



October 9, 2019

Frostproof Site

*Summary of Phase 1 Results – Presentation to the Well Drillers
Advisory Committee*

Hydrogeological Investigation of
the Lower Floridan Aquifer (P280)

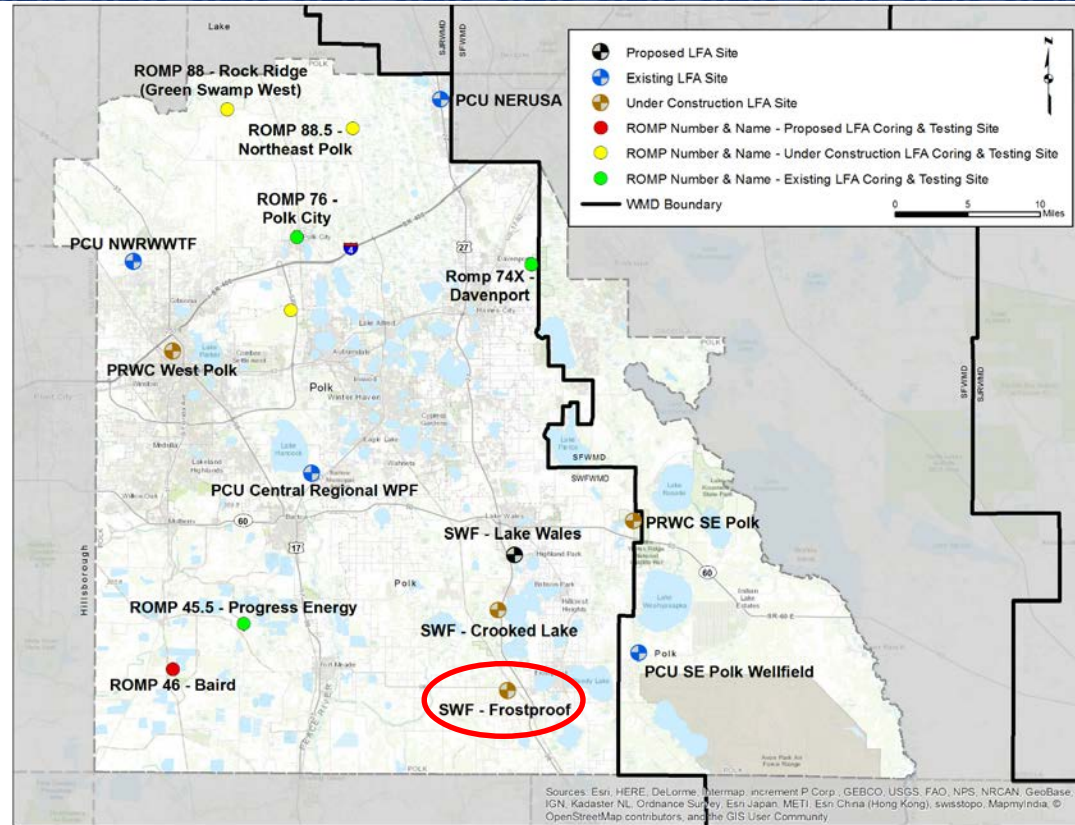


AGENDA

- Introduction and Background
- Phase 1 Purpose and Objectives
- Phase 1 Drilling and Testing Program
- Phase 1 Results
 - Lithology
 - Groundwater Elevations
 - Water Quality
 - Hydraulic Parameters
 - Monitoring Well Installation
- Next Steps

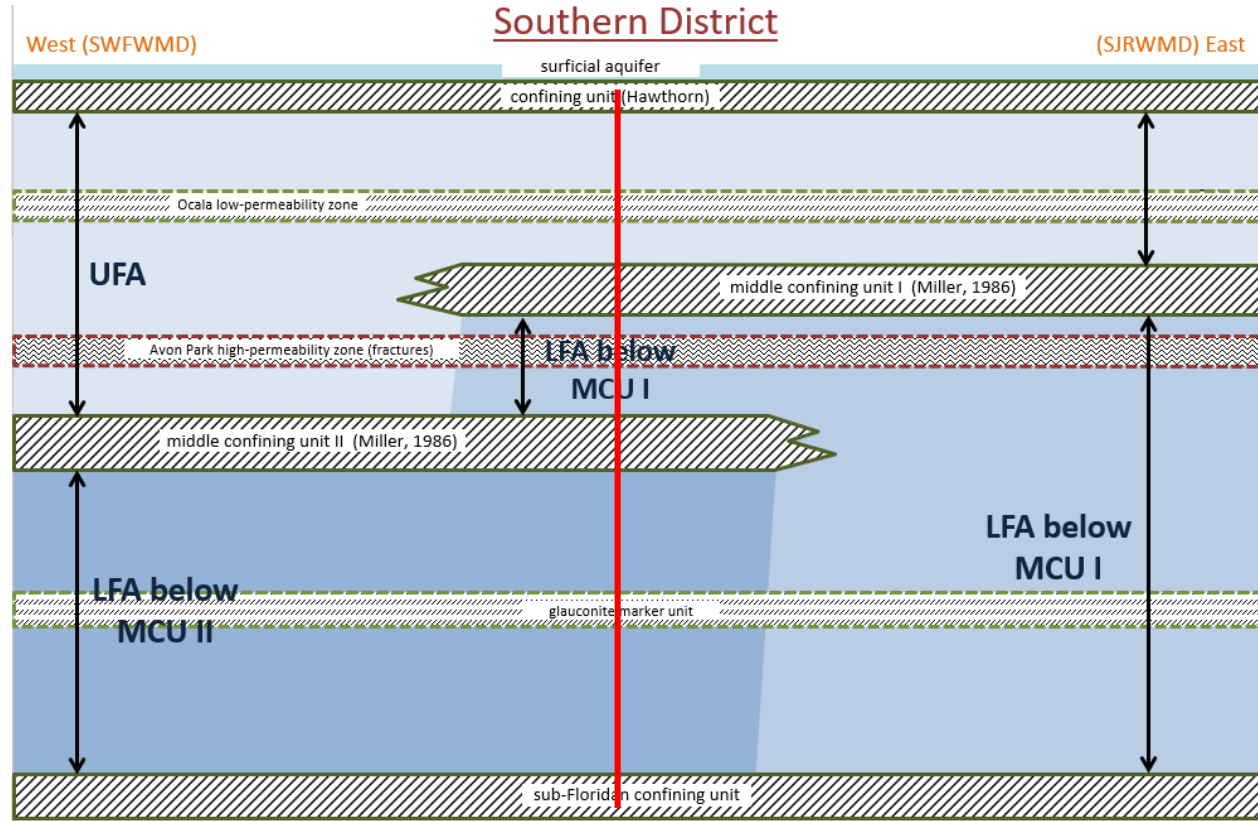
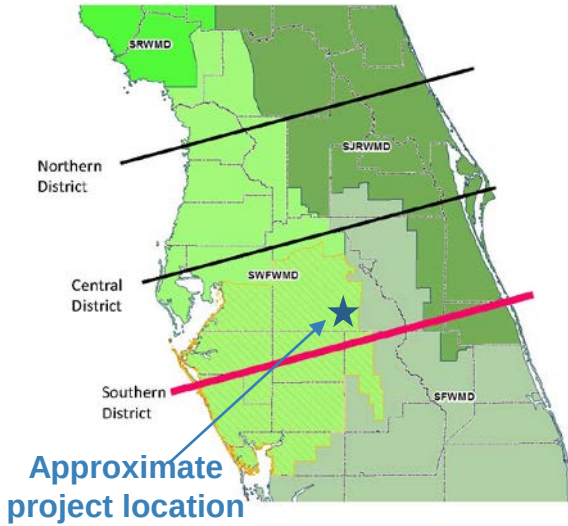
INTRODUCTION

- Frostproof Site
 - One of three P280 LFA well drilling sites
 - Southern most site
 - Near Frostproof, FL





BACKGROUND HYDROGEOLOGY

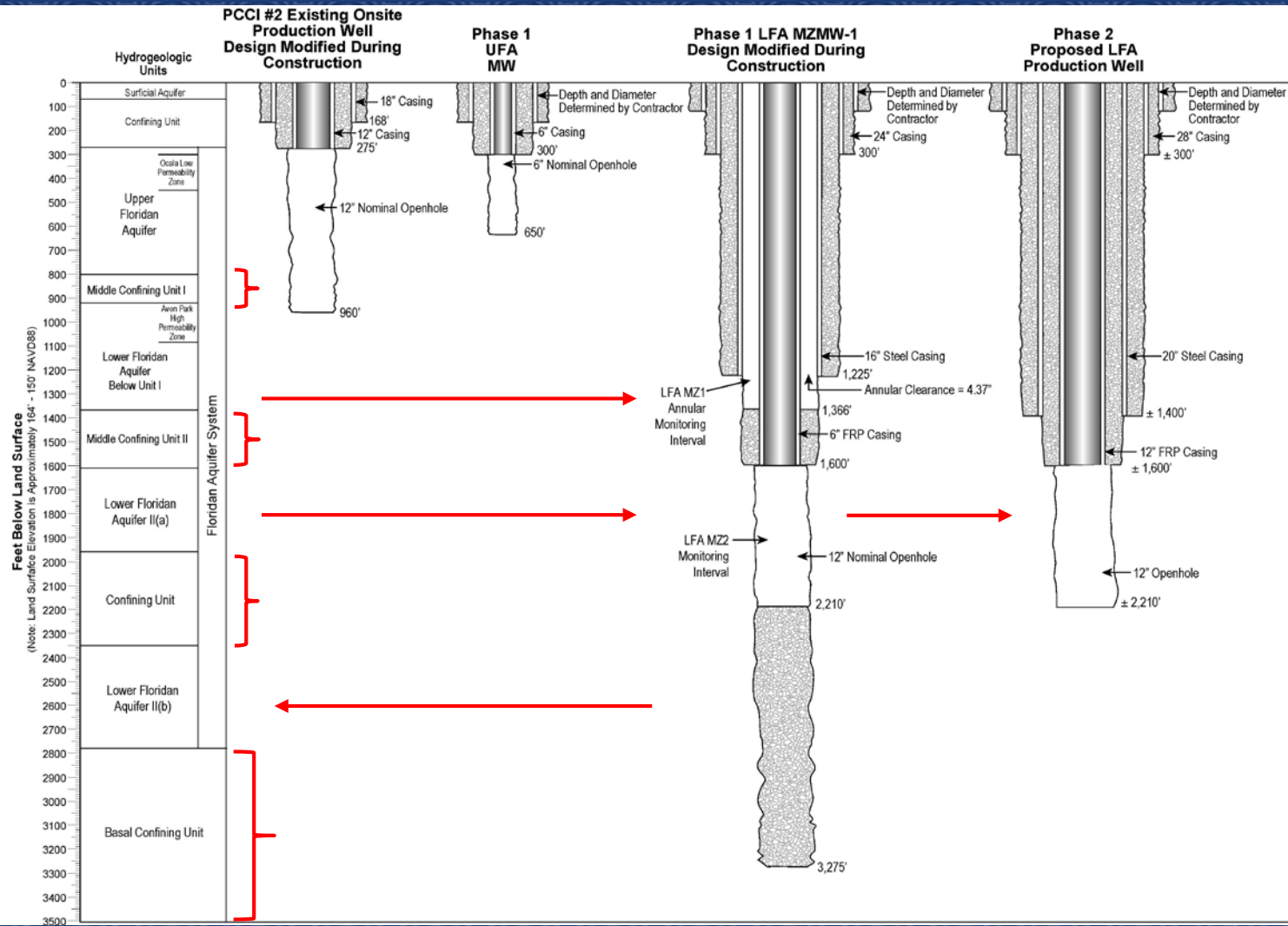


Phase 1— Purpose & Objectives

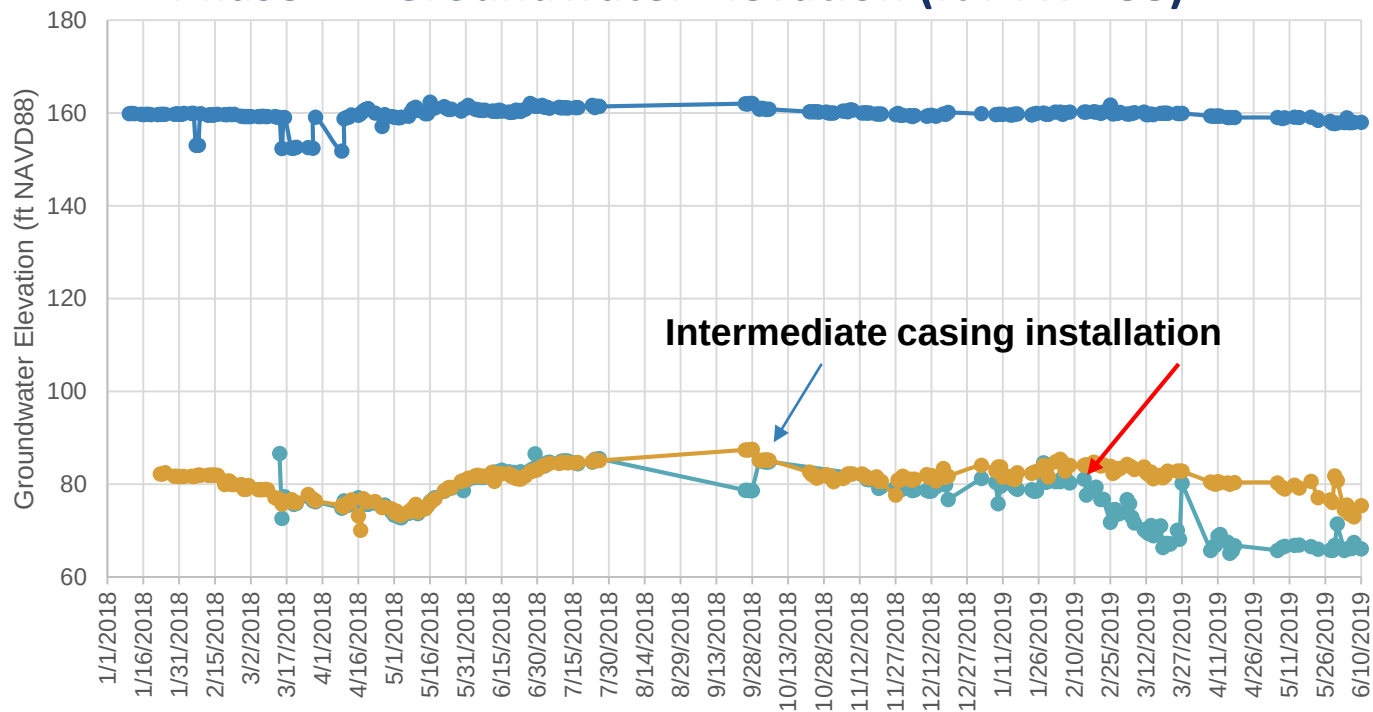
- Raw Water Production
 - Determine if the LFA can support future brackish water supply
- Confinement
 - Determine if there is sufficient confinement between UFA/LFA
- *Concentrate Disposal*
 - *Determine if the LFA could support future injection wells for membrane concentrate disposal*

Phase 1—Drilling & Testing Program

- Monitoring Well Installation
 - Surficial aquifer (SAMW-1)
 - Upper Floridan aquifer (UFAMW-1)
 - Dual zone monitoring (MZMW-1)
LFAI, LFAII(a)
- Drilling
 - Drill to sub-Floridan confinement
 - Continuous lithologic sampling
 - Cores at four discrete depths
- Groundwater Elevations
- Geophysical and OBI Logging
- Hydraulic and Water Quality Data
 - Incrementally during drilling
- Packer Testing
 - 7 discrete depths
- Constant Rate Aquifer Tests
 - Water quality sampling



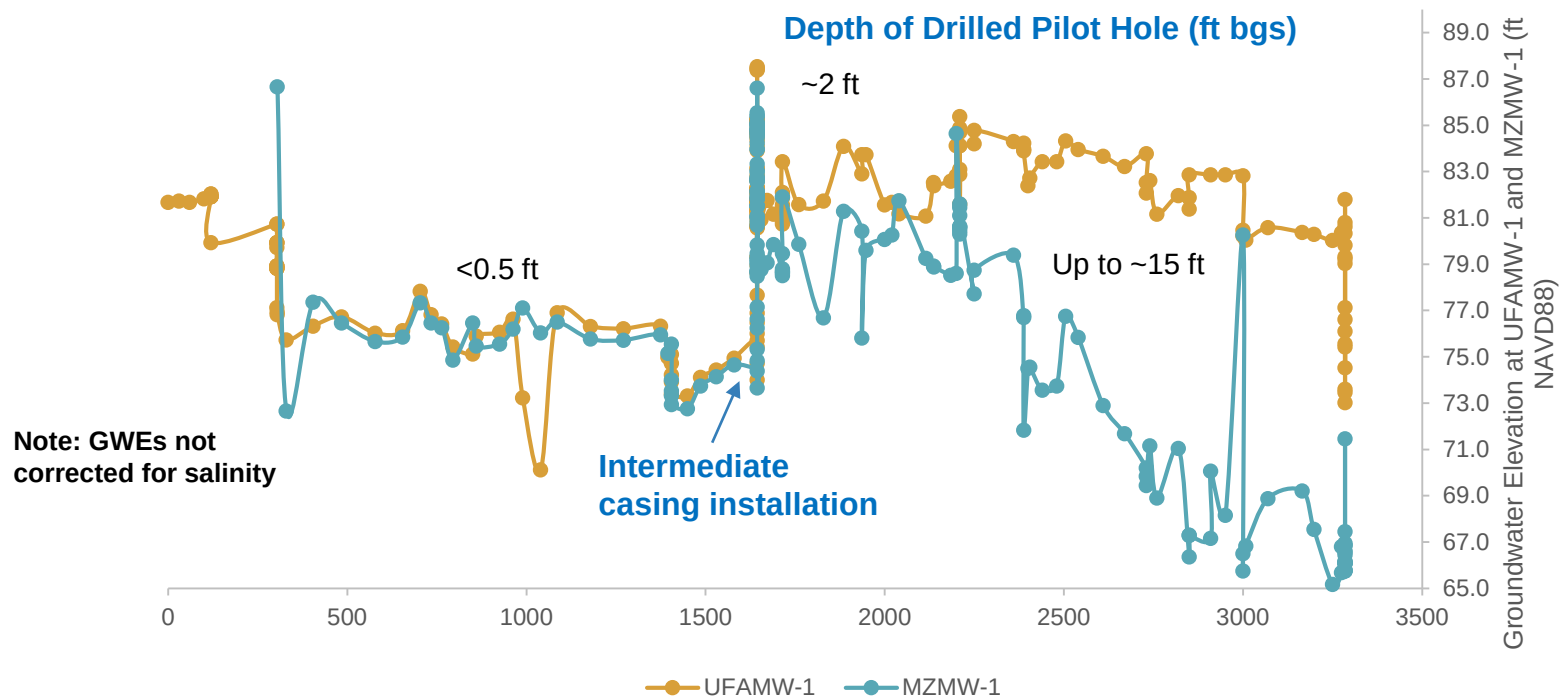
Phase 1—Groundwater Elevation (ft NAVD88)



Note: GWEs not corrected for salinity

MZMW-1 SAMW-1 UFAMW-1

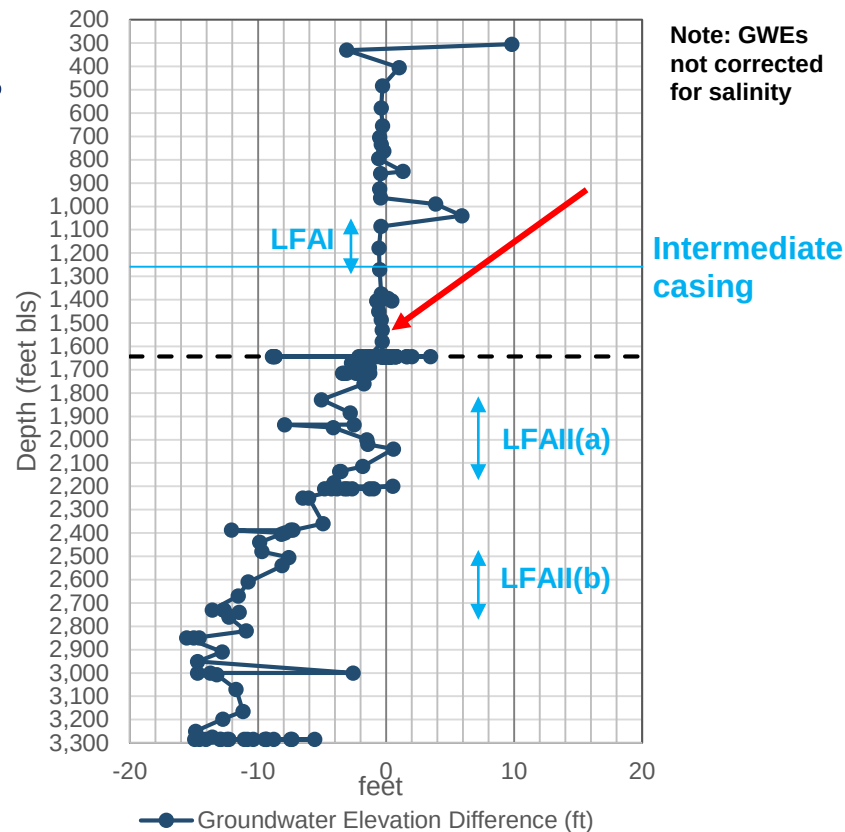
Phase 1—Groundwater Elevation (ft NAVD88)



Phase 1 Results—Vertical Flow Gradients

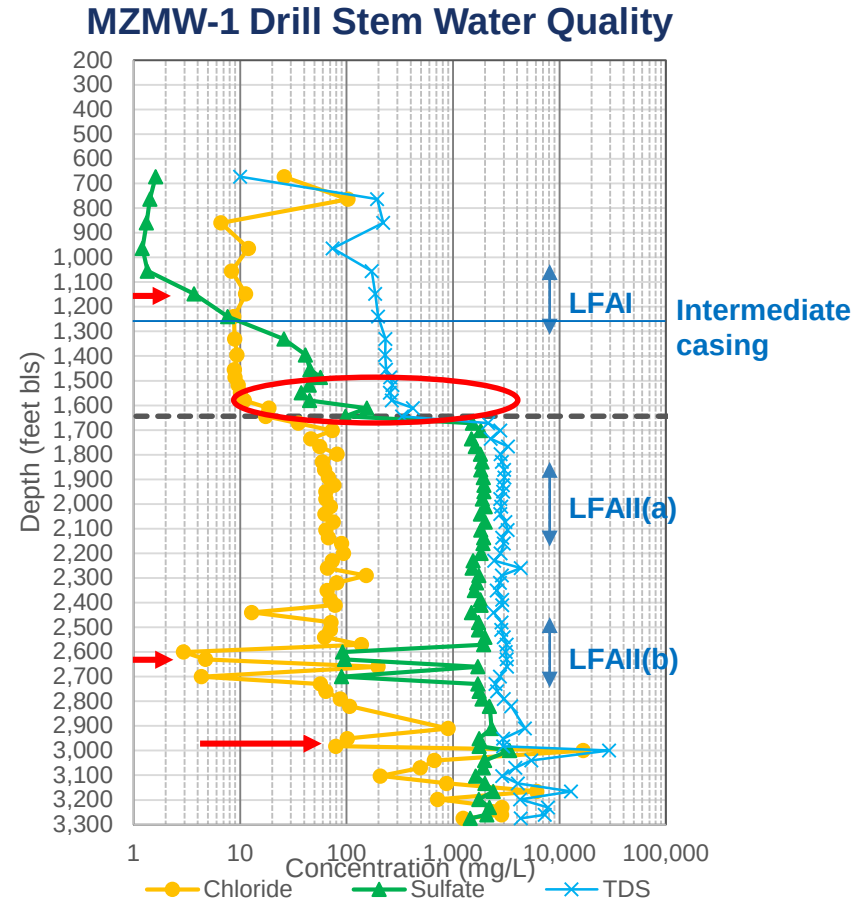
- Graphic plots MZMW-1 GWE – UFAMW-1 GWE
- Negative difference = downward vertical gradient
- LFAI groundwater elevations similar to UFA groundwater elevations
- Downward gradient after intermediate casing set
- Interflow in the borehole affected water quality results

UFA/LFA Groundwater Elevation Difference



Phase 1 Results—Water Quality

- Downward flow in the borehole affected water quality results
- Little variation observed between LFAII(a) and LFAII(b) due to intermixing
- LFAII
 - Chloride ~70 mg/L
 - Sulfate ~ 1,800 mg/L
 - TDS ~ 3,000 mg/L



Phase 1 Results—Geophysics with Tentative Hydrogeologic Picks

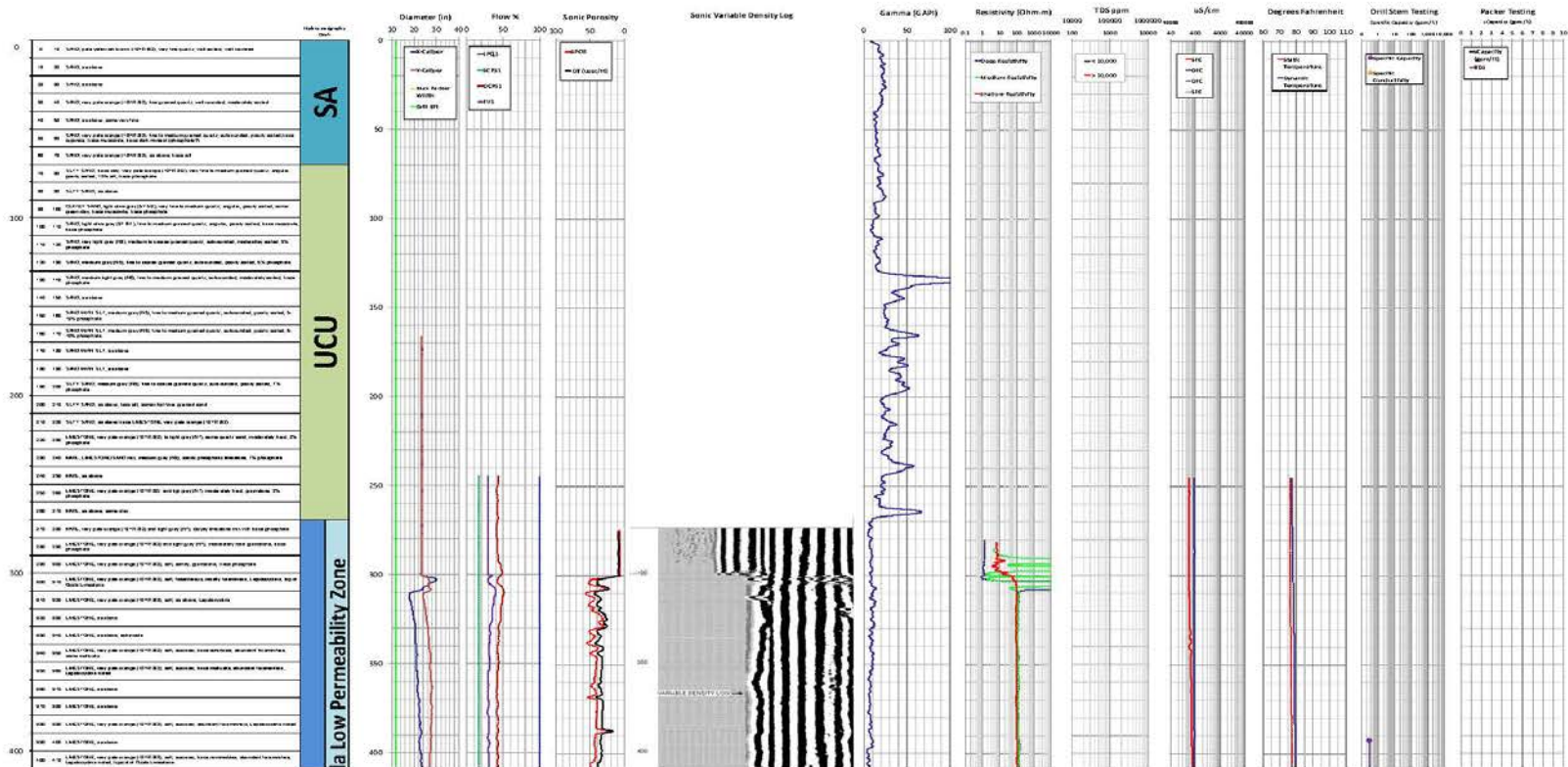
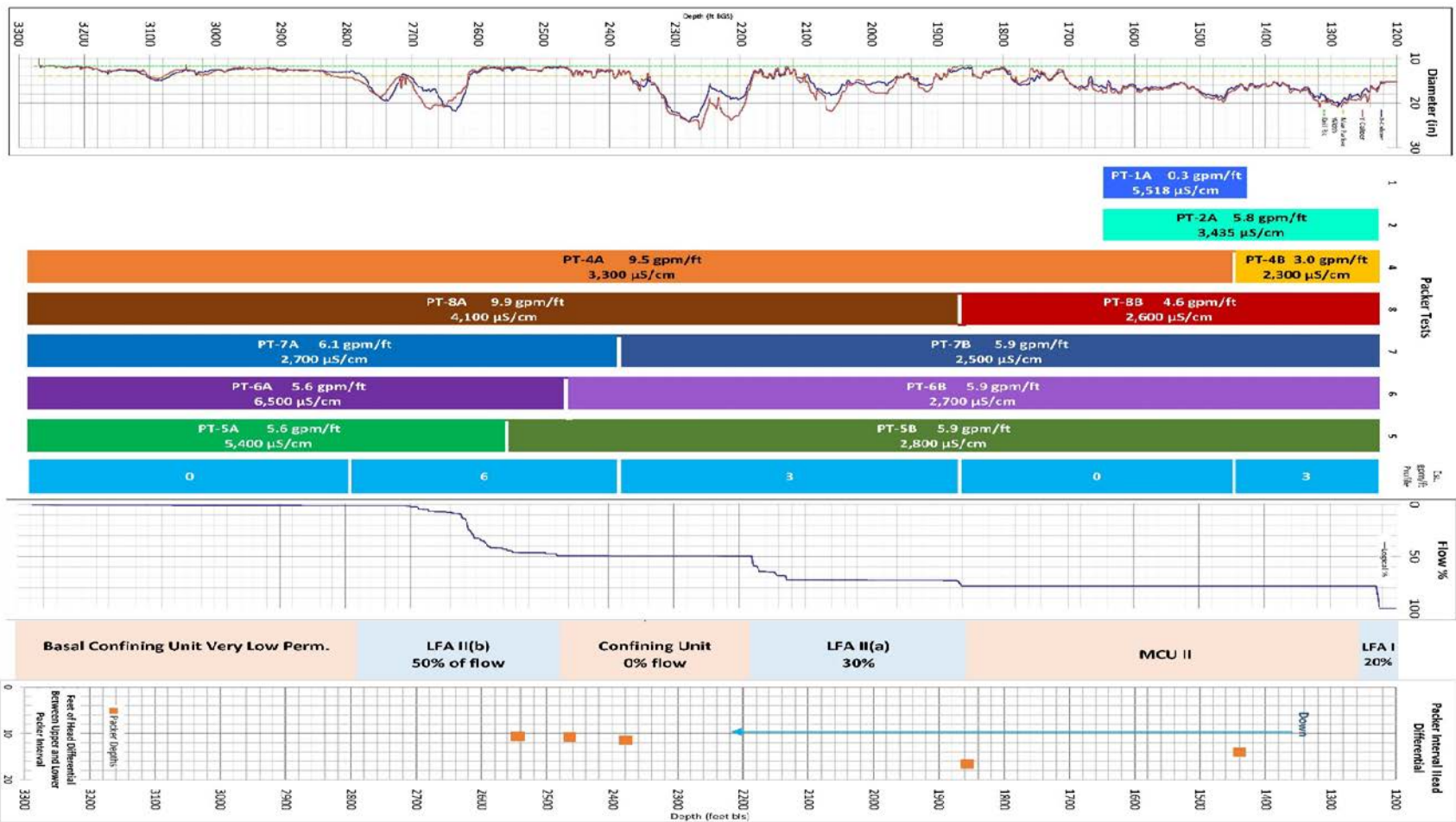


EXHIBIT 4-5
Well Testing Summary



Phase 1— Remaining Testing

- LFA Monitoring Well Completion
 - Dual zone monitoring
- Constant Rate Aquifer Tests
 - Pumping rate: ~200 – 500 gpm
 - LFA I
 - LFA II(a)
 - Monitoring zones: SA, UFA, LFA I, LFA II(a)
 - Water quality: primary, secondary, RO analytes
- Lab permeabilities on core

Phase 1—Conclusions

Water Supply

- Production zone in LFA II(a)
 - 3 gpm/ft, estimated
- UFA/LFA confinement was identified
 - >500 ft thickness
 - Packer testing and flow compilation log suggest good confinement
 - No effects observed in UFA during testing program

Concentrate Disposal

- Injection zone in LFA II(b)
 - 6 gpm/ft, estimated
- Confinement between LFA II(a) and LFAII(b)
 - ~300 ft thickness
 - Geophysical logs suggest two distinct flow zones separated by confining interval

Next Steps at Crooked Lake/Frostproof/Lake Wales

Crooked Lake

- ✓ Construction on-going with Phase 2 dual zone LFA monitoring well (25%)
- ✓ AC Schultes

Frostproof

- ✓ Complete Phase 1 (95%)
- ✓ Just kicked-off Phase 2 (15%)
- ✓ Rowe

Lake Wales

- ✓ Construction on-going with Phase 1 (20%)
- ✓ Rowe

QUESTIONS & COMMENTS

