



City of Dallas

Dallas Water Utilities- Long Range Planning

Environment and Sustainability
Committee
October 4, 2021

Terry S. Lowery, Director
Dallas Water Utilities
City of Dallas

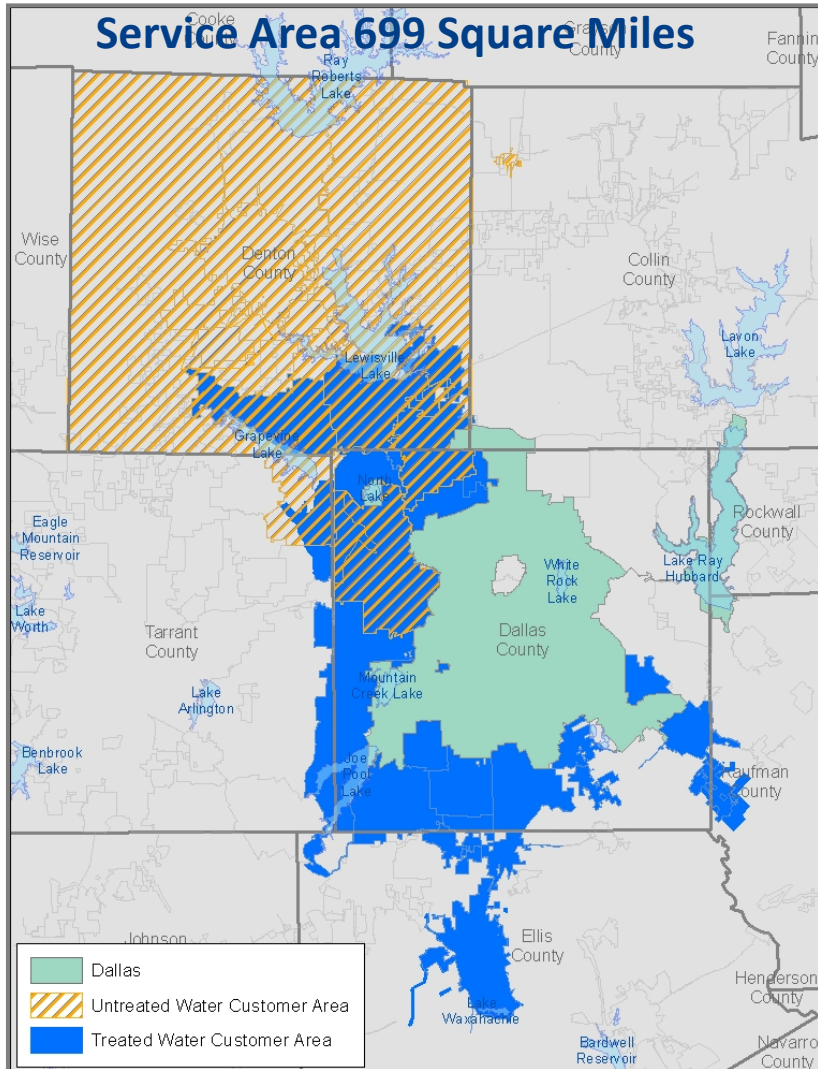
Purpose



- Provide a brief overview of Dallas Water Utilities
- Discuss Dallas' Long Range Water Supply Planning
- Provide an update on Dallas' One Water Program



Dallas Water Utilities Overview



- Established by City Charter in 1881
- Operates under Dallas City Codes, 49, 51, 19
- Funded from wholesale and retail water and wastewater revenues and stormwater fees (receives no tax dollars)
- Regional provider of water, wastewater, stormwater and flood control services
- Fiscal Year 2020 net capital water and wastewater assets of \$5.5B
- Approximately 1,600 employees
- Combined operating and capital budgets of \$1.1B




Fiscal Year 2021-22 Budget

| Budget | DWU | SDM | Total |
|------------|------------------|-----------------|------------------|
| Operations | \$722.4 M | \$69.3 M | \$791.7 M |
| Capital | <u>\$323.6 M</u> | <u>\$14.7 M</u> | <u>\$338.3 M</u> |
| Total | \$1,046.0 M | \$84.0 M | \$1,130.0 M |



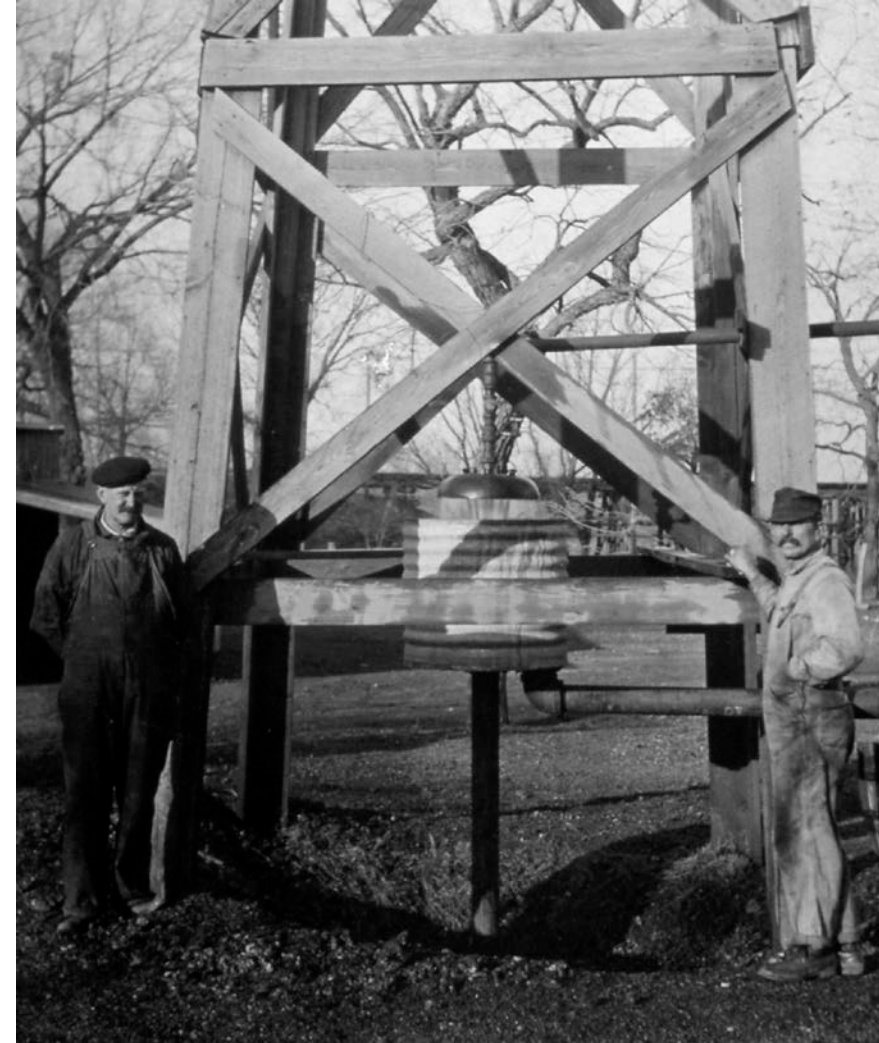
City of Dallas Utilities



| | ASSETS | CUSTOMERS |
|--|--|--|
|  | WATER <ul style="list-style-type: none"> • 7 reservoirs, (6 connected) • 5,010 miles of water mains • 3 water treatment plants (900 MGD capacity) • 23 pump stations, 10 elevated and 12 ground storage tanks | 2.5 million treated water customers <ul style="list-style-type: none"> • 1.3 million – Retail (City of Dallas) • 1.2 million – Wholesale • 23 wholesale treated water • 4 wholesale untreated water |
|  | WASTEWATER <ul style="list-style-type: none"> • 2 wastewater treatment plants (280 MGD capacity) • 4,053 miles of wastewater main • 15 wastewater pump stations | 320,000+ retail customer accounts <ul style="list-style-type: none"> • 11 wholesale wastewater |
|  | STORMWATER <ul style="list-style-type: none"> • 8 storm water pump stations (5.7 BGD capacity) • 1,963 miles of storm sewers • 30 miles of levees • 39,000 acres of floodplain | 300,000 storm water accounts <ul style="list-style-type: none"> • 265,979 Residential • 29,470 Commercial |



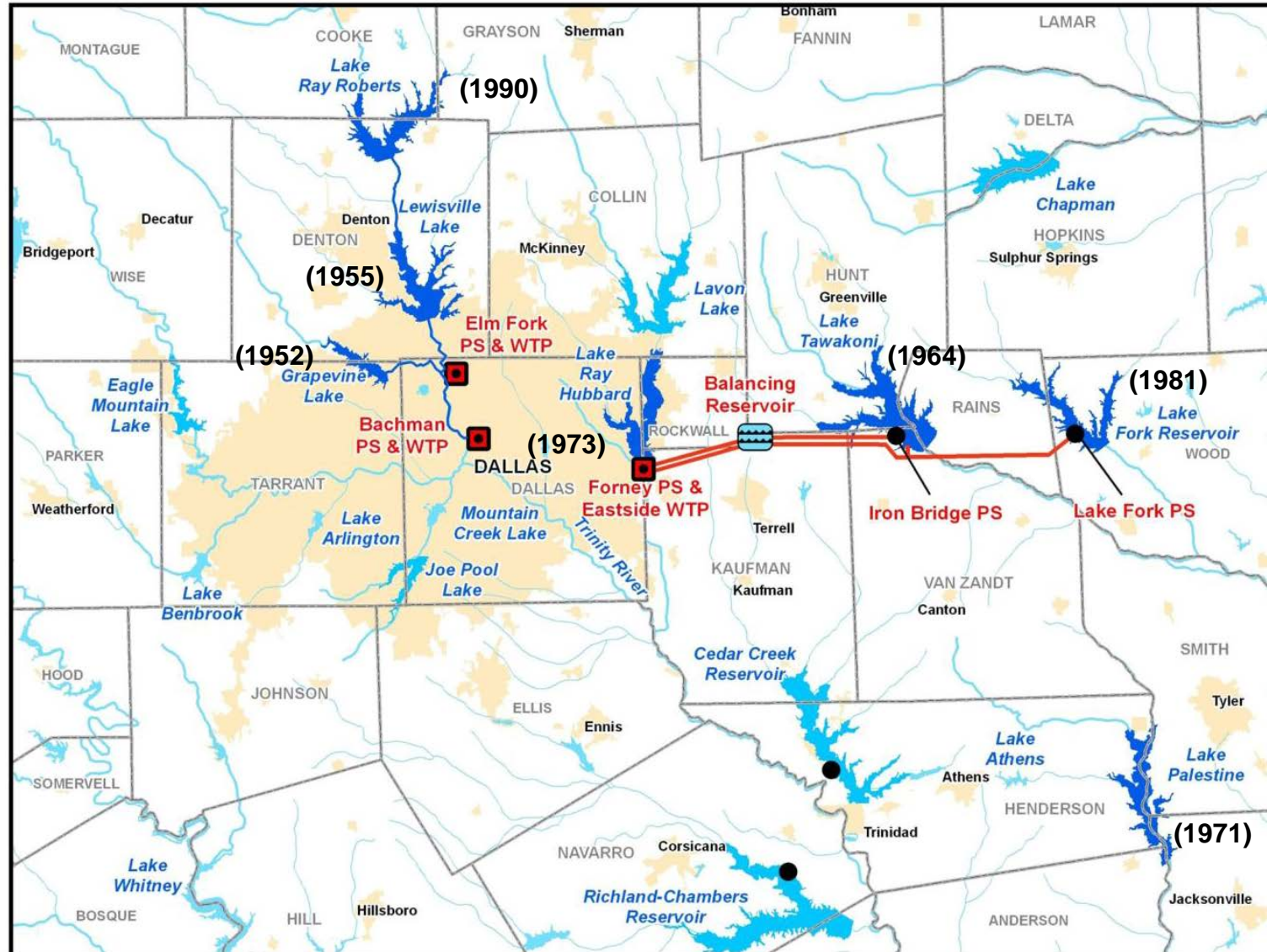
Origins of Dallas' Water Supply System



Browder Springs 1880s



Dallas' Regional Water Supply System



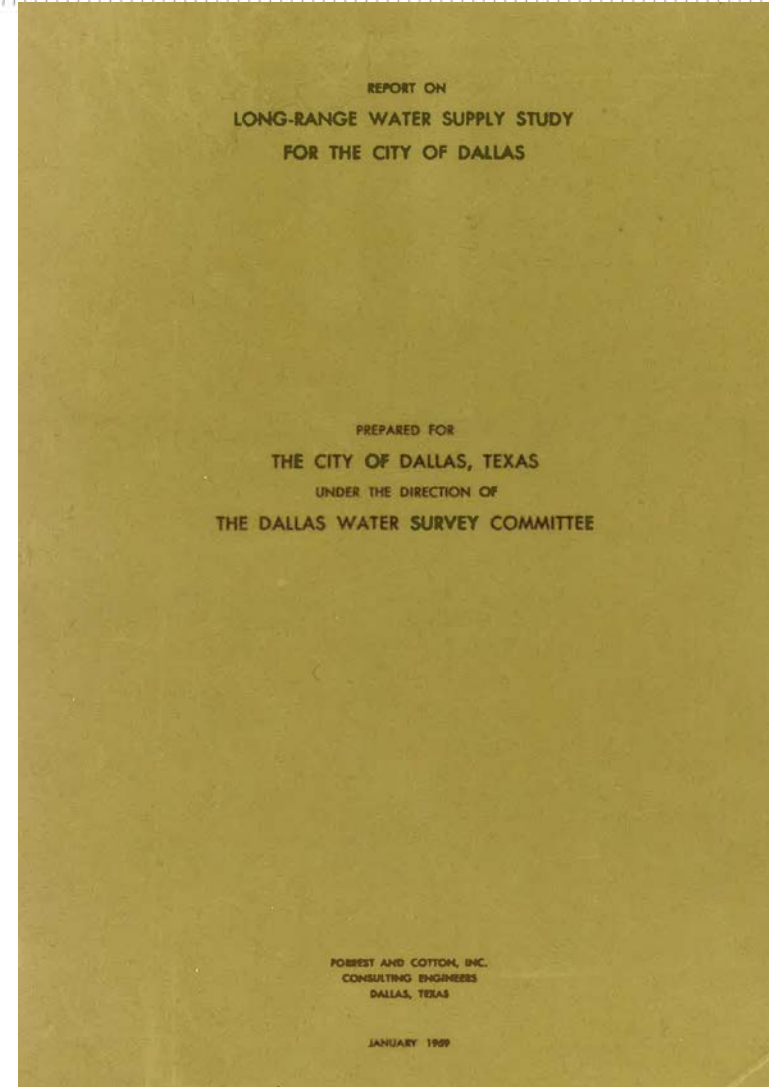
Dallas' Long Range Water Supply Planning



1950's Drought (1951-1957)



City of Dallas Red River Pump Station, 1953-1957.



Long Range Water Supply Plan 1959.



Long Range Water Supply Planning



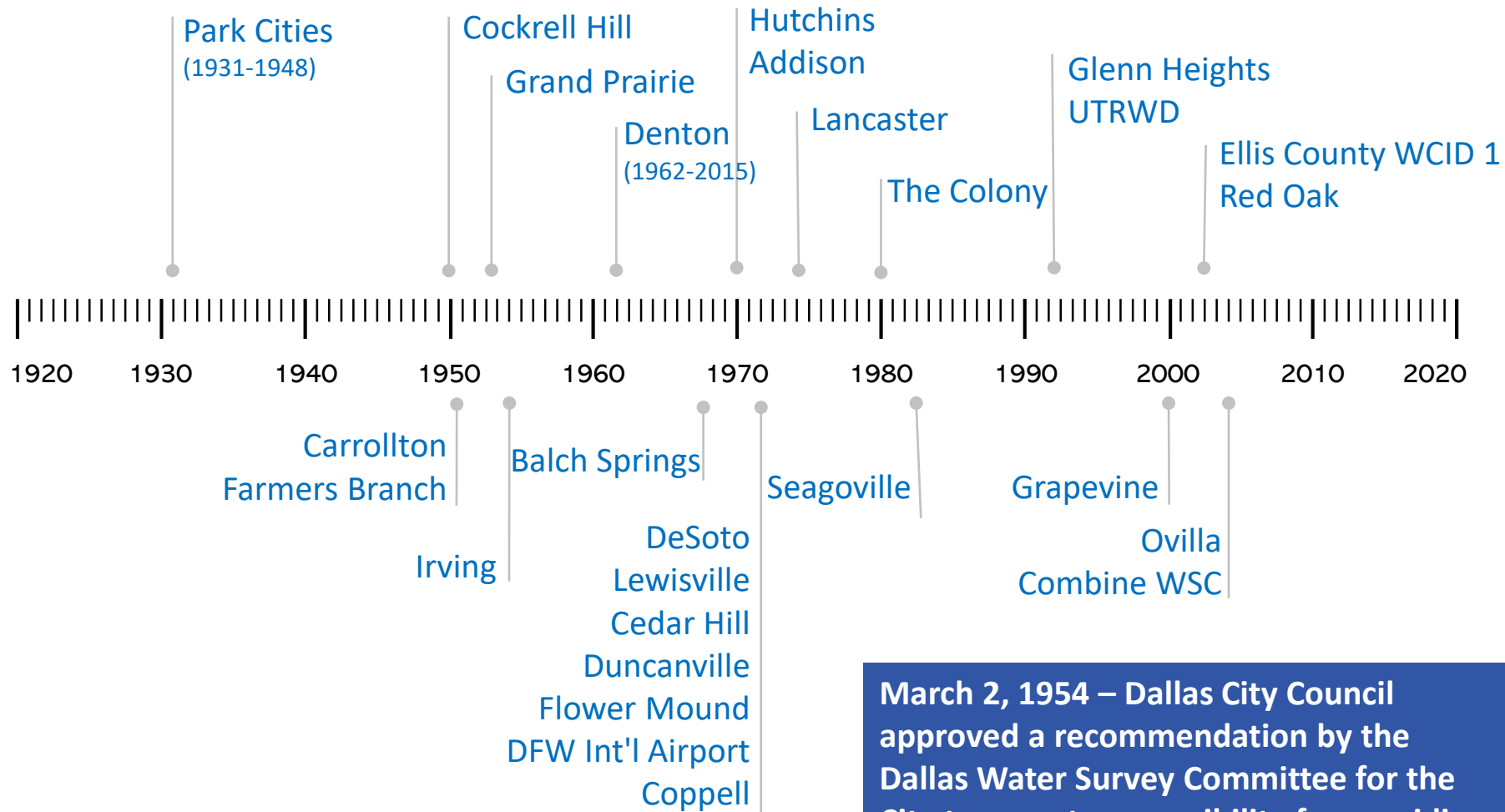
- In response to the drought of the 50's, Dallas started the current era of long range water supply planning
- Dallas' 1959 Plan included the recommendation that Dallas supply water to surrounding cities
- The 1959 Plan was updated in 1975, 1989, 2000, 2005, and 2014
- A new update is scheduled to begin in 2022



**Forney Dam at Lake Ray Hubbard
Installation of Tainter Gates**



Wholesale Treated and Untreated Water Customers



March 2, 1954 – Dallas City Council approved a recommendation by the Dallas Water Survey Committee for the City to accept responsibility for providing water supplies to all of Dallas County



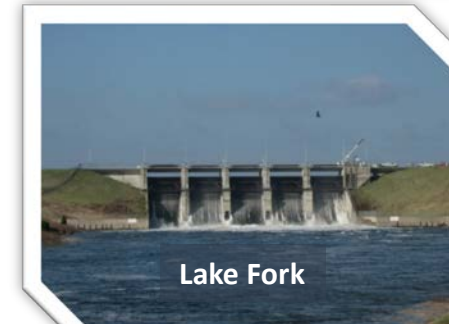
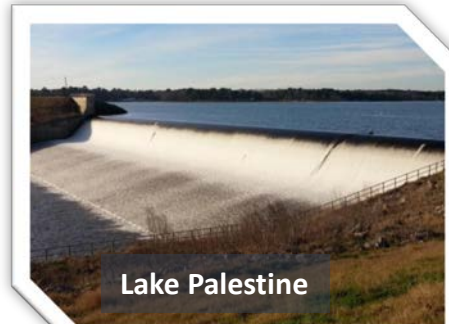
Foundation of Water Supply Planning



Existing Infrastructure must be:

**Maintained,
Operational,
and**

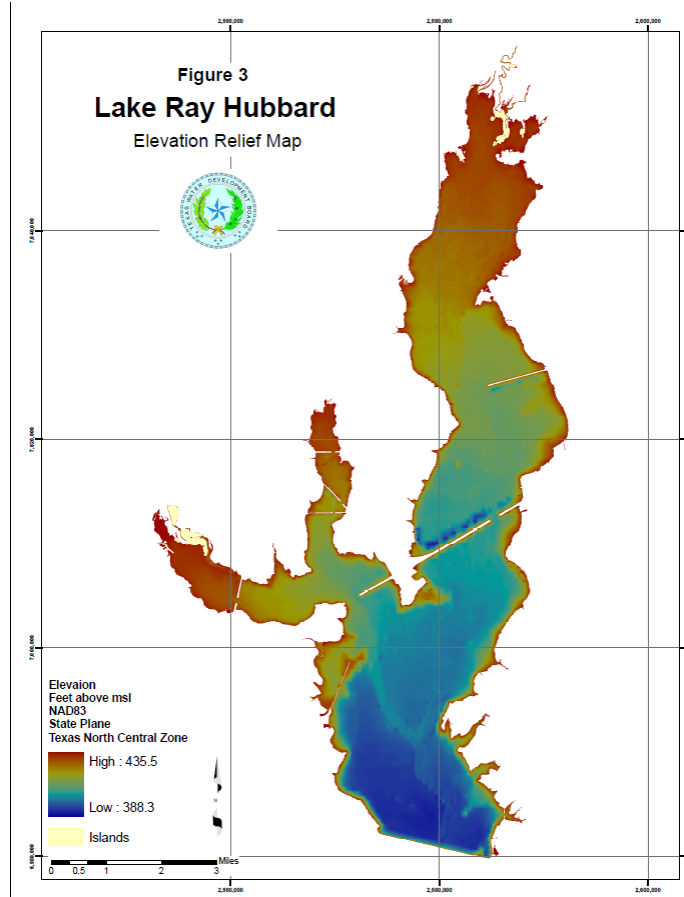
Storing Water
throughout the Planning Horizon



Effects on Existing Supplies

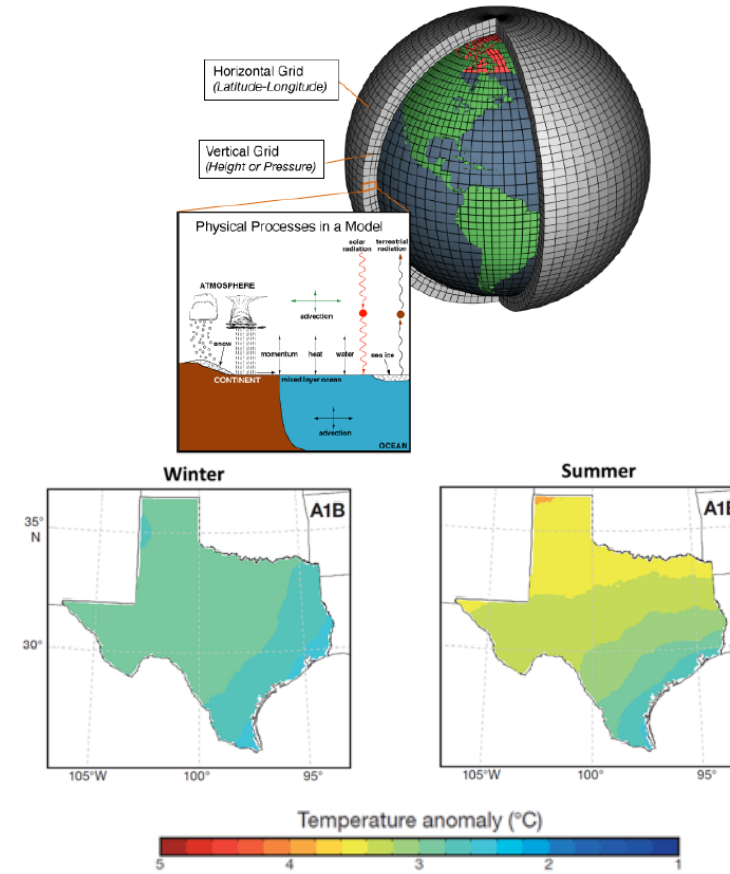


Sedimentation



Decreased Storage Volume

Climate Change



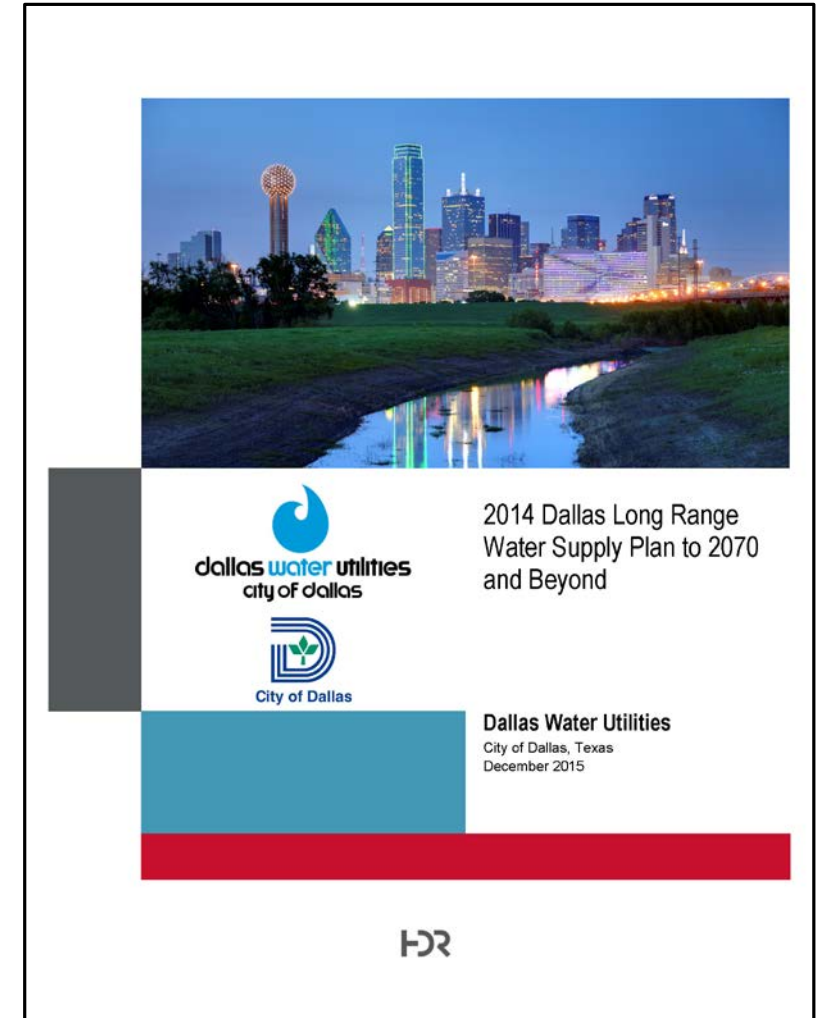
Increased Evaporation



2014 Long Range Water Supply Plan



- Adopted by City Council on October 8, 2014
 - http://dallascityhall.com/departments/waterutilities/DCH%20Documents/2014_LRWSP_Final_Report_all_11302015.pdf
- System average day water demands reduced by 23% or approximately 151 million gallons per day (MGD) while population grows
- Connected firm yield reduced over time due to sedimentation and increased evaporation from higher temperatures
- Projected supply and demand deficit beginning in 2027
- Strategies to meet 2070 DWU system demands consist of:
 - 12% additional conservation
 - 36% indirect reuse
 - 27% connection to existing water supplies
 - 25% new surface water



Current Projects – Status and Timing



- Water Conservation (Ongoing)
 - Gallons per Capita per Day (GPCD) reduced from 247 in FY2001 to 168 in FY2020
- Main Stem Pump Station (2020)
 - Develop amendment to North Texas Municipal Water District (NTMWD) Swap Agreement for cost sharing
- Integrated Pipeline Project (IPL) – Lake Palestine Connection (2027)
 - Tarrant Regional Water District (TRWD) – Land Acquisition
 - TRWD – 404 Permit application submitted
 - Engineering design 90% complete
- IPL to Bachman Connection (2027)
 - Feasibility and Preliminary Alignment Study complete
 - Finalizing pipeline alignment, right-of-way acquisition and permitting for bed and banks water rights in Joe Pool Lake will begin in FY2022



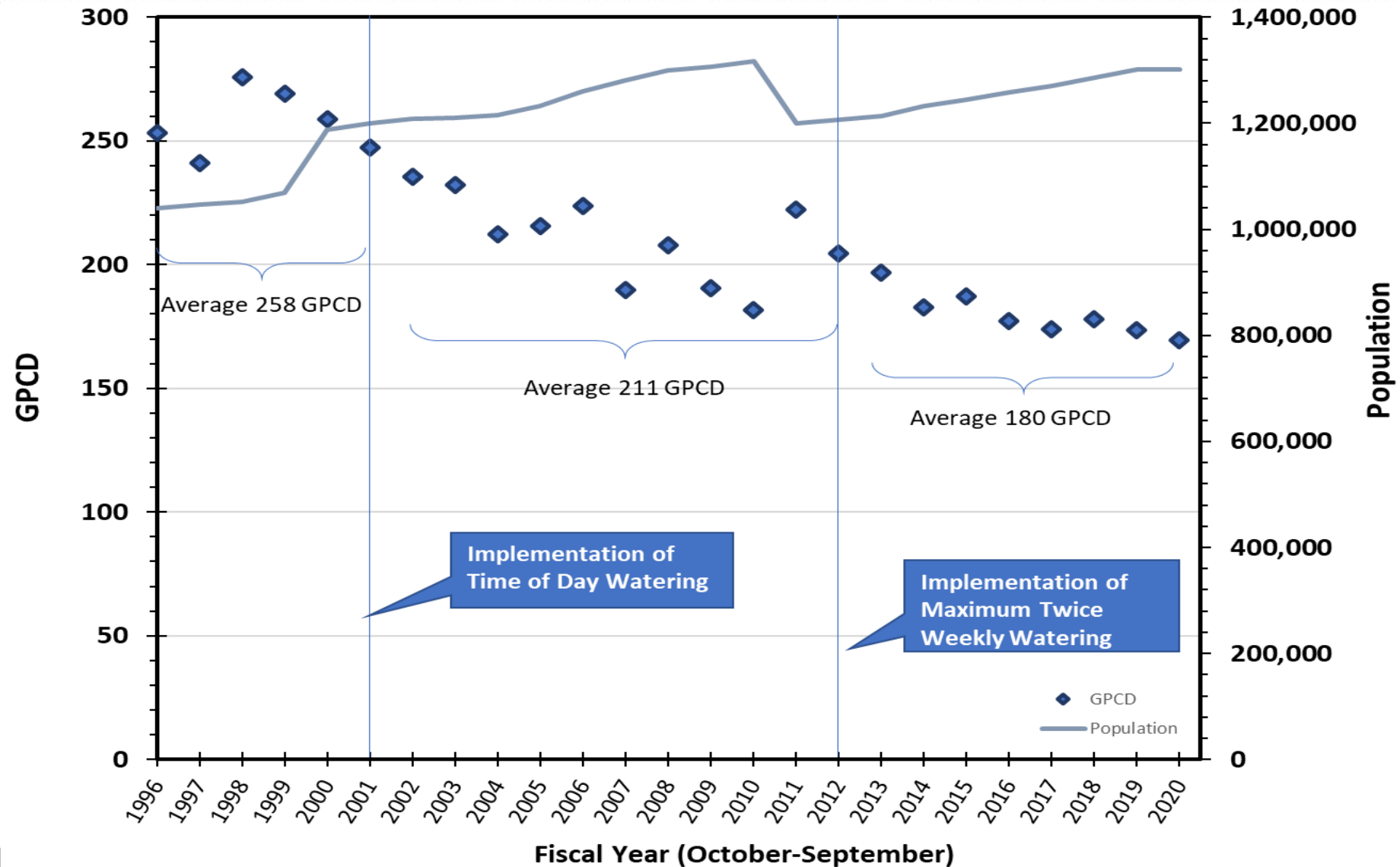
History of Dallas' Water Conservation Program



- 1980 – 2000: Education and outreach
- 2001: Irrigation Ordinance adopted; conservation rate tier added; Water Conservation Division established
- 2002: Public Awareness Campaign
- 2005: Five-Year Strategic Plan adopted; proactive leak detection and repair accelerated
- 2006: Mascot DEW joins Conservation
- 2010: Five-Year Plan updated
- 2012: Irrigation Ordinance amended to include mandatory twice weekly maximum schedule
- 2016: Five-Year Work Plan adopted
- 2019 Water Conservation Plan



Impacts of Water Conservation Program



Integrated Pipeline (IPL) Project



- Partner - Tarrant Regional Water District
- 350 MGD Total System Capacity –
 - 150 Dallas
 - 200 TRWD
- 149.5 miles of 108, 96, and 84 inch pipe
- Savings –
 - ~ \$200 million in capital costs;
 - ~\$20 million per year in debt service coverage savings for the life of the bonds.
- Redundancy and Reliability by interconnecting TRWD's supply with Dallas' supply
- Dallas' IPL to the Bachman Connection alignment study is underway



Midlothian Balancing Reservoir



Joint Booster Pump
Station 3 (JB3)



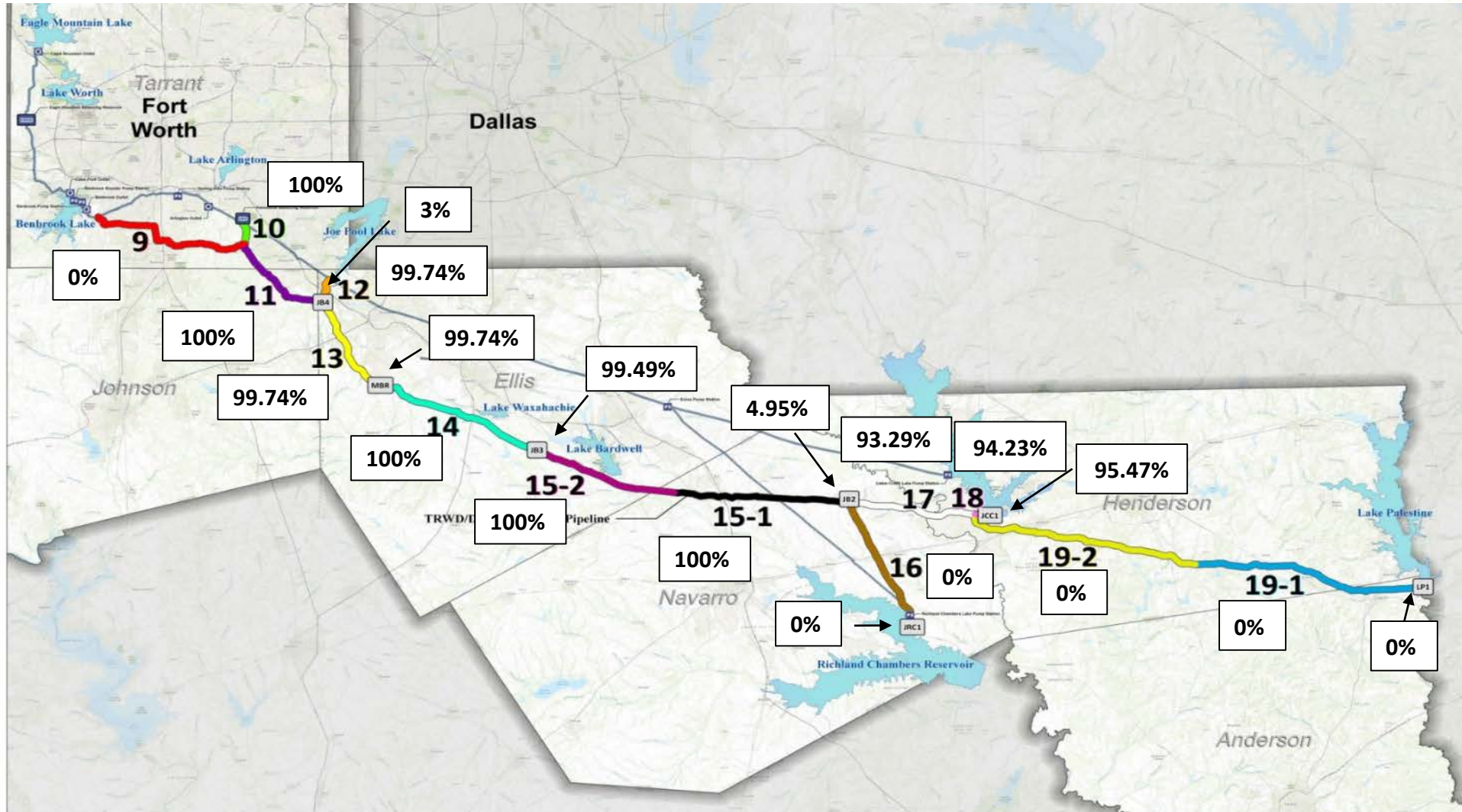
Kennedale Balancing Reservoir
Pressure Control Station



Installation of 108-inch
pipe along Section 17



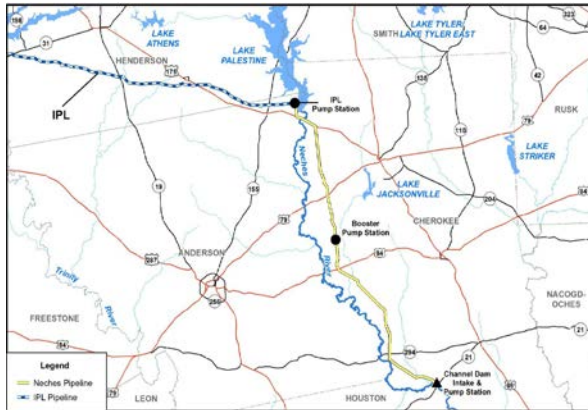
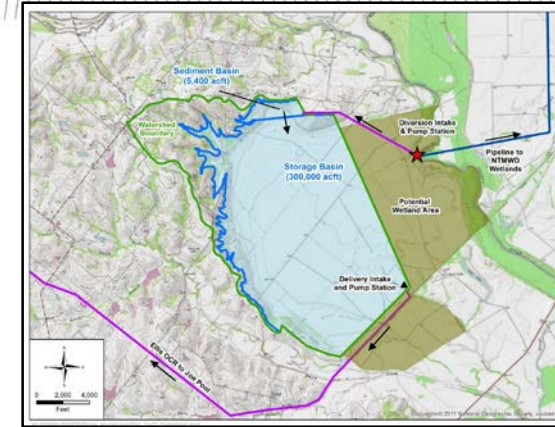
IPL Progress



Future Projects

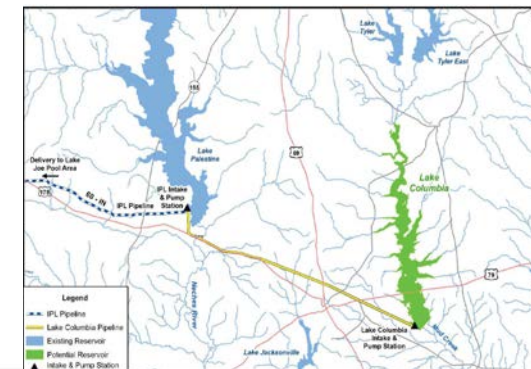


- Main Stem Balancing Reservoir (2050)
 - Develop scope of work for preliminary engineering, geotechnical evaluation and land acquisition
 - Evaluate financing alternatives



- Neches Run-of-River (2060)
 - Develop agreement with Upper Neches River Municipal Water Authority
 - Assist with water rights permitting

- Lake Columbia (2070)
 - Develop agreement with Angelina Neches River Authority



Recommended Water Strategies



| Recommended Strategies | Projected Supply (MGD) | Total Project Cost (Million Dollars) | Unit Cost (\$/1,000 gal) |
|---|------------------------|--------------------------------------|--------------------------|
| Additional Conservation | 46.4 | \$51.7 ^a | \$0.38 |
| Indirect Reuse Implementation - Main Stem Pump Station – NTMWD Swap Agreement | 31.1 | \$25.9 ^b | \$0.25 |
| Indirect Reuse Implementation - Main Stem Balancing Reservoir | 102 | \$675 | \$1.74 |
| Connect Lake Palestine | 102 | - | - |
| IPL Part 1 – Connection to Lake Palestine ^c | - | \$939 | \$2.31 |
| IPL Part 2 – Connection to Bachman WTP ^c | - | \$244 | \$0.49 |
| Neches Run-of-River | 42.2 | \$227 | \$1.88 |
| Lake Columbia | 50.0 | \$289 | \$1.78 |
| Totals | 373.7 | \$2,451.6 | \$1.24 |

^a Equivalent total project cost based on net present value analysis for the 50-year planning horizon

^b Represents Dallas' portion of the total project cost

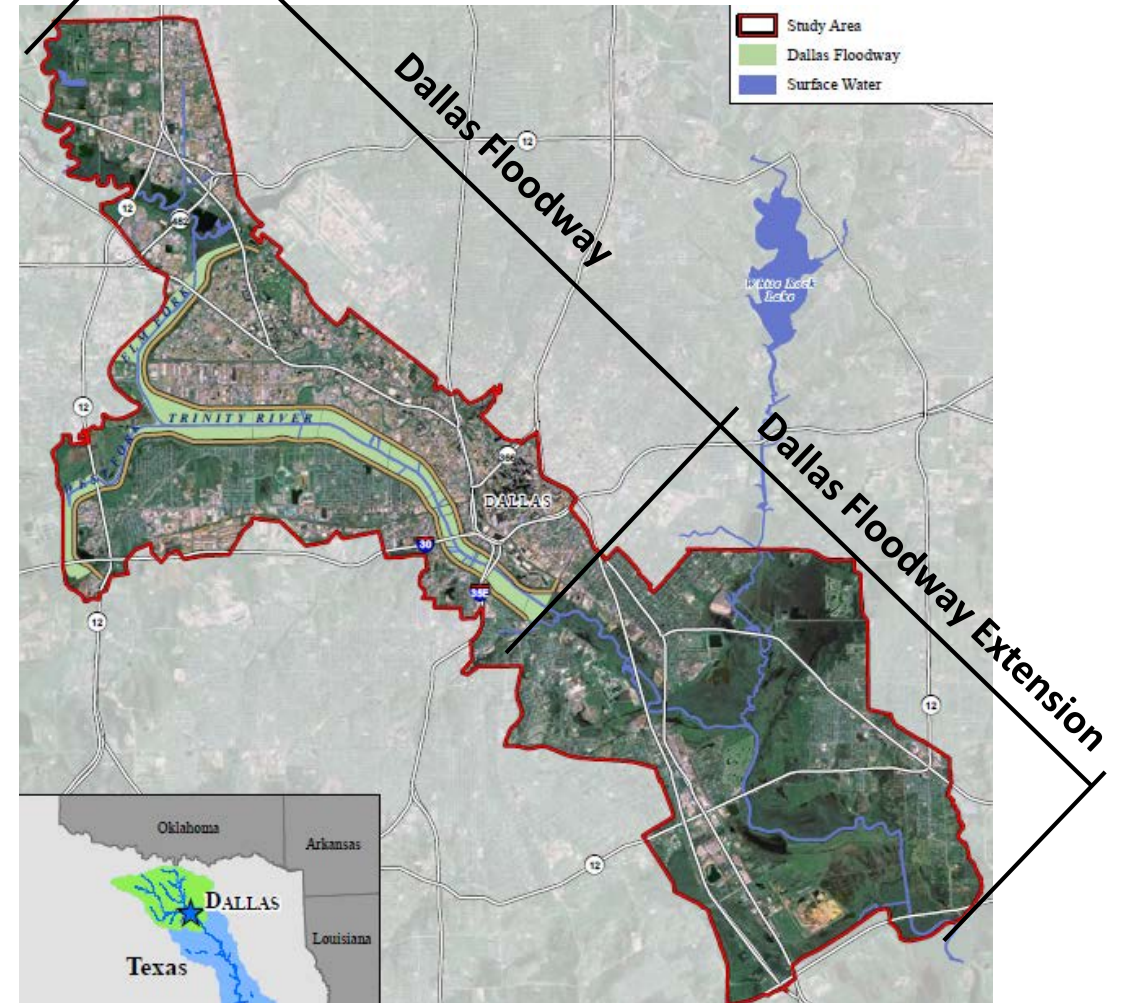
^c The IPL project requires both the following projects to provide 102 MG to the Dallas system.



Dallas Floodway and Floodway Extension



- Dallas Levee System protects:
 - Over 40,000 acres of development outside the levees
 - \$14 Billion in real and personal property
 - Over 400,000 people living in the protected levees
- All flood risk management projects included in the Dallas Floodway and Dallas Floodway Extension were funded in the Bi-Partisan Budget Bill of 2018



Mill Creek Drainage Relief Tunnel



Neighborhood Drainage Program



- For FY20, an additional \$2.5M was invested in the program
- Reduce neighborhood flooding and increase quality of life through:
 - Proactive maintenance of stormwater pipes, channels and creeks, and floodway management areas
 - Increased minor erosion repairs
 - Remove invasive species and replace with natural, noninvasive species
 - Identify areas that need cleaning with closed-circuit television video to prevent flooding on local streets
- Goal is to provide efficient, effective and timely response to property owner calls



Dallas' One Water: A Water Efficient Future



One Water Defined



- One Water is an integrated planning and implementation approach to managing finite water resources for long-term resilience and reliability, meeting both community and ecosystem needs



Benefits of a One Water Approach



- Greater resilience and reliability by considering all water, including stormwater, as a resource
- Sustainable community development
- Seamless coordination with State and Federal regulatory agencies
- Economic growth opportunities by ensuring a diverse, and stable water supply, treatment and drainage system



One Water Next Steps: Water



- Water Production Master Plan
- Water Delivery Master Plan
- Improve efficiency through work order and asset management system and Field Mobility projects
- Customer enhancement through automated meter infrastructure
- Update Long Range Water Supply Plan



One Water Next Steps : Wastewater



- Wastewater Treatment Facilities Strategic Plan
- Renew Trinity Compact Agreement
- Renew Central Wastewater Treatment Plant discharge permit
- Evaluate system efficiencies between Stormwater Operations and Wastewater Operations
- Update Pretreatment Ordinance



One Water Next Steps: Stormwater



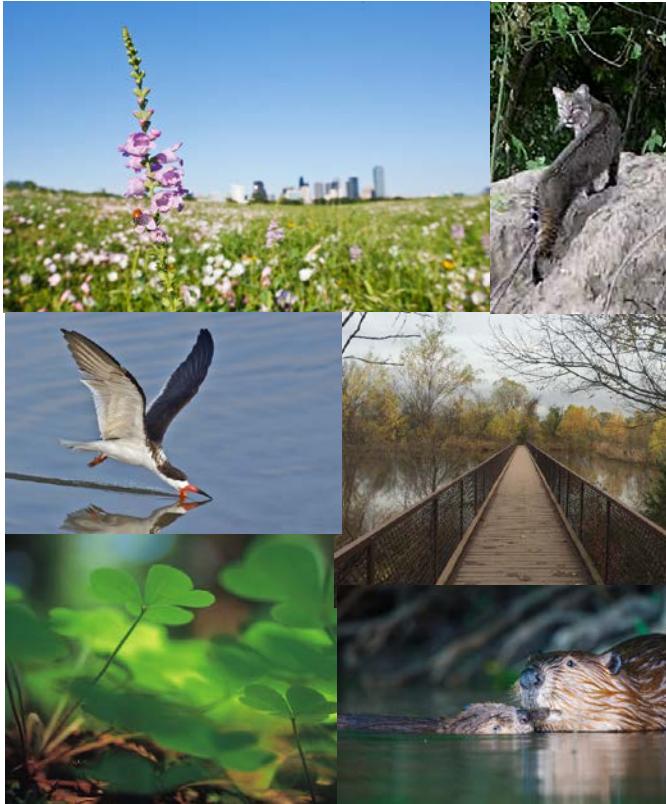
- Comprehensive Stormwater System Assessment
 - Phase I to be presented in Fall 2021
 - Phase II – to be initiated in Fall 2021
- Develop and implement capital funding plan to improve sustainability of stormwater infrastructure
- Complete USACE Dallas Floodway and Dallas Floodway Extension flood risk projects by 2026
- Update Floodplain Ordinance to include Federal Emergency Management Agency's (FEMA) program modifications



In Summary



Environmental Stewardship



Social Equity



Economic Prosperity



Dallas Water Utilities- Long Range Planning

Environment and Sustainability
Committee
October 4, 2021

The logo of the City of Dallas, featuring a stylized white 'D' on a dark blue background. Inside the 'D' is a white three-leaf plant. To the left of the 'D' is a white square with a smaller square inside it.

City of Dallas

Terry S. Lowery, Director
Dallas Water Utilities
City of Dallas