City of West Palm Beach Drought Impacts: Challenges and Solutions

City of West Palm Beach

Water Supply

The City of West Palm Beach is a
Surface Water Utility System with Access to 67 mgd

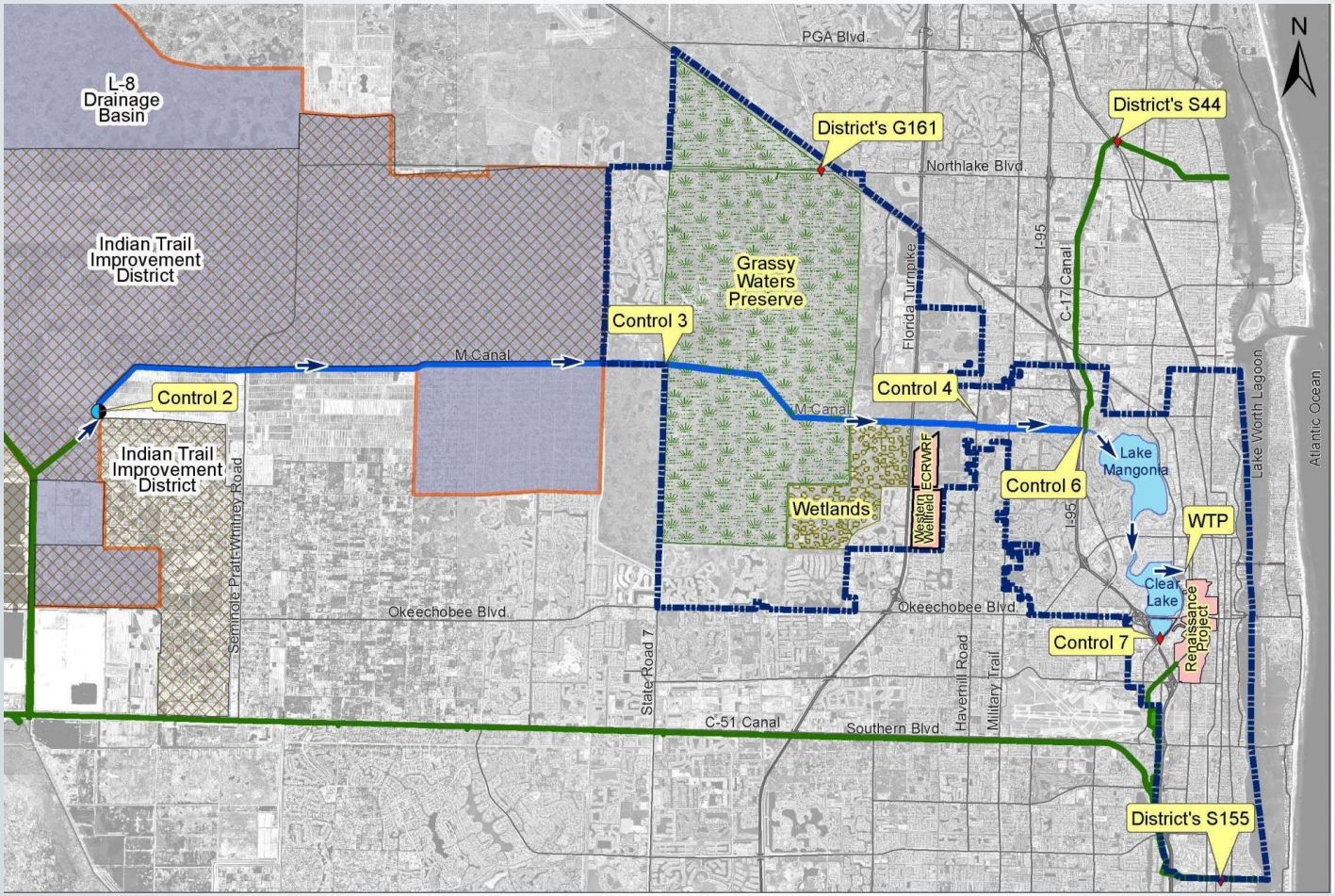
WTP Daily Production -- 28-30 mgd

Water Sources:

- (1) Lake Okeechobee
- (2) Grassy Waters Preserve (11,000 Acres)
- (3) C-17 Canal
- (4) Western Wellfield
- (5) C-51 Canal/Renaissance Project
- (6) Rainfall

City of West Palm Beach

Water Supply System



City of West Palm Beach

Water Levels

Lake Okeechobee Elevation (NGVD)	Clear Lake Elevation (NGVD)	Grassy Waters Preserve (NGVD)	Yearly Rainfall (inches)
• 2011 = 9.68 ft • 2012 = 15.69 ft • 2013 = 13.64 ft	• 2011 = 10.24 ft • 2012 = 12.49 ft • 2013 = 12.43 ft	• 2011 = 16.03 ft • 2012 = 18.84 ft • 2013 = 18.40 ft	• 2011 = 38.88 • 2013 = 61.30 • To date = 6.76

- 2011-2012 Year Ending
- January 2013 to Date

City of West Palm Beach

Grassy Waters

Before the Drought

City of West Palm Beach

Grassy Waters

Before the Drought

City of West Palm Beach

Grassy Waters

Before the Drought

City of West Palm Beach

Grassy Waters

Before the Drought

City of West Palm Beach

Grassy Waters

Before the Drought

City of West Palm Beach

Clear Lake

Westside of Clear Lake

City of West Palm Beach
M-Canal West From Grassy Waters

After the Drought

City of West Palm Beach

Grassy Waters

After the Drought

City of West Palm Beach

Grassy Waters

After the Drought

City of West Palm Beach
Long Term Supplemental Sources

L-8 Reservoir

Western Wellfield

Cumberland Well

Clear Lake Divide Structure and Pump Station

Capture C-51 Tidal Discharge

Capture C-17 Tidal Discharge

Aquifer Storage and Recovery (ASR) Well

Surficial Aquifer Recharge Wells

City of West Palm Beach
Clear Lake Pump Station

City of West Palm Beach
Clear Lake Pump Station

Extend Intake in to Clear Lake/Divide Structure

Access up to additional 10 Billion gallons of water

Project is complete

Cost: $5.3 Million

City of West Palm Beach
Capture C-17 Tidal Discharge

Fills up water supply system heading into dry season

Captures dry season storm events

Reduces SFWMD tidal discharges

Able to capture 72 mgd seasonally

City of West Palm Beach
Capture C-51 Tidal Discharge

Fills up water supply system heading into
dry season

Captures dry season storm events

Reduces SFWMD discharges to tide

Able to capture 13.5 mgd seasonally

Long Term Water Supply Plan:

ASR Well

Aquifer Storage and Recovery (ASR) Well

Provides water when water is plentiful to b
used later when water is scarce.

Potentially up to 3 billion gallons of under-
ground storage with 60-75% possible recovery

Able to capture and supply up to 8 mgd seasonally

City of West Palm Beach
Wetlands Hydration Area

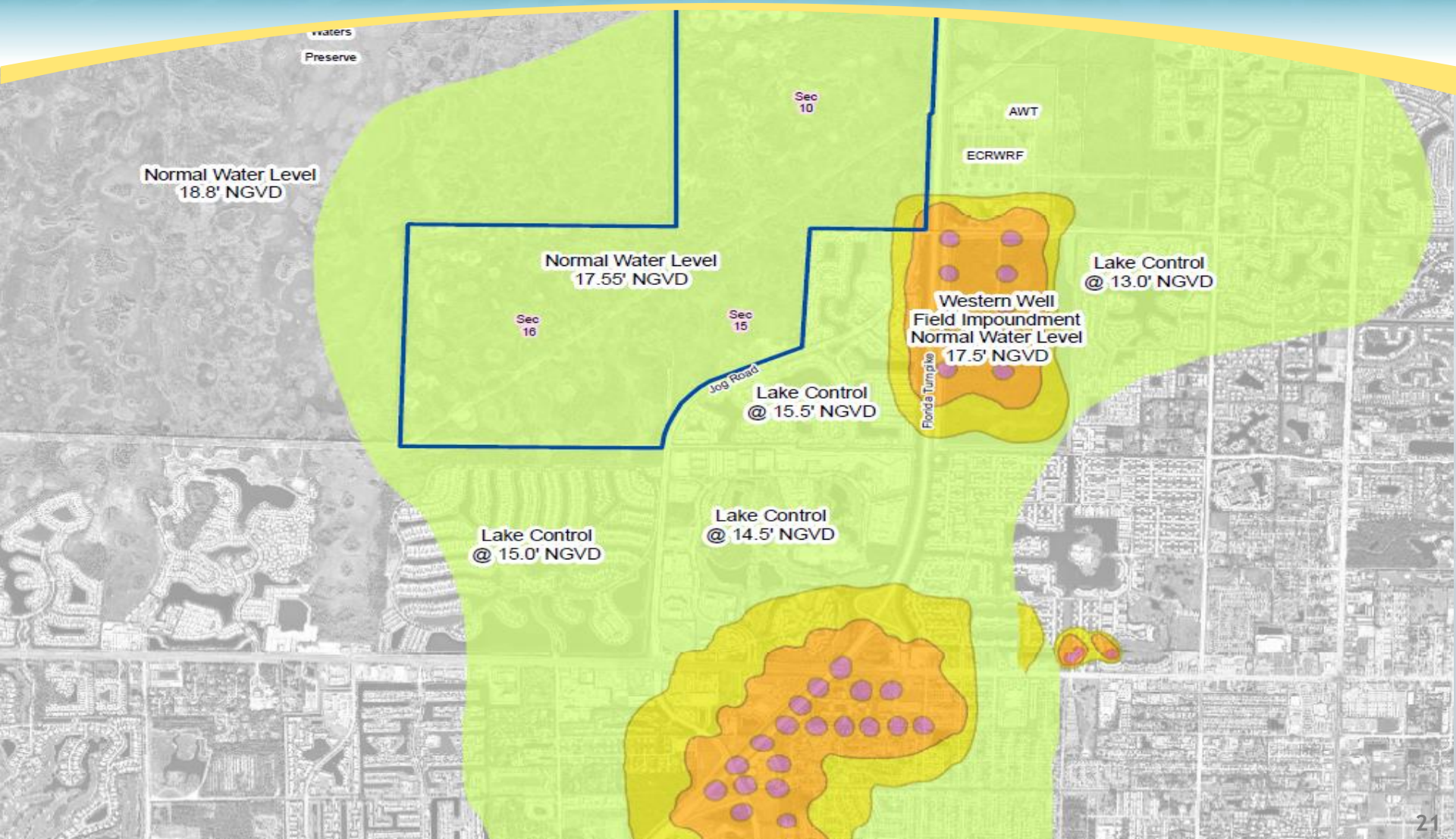
Purpose:

- Hydrate ~ 1,400 acres of City-owned wetlands via gravity flow from Grassy Waters Preserve

Benefits:

- Preservation of wetland habitat
- Additional water storage
- Additional capture of runoff otherwise lost to tide
- Reduced seepage from Grassy Waters Preserve
- Enhanced recharge of surficial aquifer in proximity to Western Wellfield and other permitted users such as Palm Beach County Wellfield 8 and RiverWalk Subdivision
- Environmental enhancement of surrounding area

City of West Palm Beach
Wetlands Hydration Area



Long Term Water Supply Plan: Surficial Aquifer Recharge Wells

10 Wells located along M-Canal

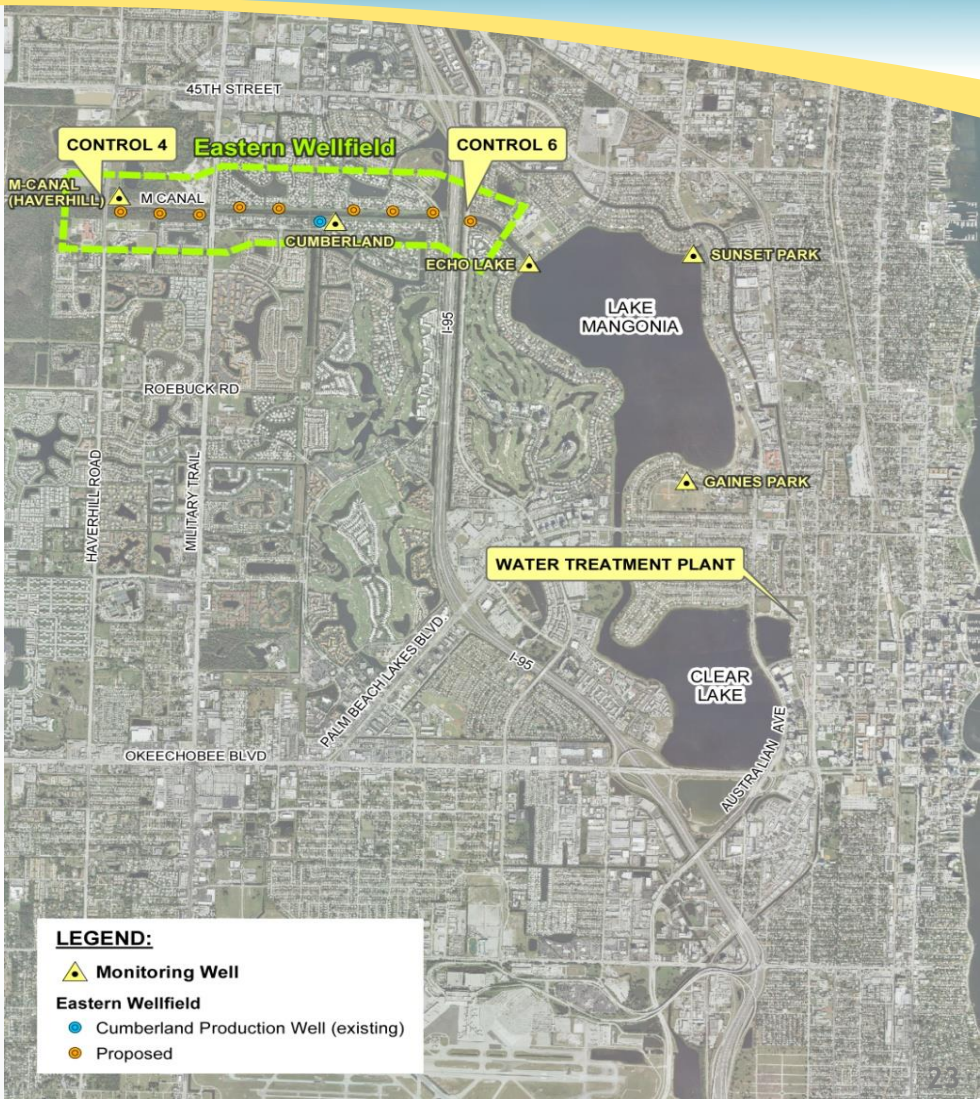
Produces up to 18 mgd immediate drought relief

Returns seepage to surface water system

Long Term Water Supply Plan: Surficial Aquifer Recharge Wells

- Provide "new" local and sustainable water to assist the City in meeting its **Raw Water Demand** during drought conditions

- Each well will have a rated pumping capacity of 1.44 MGD and will discharge directly into the M-Canal for Lake System recharge



City of West Palm Beach Drought Impacts: Conclusion

•Add a new Eastern Wellfield (EWF) along M-Canal by Grassy Waters Preserve (GWP) as a secondary source supplying up to 14.4MGD for a max of 60 days annually

•Added Clear Lake/East Clear Lake Divide Structure and Pump Station that gives up to six (6) months additional water that previously was not available to the system

- Utilize C-51 Canal and C-17 Canal withdrawals when available to supplement water from Grassy Waters and M-Canal

- System designed for over 1 in 100 Drought