

CITY OF DRIPPING SPRINGS REGIONAL WASTEWATER SERVICE PLANNING

In 2003, the City of Dripping Springs acquired approximately 40 acres for its new wastewater treatment and disposal facility. This area was sufficient for Interim I and Interim II Permit Phases (127,500 GPD total) of the initial TCEQ land application permit issued in October 2005.

The WWTP, effluent holding tank, WWTP operations building, and Interim I and Interim II subsurface drip irrigation fields were constructed on the 40 acres. These facilities went into operation in November 2008.

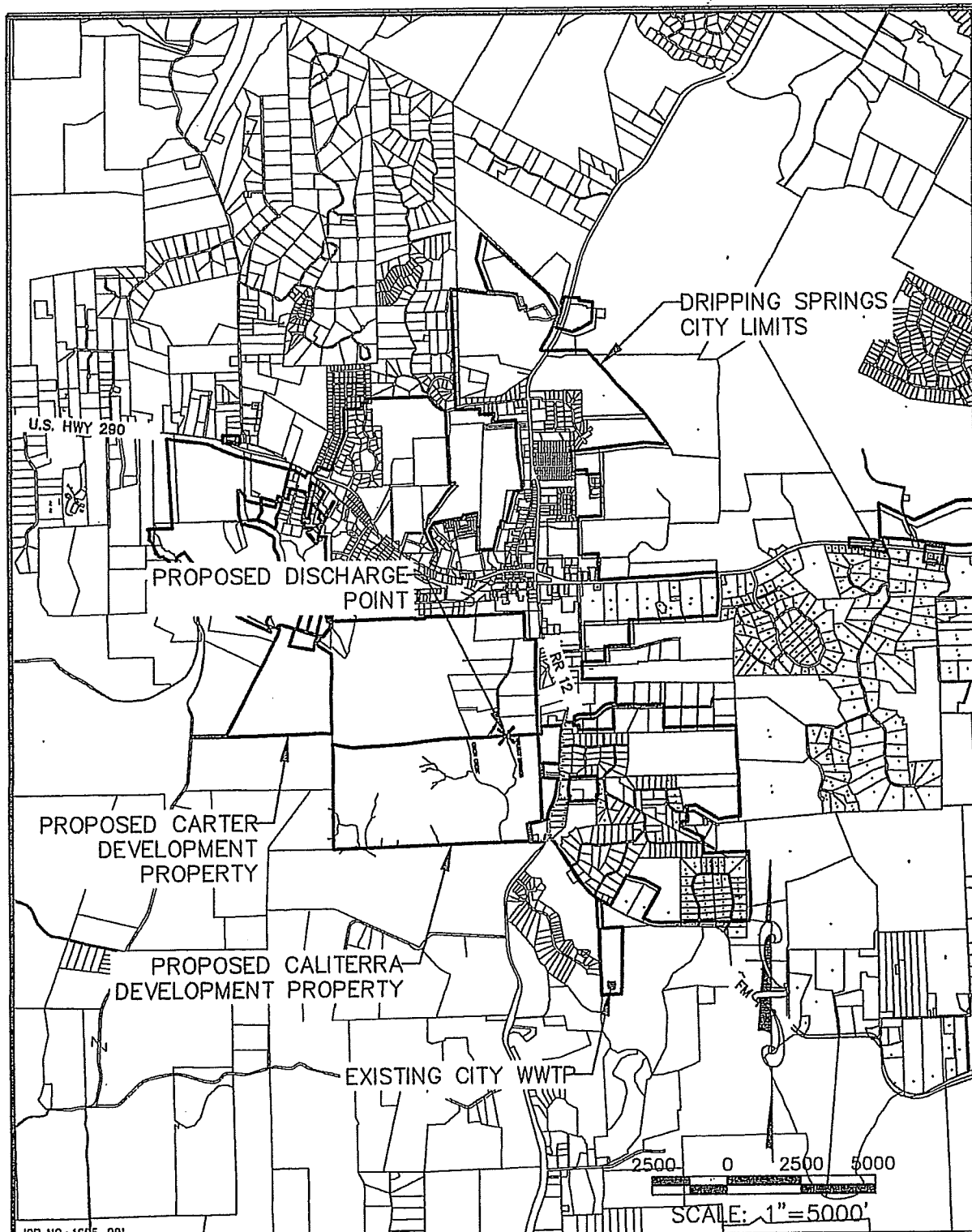
The system was originally funded by the TWDB via Clean Water State Revolving Fund (CWSRF) Program.

The original objective was to get the greater downtown area off of failing septic systems.

The City is treating approximately 70,000 GPD now, and the remaining 57,500 GPD capacity is allocated to future developments. Over the years the City has received several additional requests for wastewater service.

In January 2013, the City of Dripping Springs Economic Development Committee (Committee) expressed concern about the City's future ability to provide adequate wastewater service to the community.

More specifically, the Committee is concerned that the current lack of capacity in the System undermines their ability to accomplish the following critical goals:



JOB NO.: 1695-001

CMA ENGINEERING, INC.
 235 LEDGE STONE DRIVE
 AUSTIN, TEXAS 78737
 (512) 432-1000 Fax: (512) 432-1015
 Registration # F-3053

CITY OF DRIPPING SPRINGS
SOUTH REGIONAL WASTEWATER SYSTEM
VICINITY MAP

FIGURE
1

- Adequately meet the needs of the existing residents and businesses within the area currently served by the System, particularly the businesses as they seek to expand.
- Effectively and thoughtfully manage the commercial and residential growth that is destined to occur, regardless of whether the City expands the System.
- Recruit additional, quality primary employers to our Community that are necessary to support our local retail economy and tax base, as well as the success of our City, County, and School District.

As a result, the City applied for and was issued an amendment to their permit to increase its treatment and disposal capacity. The amendment was issued in November 2015 and increased capacity to 313,500 GPD via surface and subsurface irrigation. This capacity is also already allocated for future developments.

The City anticipated using City-owned athletic fields for the Final Phase of the permit (an additional 35,000 GPD to a new total of 348,500 GPD). However, based on several factors, including the City's experience with maintenance and operation of the existing 127,500 GPD drip irrigation fields, the City is now concerned that using its athletic fields in the final Permit Phase may not be practical or efficient.

The City continues to receive additional requests for wastewater service. It is estimated that the City could easily hit a capacity of 675,000 GPD by the year 2025. As a result, in October 2015 the City filed a new discharge permit application for a new WWTP with an ultimate capacity of 995,000 GPD.

The City is proposing three permit phases. The proposed Interim I Phase is 0.399 MGD and allows the City to operate the new WWTP in accordance with 30 TAC, Chapter 217.153(c) that requires that WWTPs over 0.400 MGD to have two aeration basins and two clarifiers for redundancy. This will allow the City to continue to grow while the existing WWTP is being retrofitted.

The proposed Interim II Phase is 0.4975 MGD.

The proposed Final Phase is 0.995 MGD.

Based on the conceptual design of the WWTP performed by Carollo Engineers (Carollo), the existing WWTP can be converted to a Biological Nutrient Removal (BNR) WWTP at the proposed permit phase capacities and meet the proposed effluent parameters.

The proposed process is a Four Stage Bardenpho Process.

The proposed 995,000 GPD wastewater treatment and effluent disposal facilities will serve approximately 5,685 Living Unit Equivalents (LUEs) using a wastewater production estimate of 175 GPD/LUE.

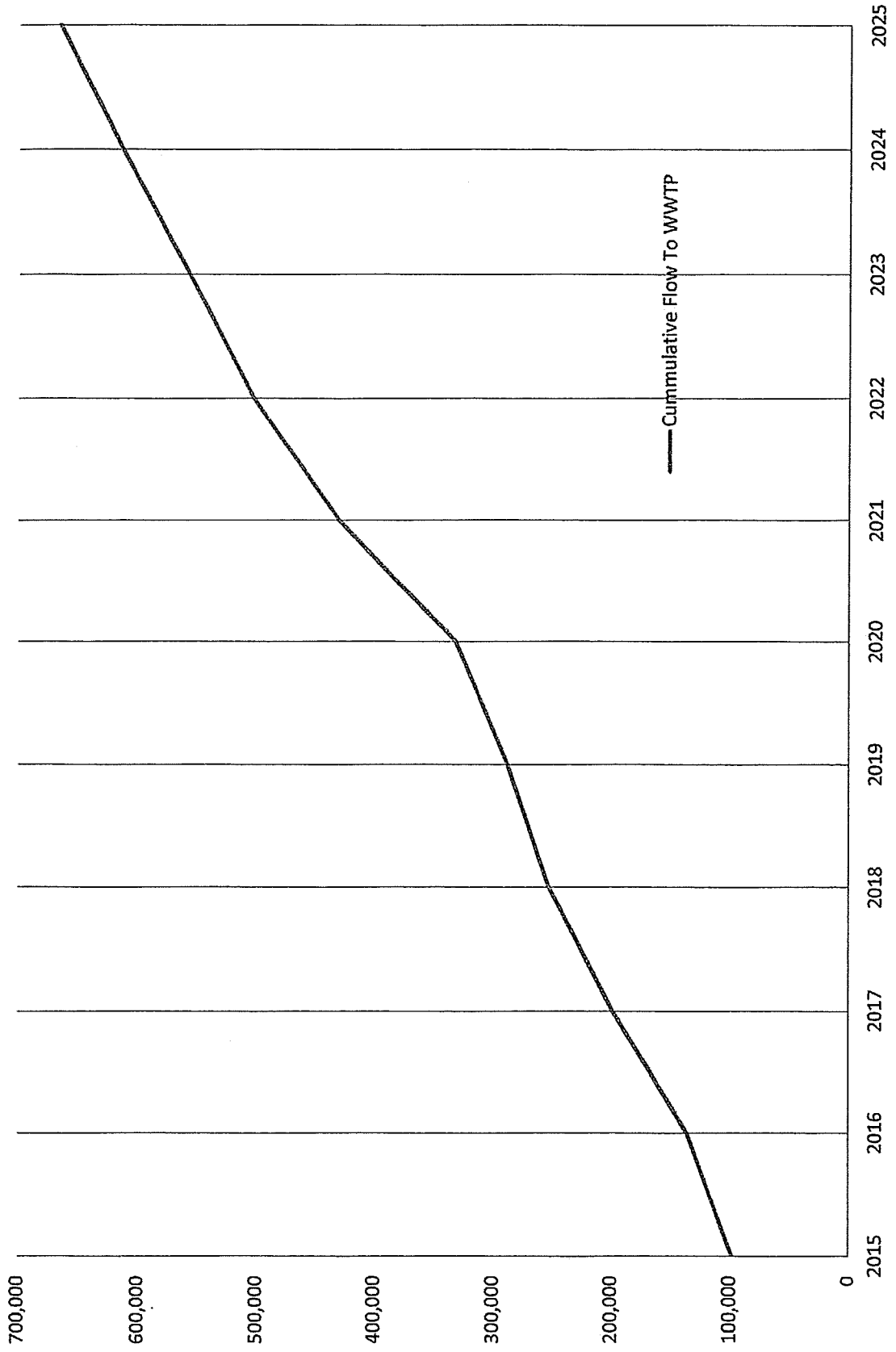
Table 1
Wastewater Flow and Growth Projections
City of Dripping Springs
 Revised October 19, 2015

GROWTH AREA	LUE PROJECTION - by Year											Area Total:				
	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025					
Arrowhead Ranch																
Barshop & Oles Tracts	3	3														
Burrows MF/The Retreat @ DS	15	18	30	13												
Calliterra	30	90	100	100	100	80	80									
Cannon Tract																
Carter Ranch																
Creek Road			25	50	50	50	50	10								
Downtown Area																
DS Presbyterian	3					5										
DSISD - MS																
Garnett Tract																
Harrison Tract							25									
Haydon Tract																
Hibberd Tracts							10	10	10	10	10	10	10	10	10	10
Hidden Springs MF							35	35	35	35	35	35	35	35	35	175
Holiday Inn Express																
Howard Tract																
HWY 290 - East																
HWY 290 - Mid West																
HWY 290 - W Central																
Karhan Tract																
Founder's Ridge/Linwood	70		70	65												
McAllister/Meritage/Heritage	34	40	33	33												
Merit Hill Country Senior Living																
Polkinghorn																
RR 12 - N																
RR 12 - S																
Slaughter Ranch																
SPP/Heritage PID																
Twisted X Tract	7	8	50	50	50	100	75	75	75	75	75	75	75	75	75	625
162	215	358	311	200	255	561	412	312	324	299	15	15	15	15	15	15
162	377	735	1,046	1,246	1,501	2,062	2,474	2,786	3,110	3,409	35	35	35	35	35	35
98,350	135,975	198,625	253,050	288,050	332,675	430,850	502,950	557,550	614,250	666,575	625	625	625	625	625	625
127,500	127,500	189,500	313,500	313,500	399,000	497,500	995,000	995,000	995,000	995,000	995,000	995,000	995,000	995,000	995,000	995,000

Current WWTP Flow
 GPD/LUE

Total of LUEs Projected by End of 2025

Figure 2
Wastewater Flow Projections Using LUE Projections



The City is proposing to discharge treated effluent into Walnut Springs, a tributary to Onion Creek. The proposed effluent limits are as follows:

- 5 mg/L CBOD5
- 5 mg/L TSS
- 2 mg/L Ammonia Nitrogen
- 0.5 mg/L Total Phosphorus
- E Coli Bacteria - 126 colonies per 100 ml
- 5 mg/L Dissolved Oxygen
- pH shall not be less than 6.0 standard units nor greater than 9.0 standard units
- The effluent shall contain a chlorine residual of at least 1.0 mg/L after a detention time of 20 minutes (based on peak flow)

In addition, the following requirements for Type I effluent will apply to Beneficial Reuse authorized under Chapter 210 of the TCEQ Rules:

- CBOD5 - 5 mg/L
- Turbidity - 3 NTU
- Fecal Coliform - 20 CFU/100 ml (geometric mean)
- Fecal Coliform - 75 CFU/100 ml (single grab sample)
- Enterococci - 4 CFU/ml (30-day geometric mean)
- Enterococci - 9 CFU/ml (maximum grab sample)

It is the City's intent to beneficially reuse the treated effluent as much as possible to reduce the volume of discharges and to cease using treated surface water and groundwater for irrigation.

The following are some potential beneficial reuse customers:

<u>Entity</u>	<u>Annual Average (GPD)</u>	<u>Committed</u>
Caliterra Subdivision	186,000	Y
Carter Subdivision	42,000	N
City Sports & Rec Park	50,000	Y
City Founders Park	30,000	Y
Heritage PID	35,000	Pending
DSISD Complex	10,000	N
City Charro Park	10,000	N
40 Acres WWTP Site	70,000	Y
Total	433,000 GPD	

In April 2015, Carollo Engineers completed a study to evaluate the feasibility of Direct Potable Reuse (DPR) of the Treated Effluent. The objective of the report were:

1. Develop water quality goals for the treated water for DPR
2. Determine Permitting Requirements for a DPR Project in the City
3. Develop one or more feasible DPR alternatives
4. Determine planning-level cost information for a preferred subset of the DPR alternatives
5. Develop a list of next steps for moving forward with a DPR Project

The report also evaluated the feasibility of land application and disposal of treated effluent for a large capacity permit.

As a result the City of Dripping Springs and the Dripping Springs Water Supply Corporation have recently entered into an Nonbinding Letter of Intent to evaluate the feasibility of a joint DPR Project.

Other beneficial uses could include:

- Roadway ROWs
- open spaces across the City and new developments
- hay fields
- make up water for storm water quality ponds
- construction water for dust control and revegetation

The existing collection system is adequately sized to serve the future estimated LUEs within the City's current service area. It has enough capacity to accommodate projected growth in the area.

A report completed in July 2013 by CMA Engineering identified additional infrastructure that may be required to convey future flows outside of its current service area.

East Interceptor (2 lift stations)

West Interceptor (2 lift stations).

South Collector

The proposed alignments coincide with proposed future road rights-of-way depicted on the conceptual land plans or existing roadways and creeks. Easements will need to be acquired for the collection system expansion.

The first phase of the West Interceptor and Lift Station was completed and put into operation in January 2016

The Probable Costs for the Project are summarized below:

**CITY OF DRIPPING SPRINGS
WASTEWATER REGIONAL PLANNING
ESTIMATE OF PROBABLE CONSTRUCTION AND ENGINEERING COSTS**

OVERALL SUMMARY

OVERALL SUMMARY - PROJECT COSTS

ITEM	DESCRIPTION	TOTAL COST
1	SOUTH COLLECTOR	\$ 2,296,400
2	EAST INTERCEPTOR	\$ 7,780,000
3	WEST INTERCEPTOR - LESS LINE FROM SCENIC GREENS TO ARROWHEAD	\$ 5,930,100
4	NEW 500,000 GPD BNR WWTP	\$ 7,000,000
5	TREATED EFFLUENT DISTRIBUTION SYSTEM EXPANSION	\$ 1,600,000
6	500,000 GPD DPR FACILITY AND EXISTING WWTP UPGRADES	\$ 9,000,000
7	FINAL FIELD ROUTE SELECTION AND EASEMENT ACQ.	\$ 250,000
8	TCEQ PERMITTING	\$ 1,000,000
TOTAL PROJECT COSTS		\$ 34,856,500

Notes

- 1 SOUTH COLLECTOR
Cost is from CMA South Regional WW System Planning Expansion Report
- 2 EAST INTERCEPTOR
Cost is from CMA South Regional WW System Planning Expansion Report
- 3 WEST INTERCEPTOR
Cost is from CMA South Regional WW System Planning Expansion Report
- 4 NEW 500,000 GPD BNR WWTP
Cost is derived from Carollo DRP Reuse Feasibility Study
- 5 TREATED EFFLUENT DISTRIBUTION SYSTEM EXPANSION
Cost is from Heritage PID TE Line Estimate
- 6 500,000 GPD DPR and Existing WWTP Upgrades
Cost is from Carollo DRP Reuse Feasibility Study

Estimated Timeline Schedule

- Discharge Permit Application filed in October 2015
- WWTP Design Mid 2017 to early 2018
- WWTP Construction begins Mid 2018 to Early 2019
- WWTP Construction complete in Early 2020

- DPR pilot testing after completion of the WWTP

