

North Texas GCD Monitoring Plan

LBG-Guyton Associates
July 19, 2016

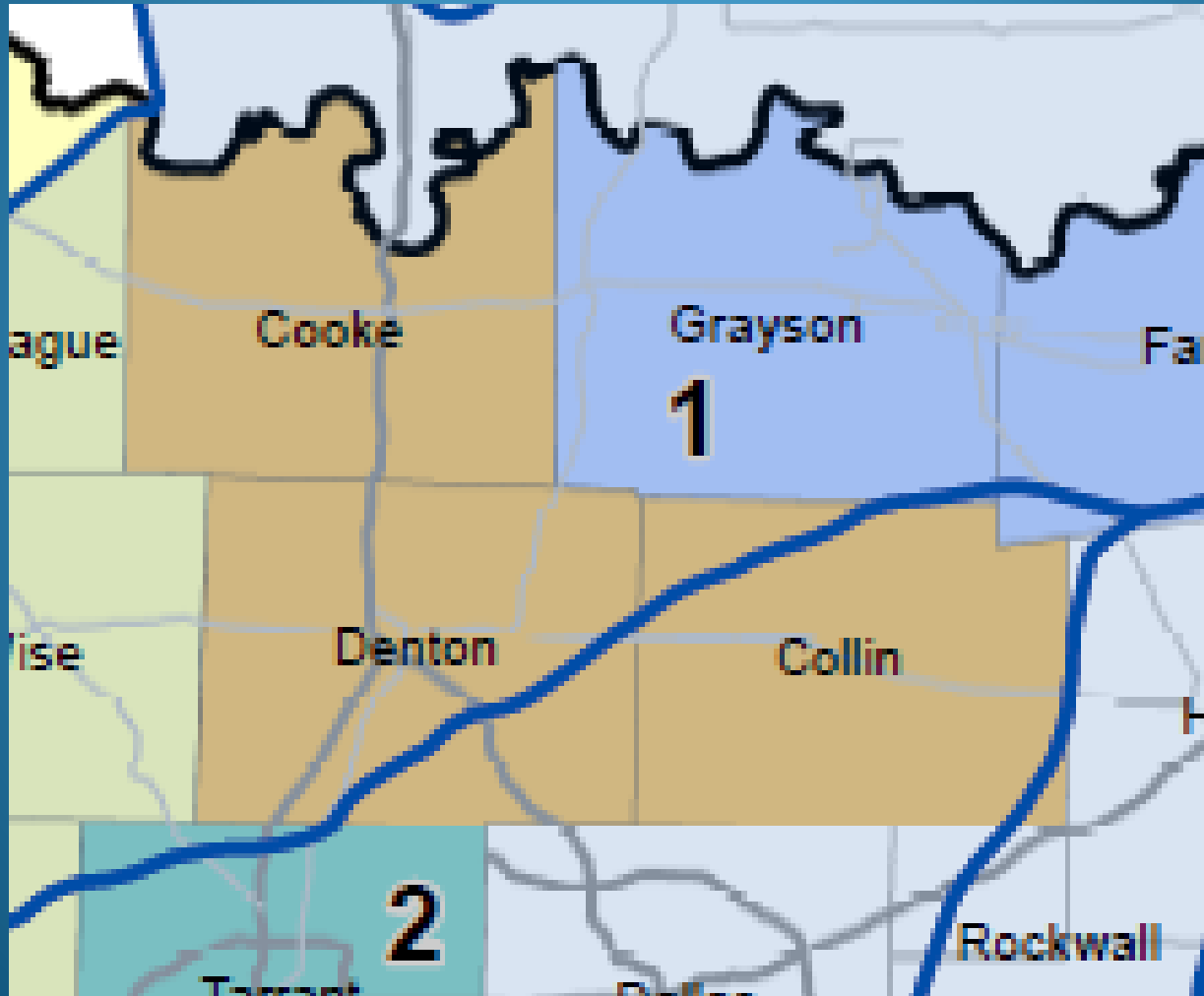


Outline

- Review of Hydrogeology and Aquifers
- Historic monitoring by TWDB
- Potential monitoring locations
- Focus Zones
- Considerations for selection



Hydrogeologic Regions



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

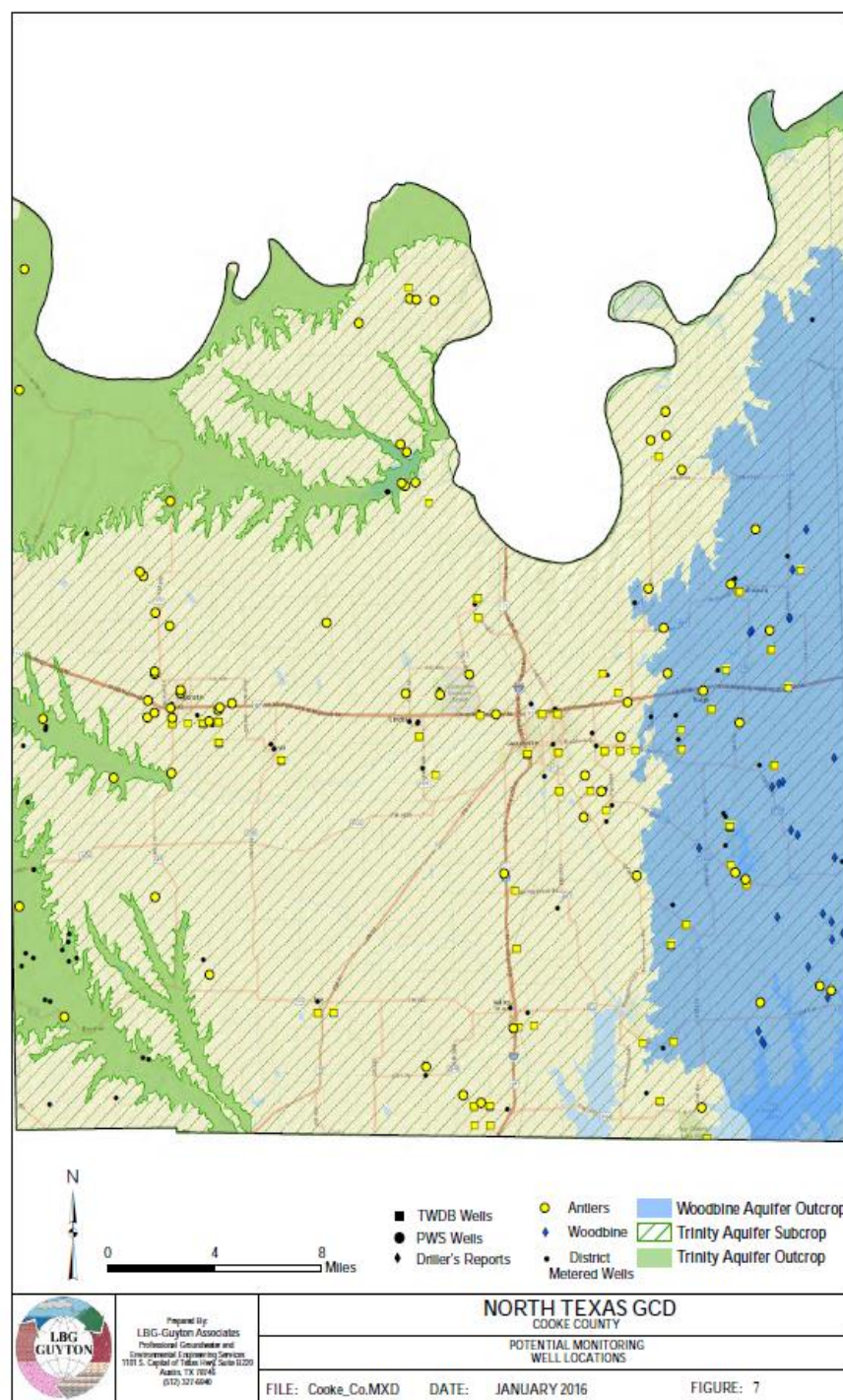
(after Kelley, Nov 18, 2015)

Historic TWDB monitoring

- Wells monitored by TWDB
- Wells with long monitoring history

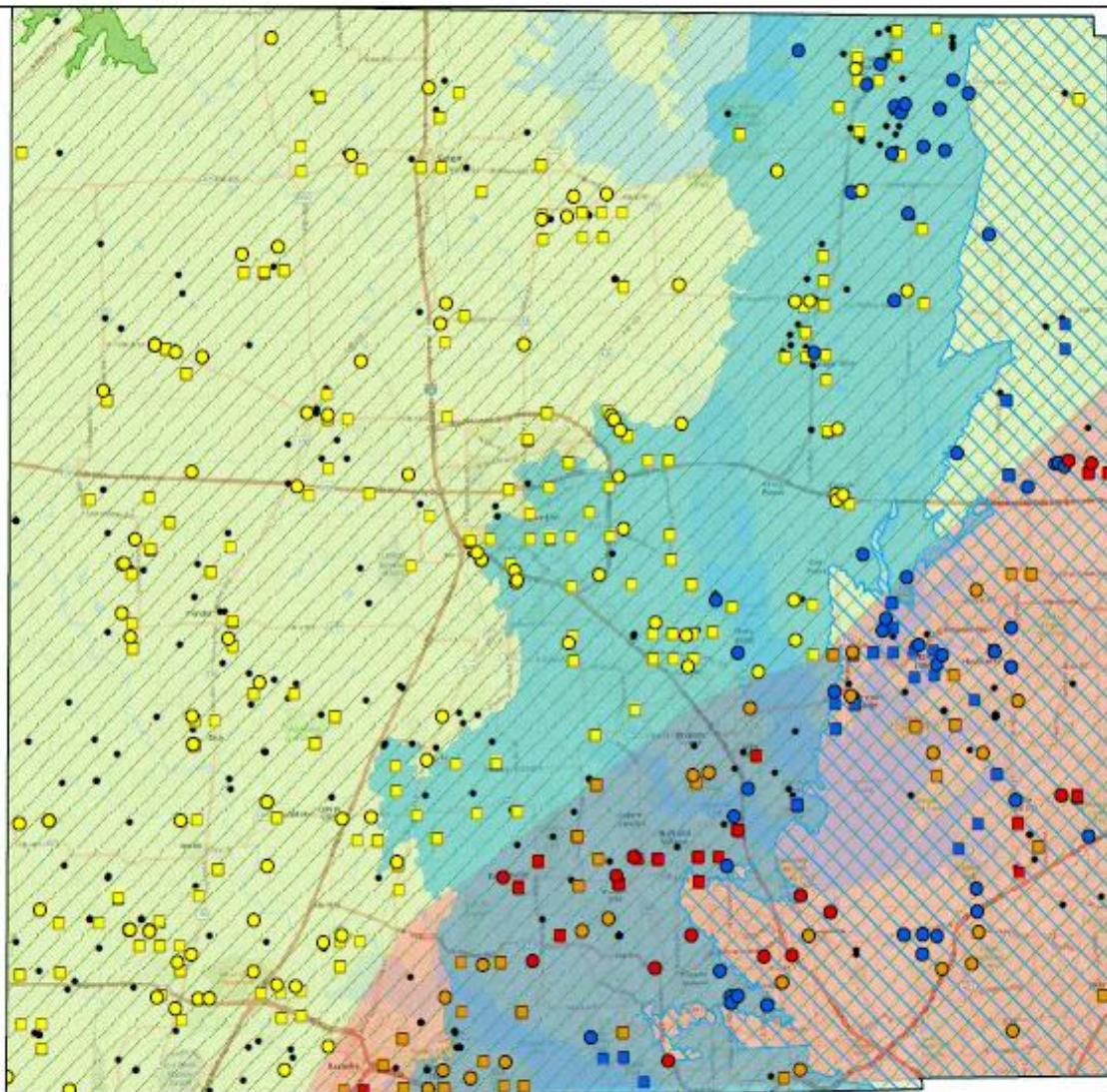
County	Aquifer			
	Woodbine	Antlers	Paluxy	Twin Mountains
Collin	5	2	0	1
Cooke	0	10	n/a	n/a
Denton	5	7	2	4

Cooke County





0 4 8 Miles



- PWS Wells
- TWDB Wells
- Paluxy ● Antlers
- Twin Mountains
- Woodbine
- District Metered Wells
- ▨ Woodbine Aquifer Subcrop
- ▨ Woodbine Aquifer Outcrop
- ▨ Trinity Aquifer Subcrop
- ▨ Trinity Aquifer Outcrop
- ▨ Region 1
- ▨ Region 2



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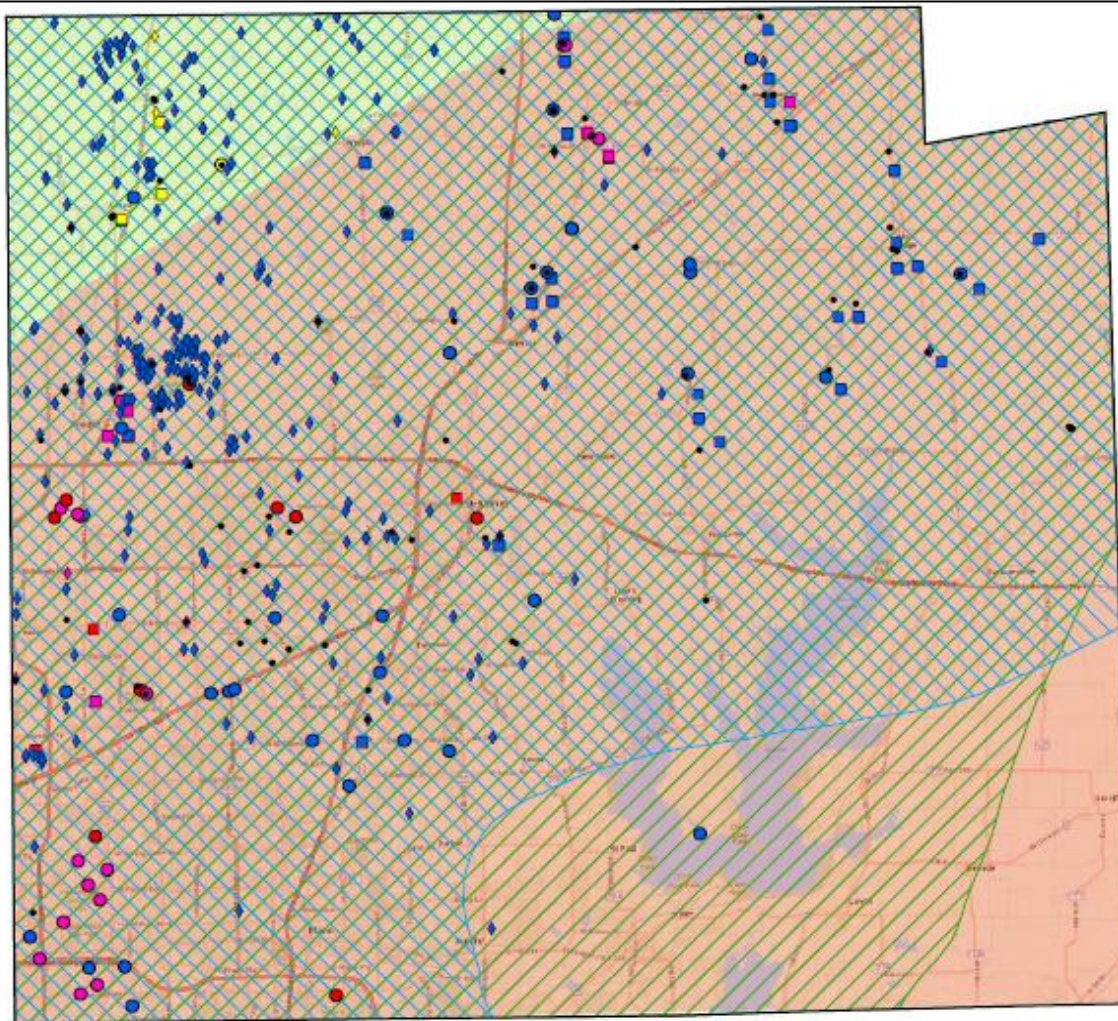
NORTH TEXAS GCD DENTON COUNTY

POTENTIAL MONITORING
WELL LOCATIONS

FILE: Denton_Co.MXD

DATE: JANUARY 2016

FIGURE: 8



- District Metered Wells
- Paluxy
- Twin Mountains
- Woodbine
- Antlers
- TWDB Wells
- PWS Wells
- Driller's Reports
- ▨ Woodbine Aquifer Subcrop
- ▨ Trinity Aquifer Subcrop
- Region 1
- Region 2



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NORTH TEXAS GCD
 COLLIN COUNTY

POTENTIAL MONITORING
 WELL LOCATIONS

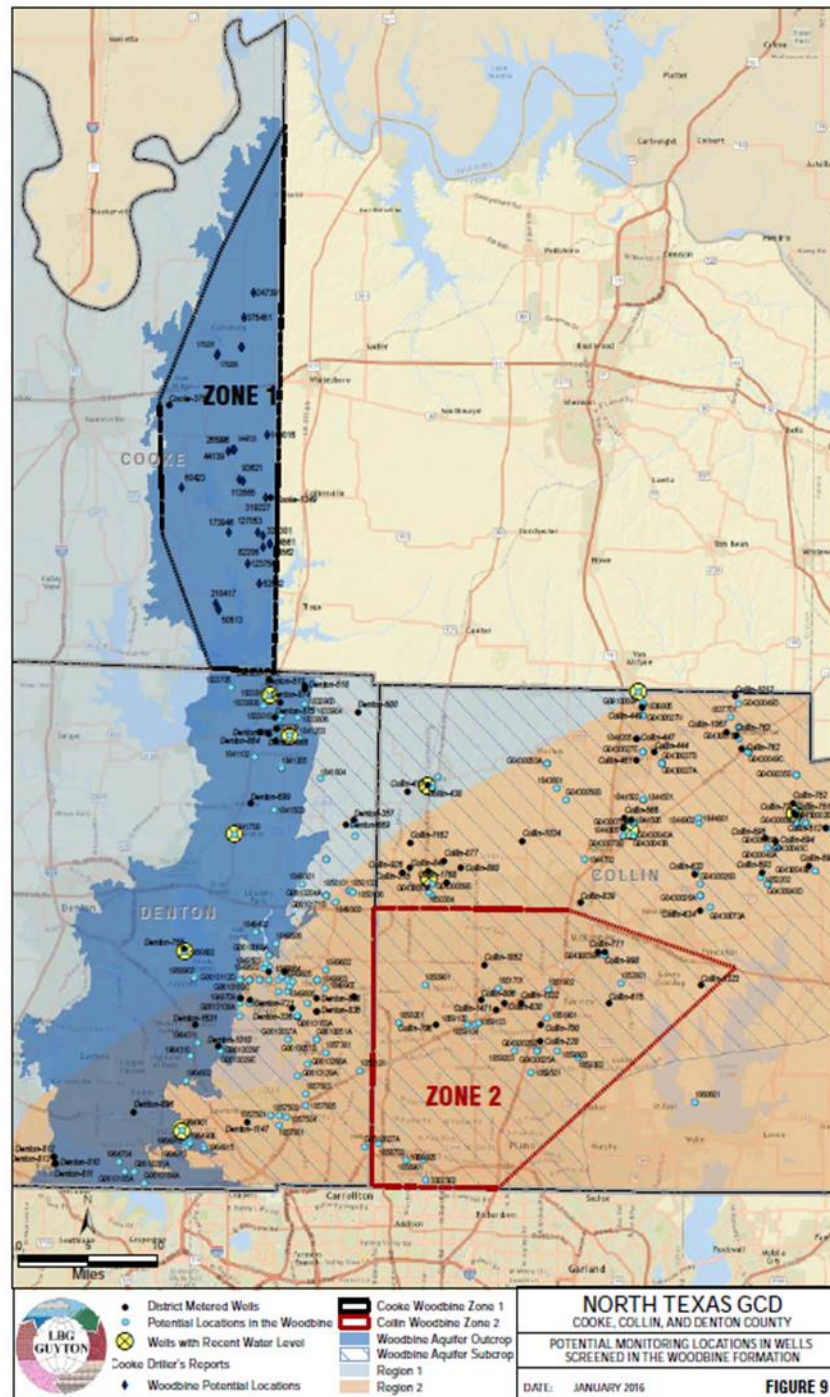
FILE: Collin_Co.MXD

DATE: JANUARY 2016

FIGURE: 6

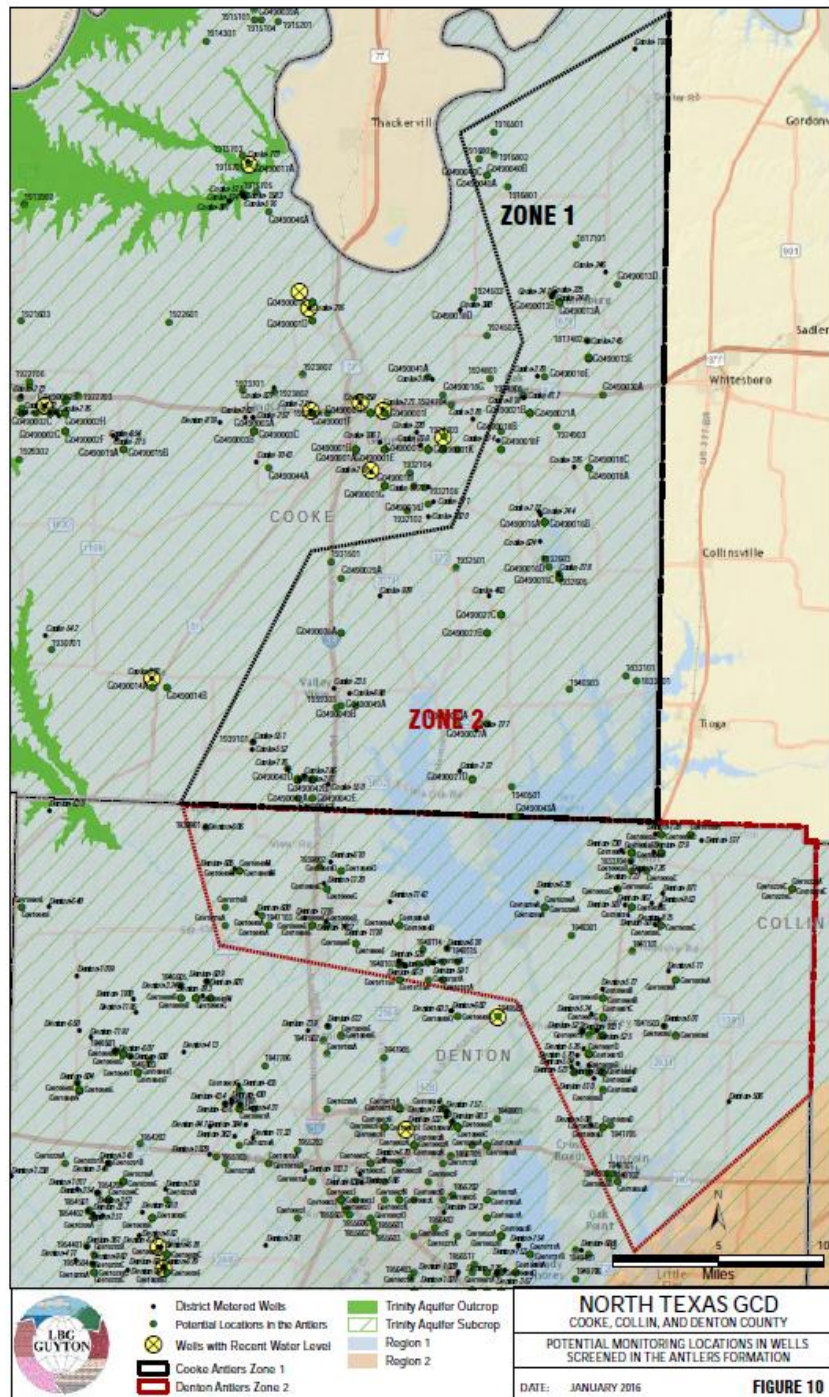
Focus Zones and potential wells

Woodbine Aquifer

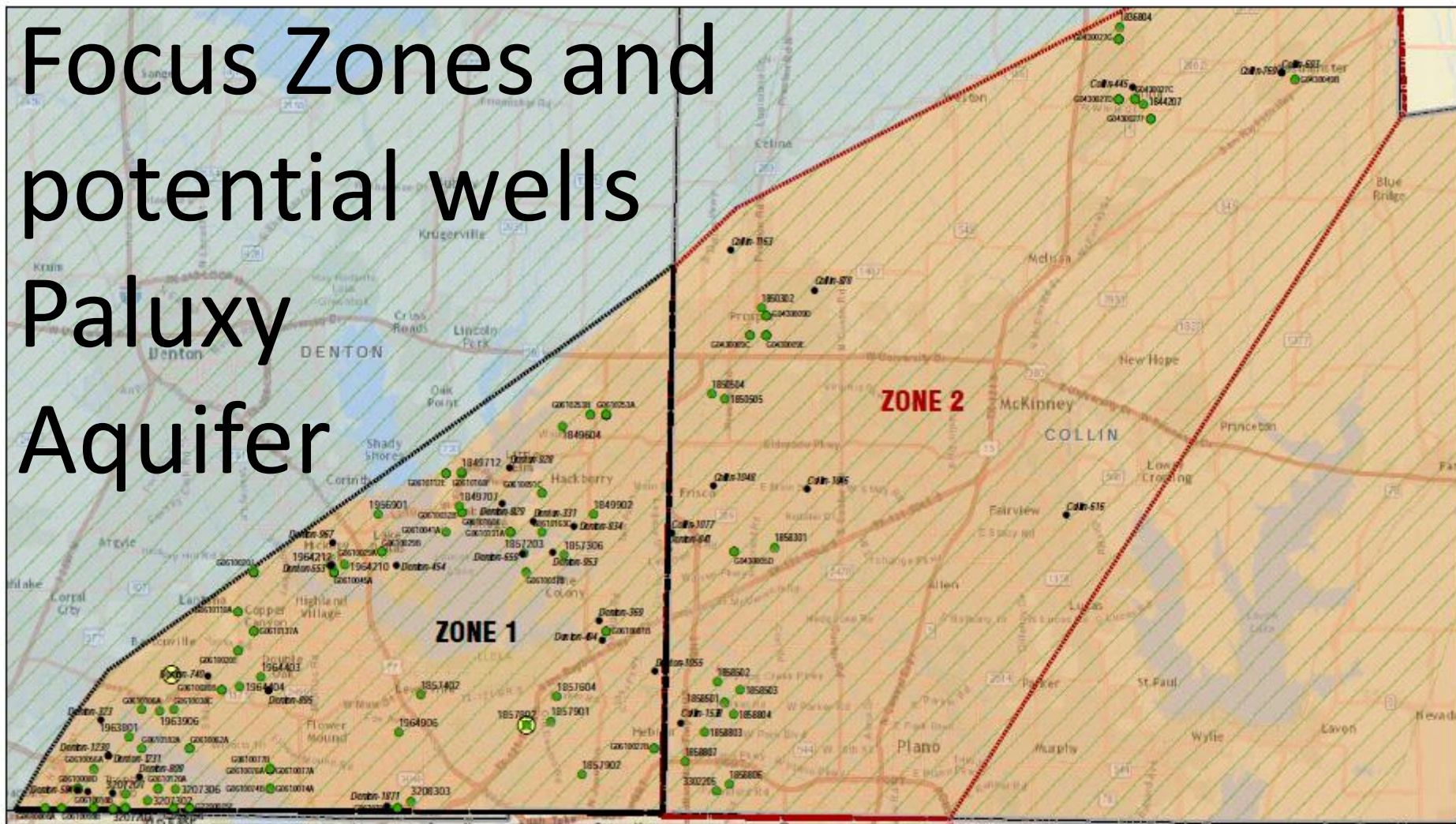






Focus Zones and potential wells

Antlers Aquifer



Focus Zones and potential wells Paluxy Aquifer



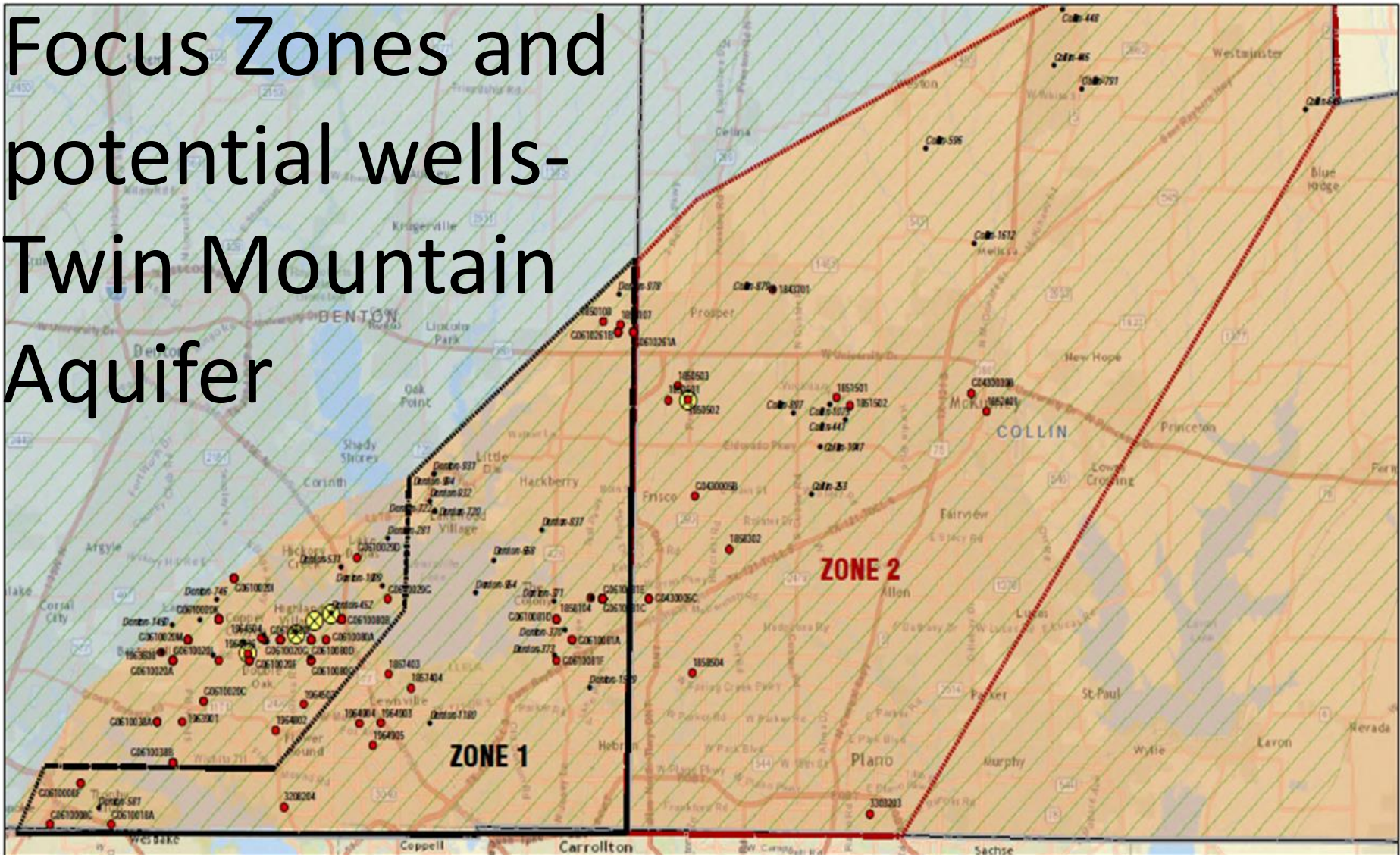
	 	 District Metered Wells	 Collin Paluxy Zone 2
		 Potential Locations in the Paluxy Formation	 Trinity Aquifer Subcrop
		 Well with Recent Water Level	 Region 1
		 Denton Paluxy Zone 1	 Region 2




NORTH TEXAS GCD
 COOKE, COLLIN, AND DENTON COUNTY

POTENTIAL MONITORING LOCATIONS IN WELLS
 SCREENED IN THE PALUXY FORMATION

DATE: JANUARY 2016 **FIGURE 11**

Focus Zones and potential wells- Twin Mountain Aquifer



	 	<ul style="list-style-type: none"> • District Metered Wells • Potential Locations in the Twin Mountains Formation ⊗ Wells with Recent Water Level 	<ul style="list-style-type: none"> Denton Twin Mountains Zone 1 Collin Twin Mountains Zone 2 Trinity Aquifer Subcrop Region 1 Region 2 	<p style="text-align: center;">NORTH TEXAS GCD COOKE, COLLIN, AND DENTON COUNTY</p> <p style="text-align: center;">POTENTIAL MONITORING LOCATIONS IN WELLS SCREENED IN THE TWIN MOUNTAINS FORMATION</p>
		DATE: JANUARY 2016		FIGURE 12

Well listings

TWDB Wells Located in Priority Monitoring Areas Collin County, Texas

State Well Number	Well Owner	Depth to Top of Screen (ft bgl)	Depth to Bottom of Screen (ft bgl)	Aquifer	Well Total Depth	Casing Diameter	Screen Length
1836804	City of Anna	2105	2398	Paluxy	2398		293
1844207	City of Anna	2144	2490	Paluxy	2500		346
1850302	Town of Prosper	1532	1740	Paluxy	1794		208
1850504	Texas Power and Light	1333	1652	Paluxy	1710		319
1850505	Texas Power and Light	1502	1680	Paluxy	1695		178
1858301	CF Plantation	1650	1833	Paluxy	1833		183
1858501	El Rancho Water Co.	1652	1724	Paluxy	1745		72
1858502	Jason Sowell, Jr.	1615	1686	Paluxy	1707		71
1858503	Heritage Farm	1725	1823	Paluxy	1834		98
1858803	Willow Bend Polo and	1640	1738	Paluxy	1744	10	98
1858806	W.D. Rosenberg Jr.	1616	1688	Paluxy	1715		72
1858807	Parkway Farms Inc.	1567	1707	Paluxy	1746		140
3302205	Collins Radio Co.	1636	1679	Paluxy	1746		43
1843701	Huie Properties	2560	2690	Twin Mountains	2728		130
1850501	Texas Power and Light	2266	2515	Twin Mountains	2694	20	249
1850502	Texas Power and Light	2378	2640	Twin Mountains	2662	20	262
1850503	Texas Power and Light	1875	2219	Twin Mountains	2230		344
1851501	Stonebridge Ranch	2780	3066	Twin Mountains	3100		286
1851502	Stonebridge Ranch	2850	3107	Twin Mountains	3117		257
1852401	City of McKinney	3022	3242	Twin Mountains	3242		220
1858302	CF Plantation	2656	2864	Twin Mountains	2890		208
1858504	Electronic Data	2564	2785	Twin Mountains	2812		221
3303203	Sherrill Park Golf	3122	3261	Twin Mountains	3288		139
1850901	Cloyce K. Box	1013	1050	Woodbine	1050	7	37
1851701	Gene Williams	1060	1074	Woodbine	1104	8	14
1851901	Stuckey's Inc.	1166	1205	Woodbine	1209	7	39
1852801	J.W. Sparkman	1168	1176	Woodbine	1231		8
1858201	City of Frisco	865	953	Woodbine	963		88
1858805	William Moss	920	932	Woodbine	1007		12

Some considerations for selection

- Access, access, access
- Knowledge of construction (screen interval)
- Production from well and nearby areas
- Monitoring objective
 - Long-term DFC
 - Frequent monitoring for local issues
- Monitoring technique and frequency