

Proposed Desired Future Conditions for Aquifers in GMA 8 and North Texas GCD



May 10, 2016

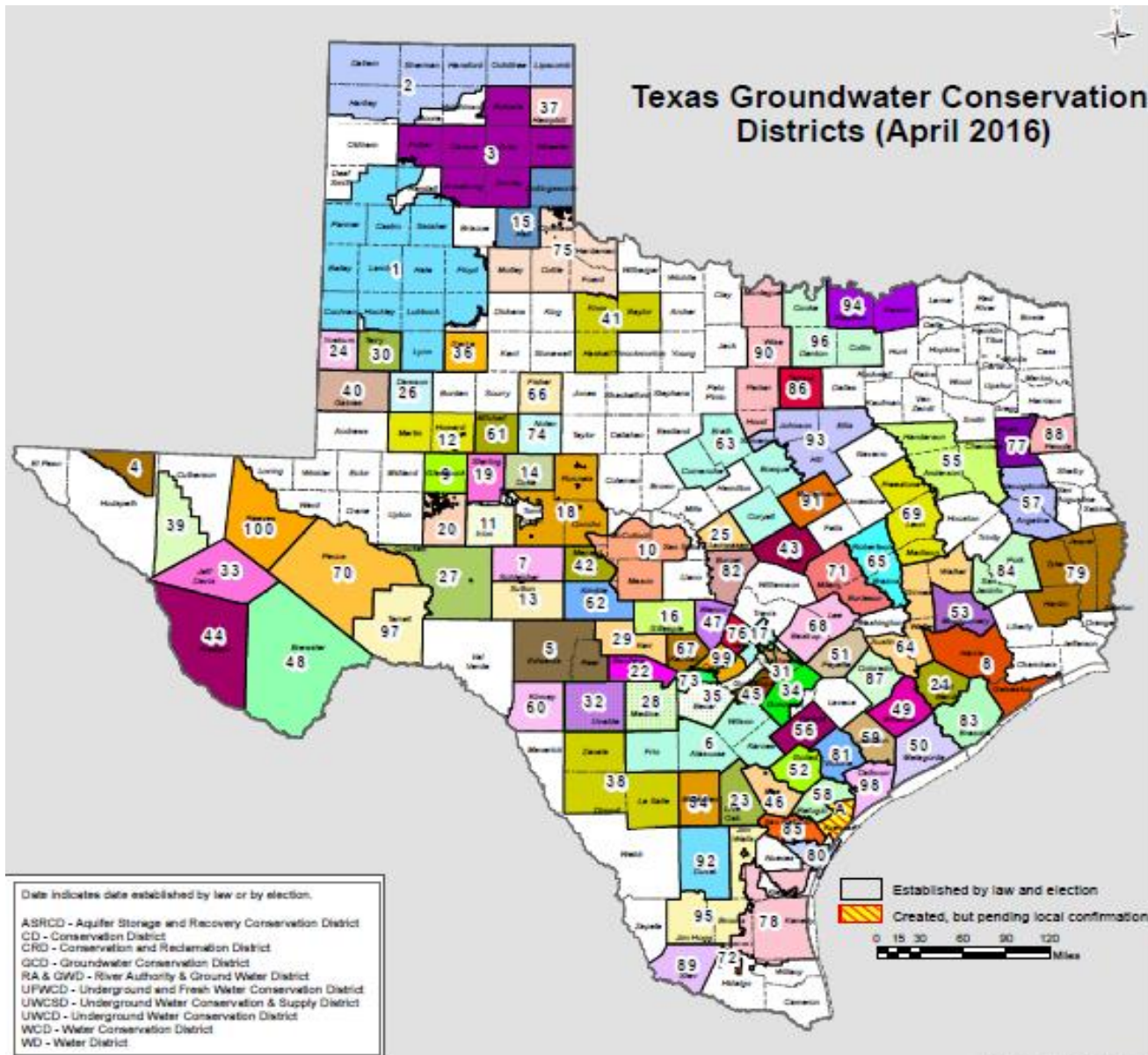
Background on North Texas GCD

💧 Collin, Cooke, and Denton Counties included in the North Texas Priority Groundwater Management Area (“PGMA”)

- This PGMA was designated by Texas Commission on Environmental Quality (“TCEQ”) in 2009
- PGMA designation occurs when the area experiences, or is expected to experience “critical” groundwater declines
- Required the 3 counties to create a GCD or have TCEQ create a GCD for them

💧 North Texas GCD created by Texas Legislature in 2009

North Texas GCD is 1 of 100 GCDs in Texas



North Texas GCD Generally

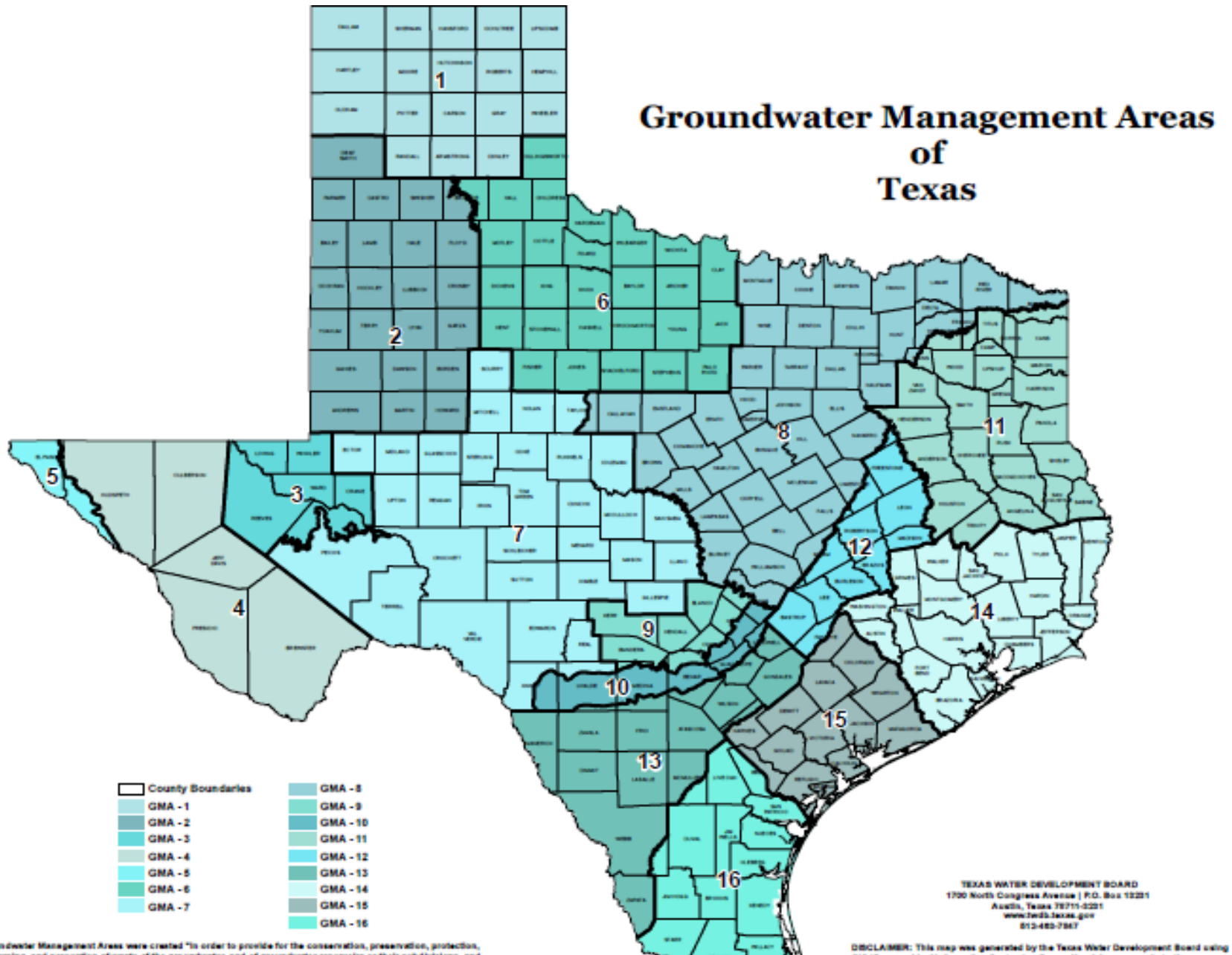
Governed by:

- Enabling Act passed by Texas Legislature (Ch. 8856 of Texas Special Districts Local Laws Code)
- Chapter 36 of Texas Water Code
- Other general statutes governing governmental entities in Texas

Chapter 36 of Texas Water Code requires GCDs to participate in joint planning with other GCDs for the common aquifers in designated planning regions

- Planning regions are called “Groundwater Management Areas”
- North Texas GCD is in Groundwater Management Area 8 (“GMA 8”)

Joint Planning – GMAs map



Joint Planning

💧 Required to establish Desired Future Conditions (“DFCs”) for the aquifers in GMA 8

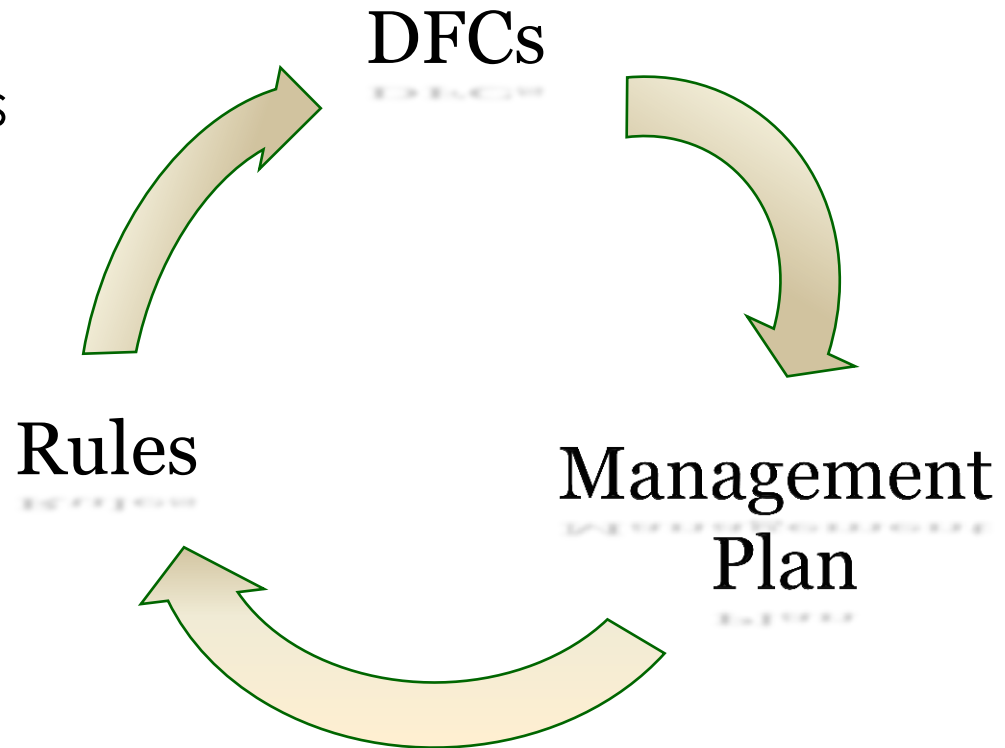
- Must be done in conjunction with 10 other GCDs in GMA 8
- GMA 8 will adopt DFCs that cover relevant aquifers in GMA 8
- North Texas GCD will thereafter adopt DFCs that cover the groundwater resources within its boundaries

💧 DFC defined as:

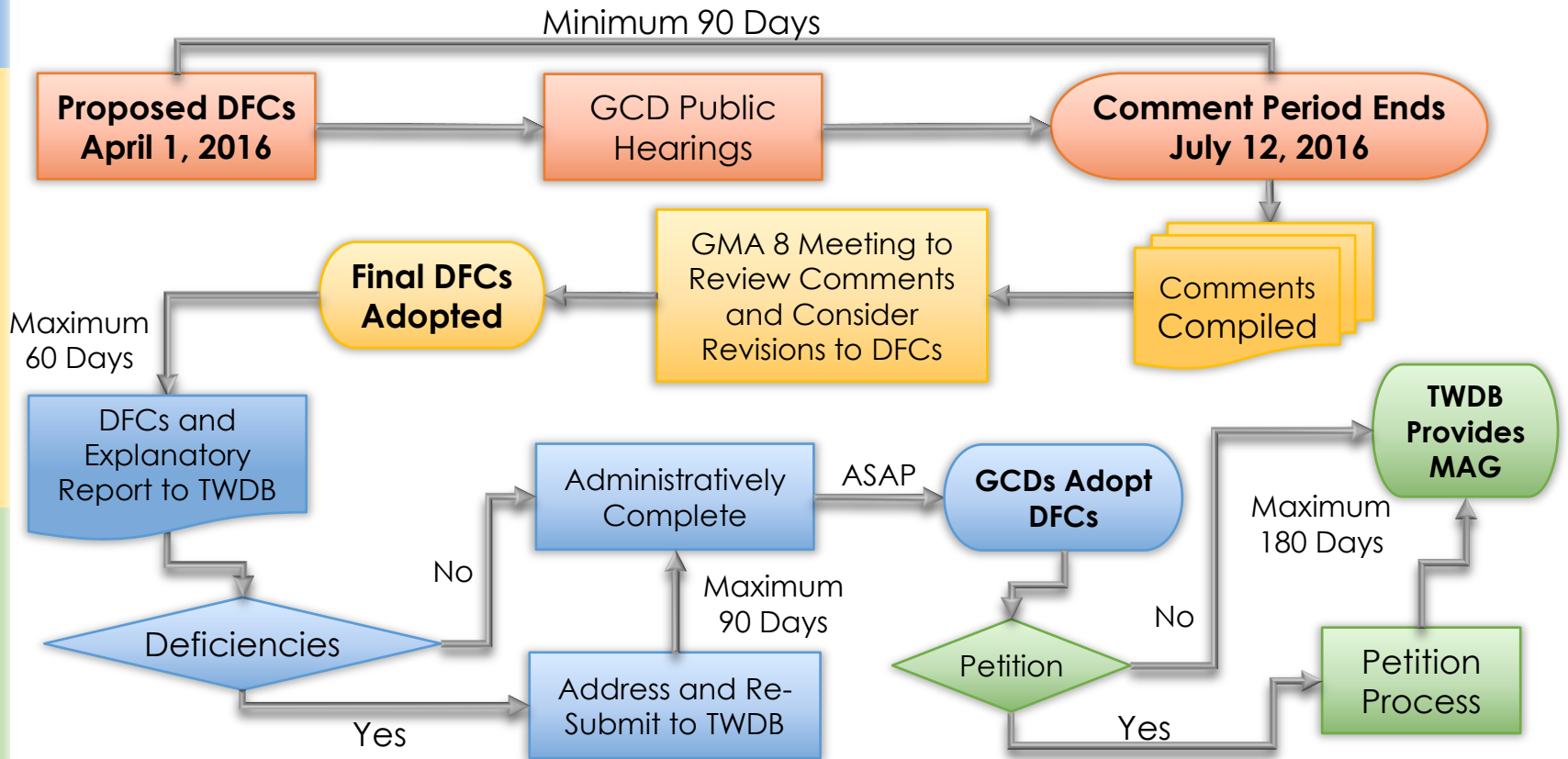
- a quantitative description, adopted in accordance with Section 36.108, of the desired condition of the groundwater resources in a management area at one or more specified future times

Significance of DFCs

- Long-term goal of how to manage the groundwater resources
- GCDs incorporate DFCs into Management Plan within 2 years from adoption
- GCDS implement DFCs into rules/regulatory program within 1 year after updating the Management Plan



GMA 8 DFC Process Illustrated



DFC Considerations

Aquifer Uses or
Conditions

Supply Needs
and
Management
Strategies

Hydrological
Conditions

Environmental
Impacts

Subsidence
Impacts

Socioeconomic
Impacts

Private Property
Rights

DFC Feasibility

Other Relevant
Information

A New Standard for Desired Future Conditions



Highest Practicable Level
of Groundwater Production



Conservation, Preservation,
Protection, Recharging,
and Prevention of Waste of
Groundwater, and Control
of Subsidence

Proposed DFCs

💧 Cover Woodbine Aquifer and Trinity Aquifer

💧 Used new groundwater availability model (“GAM”) to consider impacts

- 10 different model runs

💧 North Texas GCD considered all statutory criteria in addition to other local considerations in establishing DFC

- DFCs adopted considering regional and state water plans; project significant surface water resources to be available in area

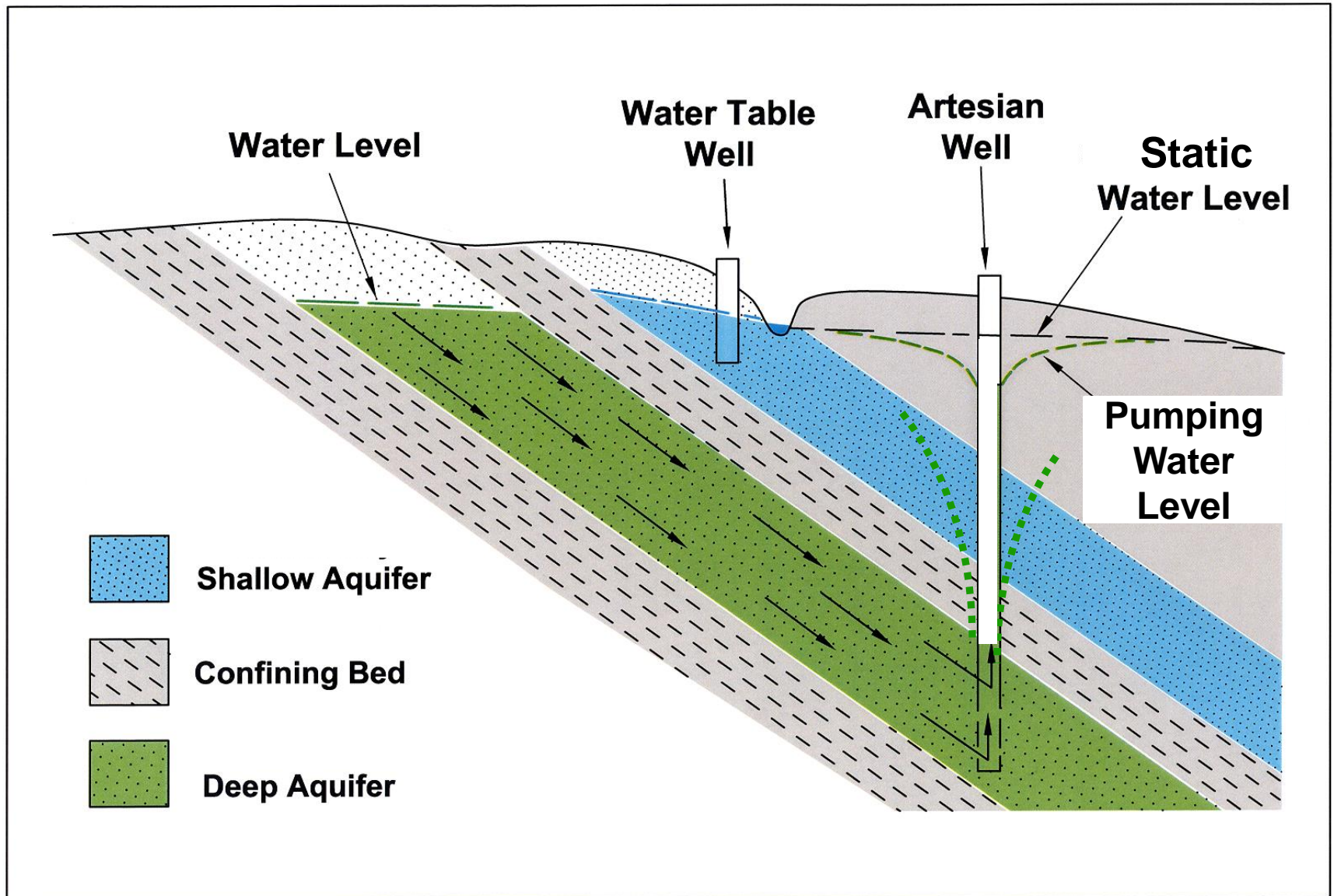
💧 GMA 8 adopted “Run 10” results as basis for Woodbine and Trinity DFCs

💧 DFCs presented by aquifer at three levels

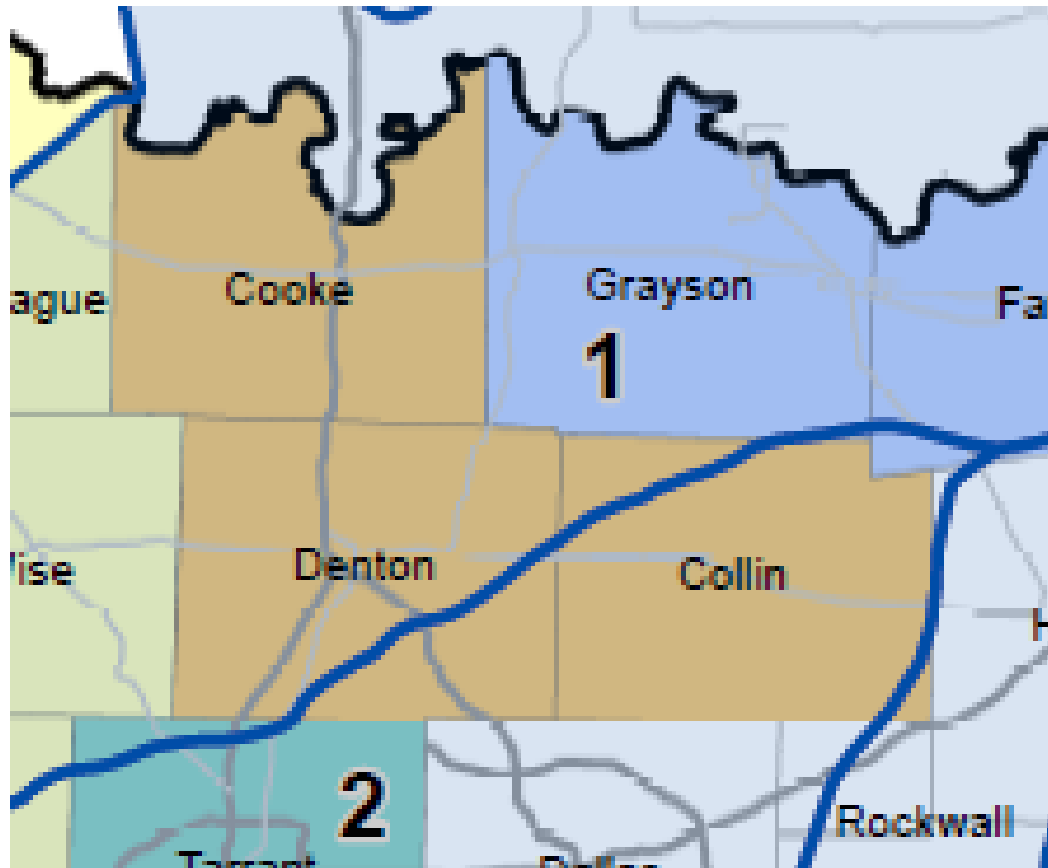
- GMA 8
- District
- County

💧 DFCs also presented by Hydrogeologic Region

Confined and Unconfined aquifers



Hydrogeologic Regions



- 5 Regions defined in model report
- NTGCD in 3 different regions
 - Cooke in 1
 - Denton in 1 & 2
 - Collin in 1, 2, & 3
- Only region 1 & 2 are relevant

Aquifers in Each Region

Model Terminology	Region 1	Region 2
Woodbine Aquifer	Woodbine	Woodbine
Washita/ Fredericksburg Groups	Washita/ Fredericksburg	Washita/ Fredericksburg
Paluxy Aquifer	Antlers	Paluxy
Glen Rose Formation	Antlers	Glen Rose
Hensell Aquifer	Antlers	Twin Mountains
Pearsall Formation	Antlers	Twin Mountains
Hosston Aquifer	Antlers	Twin Mountains

yellow = sandstone aquifers

- Woodbine is combined across regions
- Trinity is divided across regions
 - Region 1 = Antlers
 - Region 2
 - Paluxy
 - Glen Rose
 - Twin Mountains
- Washita/Fredericksburg is not relevant

(after Kelley, Nov 18, 2015)

Run 10 Description

- 💧 Used TWDB accepted version of the GAM
- 💧 Initial conditions set as simulated water levels on January 1, 2010 from transient calibration run
- 💧 Adjusted pumping amounts from baseline
- 💧 No changes to areal distribution of pumping from baseline
- 💧 No changes in aquifer assignment of pumping from baseline
- 💧 Set pumping so that model code would not automatically reduce amounts

NTGCD Run 10 Pumping Amounts

Aquifer	Collin	Cooke	Denton
Woodbine	4,254	800	3,609
Paluxy	1,548	Not Defined	4,823
Glen Rose	83	Not Defined	339
Twin Mountains	2,202	Not Defined	8,372
Antlers	1,962	10,522	16,557
Total	10,049	11,323	33,699

Values in Acre-Feet per Year

NTGCD Proposed DFCs

Average Drawdown per Aquifer

Aquifer	Collin	Cooke	Denton	NTGCD	GMA 8
Woodbine	459	2	22	278	146
Paluxy	705	Not Defined	552	671	144
Glen Rose	339	Not Defined	349	341	116
Twin Mountains	526	Not Defined	716	569	313
Antlers	570	176	395	290	177

Values in Feet

NTGCD Proposed DFCs

Average Drawdown per Region/Aquifer

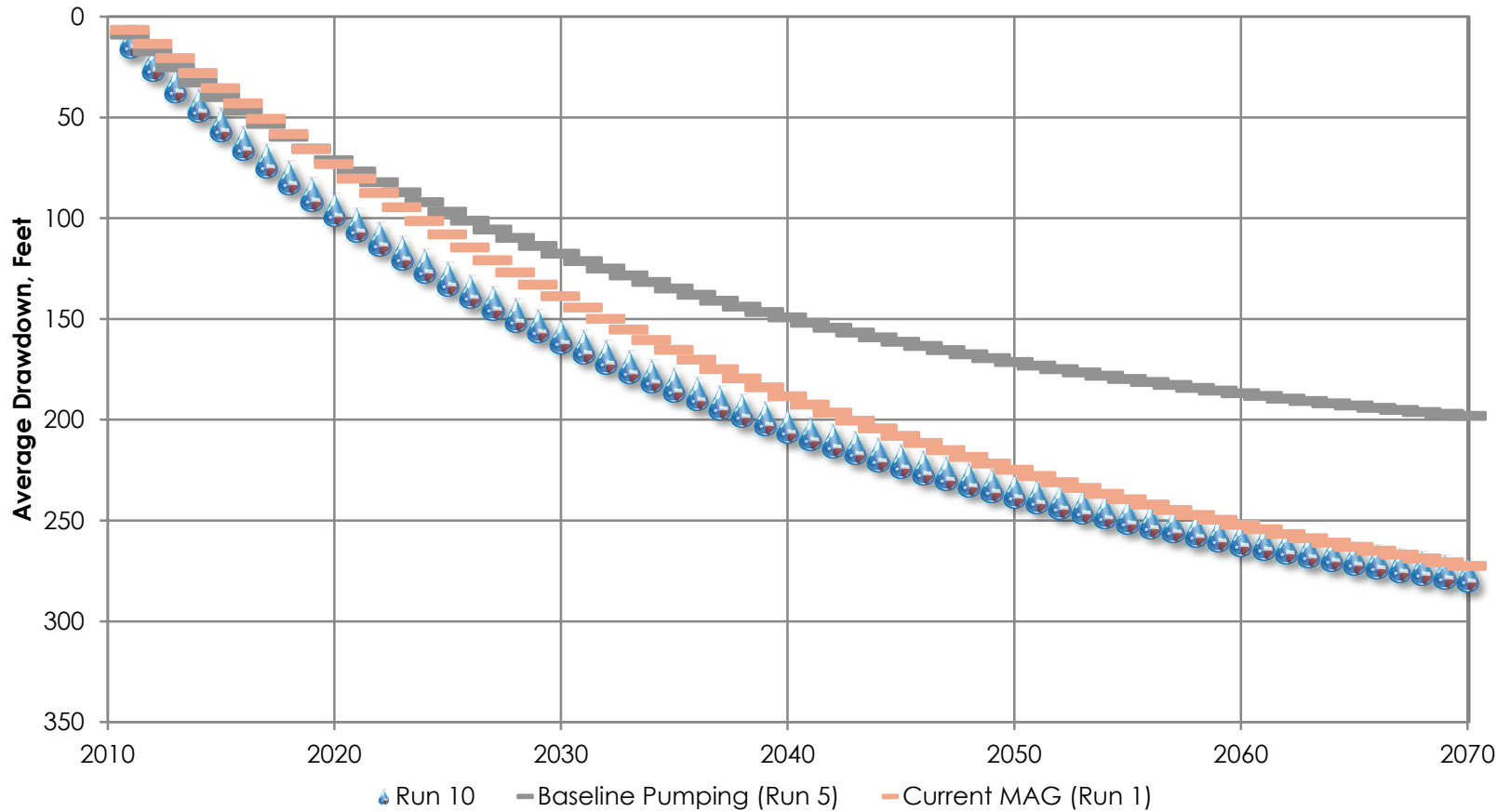
Aquifer	Collin	Cooke (Region 1)	Denton	NTGCD	GMA 8
Woodbine	Region 1: 302 Region 2: 481	2	Region 1: 13 Region 2: 30	Region 1: 75 Region 2: 372	Region 1: 160 Region 2: 227
Paluxy	Region 1: ND Region 2: 705	Not Defined	Region 1: ND Region 2: 552	Region 1: ND Region 2: 671	Region 1: ND Region 2: 144
Glen Rose	Region 1: ND Region 2: 339	Not Defined	Region 1: ND Region 2: 349	Region 1: ND Region 2: 341	Region 1: ND Region 2: 116
Twin Mountains	Region 1: ND Region 2: 526	Not Defined	Region 1: ND Region 2: 716	Region 1: ND Region 2: 569	Region 1: ND Region 2: 313
Antlers	Region 1: 570 Region 2: ND	176	Region 1: 395 Region 2: ND	Region 1: 290 Region 2: ND	Region 1: 177 Region 2: ND

Values in Feet

“ND” = Not Defined

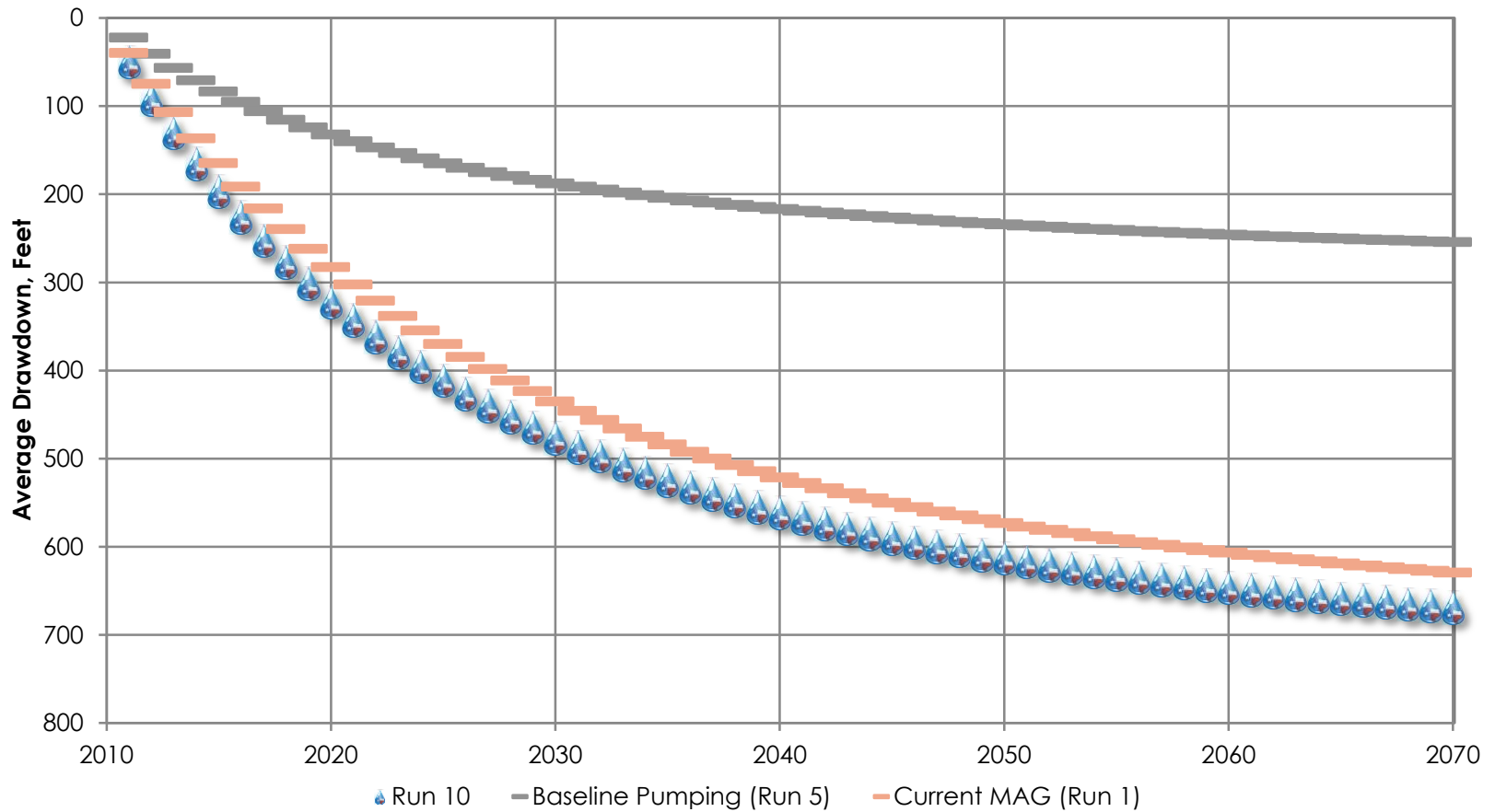
NTGCD Proposed DFCs

NTGCD Average Drawdown - Woodbine



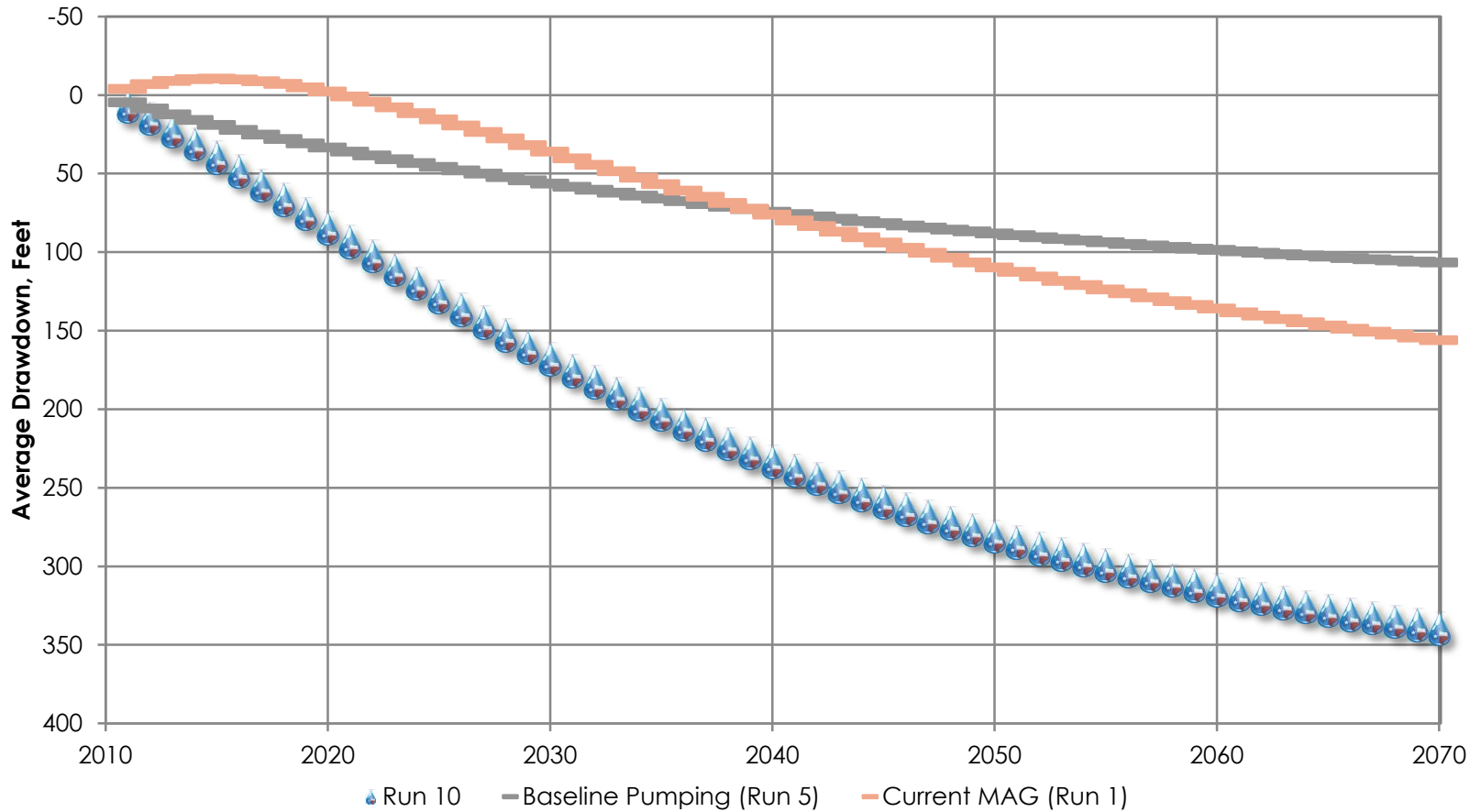
NTGCD Proposed DFCs

NTGCD Average Drawdown - Paluxy



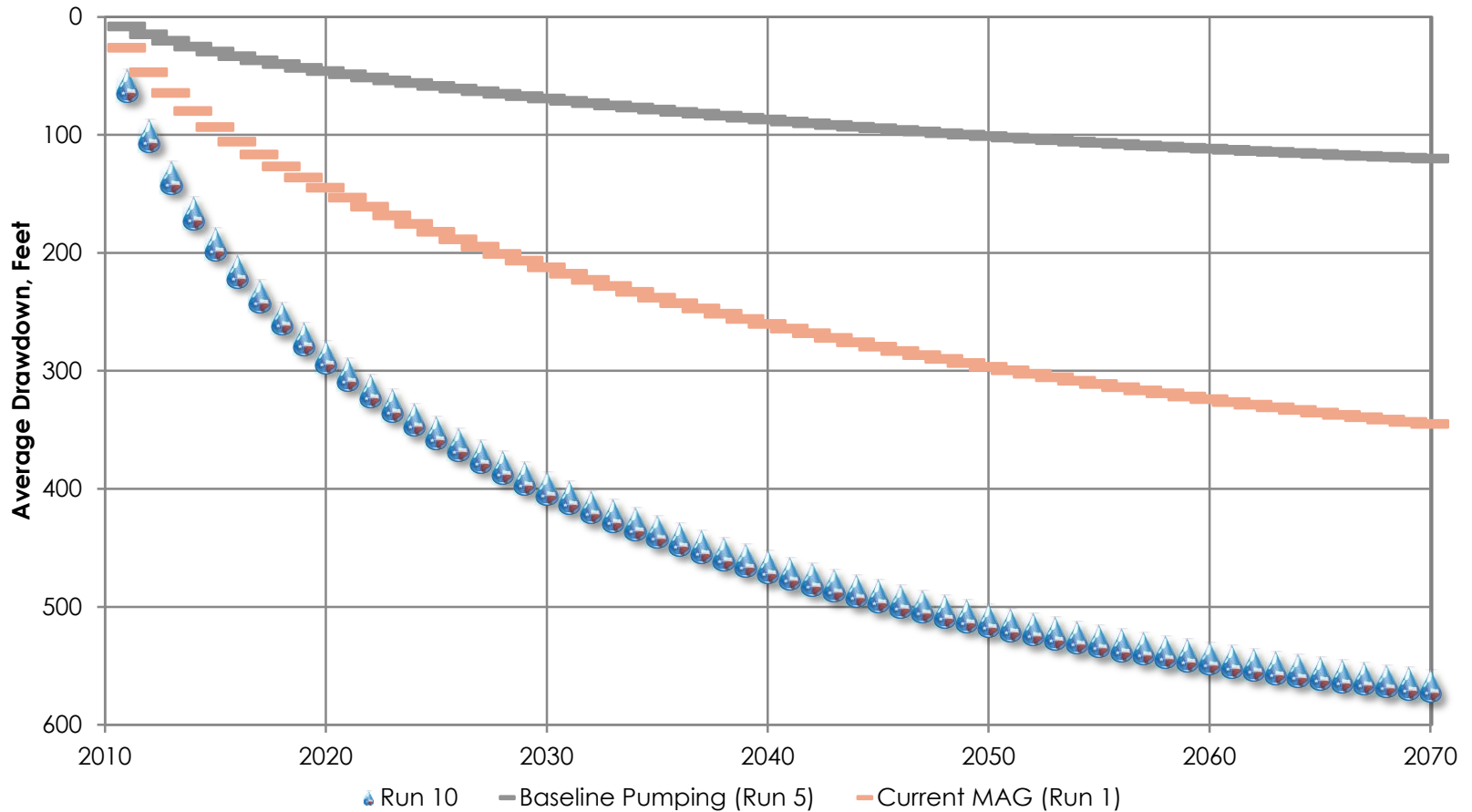
NTGCD Proposed DFCs

NTGCD Average Drawdown – Glen Rose



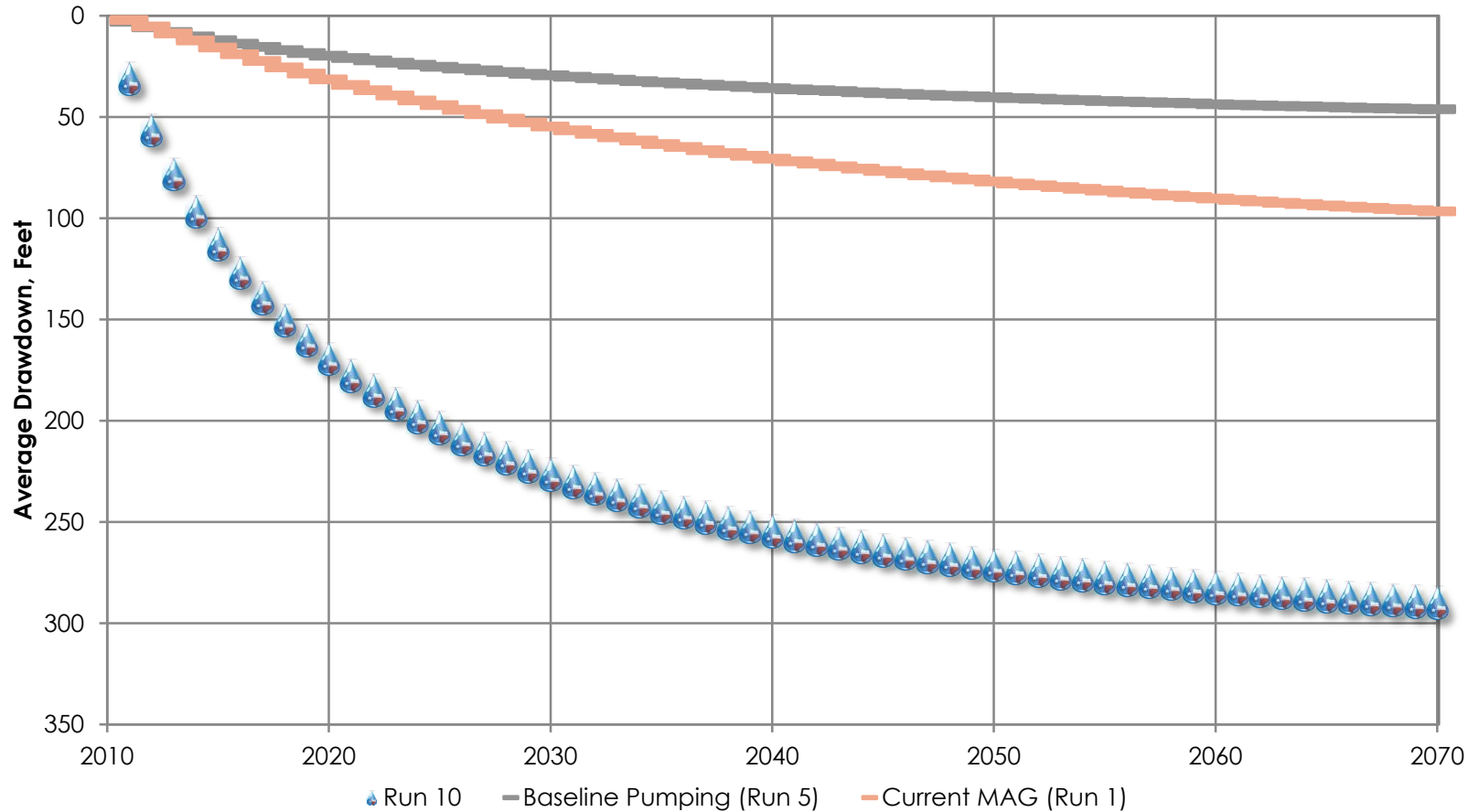
NTGCD Proposed DFCs

NTGCD Average Drawdown – Twin Mountains



NTGCD Proposed DFCs

NTGCD Average Drawdown - Antlers



Next Steps

💧 Comment period ends at 5:00 p.m. on July 12, 2016

- Verbal and written comments accepted at public hearing
- Written comments accepted through comment period
- North Texas GCD must prepare a summary report of comments

💧 GMA 8 reconvenes to review comments/summary reports and will adopt DFCs

- timeline: expected fall 2016

💧 North Texas GCD will thereafter vote to adopt its DFCs

- timeline: expected late 2016/early 2017

Next Steps

- 💧 DFCs are sent to Texas Water Development Board and an official Modeled Available Groundwater (“MAG”) number is issued
 - MAG shows the amount of groundwater available on an average annual basis to achieve the DFC
 - timeline: expected mid-2017
- 💧 North Texas GCD will revise Management Plan to include new DFCs
 - timeline: expected mid-to-late 2017
- 💧 North Texas GCD will begin rulemaking process to regulate groundwater withdrawals based on achieving DFC
 - timeline: expected late 2017/early 2018

Next Steps—Next Round of Joint Planning

- 💧 Chapter 36 currently requires GCDs to undergo DFC process again in 2020
- 💧 North Texas GCD will have opportunity to see whether surface water projections were accurate
- 💧 Can adjust DFCs as necessary during next round of joint planning
 - Or earlier if agreed by GMA 8



Questions

Run 10 Results

Percent of 2010 Water Level Remaining Above the Top of the Aquifer (Artesian Head)

Aquifer	Collin	Cooke	Denton	NTGCD	GMA 8
Woodbine	29%	Not Artesian	59%	30%	67%
Paluxy	58%	Not Defined	3%	54%	85%
Glen Rose	83%	Not Defined	57%	81%	87%
Twin Mountains	79%	Not Defined	30%	74%	71%
Antlers	38%	6%	2%	17%	68%