

# Mapping Texas Water Systems

Texas State Data Center Annual Affiliate Meeting  
May 25, 2011

Kevin Kluge

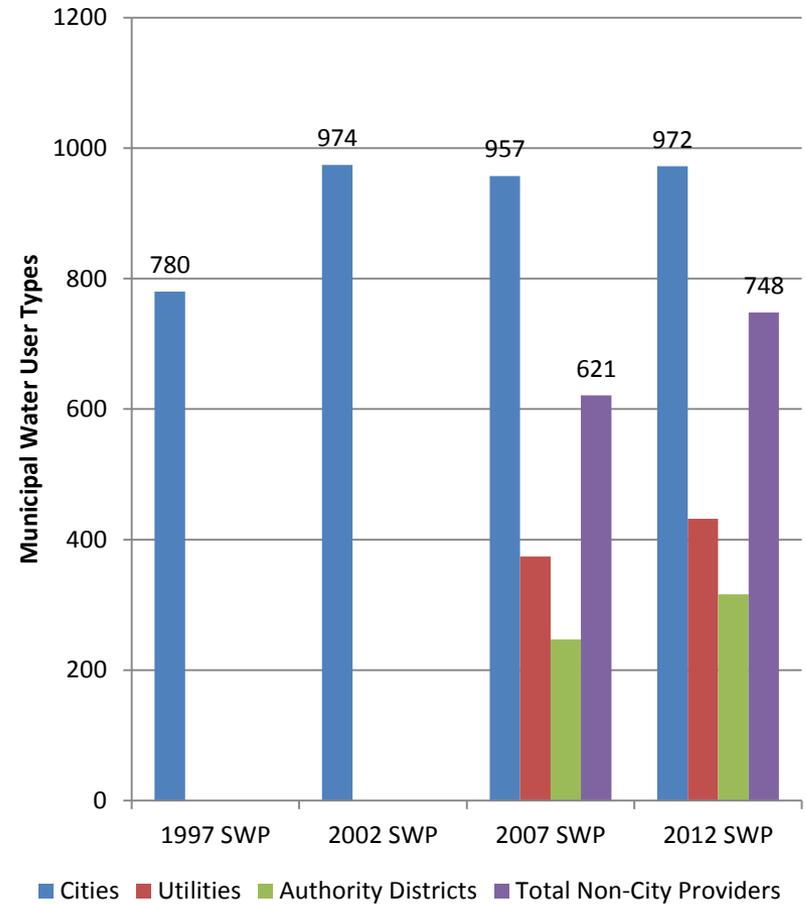
Team Lead, Water Use Survey & Estimates  
Texas Water Development Board

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# TWDB, Service Areas, and Population

- Regional Water Plans every 5 years
- Plans include cities & non-city utilities
- Project population for cities & utilities over 50 years
- Use annual pop estimates for per-person use numbers



# The Challenge



- No annual estimates for areas beyond cities
- No statewide map of where systems are
- No way to link system locations with water use or system info.

# The Solution

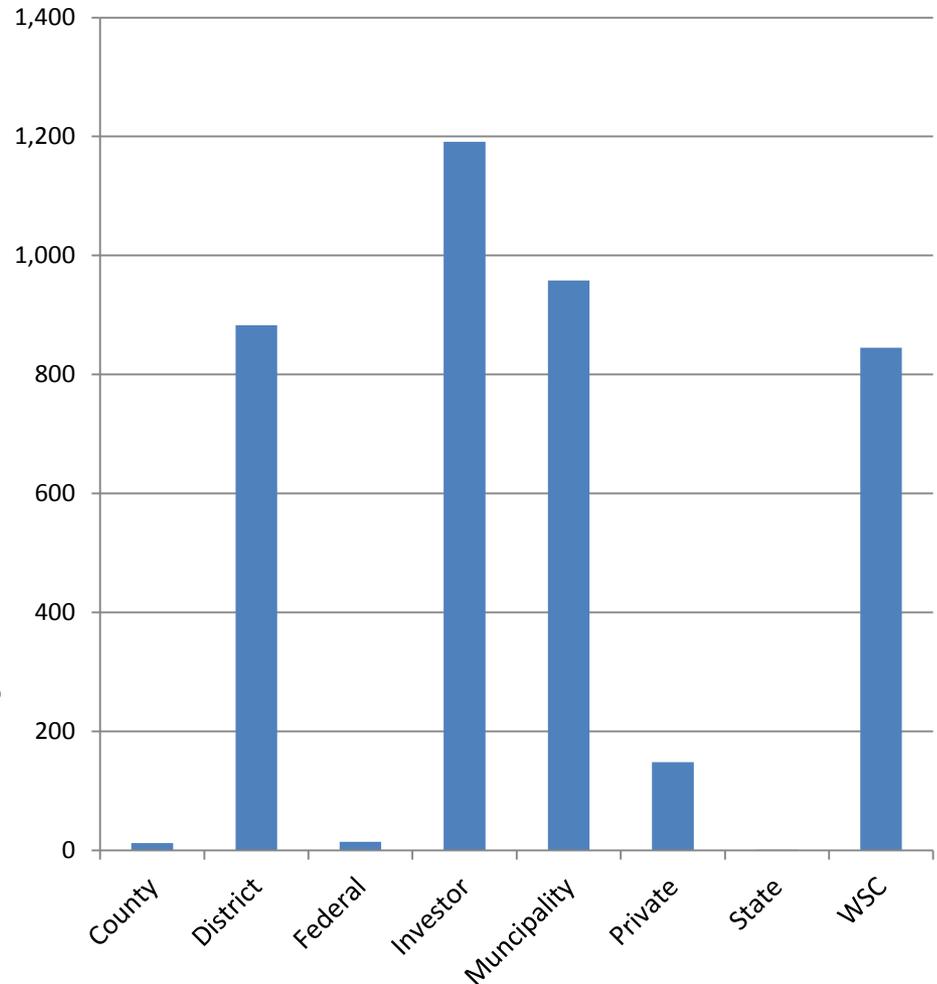
## *Make a Map...*



- Statewide geodatabase of water system service areas
- Contracted with HDR in Summer of 2010
- Used April 2010 TCEQ data
- Completion Date: June-July 2011
- **Service Area Boundaries ONLY for planning\***

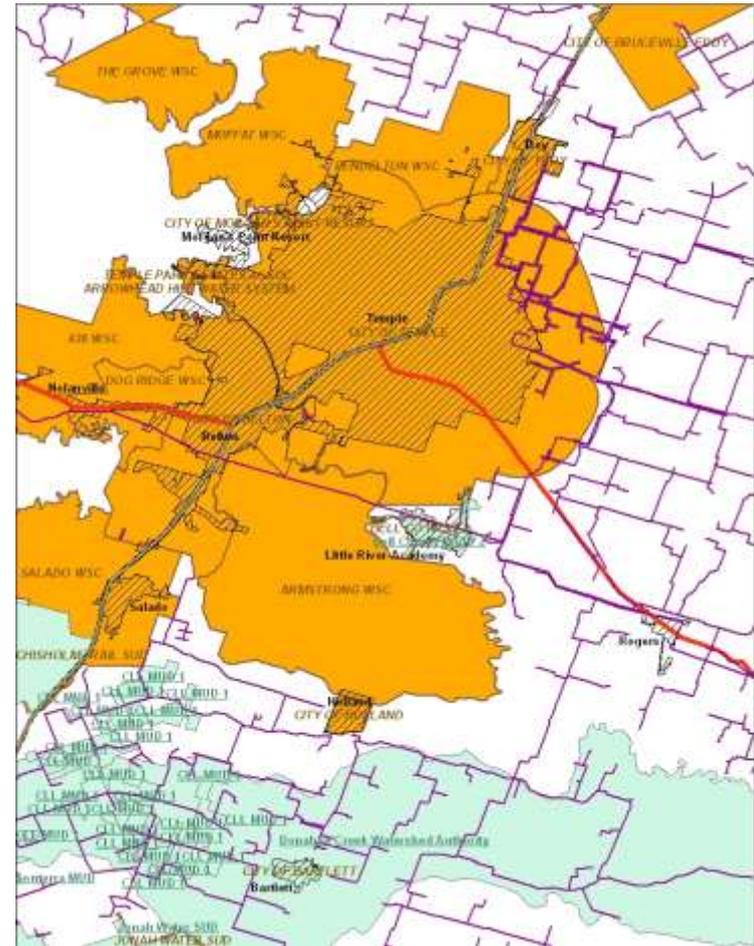
# Which Water Systems To Map?

- TCEQ Public Water Systems  $\approx$  TWDB annual surveys
- Criteria for mapping:
  - Active
  - Community Type
  - Population > 25
  - Customer Type: Residential, OR and MHP (Principal Residence)
- 4,052 water systems



# What Can Be a Service Area?

- CCNs (Certificate of Conveyance & Necessity)
- District Boundaries
- City Boundaries
- Extent of Infrastructure





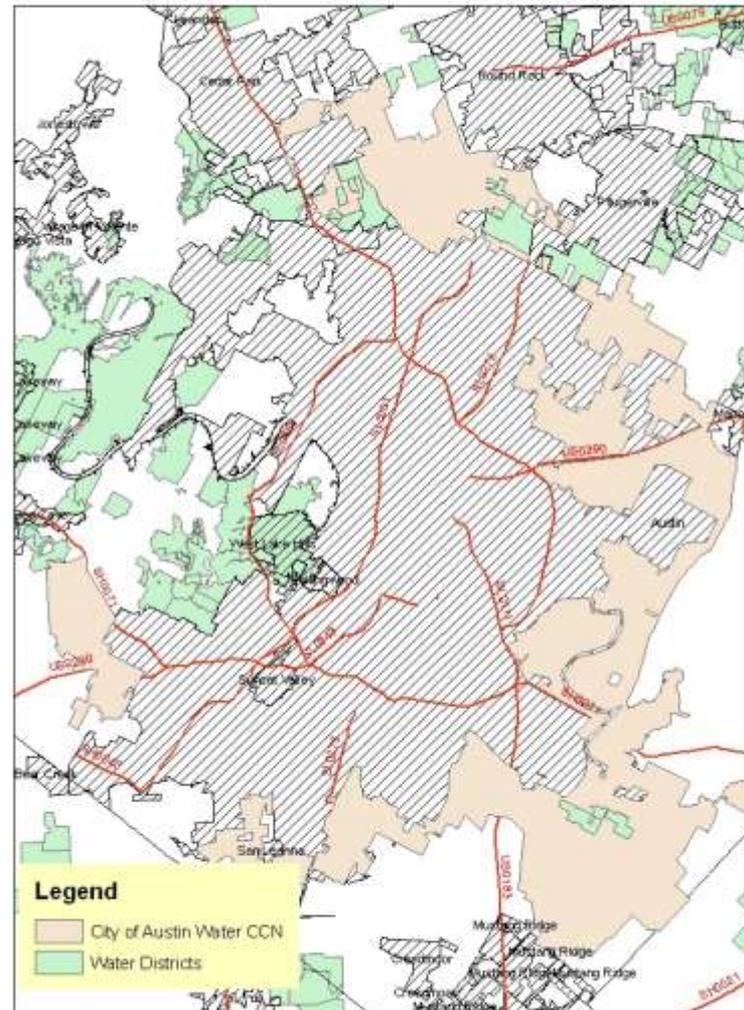
# Service Area Challenges (2)

Combo of Area Types:

## City of Austin

- City had a CCN, but only outside of city limits
- Inside of city limits, no CCN
- Both areas has to be considered in a service area

Service Area a combination of City Limit and CCN: City of Austin



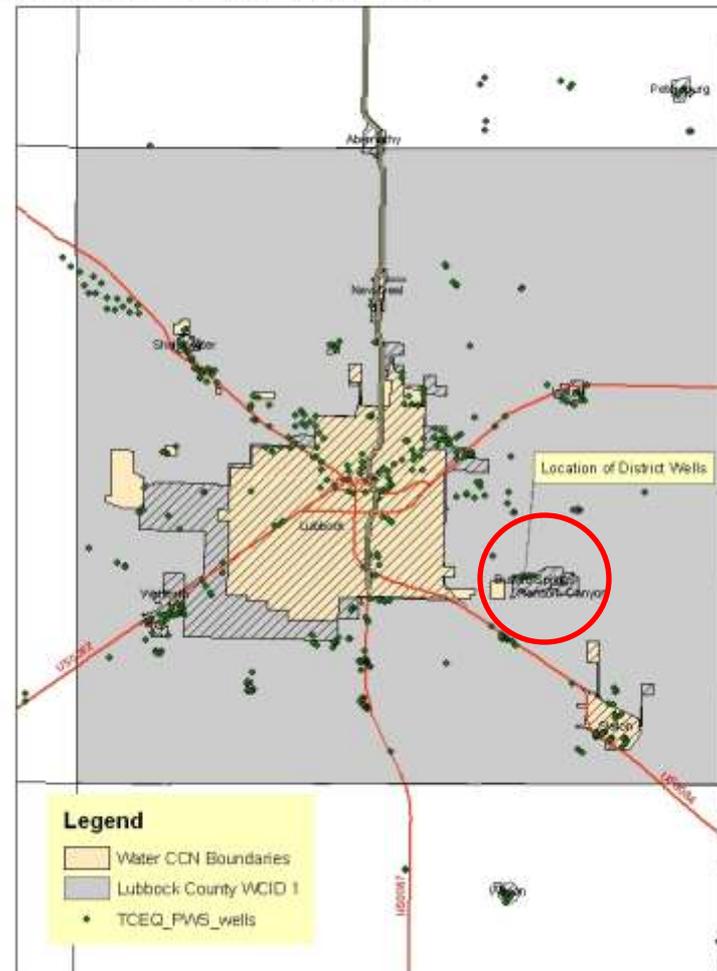
# Service Area Challenges (3)

District Area  $\neq$  Service Area:

## Lubbock County WCID #1

- District Boundary = Lubbock County
- 350 connections
- 650 population

District Boundary Much Larger Than Service Area:  
Lubbock County WCID 1 (PWS ID = 1520006,  
connections = 350, population = 650)



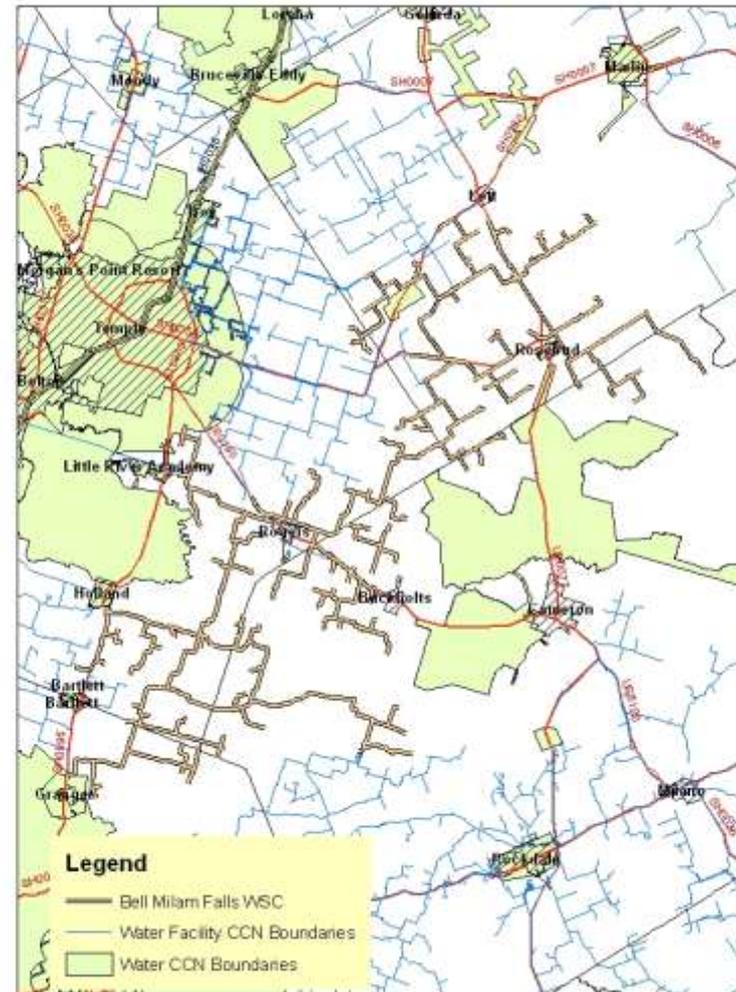
# Service Area Challenges (4)

Line CCNs:

## Bell Milam Falls WSC

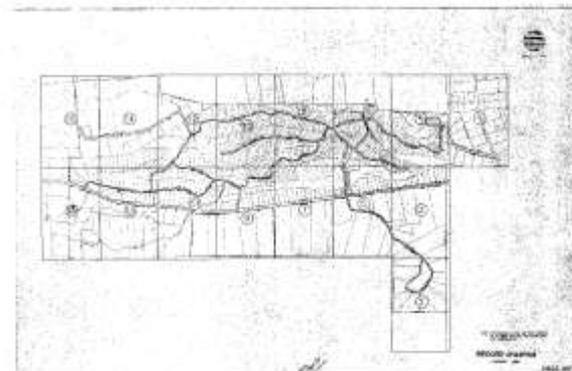
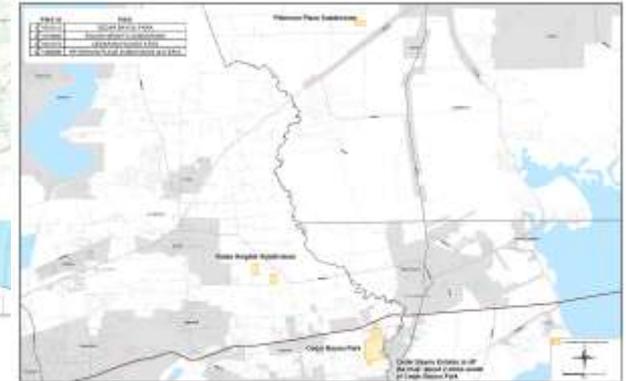
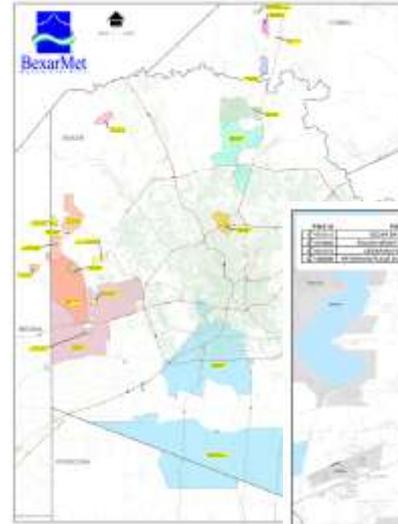
- The TCEQ CCN is a line rather than an area
- Generally the center line of rural roads
- Serves customers along the roads

Public Water Systems with Facility (Line) CCN:  
Bell Milam Falls WSC (0140007, population = 5,376)



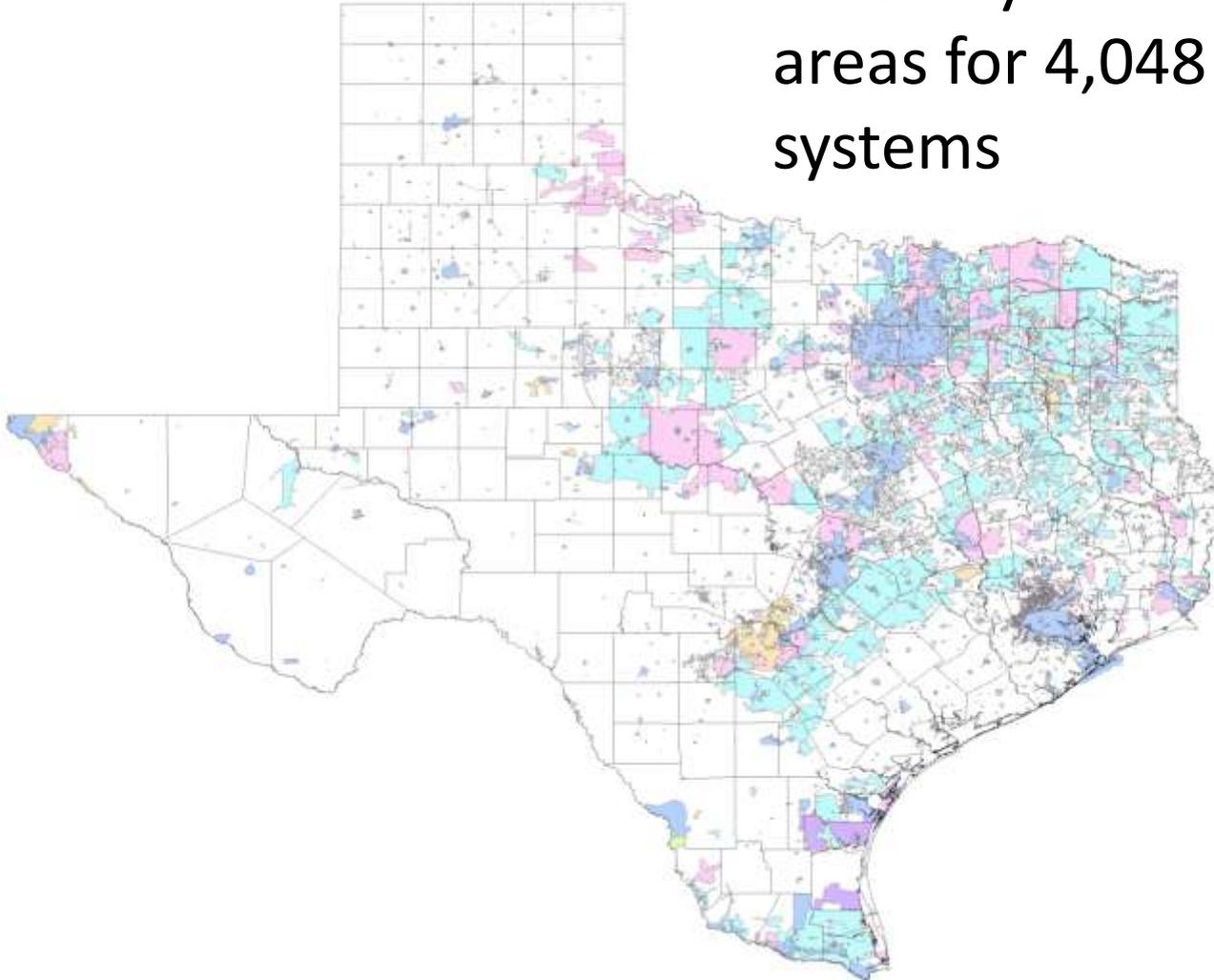
# HDR Outreach Efforts

- Letters to 1,750 water systems with ambiguous or no service area
- Received responses for 1,152 water systems
- 4 systems no longer exist
- 594 entities did not respond



# The Product

Water system service areas for 4,048 systems



# Final GeoDatabase

## Includes:

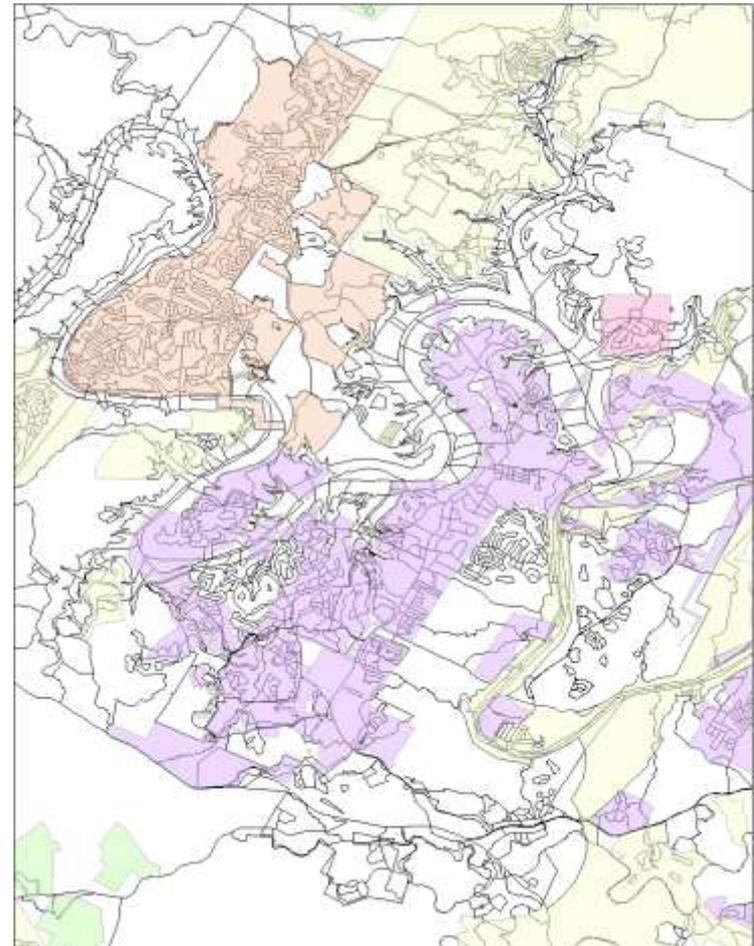
- Service areas\* feature - 4,048 public water systems
- Creation Metadata included
- Includes Original Features & Data
- System-submitted info (11 GB)

Field	Value
OBJECTID	3842
Shape	Polygon
PWS_ID	1550008
A1NAME	CITY OF WACO
POPULATION SERVED	123438
CATEGORY	1
SUBSET	1b
DISTRICT_ID	-9999
CCN_ID	10039
OVERLAPPING CCNBND	YES
OVERLAPPING CCNFAC	YES
OVERLAPPING DISTRICT	YES
PWS AREA vs PWS POP	N/A
PWS AREA vs PWS WELLS	N/A
CCN OVERLAP EXTENT	N/A
SOURCE	CCNBND
DATE_CREATED	5/11/2010
STAFF_CREATED	GONSALVEZ
DATE_MODIFIED	1/1/1900
STAFF_MODIFIED	N/A
COMMENT	Boundary created from CCN boundary, dipped cut
PWS CLARIFICATION	NOT REQUIRED
STATUS	COMPLETE (OVERLAP)
PWS AREA (Sq_mi)	436.398414
PWS AREA (ac)	279294.985087
PWS RESPONSE	N/A - PWS information not requested
PWS OVERLAP	CONFLICT
POP100_2010	163746
POP100_2000	165633
DIFF_POP_ABS	40308
DIFF_POP_ABS_PCT	32.65445
NumConn	51276
A2OWNT	M
TopologyOverlap	Y
Shape_Length	3.335128
Shape_Area	0.107385



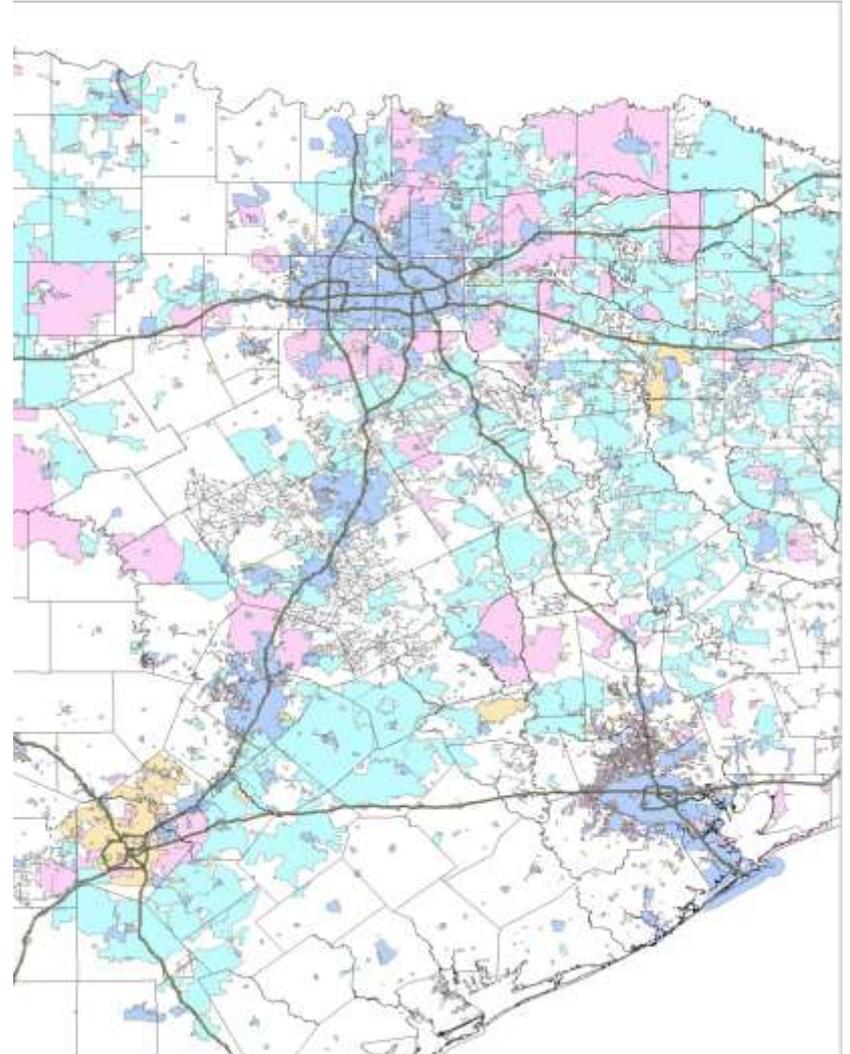
# Next Steps

- Estimate service area pop using Census blocks and census pop
- Manually estimate system population for Line CCN and very small systems
- For Shared CCNs, we'll develop a "shared" polygon layer
- Split population by county, basin, & regional water planning areas



## Further Uses

- Create annual population estimates for systems with TWDB annual surveys
- Use such small-area sub-county population estimates to assist SDC population estimates
- Thematic maps
- Potential buffering: “Which systems are within 50 miles of the lake...”



## To Be Determined...



- Distribution?
- Will it be updated?
- How can the areas be corrected?

# For More Information

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