CITY OF
ABERNATHY
TEXAS

Future Water Supply

Creative Solutions for Water Challenges

PSC

Project History

Water source life study

High Plains Water District grant

Test hole – 1,245 ft deep

Water quality testing

Study of system feasibility

Find water supply for 50 – 75 years

Santa Rosa Vs. Ogallala Well

CITY OF ABERNATHY TEXAS

Cost

Design

Construction

Water Quality

Knowledge

4.9 Minimum Spacing Requirements

(a) All wells permitted subsequent to the date of enactment of this rule shall meet the following distance and production limitations:

Table 1 Minimum Spacing of Wells in the Ogallala/Edwards-Trinity (High Plains) Aquifer

Well Production	Minimum Distance from nearest valid well or proposed well site located in the Ogallala /Edwards-Trinity (High Plains) Aquifer	Minimum Distance from nearest property line
17.5 to 70 gpm	100 yards	25 yards
>70 up to 165 gpm	200 yards	50 yards
>165 up to 265 gpm	300 yards	75 yards
>265 up to 390 gpm	350 yards	87.5 yards
>390 up to 560 gpm	400 yards	100 yards
>560 up to 1,000 gpm	500 yards	125 yards
>1,000 gpm	540 yards	135 yards

Table 2 Minimum Spacing of Wells in the Dockum Aquifer

Well Production	Minimum Distance from nearest valid well or proposed well site located in Dockum Aquifer	Minimum Distance from nearest property line
17.5 up to 70 gpm	100 yards	25 yards
>70 up to 165 gpm	200 yards	50 yards
>165 up to 265 gpm	300 yards	75 yards
>265 up to 500 gpm	880 yards	100 yards
>500 gpm	1760 yards	135 yards

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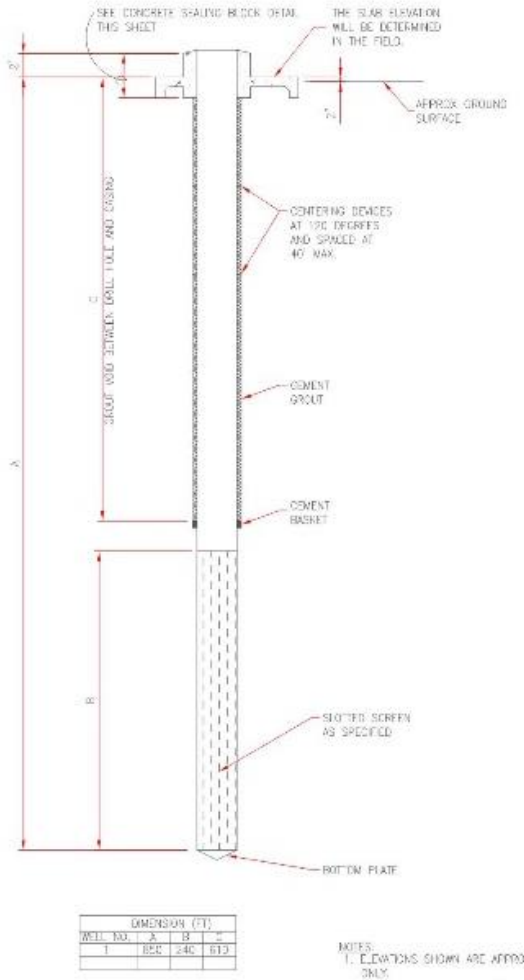
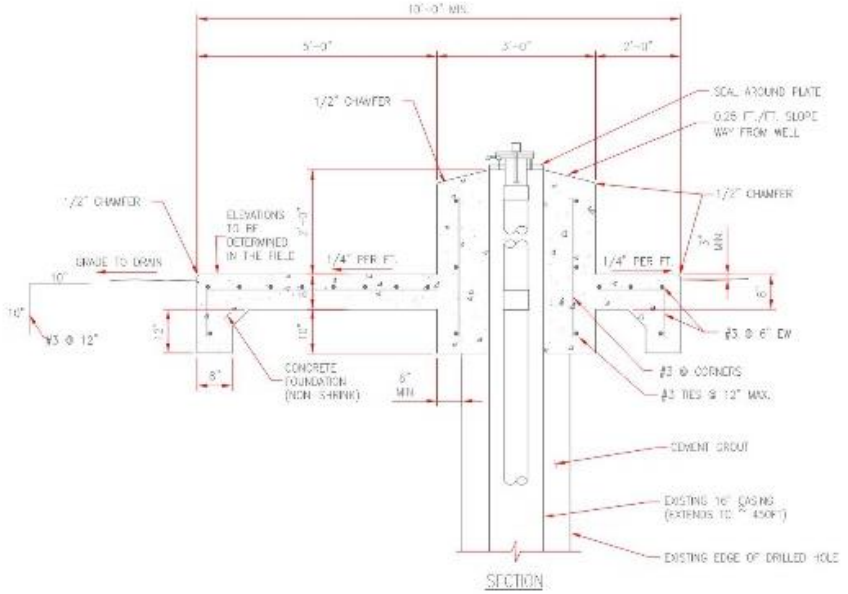
Santa Rosa Vs. Ogallala Well

CITY OF ABERNATHY TEXAS



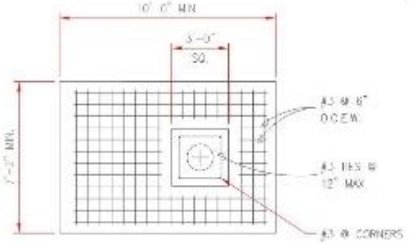
DIMENSION (FT)			
WELL NO.	A	B	C
1	855	240	610

NOTES:
1. ELEVATIONS SHOWN ARE APPROXIMATE ONLY.
2. THE CASING SHALL BE 16"ØNEW ASTM A-53 STEEL WITH A MINIMUM WALL THICKNESS OF 3/8".
3. THE DRILL HOLE SHALL HAVE A MINIMUM DIAMETER OF 21".
4. THE CONTRACTOR SHALL GROUT THE AREA BETWEEN THE WALL OF THE DRILL HOLE AND THE CASING FROM THE SURFACE TO APPROXIMATELY 550 FT.
5. THE WELL SCREEN SLOT SIZE SHALL BE 3/8" x8" THERE WILL BE 8 SLOTS/FT.
6. SEE DIMENSION TABLE THIS SHEET.



SECTION

NOTES:
1. CONCRETE FOR PUMP TO BE PLACED MONOLITHICALLY.
2. CONCRETE TO BE 3000 P.S.I.- 28 DAY.
3. CONCRETE SLAB SHALL SLOPE AWAY FROM WELLHEAD IN ALL DIRECTIONS AT 1/4" PER FOOT.
4. VERIFY CONCRETE SLAB DIMENSION WITH OWNER.



FOUNDATION PLAN

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Water Supply System

CITY OF ABERNATHY TEXAS

CITY OF ABERNATHY
WELL COLLECTION SYSTEM
EXISTING SYSTEM

PARKHILL SMITH & COOPER

Project No: 0026.11 Date: 8-7-14

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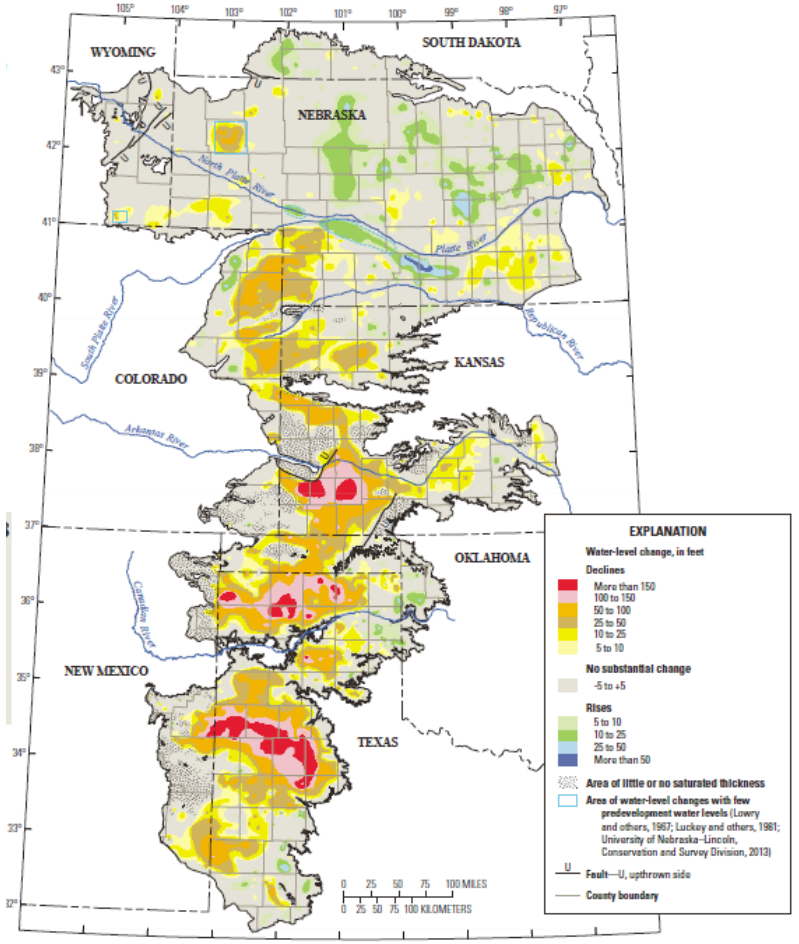
Current Water Supply

CITY OF BERNATHY TEXAS

City supplied by groundwater from Ogallala
Peak 980 gpm

Declines in water levels: 20 year supply

Industrial use increases 400 gpm



Water-level changes in the High Plains aquifer, predevelopment to 2013

Golden Spread Electric Cooperative, Inc.
A Touchstone Energy® Cooperative

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Out of Town Option for Santa Rosa Well

CITY OF ABERNATHY TEXAS

CITY OF ABERNATHY
WELL COLLECTION SYSTEM
EXISTING SYSTEM

PARKHILL SMITH & COOPER

Project No: 0026.11 Date: 8-7-14

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Preliminary Layout of System

PSC PARKHILLSMITH&COOPER

In Town Option for Santa Rosa Well

LEGEND

CITY OF ABERNATHY TEXAS

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Brackish Water Supply and Treatment

CITY OF ABERNATHY TEXAS

3,000 mg/L TDS water, normally 0-1,000 mg/L

$6.7 Million estimated cost

Increases water supply

Costly treatment

Utilizes existing infrastructure

Seminole and Wheeler have RO plants currently

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Preliminary Opinion of Construction Costs

CITY OF ABERNATHY TEXAS

City of Abernathy
Water System Improvements
Brackish Water Desalinization
Preliminary Opinion of Probable Construction Cost
May 5, 2016

PSC

Item No.	Description	Unit	Quantity	Unit Price	Extension
	New Water Brackish Treatment Plant				
1	Mobilization/Demobilization	LS	1	$115,000	$115,000
2	Site Work (Access Road/Grading of Site/Concrete Paving)	LS	1	$15,000	$15,000
3	Reverse Osmosis (250 gpm permeate) Skid-Mounted Unit	EA	2	$280,000	$560,000
4	RO Membranes/Elements (8"x40", high pressure)	EA	120	$600	$72,000
5	Clean-in-Place Skid Unit	EA	1	$64,270	$64,270
6	Booster Feed Pump Skid	EA	2	$104,980	$209,960
7	Chemical Feed Skids (Anti-Scalant and Caustic)	EA	3	$24,750	$74,250
8	Building improvements and piping	LS	1	$85,000	$85,000
9	New GST for Concentrate Water (50,000 gal)	EA	1	$75,000	$75,000
10	Booster Pump Skid for Concentrate	EA	1	$90,000	$90,000
12	Electrical (Site and Building)	LS	1	$170,000	$170,000
13	Generator	LS	1	$180,000	$180,000
14	Yard Piping, Valves, Fittings, Meters	LS	1	$150,000	$150,000
15	Pre-Cast Concrete (Vaults, Outfall, Manhole)	LS	1	$54,000	$54,000
16	Chlorine System	LS	1	$45,000	$45,000
17	PVC Water Line / Discharge Structure for Stream Discharge	LF	17,253	$52	$897,130
				Contingency and Inflation	$571,300
				Subtotal	**$3,427,900**
	New Water Brackish Water Supply Infrastructure				
18	Brackish Water Well (880 yard spacing)	EA	3	$750,000	$2,250,000
19	Collection Piping	LF	7,180	$65	$466,700
				Contingency and Inflation	$543,340.00
				Subtotal	**$3,260,040.00**
				Opinion of Probable Construction Cost	**$6,687,940**

*For preliminary use only. Not to be used for construction permitting or other construction purposes.
**Estimate does not include land or right-of-way costs
***Estimate does not include engineering, surveying, testing or construction representation

CITY OF ABERNATHY TEXAS

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New Wastewater Plant for Reuse

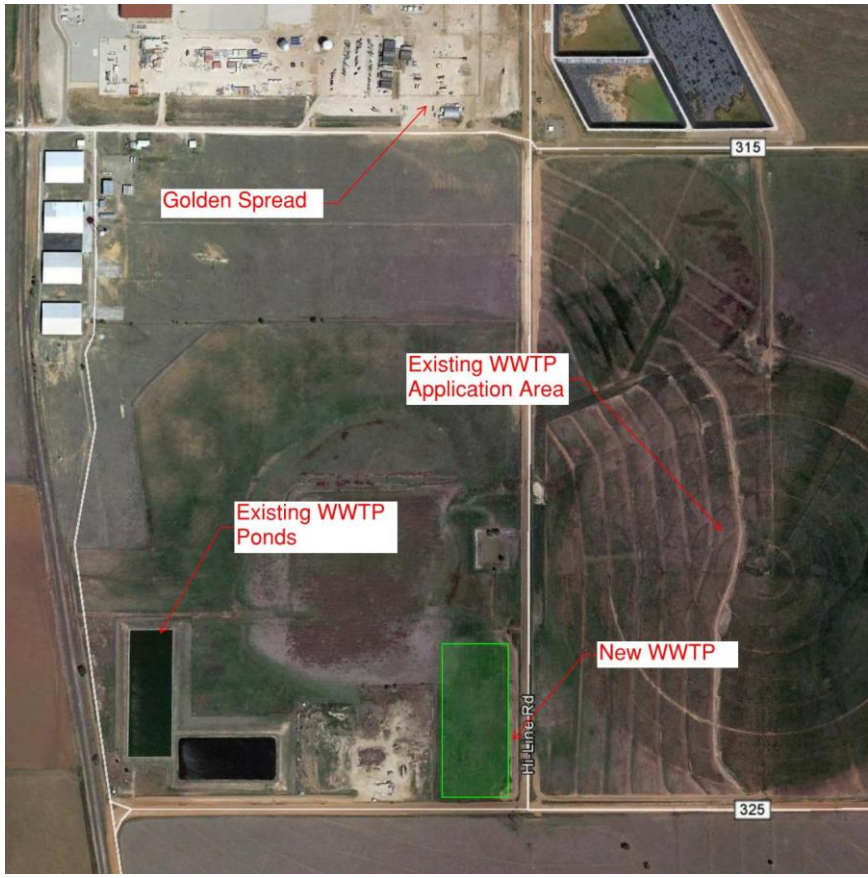
CITY OF ABERNATHY TEXAS

Reuse of the existing water resource

Mechanical for consistent quality

$6 Million estimated cost

Utilizes existing ponds and application area



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Water Resource Planning

CITY OF ABERNATHY TEXAS

Projects are 3-5 year timeframe

Add to resources or extend current resources

Well	Total Depth (ft)	Current Operational Saturated Thickness (ft)	Total Decline (ft)	Avg. Yearly Decline (ft/yr)	Well Life Remaining (Yr)
1	285	18.3	-72.7	-1.5	6.6
4	397	124.7	-54.3	-1.4	44.8
5	351	41.2	-94.8	-2.8	14.8
6	358	51.5	-93.5	-2.8	18.5
7	330	34.6	-27.3	-5.5	12.4
Well Field Average		54.1	-68.5	-2.8	19.4

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Questions