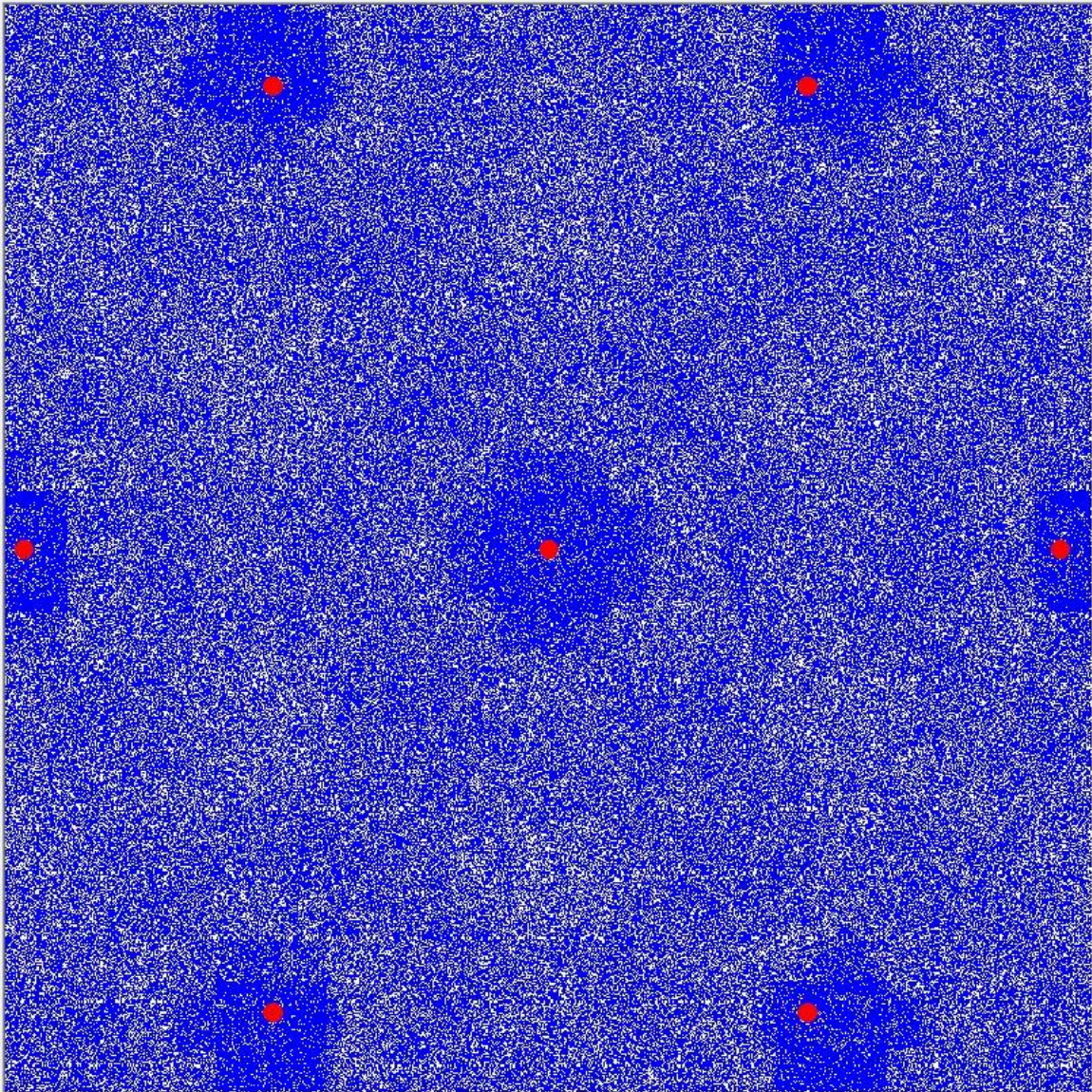
- MOST COMMONLY USED FOR LANDSCAPE IRRIGATION SYSTEMS
- IS THE RATION BETWEEN THE AVERAGE AND THE LOWEST PRECIPITATION RATE
- LESS THAN 1.2 IS ACCEPTABLE



Comments: Sprinkler provided by: TORO

Statistic	Value
Layout Type	Equilateral
Spacing	12x10 m
Cell Size	5 %
Precip Rate	20.1 mm/hr
Low 25% Precip	18.8 mm/hr
Wettest Cell	28.3 mm/hr
Driest Cell	18.5 mm/hr
SC	1.1
CU	95.1
DU	93.6

Model		
Nozzle	4.5	
Pressure	482.7 kPa	
Date	26-Sep-12	
Time	8:38:00 AM	
Mold #	0000000000	
Control #	0000000000	
Temperature	75	
Humidity	50	
Test Type	0000000000	
Serial #		
	Actual	Spec
Flow	21.88 l/min	21.88 l/min
Radius	13 m	13 m
SOR	0:04	0:01







# SPRINKLERS

## STREAM ROTOR

- 4-9 METER RADIUS
- LOW OPERATING PRESSURE
- HIGH EFFICIENCY
- LOW PRECIPITATION RATES





## MEDIUM RANGE ROTOR

- 6-15 METER RADIUS
- MEDIUM OPERATING PRESSURE
- HIGH EFFICIENCY
- VARIOUS NOZZLE OPTIONS
  - HIGH FLOW
  - LOW ANGLE





## MEDIUM RANGE IMPACT ROTOR

- 8-12 METER RADIUS
- MEDIUM OPERATING PRESSURE
- MEDIUM EFFICIENCY
- GOOD IN DIRTY OR SLIMY WATER





# VALVE IN HEAD SPRINKLER

- 14 -30 METER RADIUS
- BUILT IN CONTROL VALVE
- INDIVIDUAL CONTROL
- HIGH EFFICIENCY
- SOME BRANDS OFFER
- LOW ANGLE NOZZLES
- FULL OR PART CIRCLE IN ONE
- TURF COVERS

















# INSTALLATION METHODS

## VIBRATORY PLOUGHING

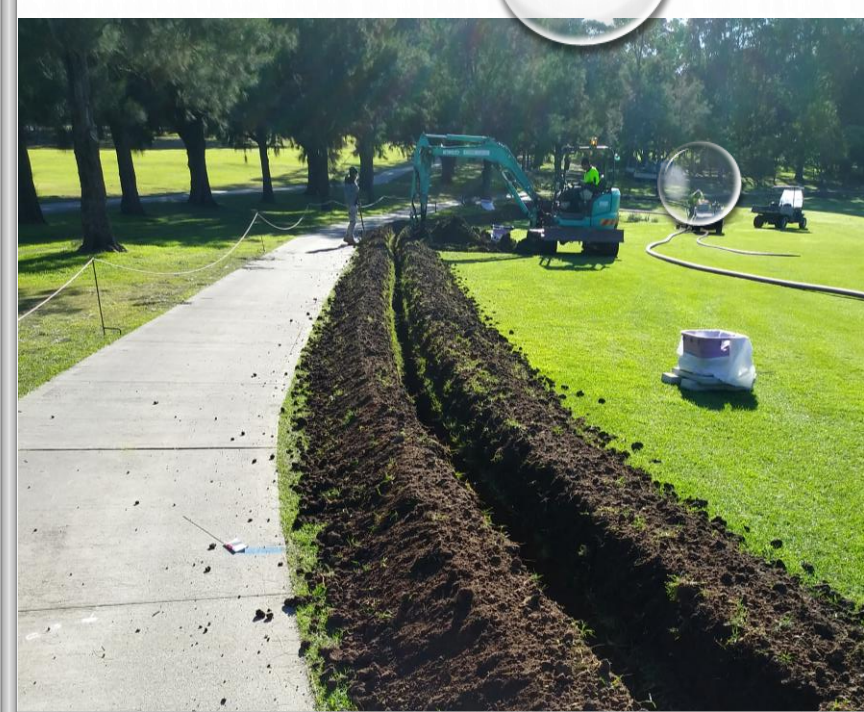
- ONLY ABLE TO BE USED ON MPDE
- LESS DAMAGE TO THE SURFACE
- REDUCED NEED FOR TRENCH RECTIFICATION
- FASTER INSTALLATION TIME
- REDUCED RISK OF TRIPS HAZARDS



# INSTALLATION METHODS

## OPEN TRENCHING

- BETTER FOR LARGER DIAMETER PIPES
- ABLE TO INSTALL MORE PIPES ON THE SAME TRENCH
- REQUIRES MORE RECTIFICATION WORKS

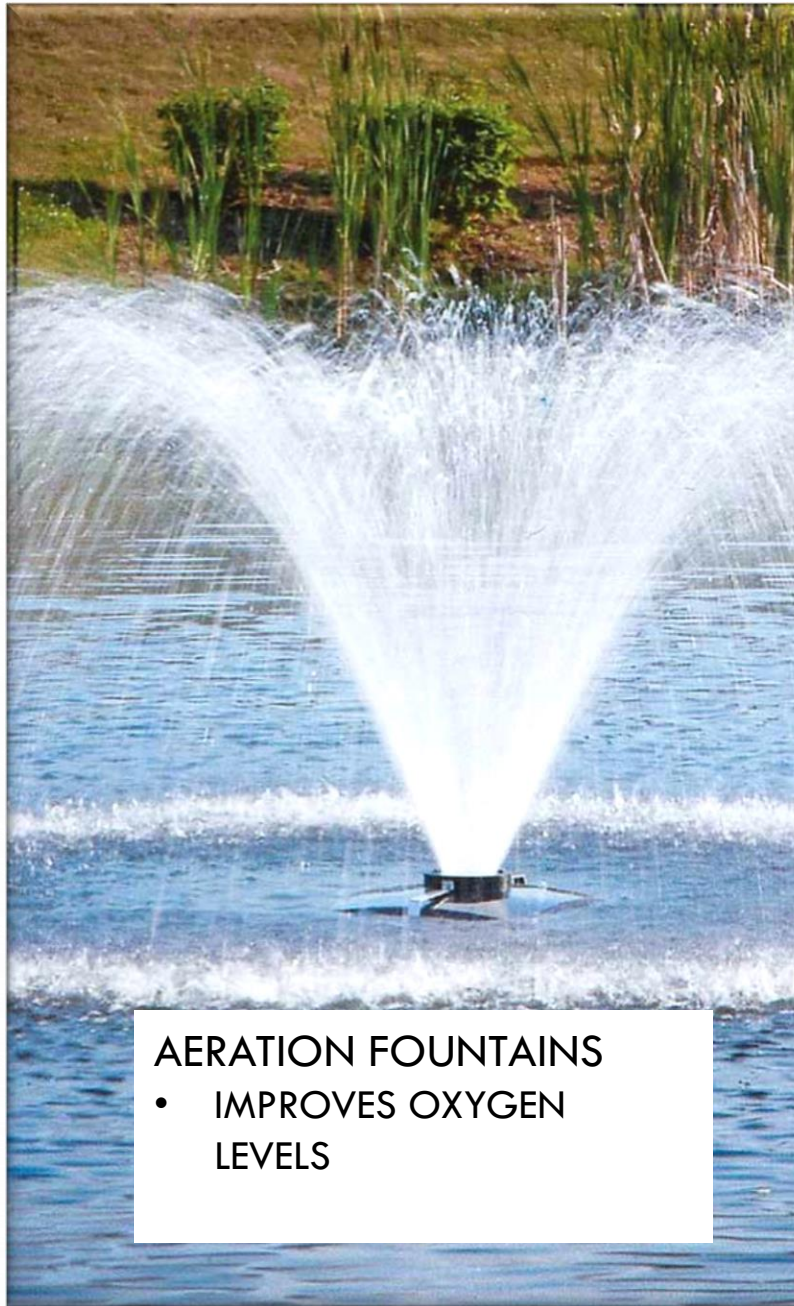






### ASPIRATOR

- INJECTS AIR
- HELPS TO CIRCULATE WATER



### AERATION FOUNTAINS

- IMPROVES OXYGEN LEVELS

### DOSING SYSTEM

- ALLOWS CHEMICALS OR FERTILIZERS TO BE SUPPLIED THROUGH THE IRRIGATION SYSTEM





*Water Wise*  
consulting

Design - Management - Support

QUESTION'S