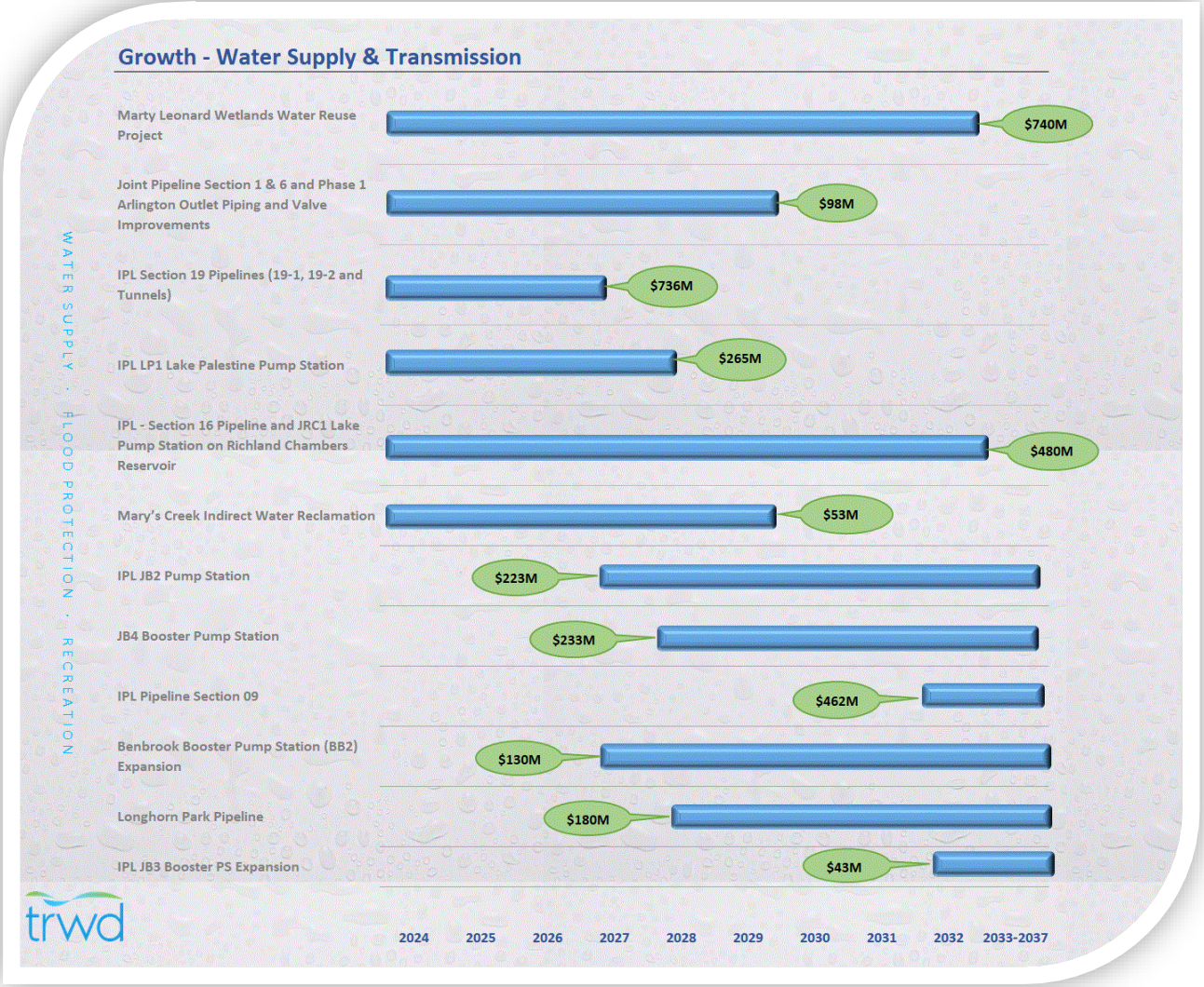


Marty Leonard Wetlands Water Reuse Project

Project Start: 2021
Projected Construction Start: 2028
Projected Completion: 2032
Projected Cost: $740,000,000
Contact: *Rick.Zarate@TRWD.com*
David.Schroeder@TRWD.com

Description:

The Marty Leonard Wetlands are a sister wetland facility planned to allow water reclamation and enhance supply storage and yield of Cedar Creek Reservoir. The location of the proposed constructed wetlands is approximately ten miles to the west and north of Cedar Creek Reservoir, immediately east of the main stem of the Trinity River. Water from the river will cascade through a similar, yet larger wetland facility as the George W. Shannon Wetland in operation at Richland - Chambers Reservoir since 2013. Water courses through the wetlands to

remove sediment and nutrients. The water is then re-lifted into Cedar Creek Reservoir for storage. The project includes the design and construction of a river pump station, raw water mains, sedimentation basins and wetlands cells, relift pump station, ten miles of large diameter pipe, balancing reservoir, and a controlled outlet structure.

The Texas Commission on Environmental Quality (TCEQ) has already issued water rights allowing TRWD to divert highly treated wastewater from the Trinity River. Since 2014, TRWD has owned most of the real estate and permanent pipeline easements needed to construct the Marty Leonard Wetlands and its supporting pipelines from the river to the wetland and from the wetland to the reservoir.

The original plan for the Marty Leonard Wetlands indirect water reuse project envisioned an 1,800 acre constructed wetlands facility footprint capable of achieving a permitted supply yield of 88,059 acre-feet per year. This would enhance the annual supply available from Cedar Creek from 175,000-acre-feet to more than 263,000 acre-feet – a 50% increase. TRWD is increasing the wetland capacity to treat additional available return flows, thus significantly expanding the Marty Leonard wetlands footprint and pumping/transmission facilities, and for which the projected cost of $740,000,000 is developed.

The existing Cedar Creek Lake Pump Station and pipeline and the new JCC1 pump station and Integrated Pipeline (IPL) will deliver the wetland-enhanced Cedar Creek Reservoir water to TRWD's customers. TRWD's goal is to have the new Mary Leonard Wetlands Facility constructed and operational by 2032.

Joint Pipeline Section 1 & 6 and Phase 1 Arlington Outlet Piping and Valving Improvements

Project Start: 2024
Projected Construction Start: 2027
Projected Completion: 2029
Projected Cost: $98,000,000
Contact: Scott.Walker@TRWD.com

Description:

Joint Pipeline (JP) Section 1 (Rolling Hills Water Treatment Plant (WTP) to Arlington Outlet) and Section 6 (adjacent to the Rolling Hills Water Treatment Plant) have been part of the TRWD water delivery capital improvement planning for more than a decade. These are new pipeline sections that will ultimately connect from the Integrated Pipeline at the Kennedale Balancing Reservoir (KBR) to the Rolling Hills WTP and TRWD's Benbrook Connection pipeline. JP Section 1 is the proposed pipeline section parallel to the existing TRWD pipelines from the Arlington Outlet to the City of Fort Worth's Rolling Hills WTP. JP Section 6 is the proposed pipeline section parallel to the existing TRWD 90-inch-diameter pipeline adjacent to the City of Fort Worth's Rolling Hills WTP. The existing 90" Benbrook pipeline is fed by a 108" pipeline and an 84" pipeline. The system plan always included installation of a parallel pipeline next to the 90" pipeline once water demands justified a second pipeline. The additional pipeline will keep the existing 90" pipeline from experiencing high velocities, high enough to put the pipeline and valves at risk of damage. Demands for terminal storage (Lake Benbrook and Eagle Mountain Lake) and at the treatment plants are expected to reach the point where a parallel pipeline will be needed by the time it is designed and constructed. An additional benefit of the project is increased redundance and resilience. By installing higher pressure class piping along this segment of the pipeline, the District will be able to reverse

the flow of standard operations, and pump water from Lake Benbrook to the Midlothian Balancing Reservoir. It is expected that JP 1 & 6 will be 108" pipelines to meet flow capacity needs, while also facilitating the option of pigging between Rolling Hills and KBR. The total length will be approximately 19,000 linear feet. Included in this design and construction are large diameter valves and upsized piping replacements feeding the Arlington Outlet facility off the Cedar Creek and Richland Chambers pipelines.

IPL Section 19 Pipelines (19-1, 19-2 and Tunnels)

Project Start: *2020*
Projected Completion: *2027*
Project Estimate: *$736,000,000*
Contact: *Eddie.Weaver@TRWD.com*

Description:

The Section 19 IPL Pipelines project is comprised of two major sub-sections (19-1 and 19-2) and multiple tunnels. Section 19-1 is an approximately 21-mile, 84-inch diameter pipeline that originates at the eastern end of the IPL Project at Lake Palestine and terminates just southeast of the city of Athens, Texas, where it will connect to Section 19-2 of the IPL Project.

The IPL Pipeline Section 19-2 consists of an 84-inch pipeline, approximately 21 miles long and is located entirely within Henderson County, Texas. The downstream portion (western end) of the pipeline begins near a proposed junction structure at the southwest corner of Cedar Creek Reservoir where Section 19-2 connects to Section 18 of the IPL pipeline. The Section 19-2 pipeline route runs generally east and slightly south such that the upstream portion (eastern end) of the pipeline ends at a connection to the westernmost point of IPL Pipeline Section 19-1, located just southeast of Athens, Tx.

The proposed Corridor is 150' wide for the entire length of the alignment, to accommodate both the initial pipeline, as well two potential, future pipelines. Two major tunnel contracts have been awarded and are underway for several tunnels in Section 19 for pipeline installations that cannot be made by open cut means. The Lake Palestine Pump Station and Section 19-1 and 19-2 Pipelines will deliver up to 150 MGD of water supply for Dallas Water Utilities from Lake Palestine via the Integrated Pipeline operated by Tarrant Regional Water District.

IPL LP1 Lake Palestine Pump Station

Project Start: *2023*
Projected Completion: *2028*
Project Estimate: *$265,000,000*
Contact: *Eddie.Weaver@TRWD.com*

Description:

The IPL Lake Palestine Pump Station (LP1) is one of three new lake pump stations that are part of the IPL. It is being constructed on a new site on the southwest side of Lake Palestine approximately a mile upstream of Blackburn Crossing Dam near Frankston, Texas. The LP1 Pump Station will draw raw water from Lake Palestine via a new intake structure constructed as part of the proposed project. It will discharge flow into the new IPL Segment 19-1 Pipeline that proceeds generally west from the site and leads to the suction reservoirs associated with the new Joint Booster Pump Station Nos. 2 and 3 (JB2 and JB3, respectively). The LP1 Pump Station is designed to have 5 vertical line-shaft pumps, each equipped with a variable frequency drive (VFD) and totally enclosed water- and air-cooled (TEWAC) 4,000-horsepower (hp), 900-revolutions-per minute (rpm) electric induction motors. Flows will be discharged from each pump through 36-inch discharge piping including pump control ball valves (PCBV), an individual Venturi-type flowmeter, and an isolation valve. All flows will be discharged into an 84-inch-diameter header and pipeline that connects to IPL Segment 19-1 on the west side of the LP1 site. Design flow capacity is 150 million gallons per day (mgd).

IPL Section 16 and JRC1 RC Lake Pump Station

Project Start: *2023*
Projected Construction Start: *2027*
Projected Completion: *2032*
Project Estimate: *$480,000,000*
Contact: *Eddie.Weaver@TRWD.com*

JRC1

The IPL Project is a raw water supply program that integrates the TRWD and DWU water supplies from Lake Palestine, Cedar Creek Reservoir, and Richland Chambers Reservoir. The program includes raw water pipelines, raw water intakes and pumping stations, booster pumping stations, and storage reservoirs.

The upcoming Joint Richland Chambers Lake Pump Station (JRC1) is the last of three new lake pump stations being built as part of the IPL project. Water supply will be pumped from JRC1 via the new Section 16 Pipeline of the IPL system.

The following criteria and configuration information guide the preliminary design of JRC1.

The JRC1 design flow range is approximately 280 million gallons per day (mgd). The maximum lake flood elevation is 320 feet msl (flood easement level) with the Richland Chambers reservoir pool conservation level at 315 feet msl.

Section 16 IPL Pipeline

The future Section 16 IPL Pipeline will connect the future JRC1 Lake Pump Station on the Richland Chambers Reservoir with the rest of the IPL water transmission system. The Section 16 pipeline is designed as an approximately 96-inch diameter pipe of either welded steel (C-200). Pipeline Right-of-way between the future JB2 booster pump station and the existing Richland Chambers Lake Pump Station (RC1) has already been obtained. The future JRC1 Lake Pump Station will be located further south of the existing RC1 lake pump station.

Mary's Creek Indirect Water Reclamation Project

Project Start: *2024*
Projected Construction Start: *2027*
Projected Completion: *2029*
Project Estimate: *$53,000,000*
Contact: *Scott.Walker@TRWD.com*

Description:
Tarrant Regional Water District is coordinating with the City of Fort Worth to capture treated effluent from the city's future Mary's Creek Water Reclamation Facility and pump it through a pipeline to the north of TRWD's Eagle Mountain Balancing Reservoir. There it will tie into TRWD's existing pipeline for discharge into Eagle Mountain Lake for water supply purposes. This capability will also protect the water quality of the downstream Mary's Creek and Clear Fork of the Trinity River, especially during extended dry periods of minimal natural stream flows. Project components include a channel dam, an intake pump station and approximately 42" pipeline.

IPL Joint Booster Pump Station #2 (JB2):

Projected Start: *2026*
Projected Construction Start: *2030*
Projected Completion: *2035*
Projected Estimate: *$223,000,000*
Contact: *Eddie.Weaver@TRWD.com*

Description:
The IPL Project is a raw water supply program that integrates the TRWD and Dallas Water Utilities' water supplies from Lake Palestine, Cedar Creek Reservoir, and Richland Chambers Reservoir. The program includes raw water pipelines, raw water intakes and pumping stations, booster pumping stations, and storage reservoirs. The upcoming Joint Booster Pump Station #2 (JB2) is one of three new booster pump stations being built as part of the IPL project. During high flow scenarios, water supply will be pumped from any of the IPL lake sources to the JB2 pump station where the water will be pumped further northwest to the next booster pump station (JB3). The JB2 pump station includes two 40-million-gallon earthen storage reservoirs that the pump station will draw from. The JB2 design flow range is 350 million gallons per day (mgd) peak, down to 35 mgd minimum.

IPL Joint Booster Pump Station #4 (JB4):

Project Start:	2028
Projected Construction Start:	2032
Projected Completion:	2037
Projected Cost:	$233,000,000
Contact:	Eddie.Weaver@TRWD.com

Description:

JB4 is a wholly new booster pump station with an upstream connection to Pipeline Segment 13 and downstream connections to Pipeline Segments 11 and 12. The JB4 booster pump station has a proposed initial pumping capacity of 200 mgd, with a total build-out pumping capacity of 400 mgd. The total build-out capacity is based on two identical proposed JB4 stations. The JB4 proposed and total build-out capacities are lower than JB2 and JB3 due to a flow split occurring in the pipeline system on the JB4 site. Flow entering the site through Segment 13 is split into Segments 11 and 12. Flow to Segment 12 simply flows through the JB4 site in route to an outlet/connection facility for supply to Dallas Water Utilities near the Joe Pool Reservoir. Flow to Segment 11 can either bypass the JB4 Booster Pump Station or it can be pumped through the JB4 Booster Pump Station depending on required flow rates downstream of JB4.

IPL Pipeline Section 9

Project Start:	2032
Projected Construction Start:	2033
Projected Completion:	2037
Projected Cost:	$462,000,000
Contact:	Eddie.Weaver@TRWD.com

Description:

The pipeline includes approximately 10.6 miles of 84-inch and 5 miles of 120-inch pipe, mainline valves, and associated appurtenances. The pipeline includes a 5-mile-long deep tunnel for the 120-inch portion under Risinger Road and connects to the existing Benbrook Tunnel east of Benbrook Lake.

Benbrook Booster Pump Station (BB2) Expansion

Project Start:	2027
Projected Construction Start:	2031
Projected Completion:	2035
Projected Cost:	$130,000,000
Contact:	James.Johnson@TRWD.com

Description:

The current design accommodates all scenarios by pumping a minimum flow rate of 12.5 MGD, maximum rate of 230 MGD and flows in-between. The current pump station was originally designed to be expanded to 350 MGD to meet future demands by increasing the building size, adding two pumping units, and changing out the existing pumps for the increased operational

pressure (based on 280 MGD to the Eagle Mountain Pipeline and 70 MGD to Fort Worth's Westside Water Treatment Plant, for a total of 350 MGD.)

Longhorn Park Pipeline (3.8 miles of 90", half tunneled)

Project Start:	2028
Projected Construction Start:	2031
Projected Completion:	2034
Projected Cost:	$180,000,000
Contact:	James.Johnson@TRWD.com

Description:

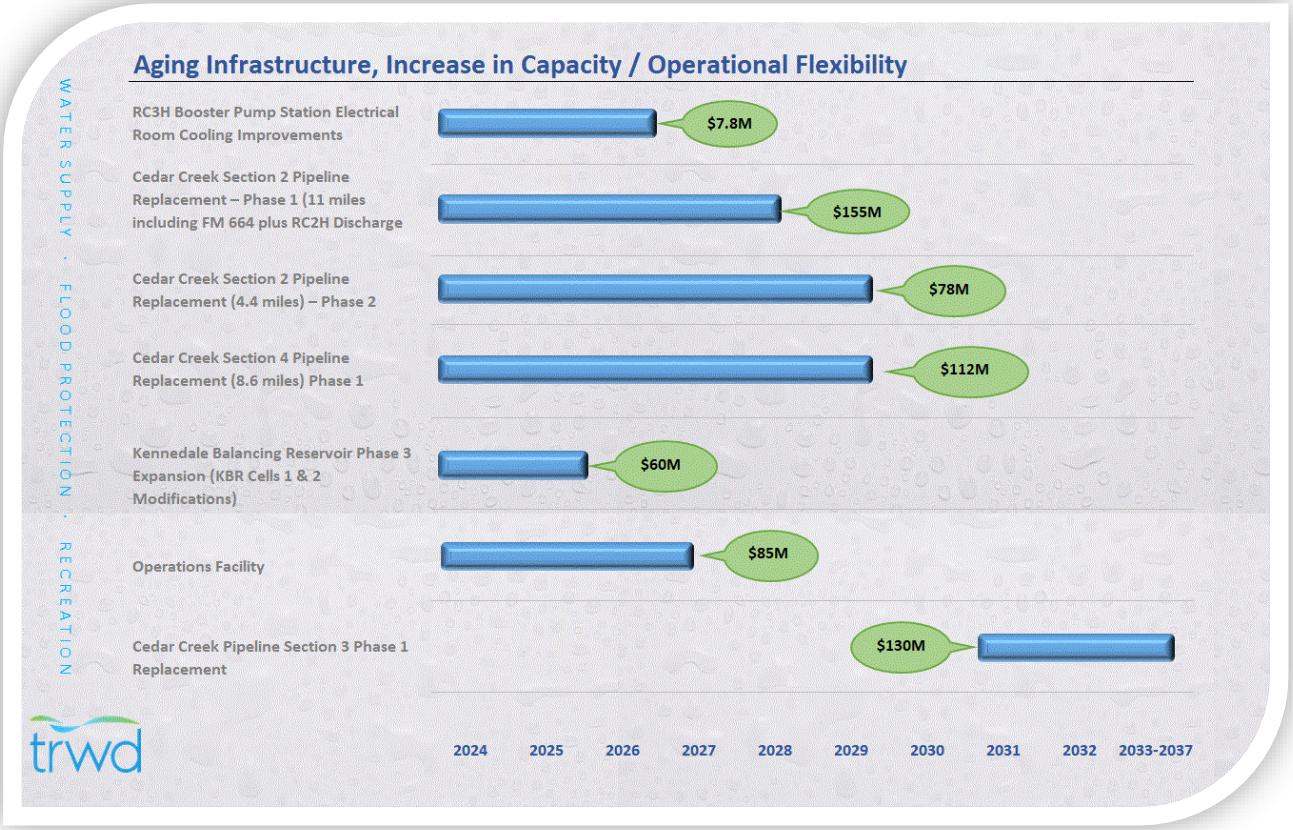
The Longhorn Park Parallel Pipeline project will connect TRWD's newest East Texas conveyance facilities to West Tarrant County. This connection will add capacity, operational flexibility, reliability and resilience to the TRWD's raw water supply. The Longhorn Park Parallel Pipeline project will convey up to 200 MGD from the Integrated Pipeline (IPL) to the Eagle Mountain Connection (EMC). The EMC supplies the City of Fort Worth's Holly, Westside, and Eagle Mountain water treatment plants (WTP). The pipeline includes approximately 4 miles of 90-inch pipe, mainline valves, and associated appurtenances. A portion of the pipeline will be installed in a deep tunnel across Longhorn Park, a US Corps of Engineer facility located on the North-east side of Benbrook Lake.

JB3 Booster PS Expansion (IPL) - addition of 3 pumps and associated equipment

Project Start:	2032
Projected Construction Start:	2033
Projected Completion:	2037
Projected Cost:	$43,000,000
Contact:	Eddie.Weaver@TRWD.com

Description:

The Joint Booster Pump Station (JB3) was originally constructed with five horizontal, centrifugal pumps installed, with room for three additional pumps. This expansion project, required to achieve the full 350 MGD pumping capacity of the JB3 booster pump station, will involve installing the pumps, motors, variable frequency drives and pump discharge flow control valves associated with these three additional pumps.



RC3H Booster Pump Station Electrical Room Cooling Improvements

Project Start: 2022
Project Construction Start: 2025
Projected Completion: 2026
Projected Cost: $7,800,000
Contact: *Scott.Walker@TRWD.com*

Description:

The existing RC3H electrical room requires significant cooling due to heat loading from the five, 5000 hp variable frequency drives. Two-thirds of the existing cooling capability is from the original 2005 pump station installation, which has exceeded their expected service life and as a result, frequently have mechanical failures. Moreover, the district is interested in moving the air handling equipment out of the electrical room for improved protection of critical equipment and personnel. A more reliable cooling solution employing air-cooled chillers will be installed, allowing the continued operation of this critical booster pump station to move the water supply to TRWD's customers.

Cedar Creek Section 2 Pipeline Replacement – Phase 1 (11 miles including FM 664 plus Ennis PS (RC2H) Discharge Header Valve Install)

Project Start: 2019
Project Construction Start: 2024
Projected Completion: 2028
Projected Cost: $155,000,000
Contact: Courtney.Jalbert@TRWD.com

Description:

In this area of the Cedar Creek pipeline, approximately one third of all pipe segments have pre-stressing wire breaks due to hydrogen embrittlement. Potential pipeline ruptures in this area of highly distressed pipeline would result in significant negative consequences. Moreover, the loss of this section of the CC Pipeline due to a pipe failure would negatively impact TRWD's ability to deliver water to several primary customer cities fed directly from the pipeline. The planned course of action is to remove and replace approximately eleven miles of 72" pre-stressed concrete cylinder pipe (PCCP) with 90" and 102" welded steel pipe in the Mansfield to Midlothian area which will provide additional water delivery capacity. The new 102" pipe will run west from the S2x12 Interconnect to the western end of this Phase 1 Replacement (Mouser Way), providing increased water delivery capacity from the IPL following completion of the remaining Phase 2 replacement and upsizing from Mouser Way to TRWD's Kennedale Balancing Reservoir.

Preliminary design began in Fall 2019, with Phase 1a construction underway as of late 2024 – and Phase 1b expected to begin construction in the summer of 2025. Construction was divided into two contracts to meet TXDOT schedule requirements in preparation for TXDOT widening of the FM 664 highway.

Cedar Creek Section 2 Pipeline Replacement (4.4 miles) – Phase 2

Project Start: *2024*
Projected Construction Start: *2027*
Projected Completion: *2029*
Projected Cost: *$78,000,000*
Contact: *Courtney.Jalbert@TRWD.com*

Description:

Section 2 of the CC pipeline conveys water from the Waxahachie Pump Station to the Kennedale Balancing Reservoir (KBR). It can also convey IPL water through the S2x12 Interconnect. Phase 2 of the Cedar Creek Section 2 Pipeline Replacement project will continue the replacement of the 50-year-old 72" PCCP with 102" welded steel pipe. In addition to the added water delivery capacity benefit, the 4.42 miles from KBR to Mouser Way will replace several areas with high likelihood and consequence of failure. This section of pipeline has 125 out of 984 pipes with defects (13%) and 15 of those pipes are a repair priority 1 which means the pipe has the potential for failure based on risk analysis. This entire section of pipeline was installed in 1971 and is also approaching its end of useful life. This stretch of PCCP is a known area with no shorting straps, resulting in reduced ability to protect the pipelines from corrosion if there are multiple breaks in the same pipeline. If a failure should occur the surrounding community would be negatively impacted, so executing this project will remove additional hazards and improve community safety. Moreover, the loss of this section of the CC Pipeline due to a pipe

failure would negatively impact TRWD's ability to deliver water to several primary customer cities fed directly from the pipeline.

The recommended course of action is to remove and replace approximately 4.42 miles of 72" pre-stressed concrete cylinder pipe with 102" steel pipe from ROW station 319+74 near KBR to 552+89 which will connect to the Phase 1 project at Mouser Way in Mansfield and provide a continuous stretch of 102" pipe from S2x12 to KBR. Water transmission flow capacity increases as a result of these two phases of the Cedar Creek Section 2 Pipeline replacements with upsized pipelines.

Cedar Creek Section 4 Pipeline Replacement (8.6 miles) Phase 1, including Lake PS header piping

Project Start: 2024
Projected Construction Start: 2027
Projected Completion: 2029
Projected Cost: $112,000,000
Contact: Courtney.Jalbert@TRWD.com

Description:

The Cedar Creek Section 4 Pipeline Replacement Project will replace 8.6 miles of the existing 72- inch prestressed concrete cylinder pipe with a new 90-inch welded steel pipe from the CC Lake Pump Station to the Trinity River. The existing 1970s vintage pipe has operating pressures up to 225 psi and has encountered joint end failures not able to be detected by electromagnetic condition assessment technologies in this flood prone area. If a pipe break occurs in this Trinity bottoms area during a major flood event, it could result in an extended CC pipeline operations shutdown spanning several months until flood waters recede, only after which time repairs could be made and the pipeline cleared of mud and debris making this a critical area for rehabilitation. TRWD also intends to replace the buried pump discharge header pipe at the CC1 lake pump station that is part of a future capacity upgrade of the Cedar Creek Lake Pump Station (CC1). The new pipe will follow the same alignment as the existing pipe which will be taken out of service during the installation of the new pipeline. Construction is expected to begin in 2027.

Over the next two to three decades, TRWD will be replacing the remainder of the distressed 1970s era 72” PCCP with 90” spiral welding steel pipe from the Cedar Creek Lake to the S2X12 Interconnect. This, along with the upsizing of the Cedar Creek Lake Pump Station, will increase the Cedar Creek transmission capacity from its current 130 mgd to 250 MGD.

Kennedale Balancing Reservoir - Phase 3: Yard Piping and Modifications to Cells 1 & 2

Project Start: 2015
Projected Construction Start: 2022
Projected Completion: 2025
Projected Cost: $60,000,000
Contact: Donna.Stephens@TRWD.com

Description:

Construction activity is continuing at the Kennedale Balancing Reservoir (KBR). The first two phases – 108” Bypass Piping and the 3rd Cell Foundation have been completed. This third phase of construction, awarded in December 2021 and implemented over a four-year period, involves the installation of 120-inch diameter flow-through inlet and outlet piping for the existing two cells, along with large diameter yard piping and valve connections to the Cedar Creek, Richland

Chambers and Integrated Pipeline pipelines that supply KBR. Two large concrete splitter box weirs will be removed, and current leakage attributed to existing cell inlets plugged. Enhanced operational flexibility and improved water quality will also result. The final phase after this construction is to complete the new 165- million-gallon third cell at KBR providing additional emergency storage and optimized time of day operational capability.

Operations Facility

Project Start:	2023
Projected Construction Start:	*2025*
Projected Completion:	2027
Projected Cost:	$85,000,000
Contact:	*JL.Cabrera@TRWD.com*
	Lexi.McCalip@TRWD.com

Description:

The current Operations Facility located at 1022 North Calhoun has been occupied for over 60 years. The facility no longer meets the work needs of staff and material storage is beyond maximum capacity. A 25-acre parcel located at the intersection of Old Decatur and 820 North was purchased and a new compound will be constructed by 2027. The new compound will be home for the following groups: operations field and administration staff, emergency management personnel, law enforcement division, fleet mechanics, welding staff, purchasing, and receiving personnel along with warehouse inventory. Accommodation for fleet and heavy equipment will be included along with bulk material storage. This new compound will accommodate the current workload and allow for future growth.

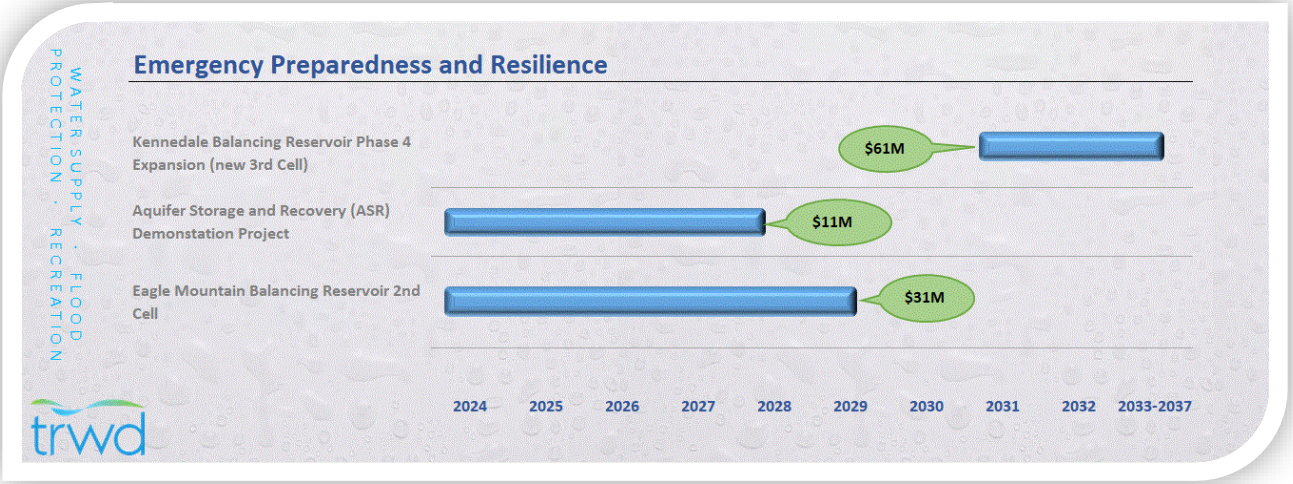
Cedar Creek Pipeline Section 3 Phase 1 Replacement

Projected Start:	*2031*
Projected Construction Start:	*2033*
Projected Completion:	*2037*
Projected Cost:	*$130,000,000*
Contact:	*Courtney.Jalbert@TRWD.com*

Description:

The Cedar Creek Section 3 Pipeline Replacement Project will replace 11 miles of the existing 72-inch prestressed concrete cylinder pipe with a new 90-inch welded steel pipe from near the Waxahachie Pump Station to Black Jack Road and Garrett Creek. Section 3 of the CC pipeline conveys water from the Ennis Pump Station to the Waxahachie Pump Station. This section of pipe was installed in 1971 making it more than 50 years old which is the estimated useful life for prestressed concrete cylinder pipe of this vintage. This stretch of pipe has had many in-house individual pipe replacements over the years and a handful of failures, mainly due to distress-prone wire, causing hydrogen embrittlement wire breaks over the years. Materials used in the manufacturing of C301 fifty years ago were much lower quality than current C301 pipe. Wire forensic testing has shown that the wire used is extremely susceptible to hydrogen embrittlement. This section of pipeline currently has 150 pipe segments with known distress remaining, 22 of those are repair priority 1 which means the pipe has the potential for failure based on risk analysis, and 11 are Zone 5 pipes. If a catastrophic failure occurs the surrounding community would be negatively impacted, which is one driver of this project. This project is also part of the water transmission master plan to upgrade the Cedar Creek pipeline from 72” to 90”

from the Cedar Creek Lake Pump Station to S2x12 for additional capacity. Executing this project will remove the hazard, improve community safety, and increase TRWD's water transmission capacity for the future.



Kennedale Balancing Reservoir – Phase 4: Third Cell Construction

Project Status: 100% design complete as of 2023
Projected Construction Start: 2031
Projected Completion: 2035
Projected Cost: $61,000,000
Contact: *Dorota.Koterba@TRWD.com*

Description:

Kennedale Balancing Reservoir (KBR) currently consists of a two-cell balancing storage reservoir with a capacity of about 1,000 acre-feet. As part of a KBR expansion project, the addition of a third reservoir cell is to be constructed in two phases. The first phase consisting of the construction of an engineered foundation was completed in 2018. The second phase consists of the construction of the third cell directly west and adjacent to the existing cells, increasing the total combined capacity to about 1,500 acre-feet. The third cell of approximately 165 MG will be constructed of an earth fill embankment with a maximum height of about 65 feet and minimum 3 horizontal to 1 vertical slopes. The nominal crest elevation of the embankment will match the elevation of the existing two cells at 740 feet-msl. A 200-foot-wide overflow weir will be used as an emergency spillway for the third cell.

Aquifer Storage and Recovery (ASR) Demonstration Project

Project Start: 2018
Project Construction Start: 2023
Projected Completion: 2028
Projected Cost: $11,300,000
Contact: Zach.Huff@TRWD.com / David.Schroeder@TRWD.com

Description:

Aquifer Storage and Recovery (ASR) is a proven technology to store water underground for later use. Benefits of ASR systems include improved resilience in times of drought, avoidance of evaporation, storage for emergency situations, and an intermittent source of supply to be used during peak demand periods. Based on the results of studies completed for the District in 2000, 2002, and 2015, ASR appears to be a technically feasible water supply strategy for the District. A more detailed business case evaluation was completed in 2016 and based on those results and discussions with other agencies that have implemented ASR, the District decided to implement an ASR demonstration project to verify aquifer performance. The primary purposes of the project are to verify that ASR is feasible in the Trinity aquifer in this region, including geochemistry reactions, recharge rates, feasible storage volumes, recovery rates, and construction and operating costs. Phase 1, construction of the ASR and monitoring well is now complete. Phase 2, Surface Facilities, is planned for construction starting in 2025.

Eagle Mountain Balancing Reservoir 2nd Cell

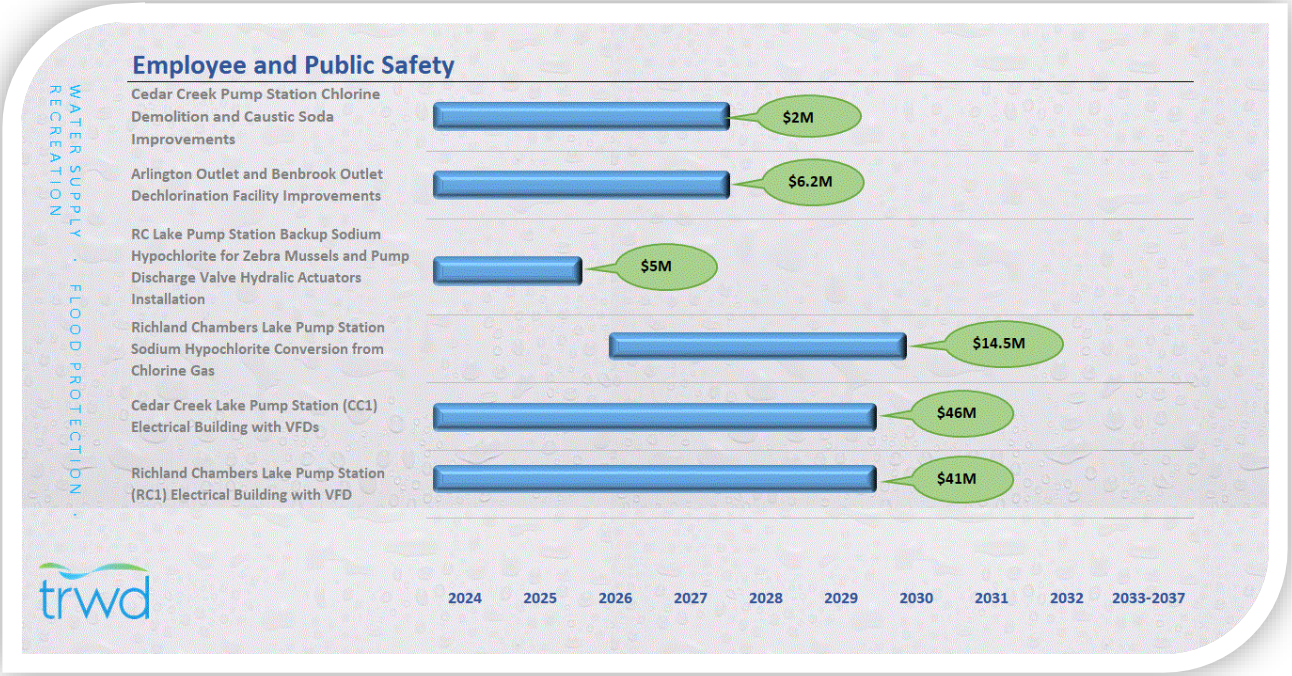
Project Start: *2024*
Projected Construction Start: *2027*
Projected Completion: *2029*
Project Estimate: *$31,000,000*
Contact: Dorota.Koterba@TRWD.com / Scott.Walker@TRWD.com

Description:

The Eagle Mountain Balancing Reservoir (EMBR) is a single cell, 118-million-gallon storage reservoir located in west Fort Worth. The reservoir serves several functions within TRWD's Eagle Mountain Connection Project system by providing emergency storage, surge control, and hydraulic control.

To address the growing water supply needs of the City of Fort Worth Westside Water Treatment Plant, along with the need for increased operational flexibility, TRWD is planning to expand the balancing reservoir to have a second cell.

The addition of a second cell will provide redundancy and the ability to bring one cell down for maintenance. The addition of approximately 120 million gallons of elevated storage in the new second cell of the EMBR facility will provide increased resilience in meeting Westside WTP demands in the event of extended emergencies.



Cedar Creek Pump Station Chlorine Demolition and Caustic Soda Improvements

Project Start: 2025
Projected Construction Start: 2026
Projected Completion: 2027
Projected Cost: $2,000,000
Contact: *John.Logan@TRWD.com*

Description:

Historically, TRWD used three chemicals at the Cedar Creek Lake Pump Station. The first two are chlorine gas and aqueous ammonia (also called ammonium hydroxide). They are mixed to form chloramines that are injected into the water before being pumped into the transmission system. Originally the chloramines were injected to reduce biofilm growth in the pipeline in order to maintain flow capacity. However, the cost/benefit did not turn out as expected because the pumping costs are dominated more by the significant pipe roughness of the previously deteriorated Cedar Creek pipeline than biofilm growth. These chlorine chemical feed systems are now inactive. A chloramine system employing sodium hypochlorite and ammonia will only be reactivated to control zebra mussels if they appear in the lake which is only a moderate risk for Cedar Creek. (The goal of controlling zebra mussels is to reduce the number that attach to the transmission system.) The third chemical is sodium hydroxide (also called caustic soda). It is injected into the pump station to maintain the Langelier Saturation Index to a safe range for protection of the pipeline lining from the otherwise aggressive waters.

TRWD is planning the following changes and improvements.

- Remove the chlorine tank, associated scrubber tank (but possibly not the containment structure for this tank as it may be reused), and associated feed system; then repurpose the building that houses the chlorine tank and feed system.

- Relocate the sodium hydroxide metering pumps so that the tank can completely drain.
- Remove the ammonia tank and demo the containment area.

Arlington Outlet and Benbrook Outlet Dechlorination Facility Improvements

Project Start: 2023
Projected Construction Start: 2025
Projected Completion: 2027
Projected Cost: $6,200,000
Contact: *Donna.Stephens@TRWD.com*

Description:

The purpose of the Arlington Outlet Dechlorination Facility is to remove any chlorine residual that may remain in the raw water pipelines prior to release into Village Creek upstream of Lake Arlington for meeting water supply and terminal storage needs. Among the planned improvements to the dechlorination facility are a roof to protect the tanks, piping and pumping components from outdoor elements, as well as improved ventilation, relocation of the sampling equipment, and additional sampling and injection taps on the three nearby TRWD transmission mains. Improvements to the existing Benbrook dechlorination facility will also be made.

RC Lake Pump Station Backup Sodium Hypochlorite for Zebra Mussels and Pump Discharge Valve Hydraulic Actuators Installation

Project Start: 2021
Project Construction Start: 2023
Projected Completion: 2025
Projected Cost: $5,000,000
Contact: *David.Schroeder@TRWD.com*

Description:

Following the discovery of zebra mussels in the Richland Chambers Reservoir in 2020, TRWD worked with Texas Parks and Wildlife (TPWD) and the Army Corps of Engineers (USACE) to ensure deliveries from Richland Chambers were not disrupted. Permission to pump to Lake Benbrook, an Army Corps Lake that does not yet have zebra mussels, was given with some conditions: TRWD needs to have the ability to dose chloramines in the Richland Chambers pipeline at all times during active zebra mussel spawning months (typically March through October of each year) to prevent the transportation of zebra mussels to currently uninfected reservoirs. To ensure that the District can meet the goal of uninterrupted service to our customers, TRWD is installing a redundant method for dosing chloramines at the Richland Chambers lake pump station that will provide protection for the wet well, pumps, pump cans, pipeline, and appurtenances. The new method for dosing chemicals in the pipeline will operate as a backup to the current chloramine delivery system in place. Having two different methods for chloramine dosing ensures that if one system fails, a second is on stand-by to continue protecting our pipeline as well as prevent the transportation of zebra mussels between reservoirs. This project is currently in construction.

Richland Chambers Lake Pump Station Sodium Hypochlorite Conversion from Chlorine Gas

Projected Start: 2026
Projected Construction Start: 2028
Projected Completion: 2030
Projected Cost: $14,500,000
Contact: John.Logan@TRWD.com

Description:

TRWD currently receives bulk chlorine and mixes it with aqueous ammonia (also called ammonium hydroxide) to form chloramines that are injected upstream of the pump station to control biofilm growth and reduce zebra mussel attachment to the transmission system. Both biofilm and attached zebra mussels reduce the flow capacity during higher flow operations.

Since chorine is a hazardous chemical, TRWD must protect personnel and the public from risks, maintain an EPA Risk Management Plan, and be subject to periodic inspections and audits by the EPA. In addition, chlorine deliveries can be interrupted by factors outside of TRWD's control.

To reduce the hazard and eliminate the EPA's requirements listed above, TRWD plans to replace the chlorine system with a sodium hypochlorite system. The sodium hypochlorite may be delivered in bulk or generated on site. While on site generation requires more equipment, and maintenance, it allows greater autonomy from the chemical market.

TRWD will contract with a design consultant and contractor to design and build this project.

Cedar Creek Lake Pump Station (CC1) Electrical Building with VFDs

Project Start: 2024
Projected Construction Start: 2026
Projected Completion: 2029
Projected Cost: $46,000,000
Contact: John.Logan@TRWD.com

Description:

Currently, the medium voltage 4,160-volt switchgear and soft starts at the CC1 Lake Pump Station, along with the master control center (MCC), are located in the existing pump station building adjacent to the mechanical equipment. Apart from the MCC, the electrical equipment is dated and does not have modern safety features. In addition to improved staff safety and equipment reliability, another driver for a new electrical building to house all electrical equipment is the desire by TRWD to have the capability to operate the six 3000 HP pumps at different speeds through the installation of Variable Frequency Drives (VFDs) with the ability to expand to six 5,000 HP pumps in the future. This would facilitate TRWD's ability to better optimize real-time pumping during peak power demand periods and times of high-power pricing variability.

Richland Chambers Lake Pump Station (RC1) Electrical Building with VFDs

Project Start: 2024
Projected Construction Start: *2026*
Projected Completion: 2029
Projected Cost: $41,000,000
Contact: John.Logan@TRWD.com

Description:

Currently, the medium voltage 4,160-volt switchgear, soft starts, and capacitor banks at the RC1 Lake Pump Station are in the pump and basement floors of the existing pump station building. The electrical equipment is dated and does not have modern safety features. Moreover, the capacitor banks are installed in the basement and are subject to damp conditions. In addition to improved staff safety and equipment reliability, another driver for a new electrical building to house all electrical equipment is the desire by TRWD to have the capability to operate the six 5000 hp pumps at different speeds through the installation of Variable Frequency Drives (VFDs). This would facilitate TRWD's ability to better optimize real-time pumping system wide during peak power demand periods and times of high-power pricing variability. The use of VFDs would also eliminate the need for the existing capacitor banks which were installed for power factor correction purposes at RC1.

Last updated 3-21-25