

THERMAL DISTRIBUTION WORKSHOP

TRACK 2: HOT + CHILLED WATER DISTRIBUTION

OVERVIEW OF DISTRIBUTION SYSTEM OPERATION, MONITORING, REPAIR & REPLACEMENT AND UPGRADE CONSIDERATIONS

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**UTILITIES & ENERGY
SERVICES**
TEXAS A&M UNIVERSITY

Texas A&M University Overview

Size of campus served:

- 800 buildings, 25 million gross square feet (GSF)
- 20 million GSF air conditioned space (cooled & heated)

Electrical power capacity and load:

- 50 megawatt on-site generation capacity (3 generators)
- 120 megawatt grid power capacity (138 kV transmission)
- 75 megawatt campus peak load

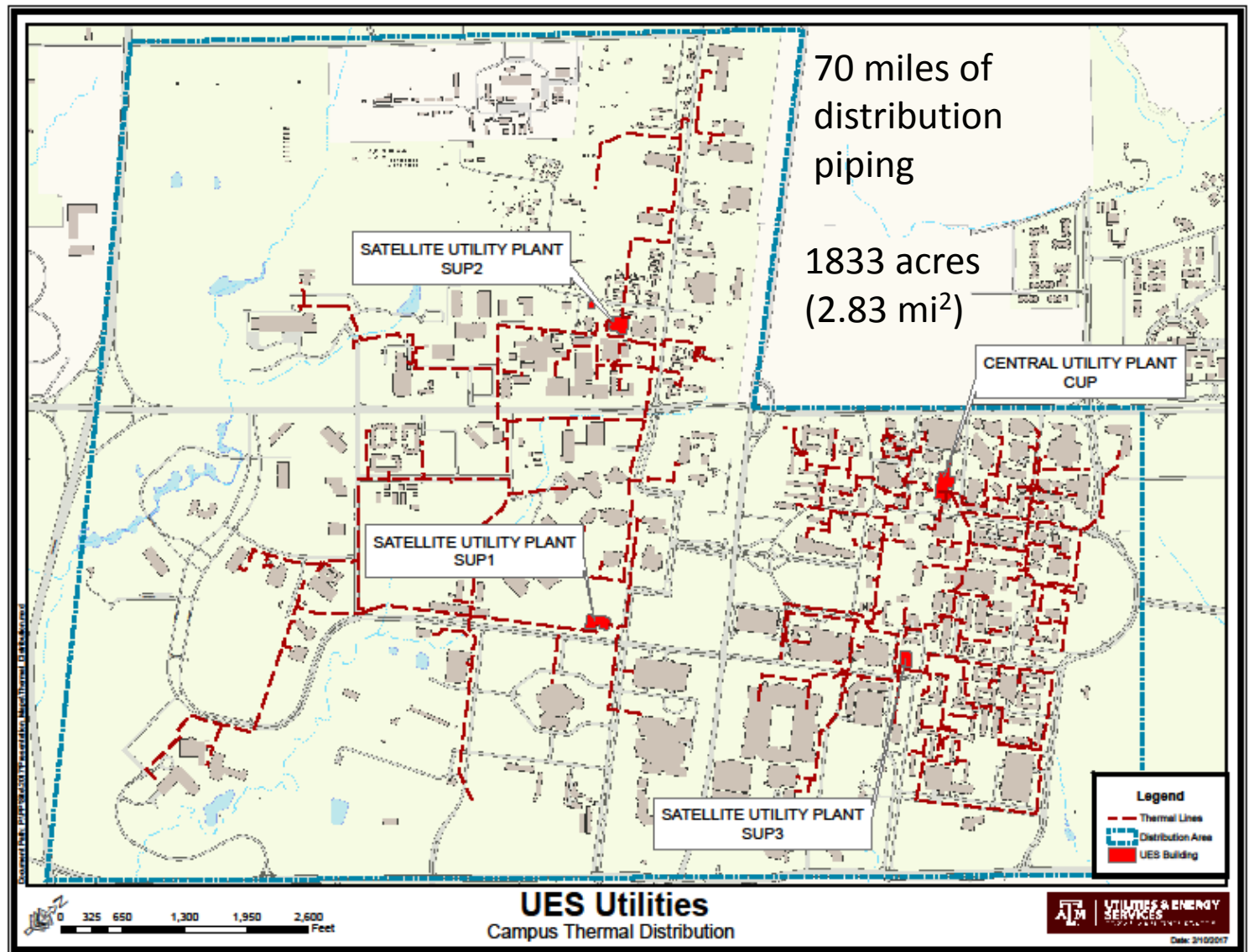
District cooling capacity and load:

- 65,000 ton cooling capacity
- 40,000 ton peak cooling load

District heating capacity and load:

- 500 mmBtu/hour heating capacity (21 boilers & 6 HX's)
- 250 mmBtu/hour peak heating load

Texas A&M University - Utility Plants



Thermal Loop Operations

Main Campus (CUP & SUP3)

120 buildings

1.2 million gallons of chilled water

400 thousand gallons of heating hot water

West Campus (SUP1 & SUP2)

60 buildings

1.6 million gallons of chilled water

450 thousand gallons of heating hot water

Chemical Treatment & Monitoring

Phosphate-based corrosion inhibitors & targeted residuals

Corraters & coupons on each loop

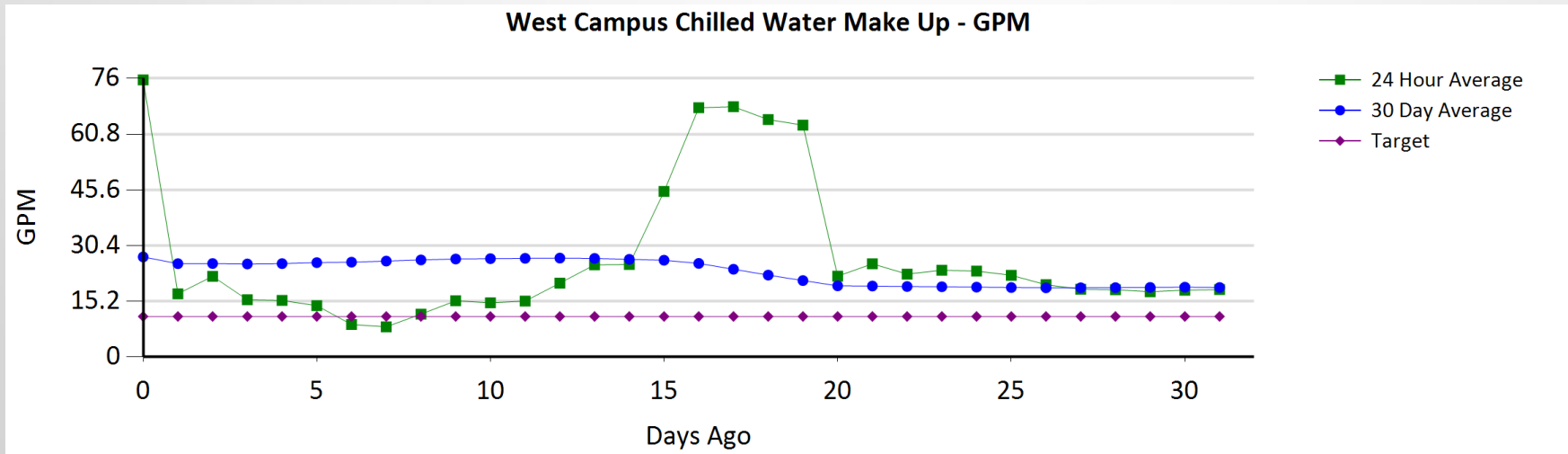
Monthly reporting

Texas A&M University Monitoring

Continuous monitoring

CHW MAKE-UP FLOW		HHW MAKE-UP FLOW	
MAIN CAMPUS	0	MAIN CAMPUS	40
WEST CAMPUS	0	WEST CAMPUS	0

Daily trend reporting



Texas A&M Distribution Piping Materials

Historically, Texas A&M has used:

- Concrete reinforced piping
- Concrete
- Ductile iron
- Galvanized
- Copper
- Clay tile
- Steel
- Stainless Steel
- HDPE is now used on all water systems

HDPE Distribution Pipe Specifications

PIPING

- High Density Polyethylene (HDPE) PE 4710
- Dow 2499 resin for HHW (rated to 180 F)
- SDR 11 used on all pressurized systems

INSULATION

Mineral powder (GILSULATE® 500) used to meet insulation, density and compaction requirements

Distribution System Repair/Replacement Planning & Execution

Budget

Materials

Labor

Equipment

Campus Coordination Challenges:

- Transportation
- Residence Halls
- Research Facilities
- Athletic Events



5/12/16 - South Campus Thermals / Corps Dorm - 24 inch chilled water and 12 inch heating-hot water under E/W tunnel serving dorm No. 12



5/11/16 - South Campus Thermals / Corps Dorms - under E/W tunnel serving dorm No. 12 - chilled and heating hot water only



5/11/16 - South Campus Thermals / Corps Dorms - fused and mechanical fittings for valve set between dorms 10 and 12



Turk Road Thermal Expansion



Turk Road Thermal Expansion



Lamar Stallings Thermal Extension



Lamar Street Thermal Extension