North Texas GCD Visioning Workshop

April 11, 2017

Session Outline

- Background
- Statutory Authority
- Temporary Rules vs. Permanent Rules
- Legal Framework of Permanent Rules
- Significance of DFCs
- District Goals in Management Plan
- Review of DFCs/MAGs
- Review of Technical Information
- Approach to Aquifer Management for DFCs
- NTGCD Management Issues
- Path Forward/Policy and Technical Assessments
- Discussion

Background

- Conservation Amendment in Texas Constitution requires state to preserve and conserve natural resources
  - Creation of GCDs part of authority in Conservation Amendment
  - North Texas GCD created due to PGMA process in 2007 to 2009
- Creation of a GCD over an area provides a limit on the rule of capture
  - Rule of Capture allows a person to pump as much water as physically possible regardless of effect on neighbor or resource, with very limited remedies

Statutory Authority

- Section 36.0015 states that GCDs:
  - "are the state's preferred method of groundwater management in order to protect property rights, balance the conservation and development of groundwater to meet the needs of this state, and use the best available science in the conservation and development of groundwater through rules developed, adopted, and promulgated by a district in accordance with the provisions of this chapter.
- Section 36.101 of Water Code provides general framework for developing rules

Temporary Rules vs. Permanent Rules

- Much of temporary rules language will be incorporated into permanent rules
  - Registration, metering, production reporting, and enforcement - some big items already addressed
  - Big difference will be that a permitting process will now be part of rules
    - Required by Chapter 36 in order to implement DFCs
  - Decisions to make on handling existing users, whether to change any exemptions for new users, etc…

Legal Framework of Permanent Rules – What We Know

- Court Cases
  - Groundwater owned in place by landowner (*EAA v. Day* 2012)
  - Landowner can be compensated for a regulatory taking of groundwater by a GCD; review multiple considerations in permitting (*EAA v. Day* 2012 and *EAA v. Bragg 2013*)
  - Regulating based on historic use (*Guitar Holding Co.* 2008)
  - District-specific lawsuits

- Legislative
  - Significant changes proposed to Chapter 36 this session

Legal Framework of Permanent Rules – Chapter 36 Rules Toolbox

- Current Chapter 36 says can limit production based on (in any combination):
  - Tract size (acreage-based; contiguous acres owned/controlled)
    - Special language on considering retail public utilities' needs
  - Spacing of wells
  - Setting production limits on wells
  - Managed depletion
  - Historic use
  - Management zones (differences in aquifer conditions or uses within a GCD)

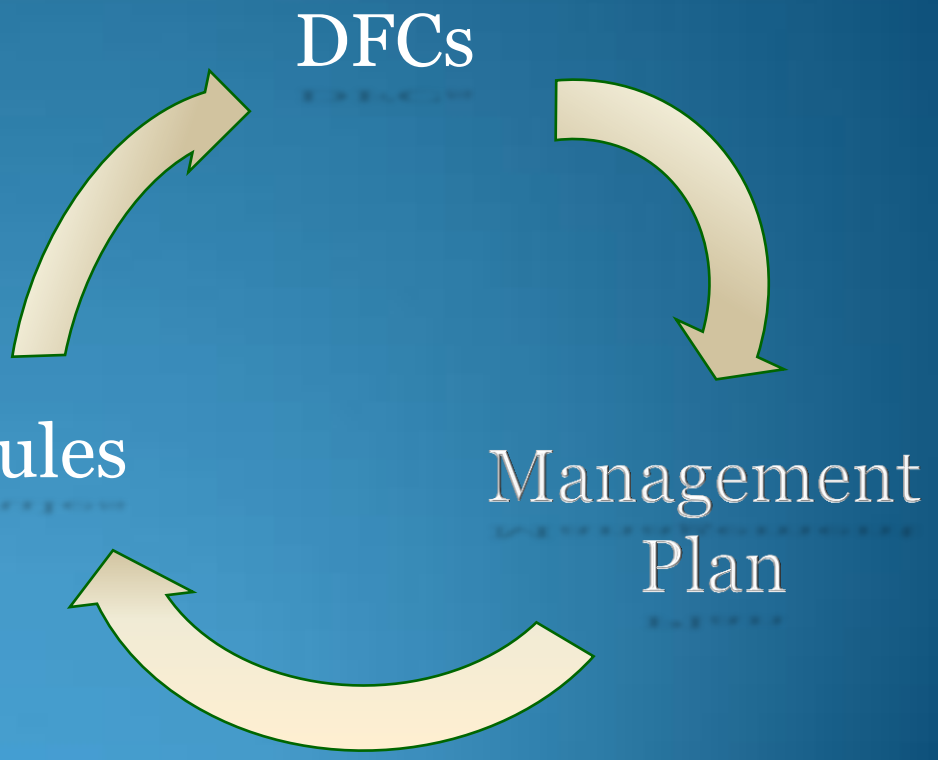
Legal Framework of Permanent Rules – Chapter 36 Rules Toolbox

- Section 36.116(e) provides that in selecting the way that a GCD will regulate, the GCD:
  - "shall select a method that is appropriate based on the hydrogeological conditions of the aquifer or aquifers in the district."

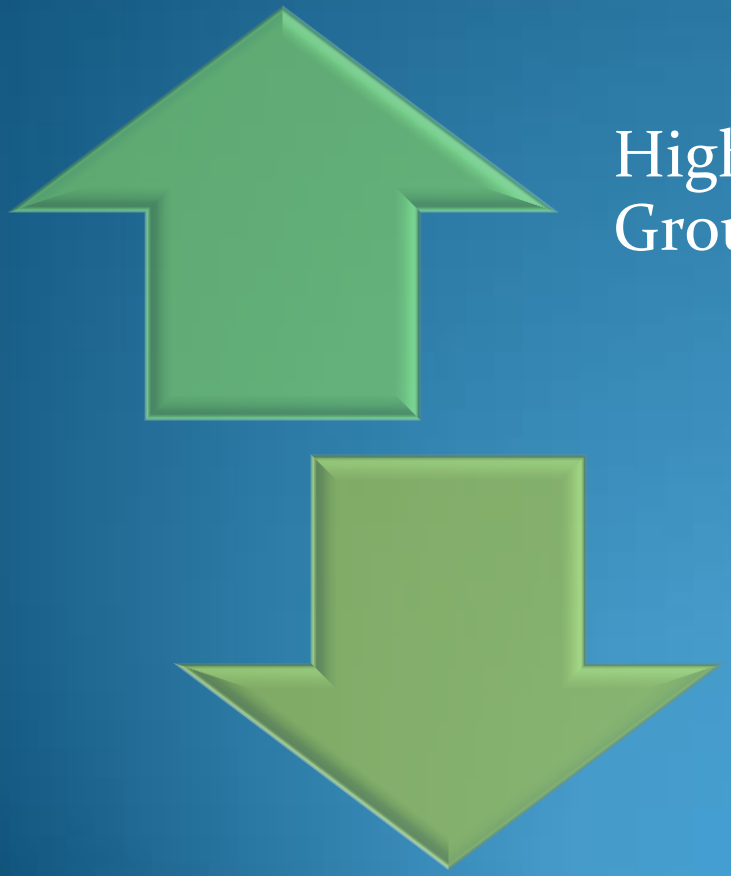
- Must adopt rules designed to achieve the DFC
  - Rules must implement Management Plan, which implements DFC

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



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

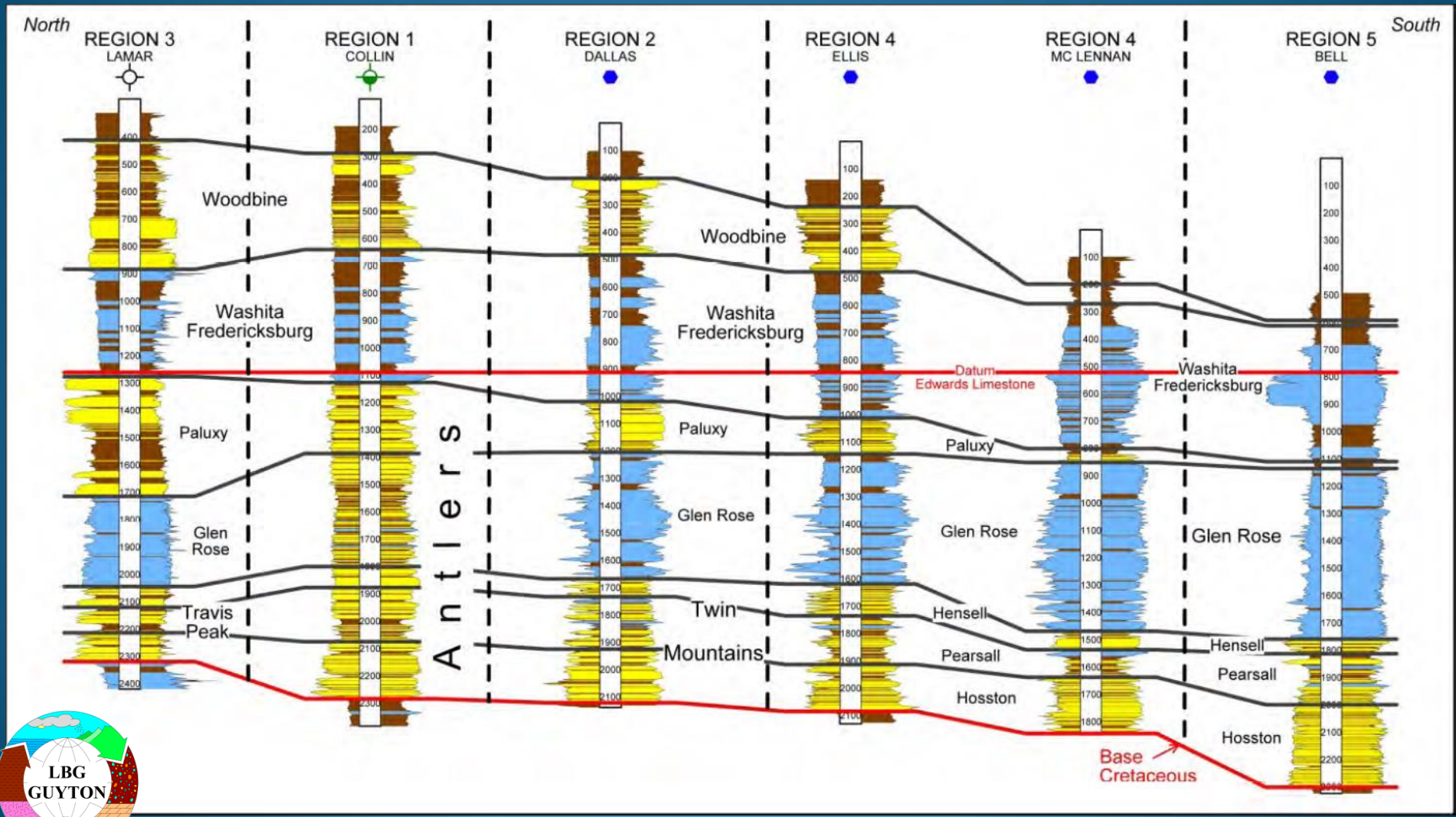
Review of District Goals (Management Plan)

1. Providing the most efficient use of groundwater
2. Controlling and preventing the waste of groundwater
3. Controlling and preventing subsidence
4. Conjunctive surface water management
5. Addressing natural resource issues
6. Addressing drought conditions
7. Address conservation, recharge and precipitation enhancement, rainwater harvesting, and brush control
8. Achieving desired future conditions of groundwater resources

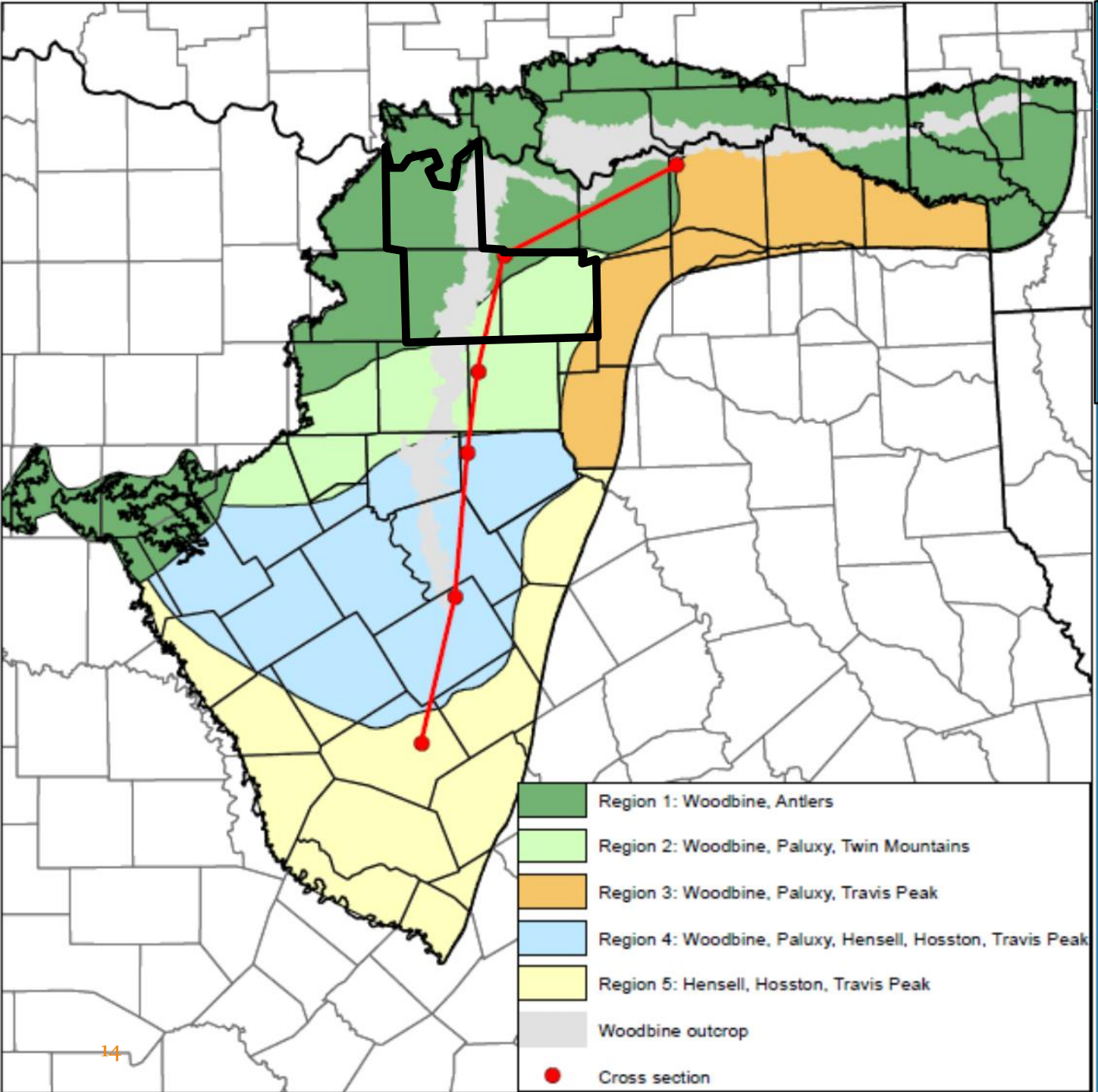
Adopted DFCs

- Must review of where District stands with current DFC in order to develop permanent rules
- Cover Woodbine Aquifer and Trinity Aquifer
  - Trinity Aquifer DFCs broken down by aquifer layer
- Used new groundwater availability model ("GAM") to consider impacts
  - 10 different model runs; goal of using "best available data"
- Red River GCD considered all statutory criteria in addition to other important local considerations in establishing DFCs
  - 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

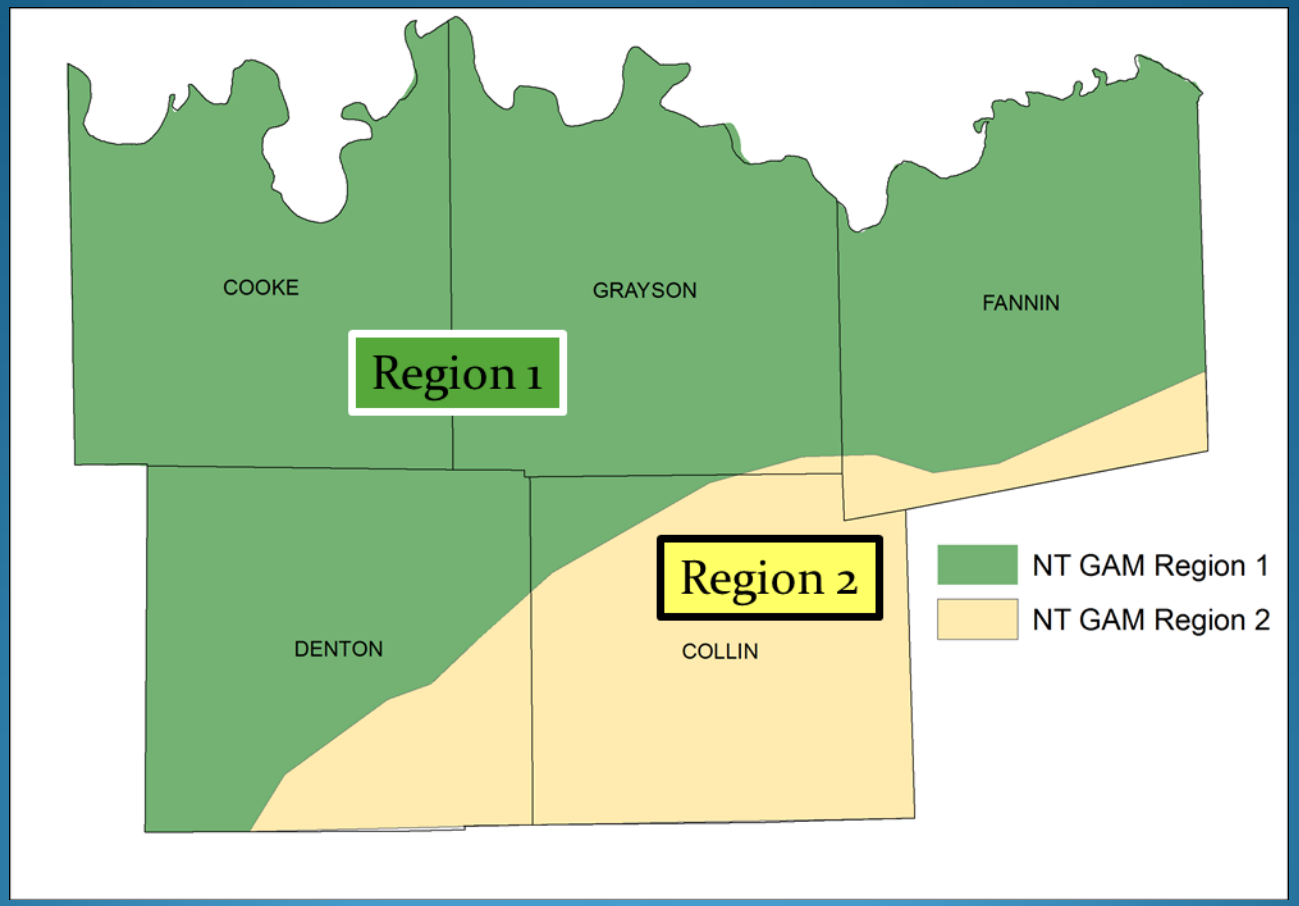
Northern Trinity Aquifer



Northern Trinity and Woodbine Aquifers



North Trinity GAM Stratigraphic Regions



Region 1: Woodbine, Antlers
Region 2: Woodbine, Paluxy, Twin Mountains

LAYER

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Model Terminology	Region 1	Region 2	Region 3	Region 4	Region 5
Woodbine Aquifer	Woodbine	Woodbine	Woodbine	Woodbine	Woodbine (no sand)
Washita/ Fredericksburg Groups	Washita/ Fredericksburg	Washita/ Fredericksburg	Washita/ Fredericksburg	Washita/ Fredericksburg	Washita/ Fredericksburg
Paluxy Aquifer	Antlers	Paluxy	Paluxy	Paluxy	Paluxy (no sand)
Glen Rose Formation	Antlers	Glen Rose	Glen Rose	Glen Rose	Glen Rose
Hensell Aquifer	Antlers	Twin Mountains	Travis Peak	Hensell/ Travis Peak	Hensell/ Travis Peak
Pearsall Formation	Antlers	Twin Mountains	Travis Peak	Pearsall/ Sligo	Pearsall/ Sligo
Hosston Aquifer	Antlers	Twin Mountains	Travis Peak	Hosston/ Travis Peak	Hosston/ Travis Peak

yellow = sandstone aquifers

Figure 4.1.6 **Chart showing model terminology and corresponding formation names and aquifer names common to each region.**

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 Mtn	2,202	Not Defined	8,372
Antlers	1,962	10,522	16,557
Total	**10,049**	**11,322**	**33,700**

Values in Acre-Feet per Year

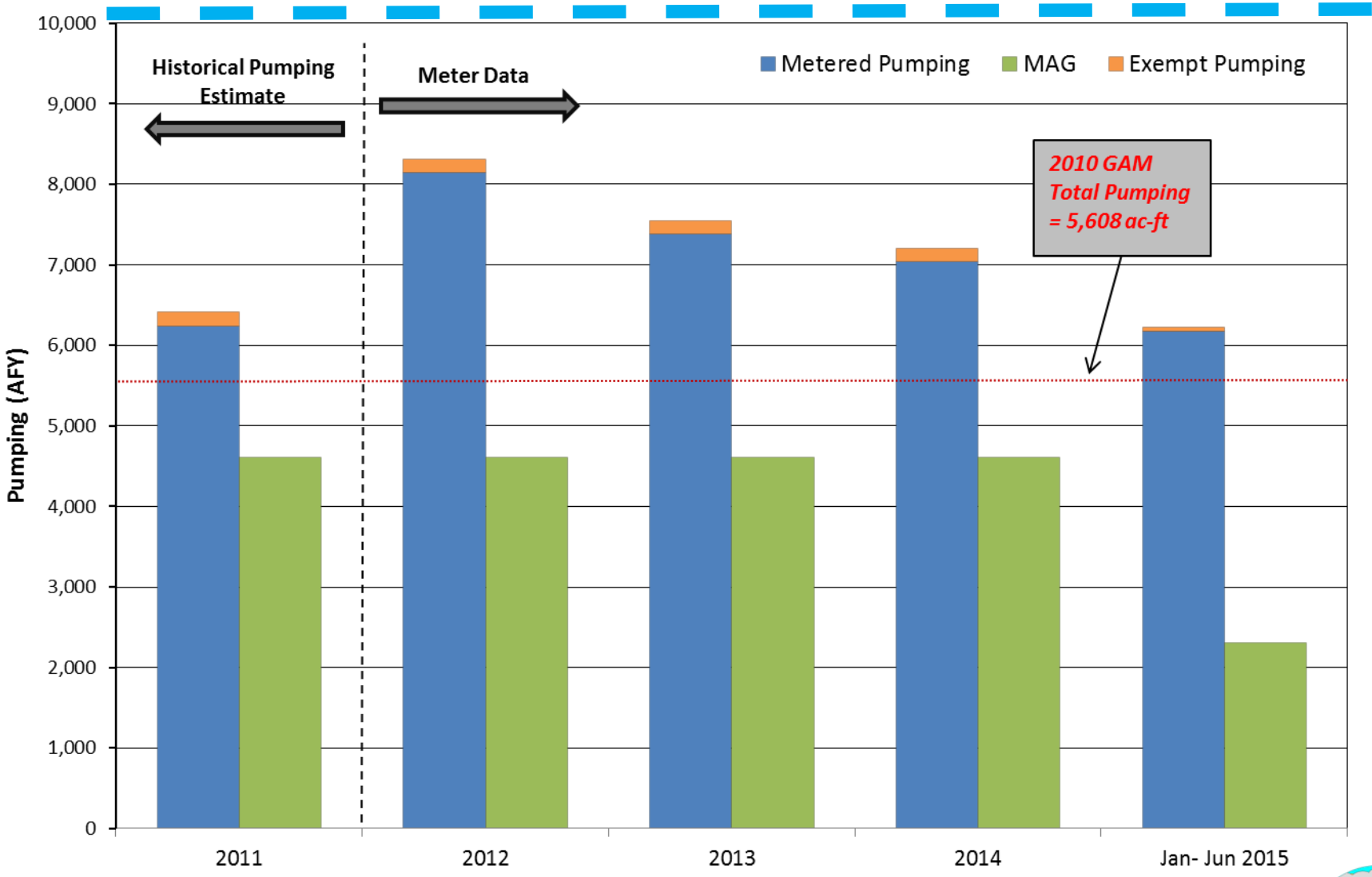
NTGCD Adopted DFCs

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 Mtn	526	Not Defined	716	569	313
Antlers	570	176	395	290	177

Values in Feet

Run 10

Collin County Total Pumping Comparisons



TWDB Historical estimates used for Year 2011 pumping.
Exempt Pumping Estimates from North Trinity GAM (year 2010) were used for all years.
MAG and exempt pumping for Year 2015 divided by 2 for comparison to 6 months of meter data.

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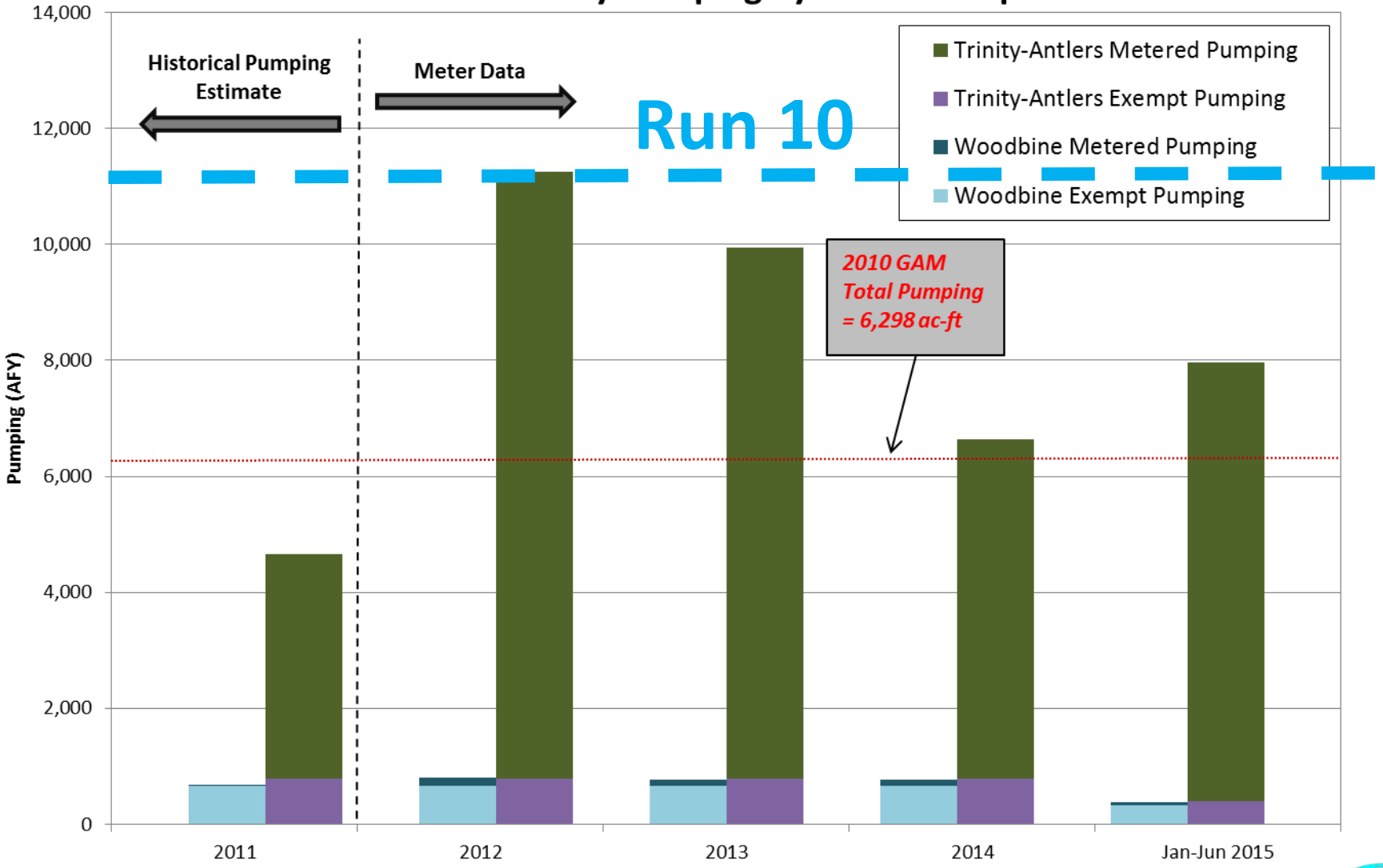
Cooke County Pumping by Year and Aquifer



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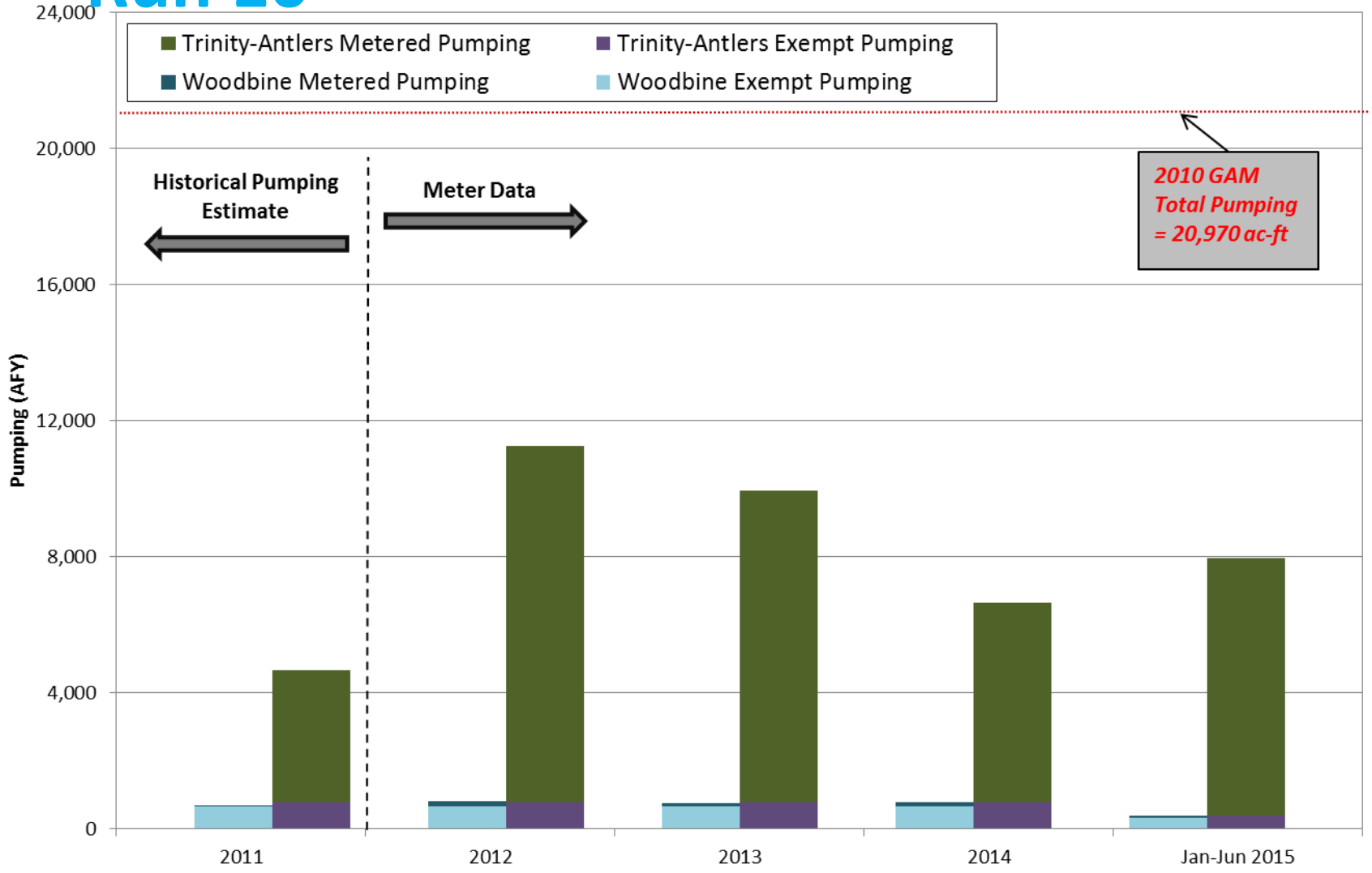
Run 10

33,700

Denton County Pumping by Year and Aquifer



TWDB Historical estimates used for Year 2011 pumping.
Exempt Pumping Estimates from North Trinity GAM (year 2010) were used for all years.
MAG and exempt pumping for Year 2015 divided by 2 for comparison to 6 months of meter data.

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Assessment of Correlative Rights for North Texas GCD

DRAFT

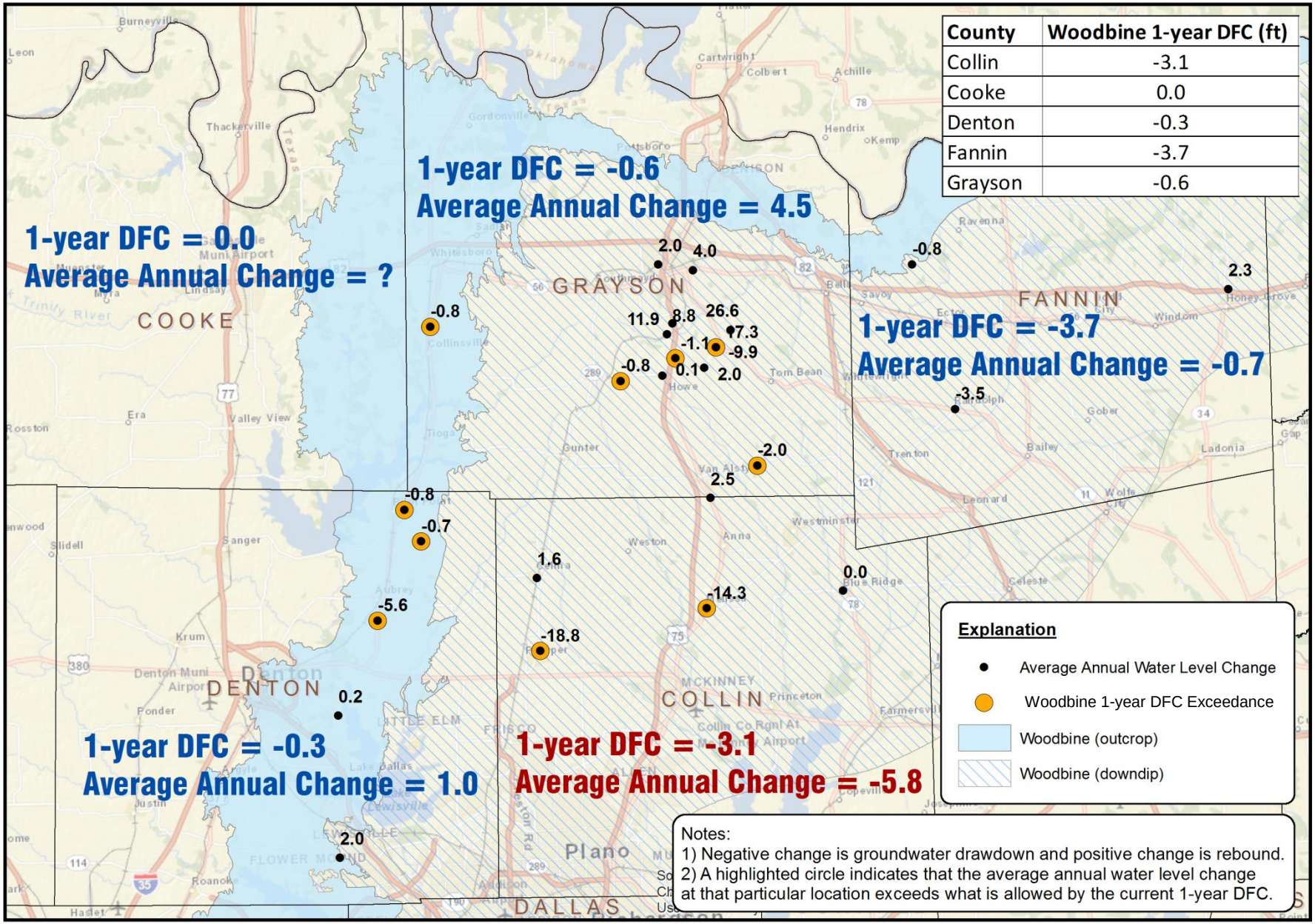
County	Aquifer	Total Area (Acres)	Run 10 Pumping (AFY)	Run 10 Pumping (ft3/yr)	Run 10 Pumping (gal/yr)	Annual Availability (ac-ft/ac)	Annual Availability (in)	Annual Availability (ft3/ac)	Annual Availability (gal/ac)
Collin	Woodbine	566,319	4,251	185,179,455	1,385,142,320	0.0075	0.0901	327	2,446
Collin	Paluxy	566,319	2,519	109,726,320	820,752,874	0.0044	0.0534	194	1,449
Collin	Glen Rose	566,319	97	4,242,052	31,730,547	0.0002	0.0021	7	56
Collin	Hensell	566,319	1,785	77,751,824	581,583,646	0.0032	0.0378	137	1,027
Collin	Pearsall	566,319	10	420,421	3,144,751	0.0000	0.0002	1	6
Collin	Hosston	566,319	1,380	60,126,797	449,748,442	0.0024	0.0292	106	794
Collin Total			**10,042**	**437,446,869**	**3,272,102,580**	**0.0177**	**0.2128**	**772**	**5,778**
Cooke	Woodbine	68,080	800	34,833,560	260,555,032	0.0117	0.1410	512	3,827
Cooke	Paluxy	482,639	1,091	47,514,969	355,411,970	0.0023	0.0271	98	736
Cooke	Glen Rose	545,479	742	32,342,562	241,922,367	0.0014	0.0163	59	444
Cooke	Hensell	563,279	2,472	107,695,190	805,560,025	0.0044	0.0527	191	1,430
Cooke	Pearsall	566,999	364	15,853,069	118,580,960	0.0006	0.0077	28	209
Cooke	Hosston	575,999	5,846	254,637,416	1,904,687,868	0.0101	0.1218	442	3,307
Cooke Total			**11,315**	**492,876,767**	**3,686,718,221**	**0.0305**	**0.3666**	**1,331**	**9,953**
Denton	Woodbine	258,120	3,607	157,111,814	1,175,196,372	0.0140	0.1677	609	4,553
Denton	Paluxy	612,719	10,519	458,218,699	3,427,475,869	0.0172	0.2060	748	5,594
Denton	Glen Rose	612,719	1,725	75,144,140	562,078,170	0.0028	0.0338	123	917
Denton	Hensell	612,719	7,182	312,846,668	2,340,093,077	0.0117	0.1407	511	3,819
Denton	Pearsall	612,719	1,098	47,816,129	357,664,645	0.0018	0.0215	78	584
Denton	Hosston	612,719	9,545	415,786,765	3,110,085,000	0.0156	0.1869	679	5,076
Denton Total			**33,676**	**1,466,924,216**	**10,972,593,132**	**0.0630**	**0.7566**	**2,746**	**20,543**

Notes

-- no pumping recording in the aquifer

Total County total numbers for annual availability are based on averages for each aquifer in the county even though some aquifers may not exist in all areas of the county

2015 Review of Water Level Changes



County	Woodbine 1-year DFC (ft)
Collin	-3.1
Cooke	0.0
Denton	-0.3
Fannin	-3.7
Grayson	-0.6

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Miles

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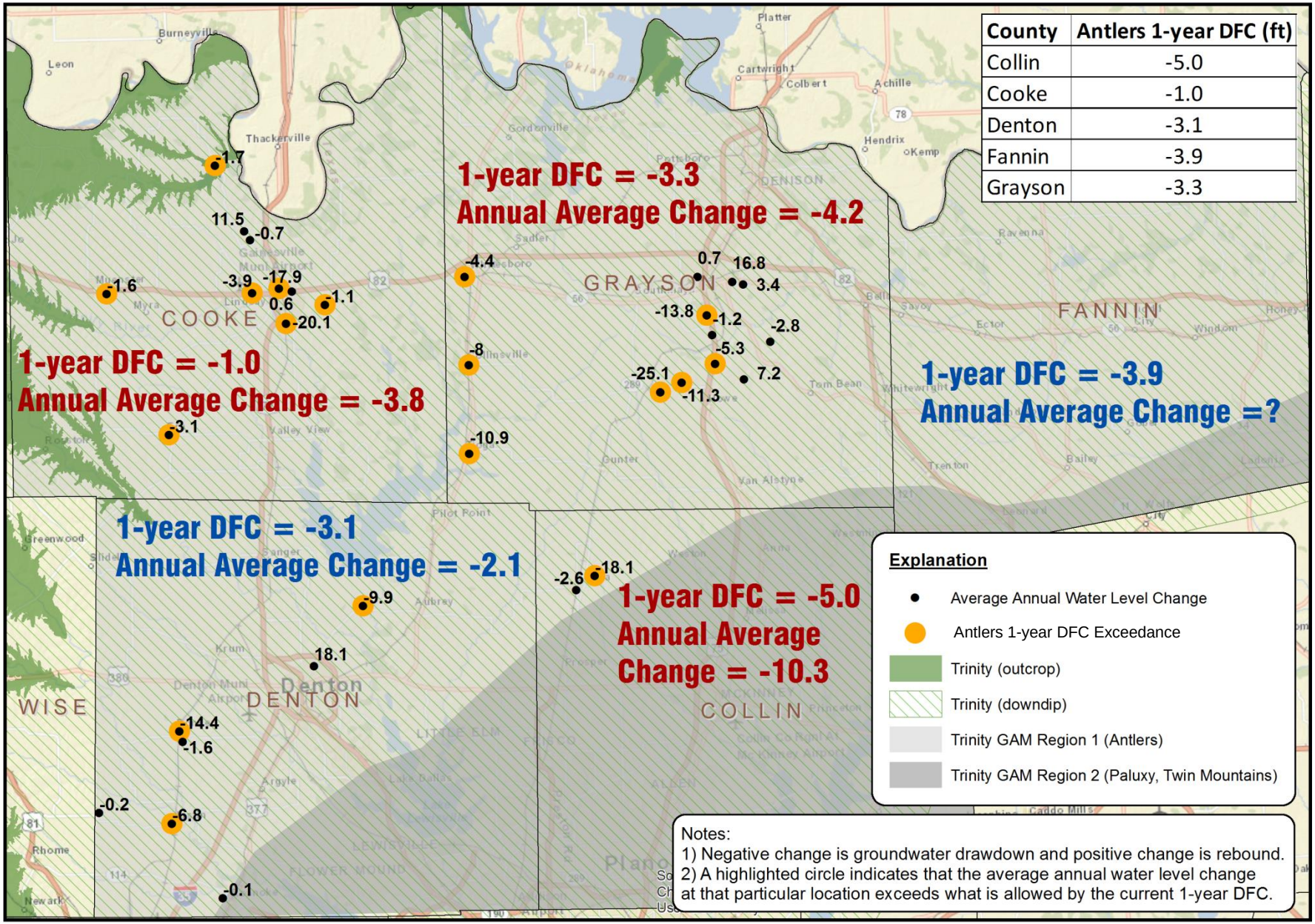
WOODBINE AQUIFER
AVERAGE ANNUAL WATER LEVEL CHANGE
2000-2015



County	Antlers 1-year DFC (ft)
Collin	-5.0
Cooke	-1.0
Denton	-3.1
Fannin	-3.9
Grayson	-3.3

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Miles

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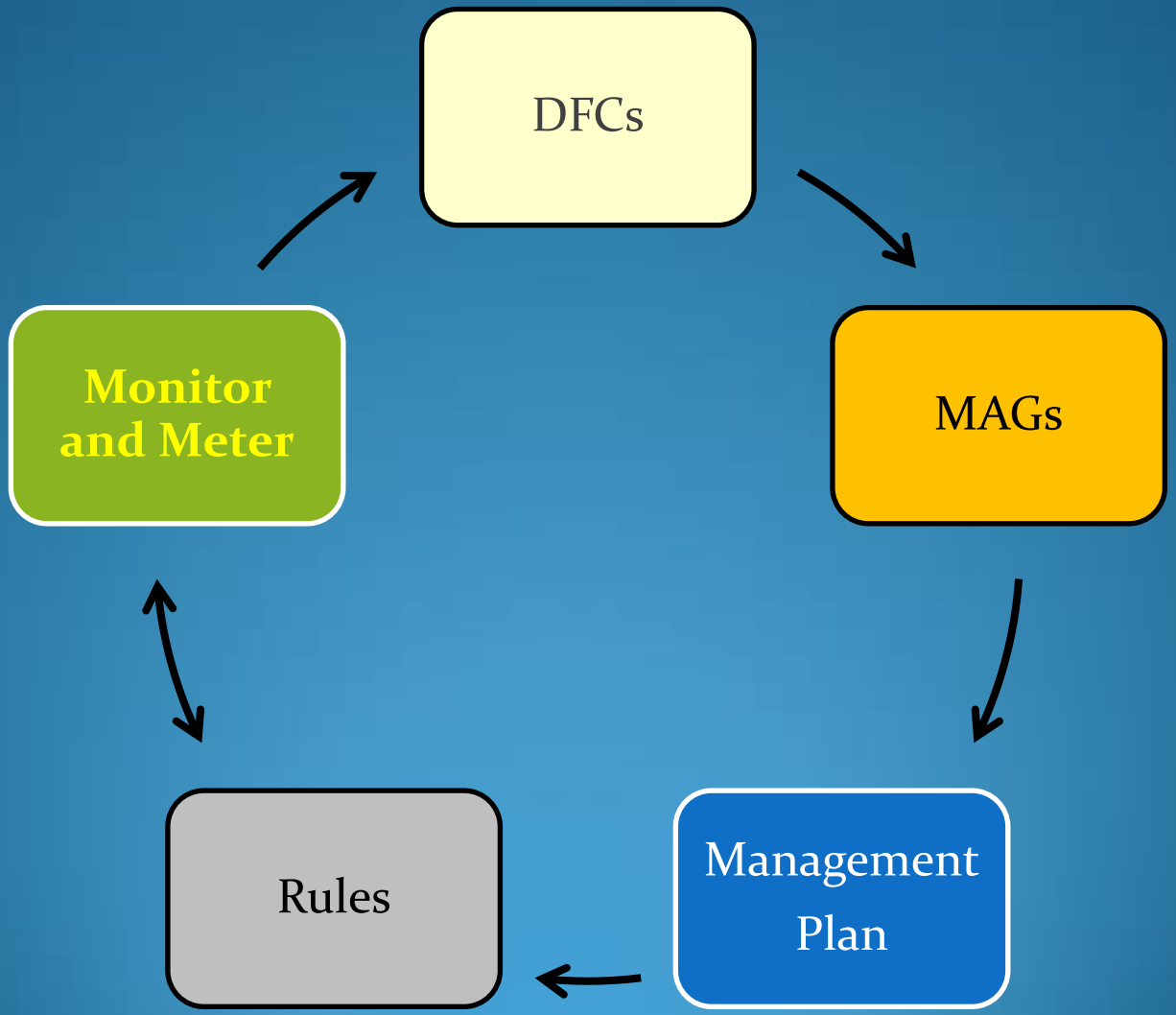
TRINITY ANTLERS AQUIFER
AVERAGE ANNUAL WATER LEVEL CHANGE
2000-2015

Approach to Aquifer Management to achieve DFCs

- Monitor water level changes
- Meter permitted wells & estimate exempt use
- Compare permitted and actual use
- Promote conjunctive use
- Consider potential restrictions as necessary based on best available science
- Consider potential conditional permits
- Consider special rules for times of severe drought
- Consider management zones

Management Approach



Summary of North Texas GCD Management Issues

1. Water level decline in outcrop areas due to overproduction in areas of thin saturated thickness
    1. Subdivisions of small lots on individual wells
    2. Public/industrial wells with heavy demand
2. Excessive water level decline in deeper portions of the aquifer
    1. Reduced or lost capacity in deep wells
    2. Well interference
3. Total production increases beyond MAG & water level decline exceeds DFC
    1. Permitting issues
    2. Adjust DFCs

Path Forward – Policy Assessments

- Main Items to Consider:
  - Production Limits (Starting point; foundation of rules is how to handle existing use)
    - Historic Use Permits (Existing Users)
    - Production Permits (New Users)
    - Option to have permitting tiers
    - Emergency Permits

Path Forward – Policy Assessments

- Main Items to Consider Continued…:
  - Permitting
    - Use of past production reports for granting of Historic Use Permits; permit by rule
    - New Users required to prove up use (most language here is from statute)
      - Hydrogeological Report – decision on a threshold well production that will require a hydrogeological report (i.e. all new wells over ____ gpm or requesting more than ____ acre feet) to determine impact on neighboring wells and aquifer
    - Permits will have conditions that refer to authority in rules for adjustments based on DFC, etc…
    - Consider drought language in permit

Path Forward – Policy Assessments

- Main Items to Consider Continued…:
  - Management Zones
    - Common to place general authority in rules that would be followed up by a technical assessment if a problem area shows it may need a management zone
  - Reductions when actual production exceeds MAG and/or water level decline exceeds DFC
    - Proportional
    - Based on Permit Type (i.e. historic cut back last)
    - Incentive based (i.e. similar to conservation-oriented rate structures)
  - Other changes to temporary rules language
    - Review whether want to grandfather current exemptions and move towards statutory exemptions for new users, etc…

Path Forward – Policy Assessments

- Main Items to Consider Continued…:
  - Get regulatory system up and running
    - Note that actual water level decline assessments/well monitoring and review of actual pumpage (as opposed to permitted volume) will provide most information on review of MAG and achievement of DFC
  - Many considerations in permitting
  - Review any legislative changes
  - Adjustment of DFC in future if needed once regulatory program is up and running
    - Timing works well to have rules in place in early 2018 with DFC currently up for required renewal in 2020 (likely to be pushed back to 2021)

Path Forward – Technical Assessments

- Main Items to Consider:
  - Minimum tract size requirements
    - Can help avoid excessive well interference
    - Findings from other areas
      - Larger lots = less risk of dry wells
      - Increased lot size won't solve every potential problem for thin aquifer, but it does significantly decrease risk
    - Current tract size requirements (primarily based on county septic rules)
      - Collin County – 1.5 acres; Cooke County – 1 acre; Denton County – 2 acres
    - Confer with neighboring districts for consistency to the degree possible
    - Recommendation: complete technical evaluation for NTGCD
      - Then coordinate with counties too based on technical evaluation

Path Forward – Technical Assessments

- Spacing assessment
  - Also consider new well distance from existing wells and property lines (based on size of well)
  - Variance process
- Outcrop evaluation as needed
- Assess downdip areas at most risk
- Review of conversion to surface water as per regional/state water plan predictions

Path Forward – General Timeline

Regulatory system up and running
(early 2018)

Permitting
Review of actual pumping/monitor levels
Review of accuracy of surface water predictions
(2018 – 2021)

Toughest decisions (if any) likely to occur on/around next round of DFC planning
- Cutbacks and/or DFC adjustment
(2020-2021)

Discussion/Questions