

Table E-1
City of Amarillo
Develop Potters County Well Field (Ogallala Aquifer)

Owner: City of Amarillo
Quantity: 8,000 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	600 gpm	15	Ea.	\$320,000	\$4,800,000
Connection to Pump Station		15	Ea.	\$100,000	\$1,500,000
Storage Tank	1,500,000 Gal	1	Ea.	\$355,000	\$355,000
Engineering and Contingencies (35% for well field)					\$2,329,300
Subtotal for Wellfield and Treatment					\$8,984,300
 Transmission System					
Pipeline - Transmission Main	30 inch	105,600	LF	\$86	\$9,081,600
Pump Station	1,000 HP	2	LS	\$2,400,000	\$4,800,000
Easement - Rural	20 Feet	48	AC	\$500	\$24,000
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$4,404,500
Subtotal for Transmission					\$18,310,100
 TOTAL CONSTRUCTION COST					 \$27,294,400
 Interest During Construction					 (12 months) \$1,137,400
 Permitting and Mitigation					 \$246,400
 Groundwater Rights/ Purchase					 \$0
 TOTAL CAPITAL COST					 \$28,678,200
 Annual Costs					
Debt Service (6 percent for 20 years)					\$2,500,300
Electricity					\$88,600
Water Treatment (\$0.15 per 1,000 gal)					\$391,000
Operation and Maintenance					\$452,700
Total Annual Cost					\$3,432,600
 UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$429
Water Cost (\$ per 1,000 gallons)					\$1.32
 UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$117
Water Cost (\$ per 1,000 gallons)					\$0.36

Table E-2
City of Amarillo
Develop Roberts County Well Field (Ogallala Aquifer)

Owner: City of Amarillo
Quantity: 11,210 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	800 gpm	15	Ea.	\$320,000	\$4,800,000
Connection to Pump Station		15	Ea.	\$100,000	\$1,500,000
Storage Tank	2,500,000 Gal	1	Ea.	\$510,000	\$510,000
Engineering and Contingencies (35% for well field)					\$2,383,500
Subtotal for Wellfield and Treatment					\$9,193,500
Transmission System					
Pipeline - Transmission Main	36 inch	401,280	LF	\$114	\$45,745,900
Pump Station	2,000 HP	2	LS	\$3,500,000	\$7,000,000
Easement - Rural	20 Feet	184	AC	\$500	\$92,000
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$16,173,800
Subtotal for Transmission					\$69,011,700
TOTAL CONSTRUCTION COST					\$78,205,200
Interest During Construction			(12 months)		\$3,258,800
Permitting and Mitigation					\$714,700
Groundwater Rights/ Purchase					\$0
TOTAL CAPITAL COST					\$82,178,700
Annual Costs					
Debt Service (6 percent for 30 years)					\$5,970,200
Electricity					\$251,100
Water Treatment (\$0.15 per 1,000 gal)					\$547,900
Operation and Maintenance					\$963,300
Total Annual Cost					\$7,732,500
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$690
Water Cost (\$ per 1,000 gallons)					\$2.12
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$157
Water Cost (\$ per 1,000 gallons)					\$0.48

Table E-3
Canadian River Municipal Water Authority
Expand Roberts County Well Field (Ogallala Aquifer)

Owner: Canadian River Municipal Water Authority
Quantity: 31,659 AF/Y

Capital Costs	Cost
Water Rights	\$23,000,000
Collection Pipeline(s)	\$1,800,000
Well Field(s) and Wells	\$18,200,000
Total Capital Cost	\$43,000,000
Engineering, Legal Costs and Contingencies (30% for pipelines & 35% for all other)	\$6,910,000
Interest During Construction (3 years @ 4 percent)	\$6,073,000
Total Project Cost	\$55,983,000
 Annual Costs	
Debt Service (6 percent for 30 years)	\$4,067,000
Pipeline and Well Operation and Maintenance	\$473,000
Pumping Energy Costs (35,391,000 kWh @ \$0.072/kWh)	\$2,547,600
Total Annual Cost	\$7,087,600
 Unit Cost	
Annual Cost of Water (\$ per acft)	\$224
Annual Cost of Water (\$ per 1,000 gallons)	\$0.69

Table E-4
Canadian River Municipal Water Authority
Replace Capacity of Roberts County Well Field (Ogallala Aquifer) in 2030

Owner: Canadian River Municipal Water Authority
Quantity: 15,000 AF/Y

Capital Costs	Cost
Water Rights	\$6,075,000
Collection Pipeline(s)	\$1,000,000
Well Field(s) and Wells	\$10,000,000
Total Capital Cost	\$17,075,000
Engineering, Legal Costs and Contingencies (30% for pipelines & 35% for all other)	\$3,800,000
Interest During Construction (3 years @ 4 percent)	\$2,540,000
Total Project Cost	\$23,415,000
 Annual Costs	
Debt Service (6 percent for 30 years)	\$1,701,000
Pipeline and Well Operation and Maintenance	\$260,000
Pumping Energy Costs (35,391,000 kWh @ \$0.072/kWh)	\$1,207,200
Total Annual Cost	\$3,168,200
 Unit Cost	
Annual Cost of Water (\$ per acft)	\$211
Annual Cost of Water (\$ per 1,000 gallons)	\$0.65

Table E-5
City of Cactus
Overdraft Ogallala Aquifer with New Wells

Owner: City of Cactus
Quantity: 3,200 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	700 gpm	5	Ea.	\$300,000	\$1,500,000
Connection to Pump Station		5	Ea.	\$100,000	\$500,000
Storage Tank (Closed)	700,000 Gal	1	Ea.	\$203,000	\$203,000
Engineering and Contingencies (35% for well field)					\$771,100
Subtotal for Wellfield and Treatment					\$2,974,100
 Transmission System					
Pipeline - Transmission Main	20 inch	7,920	LF	\$51	\$403,900
Pump Station	100 HP	1	LS	\$620,000	\$620,000
Easement - Rural	20 Feet	4	AC	\$500	\$1,800
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$338,200
Subtotal for Transmission					\$1,363,900
 TOTAL CONSTRUCTION COST					 \$4,338,000
 Interest During Construction					 \$94,000
(6 months)					
 Permitting and Mitigation					 \$38,700
 Groundwater Rights/ Purchase					 \$960,000
 TOTAL CAPITAL COST					 \$5,430,700
 Annual Costs					
Debt Service (6 percent for 20 years)					\$473,500
Electricity (Transmission)					\$18,300
Water Treatment (\$0.15 per 1,000 gal)					\$156,400
Operation and Maintenance					\$89,500
Total Annual Cost					\$737,700
 UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$231
Water Cost (\$ per 1,000 gallons)					\$0.71
 UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$83
Water Cost (\$ per 1,000 gallons)					\$0.25

Table E-6
City of Dalhart (Dallam County)
Overdraft Ogallala Aquifer in Dallam County with New Wells

Owner: City of Dalhart
Quantity: 900 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	500 gpm	2	Ea.	\$162,500	\$325,000
Connection to Pump Station		2	Ea.	\$100,000	\$200,000
Storage Tank (Closed)	200,000 Gal	1	Ea.	\$91,700	\$91,700
Engineering and Contingencies (35% for well field)					\$215,800
Subtotal for Wellfield and Treatment					\$832,500
Transmission System					
Pipeline - Transmission Main	20 inch	10,560	LF	\$51	\$538,600
Pump Station	25 HP	1	LS	\$250,000	\$250,000
Easement - Rural	20 Feet	5	AC	\$500	\$2,400
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$249,100
Subtotal for Transmission					\$1,040,100
TOTAL CONSTRUCTION COST					\$1,872,600
Interest During Construction		(6 months)			\$40,600
Permitting and Mitigation					\$16,900
Groundwater Rights/ Purchase					\$270,000
TOTAL CAPITAL COST					\$2,200,100
Annual Costs					
Debt Service (6 percent for 20 years)					\$191,800
Electricity (Transmission)					\$4,700
Water Treatment (\$0.15 per 1,000 gal)					\$44,000
Operation and Maintenance					\$32,500
Total Annual Cost					\$273,000
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$303
Water Cost (\$ per 1,000 gallons)					\$0.93
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$90
Water Cost (\$ per 1,000 gallons)					\$0.28

Table E-7
City of Dalhart (Hartley County)
Overdraft Ogallala Aquifer in Hartley County with New Wells

Owner: City of Dalhart
Quantity: 180 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	200 gpm	1	Ea.	\$162,500	\$162,500
Connection to Pump Station		1	Ea.	\$100,000	\$100,000
Storage Tank (Closed)	50,000 Gal	1	Ea.	\$40,000	\$40,000
Engineering and Contingencies (35% for well field)					\$105,900
Subtotal for Wellfield and Treatment					\$408,400
Transmission System					
Pipeline - Transmission Main	8 inch	10,560	LF	\$20	\$211,200
Pump Station	5 HP	1	LS	\$50,000	\$50,000
Easement - Rural	15 Feet	4	AC	\$500	\$1,800
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$80,900
Subtotal for Transmission					\$343,900
TOTAL CONSTRUCTION COST					\$752,300
Interest During Construction		(6 months)			\$16,300
Permitting and Mitigation					\$6,800
Groundwater Rights/ Purchase					\$54,000
TOTAL CAPITAL COST					\$829,400
Annual Costs					
Debt Service (6 percent for 20 years)					\$72,300
Electricity (Transmission)					\$1,000
Water Treatment (\$0.15 per 1,000 gal)					\$8,800
Operation and Maintenance					\$13,100
Total Annual Cost					\$95,200
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$529
Water Cost (\$ per 1,000 gallons)					\$1.62
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$127
Water Cost (\$ per 1,000 gallons)					\$0.39

Table E-8
City of Dumas
Overdraft Ogallala Aquifer with New Wells

Owner: City of Dumas
Quantity: 2,300 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	800 gpm	3	Ea.	\$280,000	\$840,000
Connection to Pump Station		3	Ea.	\$100,000	\$300,000
Storage Tank	500,000 Gal	1	Ea.	\$155,000	\$155,000
Engineering and Contingencies (35% for well field)					\$453,300
Subtotal for Wellfield and Treatment					\$1,748,300
 Transmission System					
Pipeline - Rural	18 inch	52,800	LF	\$42	\$2,217,600
Pump Station	200 HP	1	LS	\$930,000	\$930,000
Easement - Rural	20 Feet	24	AC	\$500	\$12,100
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$990,800
Subtotal for Transmission					\$4,150,500
 TOTAL CONSTRUCTION COST					 \$5,898,800
 Interest During Construction					 \$245,800
					(12 months)
 Permitting and Mitigation					 \$53,300
 Groundwater Rights/ Purchase					 \$690,000
 TOTAL CAPITAL COST					 \$6,887,900
 Annual Costs					
Debt Service (6 percent for 20 years)					\$600,500
Electricity (Transmission)					\$13,900
Water Treatment (\$0.15 per 1,000 gal)					\$112,400
Operation and Maintenance					\$93,400
Total Annual Cost					\$820,200
 UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$357
Water Cost (\$ per 1,000 gallons)					\$1.09
 UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$96
Water Cost (\$ per 1,000 gallons)					\$0.29

Table E-9
City of Stratford
Overdraft Ogallala Aquifer with New Wells

Owner: City of Stratford
Quantity: 450 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	600 gpm	1	Ea.	\$162,500	\$162,500
Connection to Pump Station		1	Ea.	\$100,000	\$100,000
Storage Tank (Closed)	100,000 Gal	1	Ea.	\$75,000	\$75,000
Engineering and Contingencies (35% for well field)					\$118,100
Subtotal for Wellfield and Treatment					\$455,600
 Transmission System					
Pipeline - Rural	10 inch	5,280	LF	\$24	\$126,700
Pump Station	15 HP	1	LS	\$150,000	\$150,000
Easement - Rural	20 Feet	2	AC	\$500	\$1,200
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$90,500
Subtotal for Transmission					\$368,400
 TOTAL CONSTRUCTION COST					 \$824,000
 Interest During Construction					 (6 months) \$17,900
 Permitting and Mitigation					 \$7,400
 Groundwater Rights/ Purchase					 \$135,000
 TOTAL CAPITAL COST					 \$984,300
 Annual Costs					
Debt Service (6 percent for 20 years)					\$85,800
Electricity (Transmission)					\$2,500
Water Treatment (\$0.15 per 1,000 gal)					\$22,000
Operation and Maintenance					\$16,100
Total Annual Cost					\$126,400
 UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$281
Water Cost (\$ per 1,000 gallons)					\$0.86
 UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$90
Water Cost (\$ per 1,000 gallons)					\$0.28

Table E-10
City of Sunray
Overdraft Ogallala with New Groundwater Wells

Owner: City of Sunray
Quantity: 550 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	700 gpm	1	Ea.	\$162,500	\$162,500
Connection to Pump Station		1	Ea.	\$100,000	\$100,000
Storage Tank (Closed)	125,000 Gal	1	Ea.	\$315,000	\$315,000
Engineering and Contingencies (35% for well field)					\$202,100
Subtotal for Wellfield and Treatment					\$779,600
 Transmission System					
Pipeline - Rural	10 inch	5,280	LF	\$24	\$126,700
Pump Station	15 HP	1	LS	\$150,000	\$150,000
Easement - Rural	20 Feet	2	AC	\$500	\$1,200
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$90,500
Subtotal for Transmission					\$368,400
 TOTAL CONSTRUCTION COST					 \$1,148,000
 Interest During Construction					 \$24,900
			(6 months)		
 Permitting and Mitigation					 \$10,300
 Groundwater Rights/ Purchase					 \$165,000
 TOTAL CAPITAL COST					 \$1,348,200
 Annual Costs					
Debt Service (6 percent for 20 years)					\$117,500
Electricity (Transmission)					\$1,600
Water Treatment (\$0.15 per 1,000 gal)					\$26,900
Operation and Maintenance					\$23,300
Total Annual Cost					\$169,300
 UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$308
Water Cost (\$ per 1,000 gallons)					\$0.94
 UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$94
Water Cost (\$ per 1,000 gallons)					\$0.29

Table E-11
County-Other WUGs with Needs less than 200 ac-ft/yr
Install New Groundwater Well

Owner: County-Other
Quantity: 200 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	300 gpm	1	Ea.	\$137,500	\$137,500
Connection to Pump Station		1	Ea.	\$100,000	\$100,000
Storage Tank (Closed)	50,000 Gal	1	Ea.	\$40,000	\$40,000
Engineering and Contingencies (35% for well field)					\$97,100
Subtotal for Wellfield and Treatment					\$374,600
Transmission System					
Pipeline - Rural	8 inch	10,560	LF	\$20	\$211,200
Pump Station	10 HP	1	LS	\$100,000	\$100,000
Easement - Rural	15 Feet	4	AC	\$500	\$1,800
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$98,400
Subtotal for Transmission					\$411,400
TOTAL CONSTRUCTION COST					\$786,000
Interest During Construction					\$17,000
(6 months)					
Permitting and Mitigation					\$7,100
Groundwater Rights/ Purchase					\$60,000
TOTAL CAPITAL COST					\$870,100
Annual Costs					
Debt Service (6 percent for 20 years)					\$75,900
Electricity (Transmission)					\$1,100
Water Treatment (\$0.15 per 1,000 gal)					\$9,800
Operation and Maintenance					\$13,800
Total Annual Cost					\$100,600
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$503
Water Cost (\$ per 1,000 gallons)					\$1.54
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$124
Water Cost (\$ per 1,000 gallons)					\$0.38

Table E-12
County-Other WUGs with Needs around 600 ac-ft/yr
Install New Groundwater Wells

Owner: County-Other
Quantity: 600 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	400 gpm	2	Ea.	\$150,000	\$300,000
Connection to Pump Station		2	Ea.	\$100,000	\$200,000
Storage Tank (Closed)	120,000 Gal	1	Ea.	\$80,000	\$80,000
Engineering and Contingencies (35% for well field)					\$203,000
Subtotal for Wellfield and Treatment					\$783,000
Transmission System					
Pipeline - Rural	10 inch	10,560	LF	\$24	\$253,400
Pump Station	25 HP	1	LS	\$250,000	\$250,000
Easement - Rural	20 Feet	5	AC	\$500	\$2,400
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$163,500
Subtotal for Transmission					\$669,300
TOTAL CONSTRUCTION COST					\$1,452,300
Interest During Construction			(12 months)		\$60,500
Permitting and Mitigation					\$13,000
Groundwater Rights/ Purchase					\$180,000
TOTAL CAPITAL COST					\$1,705,800
Annual Costs					
Debt Service (6 percent for 20 years)					\$148,700
Electricity (Transmission)					\$3,700
Water Treatment (\$0.15 per 1,000 gal)					\$29,300
Operation and Maintenance					\$27,900
Total Annual Cost					\$209,600
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$349
Water Cost (\$ per 1,000 gallons)					\$1.07
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$102
Water Cost (\$ per 1,000 gallons)					\$0.31

Table E-13
County-Other WUGs with Needs around 1,000 ac-ft/yr
Install New Groundwater Wells

Owner: County-Other
Quantity: 1,000 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	600 gpm	2	Ea.	\$162,500	\$325,000
Connection to Pump Station		2	Ea.	\$100,000	\$200,000
Storage Tank (Closed)	200,000 Gal	1	Ea.	\$91,700	\$91,700
Engineering and Contingencies (35% for well field)					\$215,800
Subtotal for Wellfield and Treatment					\$832,500
Transmission System					
Pipeline - Rural	14 inch	10,560	LF	\$32	\$337,900
Pump Station	50 HP	1	LS	\$400,000	\$400,000
Easement - Rural	20 Feet	5	AC	\$500	\$2,400
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$241,400
Subtotal for Transmission					\$981,700
TOTAL CONSTRUCTION COST					\$1,814,200
Interest During Construction			(12 months)		\$75,600
Permitting and Mitigation					\$16,300
Groundwater Rights/ Purchase					\$300,000
TOTAL CAPITAL COST					\$2,206,100
Annual Costs					
Debt Service (6 percent for 20 years)					\$192,300
Electricity (Transmission)					\$5,600
Water Treatment (\$0.15 per 1,000 gal)					\$48,900
Operation and Maintenance					\$34,600
Total Annual Cost					\$281,400
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$281
Water Cost (\$ per 1,000 gallons)					\$0.86
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$89
Water Cost (\$ per 1,000 gallons)					\$0.27

Table E-14
County-Other WUGs with Needs around 2,000 ac-ft/yr
Install New Groundwater Wells

Owner: County-Other
Quantity: 2,000 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	800 gpm	3	Ea.	\$200,000	\$600,000
Connection to Pump Station		3	Ea.	\$100,000	\$300,000
Storage Tank (Closed)	400,000 Gal	1	Ea.	\$133,000	\$133,000
Engineering and Contingencies (35% for well field)					\$361,600
Subtotal for Wellfield and Treatment					\$1,394,600
 Transmission System					
Pipeline - Rural	18 inch	10,560	LF	\$42	\$443,500
Pump Station	75 HP	1	LS	\$510,000	\$510,000
Easement - Rural	20 Feet	5	AC	\$500	\$2,400
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$311,600
Subtotal for Transmission					\$1,267,500
 TOTAL CONSTRUCTION COST					 \$2,662,100
 Interest During Construction					 \$110,900
					(12 months)
 Permitting and Mitigation					 \$23,800
 Groundwater Rights/ Purchase					 \$600,000
 TOTAL CAPITAL COST					 \$3,396,800
 Annual Costs					
Debt Service (6 percent for 20 years)					\$296,100
Electricity (Transmission)					\$11,200
Water Treatment (\$0.15 per 1,000 gal)					\$97,800
Operation and Maintenance					\$51,600
Total Annual Cost					\$456,700
 UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$228
Water Cost (\$ per 1,000 gallons)					\$0.70
 UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$80
Water Cost (\$ per 1,000 gallons)					\$0.25

Table E-15

Armstrong

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	58,560
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	917	1,147	1,376	1,606	1,835	2,064	0
Convert to Dry	0	0	0	0	0	0	492,229
Irrigation Equipment	917	1,835	2,752	4,587	5,505	6,422	1,161,030
PET Network	1,018	1,018	1,018	1,018	1,018	1,018	4,886
Precipitation Enhancement	3,257	3,257	3,257	3,257	3,257	3,257	14,659
Total	6,110	7,257	8,404	10,468	11,615	12,762	1,731,363

Carson

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	1,277,280
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	7,272	9,091	10,909	12,727	14,545	16,363	0
Convert to Dry	0	0	0	0	0	0	3,169,335
Irrigation Equipment	7,272	14,545	21,817	36,362	43,635	50,907	9,203,009
PET Network	8,069	8,069	8,069	8,069	8,069	8,069	38,731
Precipitation Enhancement	25,820	25,820	25,820	25,820	25,820	25,820	116,192
Total	48,434	57,525	66,615	82,978	92,069	101,159	13,804,547

Childress

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	0
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	723	904	1,085	1,265	1,446	1,627	0
Convert to Dry	0	0	0	0	0	0	385,613
Irrigation Equipment	723	1,446	2,169	3,615	4,338	5,061	914,929
PET Network	802	802	802	802	802	802	3,850
Precipitation Enhancement	2,567	2,567	2,567	2,567	2,567	2,567	11,551
Total	4,815	5,719	6,623	8,249	9,153	10,057	1,315,943

Collingsworth

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	2,400
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	1,609	2,012	2,414	2,816	3,219	3,621	0
Convert to Dry	0	0	0	0	0	0	320,483
Irrigation Equipment	1,609	3,219	4,828	8,047	9,657	11,266	2,036,666
PET Network	1,786	1,786	1,786	1,786	1,786	1,786	8,571
Precipitation Enhancement	5,714	5,714	5,714	5,714	5,714	5,714	25,714
Total	10,719	12,730	14,742	18,363	20,375	22,387	2,393,834

Table E-15, Continued
Dallam

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	13,355,920
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	18,870	23,588	28,306	33,023	37,741	42,459	0
Convert to Dry	0	0	0	0	0	0	3,902,876
Irrigation Equipment	18,870	37,741	56,611	94,352	113,223	132,093	23,879,837
PET Network	20,937	20,937	20,937	20,937	20,937	20,937	100,498
Precipitation Enhancement	66,999	66,999	66,999	66,999	66,999	66,999	301,493
Total	125,676	149,264	172,853	215,311	238,899	262,487	41,540,625

Donley

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	97,280
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	1,370	1,713	2,055	2,398	2,740	3,083	0
Convert to Dry	0	0	0	0	0	0	496,031
Irrigation Equipment	1,370	2,740	4,110	6,850	8,221	9,591	1,733,809
PET Network	1,520	1,520	1,520	1,520	1,520	1,520	7,297
Precipitation Enhancement	4,864	4,864	4,864	4,864	4,864	4,864	21,890
Total	9,125	10,837	12,550	15,633	17,345	19,058	2,356,308

Gray

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	501,440
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	2,206	2,757	3,309	3,860	4,411	4,963	0
Convert to Dry	0	0	0	0	0	0	866,726
Irrigation Equipment	2,206	4,411	6,617	11,028	13,234	15,440	2,791,198
PET Network	2,447	2,447	2,447	2,447	2,447	2,447	11,747
Precipitation Enhancement	7,831	7,831	7,831	7,831	7,831	7,831	35,240
Total	14,690	17,447	20,204	25,167	27,924	30,681	4,206,351

Hall

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	0
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	1,516	1,895	2,274	2,653	3,032	3,411	0
Convert to Dry	0	0	0	0	0	0	656,321
Irrigation Equipment	1,516	3,032	4,548	7,579	9,095	10,611	1,918,314
PET Network	1,682	1,682	1,682	1,682	1,682	1,682	8,073
Precipitation Enhancement	5,382	5,382	5,382	5,382	5,382	5,382	24,220
Total	10,096	11,991	13,886	17,296	19,191	21,086	2,606,928

Table E-15, Continued
Hansford

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	2,533,440
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	9,535	11,918	14,302	16,686	19,069	21,453	0
Convert to Dry	0	0	0	0	0	0	4,202,543
Irrigation Equipment	9,535	19,069	28,604	47,673	57,208	66,742	12,065,674
PET Network	10,579	10,579	10,579	10,579	10,579	10,579	50,778
Precipitation Enhancement	33,852	33,852	33,852	33,852	33,852	33,852	152,334
Total	63,500	75,418	87,337	108,789	120,708	132,626	19,004,769

Hartley

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	10,483,280
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	16,202	20,252	24,302	28,353	32,403	36,454	0
Convert to Dry	0	0	0	0	0	0	3,558,360
Irrigation Equipment	16,202	32,403	48,605	81,008	97,210	113,412	20,502,572
PET Network	17,976	17,976	17,976	17,976	17,976	17,976	86,285
Precipitation Enhancement	57,523	57,523	57,523	57,523	57,523	57,523	258,854
Total	107,902	128,154	148,406	184,860	205,112	225,364	34,889,351

Hemphill

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	0
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	95	119	143	167	191	215	0
Convert to Dry	0	0	0	0	0	0	59,085
Irrigation Equipment	95	191	286	477	573	668	120,820
PET Network	106	106	106	106	106	106	508
Precipitation Enhancement	339	339	339	339	339	339	1,525
Total	636	755	875	1,089	1,209	1,328	181,939

Hutchinson

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	1,152,080
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	4,597	5,746	6,895	8,045	9,194	10,343	0
Convert to Dry	0	0	0	0	0	0	2,078,115
Irrigation Equipment	4,597	9,194	13,791	22,984	27,581	32,178	5,817,202
PET Network	5,100	5,100	5,100	5,100	5,100	5,100	24,482
Precipitation Enhancement	16,321	16,321	16,321	16,321	16,321	16,321	73,445
Total	30,615	36,361	42,107	52,450	58,197	63,943	9,145,324

Table E-15, Continued
Lipscomb

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	396,480
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	918	1,148	1,377	1,607	1,836	2,066	0
Convert to Dry	0	0	0	0	0	0	230,100
Irrigation Equipment	918	1,836	2,754	4,590	5,508	6,427	1,161,789
PET Network	1,019	1,019	1,019	1,019	1,019	1,019	4,889
Precipitation Enhancement	3,260	3,260	3,260	3,260	3,260	3,260	14,668
Total	6,114	7,262	8,410	10,475	11,623	12,770	1,807,926

Moore

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	6,699,120
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	11,723	14,653	17,584	20,515	23,445	26,376	0
Convert to Dry	0	0	0	0	0	0	3,010,556
Irrigation Equipment	11,723	23,445	35,168	58,613	70,336	82,059	14,834,568
PET Network	13,006	13,006	13,006	13,006	13,006	13,006	62,431
Precipitation Enhancement	41,621	41,621	41,621	41,621	41,621	41,621	187,293
Total	78,072	92,726	107,379	133,755	148,408	163,062	24,793,968

Ochiltree

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	1,250,080
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	7,270	9,087	10,905	12,722	14,539	16,357	0
Convert to Dry	0	0	0	0	0	0	3,158,708
Irrigation Equipment	7,270	14,539	21,809	36,348	43,618	50,888	9,199,497
PET Network	8,066	8,066	8,066	8,066	8,066	8,066	38,716
Precipitation Enhancement	25,811	25,811	25,811	25,811	25,811	25,811	116,148
Total	48,416	57,503	66,590	82,947	92,034	101,121	13,763,148

Oldham

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	0
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	346	432	518	605	691	777	0
Convert to Dry	0	0	0	0	0	0	205,140
Irrigation Equipment	346	691	1,037	1,728	2,073	2,419	437,249
PET Network	383	383	383	383	383	383	1,840
Precipitation Enhancement	1,227	1,227	1,227	1,227	1,227	1,227	5,520
Total	2,301	2,733	3,165	3,942	4,374	4,806	649,749

Table E-15, Continued
Potter

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	27,760
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	421	527	632	737	842	948	0
Convert to Dry	0	0	0	0	0	0	183,251
Irrigation Equipment	421	842	1,264	2,106	2,527	2,948	533,013
PET Network	467	467	467	467	467	467	2,243
Precipitation Enhancement	1,495	1,495	1,495	1,495	1,495	1,495	6,730
Total	2,805	3,332	3,858	4,806	5,332	5,859	752,997

Randall

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	368,240
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	7,320	9,150	10,979	12,809	14,639	16,469	0
Convert to Dry	0	0	0	0	0	0	4,524,536
Irrigation Equipment	7,320	14,639	21,959	36,598	43,918	51,237	9,262,707
PET Network	8,121	8,121	8,121	8,121	8,121	8,121	38,982
Precipitation Enhancement	25,988	25,988	25,988	25,988	25,988	25,988	116,946
Total	48,748	57,898	67,047	83,517	92,666	101,816	14,311,411

Roberts

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	157,680
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	1,383	1,729	2,075	2,421	2,766	3,112	0
Convert to Dry	0	0	0	0	0	0	325,504
Irrigation Equipment	1,383	2,766	4,149	6,916	8,299	9,682	1,750,324
PET Network	1,535	1,535	1,535	1,535	1,535	1,535	7,366
Precipitation Enhancement	4,911	4,911	4,911	4,911	4,911	4,911	22,099
Total	9,212	10,941	12,670	15,782	17,511	19,240	2,262,972

Sherman

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	7,339,280
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	17,651	22,064	26,477	30,889	35,302	39,715	0
Convert to Dry	0	0	0	0	0	0	6,662,614
Irrigation Equipment	17,651	35,302	52,953	88,255	105,906	123,557	22,336,701
PET Network	19,584	19,584	19,584	19,584	19,584	19,584	94,003
Precipitation Enhancement	62,669	62,669	62,669	62,669	62,669	62,669	282,010
Total	117,555	139,619	161,683	201,397	223,461	245,525	36,714,609

Table E-15, Continued
Wheeler

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	0	0	0	0	0	0	30,000
Change Crop Variety	0	0	0	0	0	0	0
Conservation Tillage	718	897	1,077	1,256	1,436	1,615	0
Convert to Dry	0	0	0	0	0	0	386,246
Irrigation Equipment	718	1,436	2,154	3,589	4,307	5,025	908,475
PET Network	797	797	797	797	797	797	3,823
Precipitation Enhancement	2,549	2,549	2,549	2,549	2,549	2,549	11,470
Total	4,781	5,679	6,576	8,191	9,089	9,986	1,340,015

Total

Strategy	Annual Costs						Capital Cost
	2010	2020	2030	2040	2050	2060	
Change Crop Type	\$0	\$0	\$0	\$0	\$0	\$0	\$45,730,320
Change Crop Variety	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Conservation Tillage	\$112,662	\$140,827	\$168,993	\$197,158	\$225,324	\$253,489	\$0
Convert to Dry	\$0	\$0	\$0	\$0	\$0	\$0	\$38,874,371
Irrigation Equipment	\$112,662	\$225,324	\$337,986	\$563,310	\$675,971	\$788,633	\$142,569,385
PET Network	\$125,000	\$125,000	\$125,000	\$125,000	\$125,000	\$125,000	\$600,000
Precipitation Enhancement	\$400,000	\$400,000	\$400,000	\$400,000	\$400,000	\$400,000	\$1,800,000
Total	\$750,324	\$891,151	\$1,031,979	\$1,285,468	\$1,426,295	\$1,567,123	\$229,574,076

Table E-16
Manufacturing WUGs with Needs of Approximately 1,000 ac-ft/yr
Purchase Direct Reuse

Owner: Manufacturing
Quantity: 1,000 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Transmission System					
Pipeline - Rural	12 inch	10,560	LF	\$28	\$295,700
Pump Station	30 HP	1	LS	\$280,000	\$280,000
Easement - Rural	20 Feet	5	AC	\$500	\$2,500
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$186,700
Subtotal for Transmission					\$764,900
TOTAL CONSTRUCTION COST					\$764,900
Interest During Construction			(6 months)		\$16,600
Permitting and Mitigation					\$6,900
TOTAL CAPITAL COST					\$788,400
Annual Costs					
Debt Service (6 percent for 20 years)					\$68,700
Electricity (Transmission)					\$3,700
Water Purchase (\$0.15 per 1,000 gal)					\$48,900
Operation and Maintenance					\$11,900
Total Annual Cost					\$133,200
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$133
Water Cost (\$ per 1,000 gallons)					\$0.41
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$65
Water Cost (\$ per 1,000 gallons)					\$0.20

Table E-17
Manufacturing WUGs with Needs of Approximately 1,700 ac-ft/yr
Purchase Direct Reuse

Owner: Manufacturing
Quantity: 1,700 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Transmission System					
Pipeline - Rural	16 inch	10,560	LF	\$37	\$390,700
Pump Station	45 HP	1	LS	\$370,000	\$370,000
Easement - Rural	20 Feet	5	AC	\$500	\$2,500
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$246,700
Subtotal for Transmission					\$1,009,900
TOTAL CONSTRUCTION COST					\$1,009,900
Interest During Construction			(6 months)		\$21,900
Permitting and Mitigation					\$9,100
TOTAL CAPITAL COST					\$1,040,900
Annual Costs					
Debt Service (6 percent for 20 years)					\$90,800
Electricity (Transmission)					\$5,500
Water Purchase (\$0.15 per 1,000 gal)					\$83,100
Operation and Maintenance					\$15,800
Total Annual Cost					\$195,200
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$115
Water Cost (\$ per 1,000 gallons)					\$0.35
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$61
Water Cost (\$ per 1,000 gallons)					\$0.19

Table E-18
Manufacturing WUGs with Needs of Approximately 2,000 ac-ft/yr
Install Additional Groundwater Wells in Ogallala Aquifer

Owner: Manufacturing
Quantity: 2,000 AF/Y

Item	Size	Quantity	Unit	Unit Price	Cost
Capital Costs					
Wellfield and Treatment					
Wells	700 gpm	3	Ea.	\$140,000	\$420,000
Connection to Pump Station		3	Ea.	\$100,000	\$300,000
Storage Tank (Closed)	400,000 Gal	1	Ea.	\$145,000	\$145,000
Engineering and Contingencies (35% for well field)					\$302,800
Subtotal for Wellfield and Treatment					\$1,167,800
Transmission System					
Pipeline - Rural	18 inch	10,560	LF	\$42	\$443,500
Pump Station	50 HP	1	LS	\$400,000	\$400,000
Easement - Rural	20 Feet	5	AC	\$500	\$2,500
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$273,100
Subtotal for Transmission					\$1,119,100
TOTAL CONSTRUCTION COST					\$2,286,900
Interest During Construction (6 months)					\$49,600
Permitting and Mitigation					\$20,500
Groundwater Rights/ Purchase					\$600,000
TOTAL CAPITAL COST					\$2,957,000
Annual Costs					
Debt Service (6 percent for 20 years)					\$257,800
Electricity (Transmission)					\$6,100
Water Treatment (\$0.15 per 1,000 gal)					\$97,800
Operation and Maintenance					\$43,300
Total Annual Cost					\$405,000
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$203
Water Cost (\$ per 1,000 gallons)					\$0.62
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$74
Water Cost (\$ per 1,000 gallons)					\$0.23

Table E-19
Manufacturing WUGs with Needs of Approximately 2,500 ac-ft/yr
Install Additional Groundwater Wells in Ogallala Aquifer

Owner: Manufacturing
Quantity: 2,500 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	700 gpm	4	Ea.	\$140,000	\$560,000
Connection to Pump Station		4	Ea.	\$100,000	\$400,000
Storage Tank (Closed)	500,000 Gal	1	Ea.	\$155,000	\$155,000
Engineering and Contingencies (35% for well field)					\$390,300
Subtotal for Wellfield and Treatment					\$1,505,300
Transmission System					
Pipeline - Rural	18 inch	10,560	LF	\$42	\$443,500
Pump Station	75 HP	1	LS	\$510,000	\$510,000
Easement - Rural	20 Feet	5	AC	\$500	\$2,500
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$311,600
Subtotal for Transmission					\$1,267,600
TOTAL CONSTRUCTION COST					\$2,772,900
Interest During Construction					\$60,100
(6 months)					
Permitting and Mitigation					\$24,800
Groundwater Rights/ Purchase					\$750,000
TOTAL CAPITAL COST					\$3,607,800
Annual Costs					
Debt Service (6 percent for 20 years)					\$314,500
Electricity (Transmission)					\$8,500
Water Treatment (\$0.15 per 1,000 gal)					\$122,200
Operation and Maintenance					\$54,100
Total Annual Cost					\$499,300
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$200
Water Cost (\$ per 1,000 gallons)					\$0.61
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$74
Water Cost (\$ per 1,000 gallons)					\$0.23

Table E-20
Manufacturing WUGs with Needs of Approximately 3,600 ac-ft/yr
Install Additional Groundwater Wells in Ogallala Aquifer

Owner: Manufacturing
Quantity: 3,600 AF/Y

Item	Size	Quantity	Unit	Unit Price	Cost
Capital Costs					
Wellfield and Treatment					
Wells	700 gpm	6	Ea.	\$140,000	\$840,000
Connection to Pump Station		6	Ea.	\$100,000	\$600,000
Storage Tank (Closed)	700,000 Gal	1	Ea.	\$203,000	\$203,000
Engineering and Contingencies (35% for well field)					\$575,100
Subtotal for Wellfield and Treatment					\$2,218,100
Transmission System					
Pipeline - Rural	20 inch	10,560	LF	\$51	\$538,600
Pump Station	100 HP	1	LS	\$620,000	\$620,000
Easement - Rural	20 Feet	5	AC	\$500	\$2,500
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$378,600
Subtotal for Transmission					\$1,539,700
TOTAL CONSTRUCTION COST					\$3,757,800
Interest During Construction (6 months)					\$81,400
Permitting and Mitigation					\$33,600
Groundwater Rights/ Purchase					\$1,080,000
TOTAL CAPITAL COST					\$4,952,800
Annual Costs					
Debt Service (6 percent for 20 years)					\$431,800
Electricity (Transmission)					\$12,600
Water Treatment (\$0.15 per 1,000 gal)					\$176,000
Operation and Maintenance					\$74,400
Total Annual Cost					\$694,800
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$193
Water Cost (\$ per 1,000 gallons)					\$0.59
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$73
Water Cost (\$ per 1,000 gallons)					\$0.22

Table E-21
Manufacturing WUGs with Needs of Approximately 5,600 ac-ft/yr
Install Additional Groundwater Wells in Ogallala Aquifer

Owner: Manufacturing
Quantity: 5,600 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	800 gpm	8	Ea.	\$140,000	\$1,120,000
Connection to Pump Station		8	Ea.	\$100,000	\$800,000
Storage Tank (Closed)	1,250,000 Gal	1	Ea.	\$393,500	\$393,500
Engineering and Contingencies (35% for well field)					\$809,700
Subtotal for Wellfield and Treatment					\$3,123,200
Transmission System					
Pipeline - Rural	24 inch	10,560	LF	\$66	\$697,000
Pump Station	150 HP	1	LS	\$775,000	\$775,000
Easement - Rural	20 Feet	5	AC	\$500	\$2,500
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$480,400
Subtotal for Transmission					\$1,954,900
TOTAL CONSTRUCTION COST					\$5,078,100
Interest During Construction			(6 months)		\$110,000
Permitting and Mitigation					\$45,400
Groundwater Rights/ Purchase					\$1,680,000
TOTAL CAPITAL COST					\$6,913,500
Annual Costs					
Debt Service (6 percent for 20 years)					\$602,800
Electricity (Transmission)					\$19,600
Water Treatment (\$0.15 per 1,000 gal)					\$273,700
Operation and Maintenance					\$101,100
Total Annual Cost					\$997,200
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$178
Water Cost (\$ per 1,000 gallons)					\$0.55
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$70
Water Cost (\$ per 1,000 gallons)					\$0.22

Table E-22
Steam Electric Power WUGs with Needs less than 200 ac-ft/yr
Install New Groundwater Well

Owner: Steam Electric Power
Quantity: 200 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	300 gpm	1	Ea.	\$137,500	\$137,500
Connection to Pump Station		1	Ea.	\$100,000	\$100,000
Storage Tank (Closed)	50,000 Gal	1	Ea.	\$40,000	\$40,000
Engineering and Contingencies (35% for well field)					\$97,100
Subtotal for Wellfield and Treatment					\$374,600
Transmission System					
Pipeline - Rural	8 inch	10,560	LF	\$20	\$211,200
Pump Station	10 HP	1	LS	\$100,000	\$100,000
Easement - Rural	15 Feet	4	AC	\$500	\$1,800
Engineering and Contingencies (30% for pipelines, 35% for other items)					\$98,400
Subtotal for Transmission					\$411,400
TOTAL CONSTRUCTION COST					\$786,000
Interest During Construction			(6 months)		\$17,000
Permitting and Mitigation					\$7,100
Groundwater Rights/ Purchase					\$60,000
TOTAL CAPITAL COST					\$870,100
Annual Costs					
Debt Service (6 percent for 20 years)					\$75,900
Electricity (Transmission)					\$1,100
Water Treatment (\$0.15 per 1,000 gal)					\$9,800
Operation and Maintenance					\$13,800
Total Annual Cost					\$100,600
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$503
Water Cost (\$ per 1,000 gallons)					\$1.54
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$124
Water Cost (\$ per 1,000 gallons)					\$0.38

**Table E-23
Connecting to Palo Duro Reservoir**

Owner:	Palo Duro River Authority	
Quantity:	Cactus	2,265
	Dumas	1,760
	Sunray	370
	Gruver	146
	Spearman	331
	Stinnet	157
	<u>Total</u>	<u>5,029</u>

	Quantity	Units	1995 Dollars	Unit Price	Cost
Water Treatment Plant					
9 MGD Conventional Treatment Plant	1	LS		\$14,300,000	\$14,300,000
Engineering and Contingencies (35%)					\$5,005,000
Subtotal for Water Treatment Plant					\$19,305,000

	Construction	Capital
Cactus	\$6,440,600	\$8,694,800
Dumas	\$5,005,800	\$6,757,800
Sunray	\$1,052,200	\$1,420,400
Gruver	\$414,500	\$559,600
Spearman	\$940,600	\$1,269,800
Stinnet	\$446,400	\$602,600
check total	\$14,300,100	\$19,305,000

	Quantity	Units	1995 Dollars	Unit Price	Cost
Pipeline System Components					
24" line from Res. to WTP	9,000	LF		\$66	\$594,000
24" line from WTP to Spearman	51,000	LF		\$66	\$3,366,000
Crossings	1	LS	\$75,000		\$88,000
Connection to Spearman	1	LS	\$10,000		\$11,700
ROW	20	23		\$500	\$11,500
Engineering and Contingencies (30%)					\$1,217,900
Pipeline Subtotal at Spearman					\$5,289,100

	Construction	Capital	Electricity (\$)
Cactus	\$1,783,500	\$2,382,200	\$11,600
Dumas	\$1,386,200	\$1,851,500	\$9,000
Sunray	\$291,400	\$389,200	\$1,900
Gruver	\$114,800	\$153,300	\$700
Spearman	\$260,500	\$347,900	\$1,700
Stinnet	\$123,600	\$165,100	\$800
check total	\$3,960,000	\$5,289,200	\$25,700

Table E-23, Continued

	Quantity	Units	1995 Dollars	Unit Price	Cost
8" line from Spearman to Gruver	71,300	LF		\$20	\$1,426,000
Crossings	1	LS	\$65,000		\$76,200
Connection to Gruver	1	LS	\$10,000		\$11,700
ROW	15	AC		\$500	\$12,500
Engineering and Contingencies (30%)					\$454,200
Pipeline Subtotal at Gruver					\$1,980,600

	Construction	Capital	Electricity (\$)
Cactus	\$0	\$0	\$0
Dumas	\$0	\$0	\$0
Sunray	\$0	\$0	\$0
Gruver	\$1,426,000	\$1,980,600	\$300
Spearman	\$0	\$0	\$0
Stinnet	\$0	\$0	\$0
check total	\$1,426,000	\$1,980,600	\$300

	Quantity	Units	1995 Dollars	Unit Price	Cost
24" line from Spearman to Stinnet	133,500	LF		\$66	\$8,811,000
Crossings	1	LS	\$125,000		\$146,600
ROW	20	AC		\$500	\$30,500
Engineering and Contingencies (30%)					\$2,687,300
Pipeline Subtotal at Stinnet					\$11,675,400

	Construction	Capital	Electricity (\$)
Cactus	\$4,383,800	\$5,808,900	\$19,400
Dumas	\$3,407,200	\$4,514,900	\$15,100
Sunray	\$716,200	\$949,000	\$3,200
Gruver	\$0	\$0	\$0
Spearman	\$0	\$0	\$0
Stinnet	\$303,800	\$402,600	\$1,300
check total	\$8,811,000	\$11,675,400	\$39,000

	Quantity	Units	1995 Dollars	Unit Price	Cost
8" line Stinnet Spur	83,350	LF		\$20	\$1,667,000
Crossings	1	LS	\$200,000		\$234,600
Connection to Stinnet	1	LS	\$10,000		\$11,700
ROW	20	AC		\$500	\$19,000
Engineering and Contingencies (30%)					\$574,000
Pipeline Subtotal at Stinnet					\$2,506,300

	Construction	Capital	Electricity (\$)
Cactus	\$0	\$0	\$0
Dumas	\$0	\$0	\$0
Sunray	\$0	\$0	\$0
Gruver	\$0	\$0	\$0
Spearman	\$0	\$0	\$0
Stinnet	\$1,667,000	\$2,506,300	\$500
check total	\$1,667,000	\$2,506,300	\$500

Table E-23, Continued

	Quantity	Units	1995 Dollars	Unit Price	Cost
24" line from Stinnet Spur to Dumas	122,800	LF		\$66	\$8,104,800
Crossings	1	LS	\$115,000		\$134,900
Connection to Dumas	1	LS	\$10,000		\$11,700
ROW	20	56 AC		\$500	\$28,000
Engineering and Contingencies (30%)					\$2,475,400
Pipeline Subtotal at Dumas					\$10,754,800

	Construction	Capital	Electricity (\$)
Cactus	\$4,176,500	\$5,542,000	\$17,200
Dumas	\$3,246,100	\$4,307,400	\$13,300
Sunray	\$682,300	\$905,400	\$2,800
Gruver	\$0	\$0	\$0
Spearman	\$0	\$0	\$0
Stinnet	\$0	\$0	\$0
check total	\$8,104,900	\$10,754,800	\$33,300

	Quantity	Units	1995 Dollars	Unit Price	Cost
8" line Sunray Spur	28,000	LF		\$20	\$560,000
Crossings	1	LS	\$85,000		\$99,700
Pressure Reducing Valve	1	EA	\$20,000		\$23,500
Connection to Sunray	1	LS	\$10,000		\$11,700
ROW	15	10 AC		\$500	\$5,000
Engineering and Contingencies (30%)					\$208,500
Pipeline Subtotal at Sunray					\$348,400

	Construction	Capital	Electricity (\$)
Cactus	0	\$0	\$0
Dumas	0	\$0	\$0
Sunray	\$560,000	\$348,400	\$1,500
Gruver	0	\$0	\$0
Spearman	0	\$0	\$0
Stinnet	0	\$0	\$0
check total	\$560,000	\$348,400	\$1,500

	Quantity	Units	1995 Dollars	Unit Price	Cost
18" line from Dumas to Cactus	67,150	LF		\$42	\$2,820,300
Crossings	1	LS	\$165,000		\$193,600
Connection to Cactus	1	LS	\$10,000		\$11,700
ROW	20	31 AC		\$500	\$15,500
Engineering and Contingencies (30%)					\$907,700
Pipeline Subtotal at Sunray					\$3,948,800

Table E-23, Continued

	Construction	Capital	Electricity (\$)
Cactus	\$2,820,300	\$3,948,800	\$11,800
Dumas	0	\$0	\$0
Sunray	0	\$0	\$0
Gruver	0	\$0	\$0
Spearman	0	\$0	\$0
Stinnet	0	\$0	\$0
check total	\$2,820,300	\$3,948,800	\$11,800

Pump Station Components	Quantity	Units	1995 Dollars	Unit Price	Cost
9 MGD PS at intake	250	HP			\$1,065,000
9 MGD PS at WTP	250	HP			\$1,065,000
9 MGD PS at Spearman	400	HP			\$1,500,000
8.12 MGD at Stinnet Spur	400	HP			\$1,500,000
4.04 MGD at Dumas	100	HP			\$620,000
Engineering and Contingencies (35%)					\$2,012,500
Pump Station Subtotal					\$7,762,500

Construction Costs	9 MGD PS at intake	9 MGD PS at WTP	9 MGD PS at Spearman	8.12 MGD at Stinnet Spur	4.04 MGD at Dumas	
Cactus	\$479,700	\$479,700	\$675,600	\$746,300	\$348,900	
Dumas	\$372,800	\$372,800	\$525,100	\$580,000	\$271,100	
Sunray	\$78,400	\$78,400	\$110,400	\$121,900	\$0	
Gruver	\$30,900	\$30,900	\$43,500	\$0	\$0	
Spearman	\$70,100	\$70,100	\$98,700	\$0	\$0	
Stinnet	\$33,200	\$33,200	\$46,800	\$51,700	\$0	
check total	\$1,065,100	\$1,065,100	\$1,500,100	\$1,499,900	\$620,000	\$5,750,200

Capital Costs	9 MGD PS at intake	9 MGD PS at WTP	9 MGD PS at Spearman	8.12 MGD at Stinnet Spur	4.04 MGD at Dumas	
Cactus	\$647,500	\$647,500	\$912,000	\$1,007,500	\$471,000	
Dumas	\$503,300	\$503,300	\$708,900	\$783,100	\$366,000	
Sunray	\$105,800	\$105,800	\$149,000	\$164,600	\$0	
Gruver	\$41,700	\$41,700	\$58,700	\$0	\$0	
Spearman	\$94,600	\$94,600	\$133,200	\$0	\$0	
Stinnet	\$44,900	\$44,900	\$63,200	\$69,800	\$0	
check total	\$1,437,800	\$1,437,800	\$2,025,000	\$2,025,000	\$837,000	\$7,762,600

Ground Storage Tanks	Quantity	Units	1995 Dollars	Unit Price	Cost
3 MG at WTP	1	LS	\$1,200,000	\$589,000	\$589,000
3 MG at Spearman	1	LS	\$1,200,000	\$589,000	\$589,000
2.5 MG at Stinnet Spur	1	LS	\$1,000,000	\$510,000	\$510,000
1.5 MG at Dumas	1	LS	\$600,000	\$355,000	\$355,000
Engineering and Contingencies (35%)					\$715,100
Pump Station Subtotal					\$2,758,100

Table E-23, Continued

Construction Costs	3 MG at WTP	3 MG at Spearman	2.5 MG at Stinnet Spur	1.5 MG at Dumas	
Cactus	\$265,300	\$265,300	\$253,700	\$199,700	
Dumas	\$206,200	\$206,200	\$197,200	\$155,300	
Sunray	\$43,300	\$43,300	\$41,500	\$0	
Gruver	\$17,100	\$17,100	\$0	\$0	
Spearman	\$38,700	\$38,700	\$0	\$0	
Stinnet	\$18,400	\$18,400	\$17,600	\$0	
check total	\$589,000	\$589,000	\$510,000	\$355,000	\$2,043,000

Capital Costs	3 MG at WTP	3 MG at Spearman	2.5 MG at Stinnet Spur	1.5 MG at Dumas	
Cactus	\$358,100	\$358,100	\$342,600	\$269,700	
Dumas	\$278,300	\$278,300	\$266,200	\$209,600	
Sunray	\$58,500	\$58,500	\$56,000	\$0	
Gruver	\$23,000	\$23,000	\$0	\$0	
Spearman	\$52,300	\$52,300	\$0	\$0	
Stinnet	\$24,800	\$24,800	\$23,700	\$0	
check total	\$795,000	\$795,000	\$688,500	\$479,300	\$2,757,800

TOTAL CONSTRUCTION COST

Cactus	\$31,390,700
Dumas	\$21,328,600
Sunray	\$4,710,600
Gruver	\$2,881,600
Spearman	\$2,044,700
Stinnet	\$3,972,700
check total	\$66,328,900

Interest During Construction

(24 month)

Cactus	\$2,563,700
Dumas	\$1,741,900
Sunray	\$384,700
Gruver	\$235,300
Spearman	\$167,000
Stinnet	\$324,500
check total	\$5,417,100

Permitting and Mitigation

Cactus	\$244,200
Dumas	\$163,500
Sunray	\$41,100
Gruver	\$24,000
Spearman	\$15,700
Stinnet	\$31,100
check total	\$519,600

Table E-23, Continued**TOTAL CAPITAL COST**

Cactus	\$34,198,600
Dumas	\$23,234,000
Sunray	\$5,136,400
Gruver	\$3,140,900
Spearman	\$2,227,400
Stinnet	\$4,328,300
check total	\$72,265,600

Annual Costs - Cactus

Debt Service (6 percent for 20 years)	\$2,981,600
Electricity	\$60,000
Price to Purchase Water (\$0.15 per 1,000 gal)	\$110,700
Operation and Maintenance	\$385,500
Total Annual Cost	\$3,537,800

UNIT COSTS (Until Amortized)

Water Cost (\$ per ac-ft)	\$1,562
Water Cost (\$ per 1,000 gallons)	\$4.79

UNIT COSTS (After Amortization)

Water Cost (\$ per ac-ft)	\$246
Water Cost (\$ per 1,000 gallons)	\$0.75

Annual Costs - Dumas

Debt Service (6 percent for 20 years)	\$2,025,600
Electricity	\$37,400
Price to Purchase Water (\$0.15 per 1,000 gal)	\$86,000
Operation and Maintenance	\$277,700
Total Annual Cost	\$2,426,700

UNIT COSTS (Until Amortized)

Water Cost (\$ per ac-ft)	\$1,379
Water Cost (\$ per 1,000 gallons)	\$4.23

UNIT COSTS (After Amortization)

Water Cost (\$ per ac-ft)	\$228
Water Cost (\$ per 1,000 gallons)	\$0.70

Table E-23, Continued

	Cost
Annual Costs - Sunray	
Debt Service (6 percent for 20 years)	\$447,800
Electricity	\$9,400
Price to Purchase Water (\$0.15 per 1,000 gal)	\$18,100
Operation and Maintenance	\$61,700
Total Annual Cost	\$537,000
UNIT COSTS (Until Amortized)	
Water Cost (\$ per ac-ft)	\$1,451
Water Cost (\$ per 1,000 gallons)	\$4.45
UNIT COSTS (After Amortization)	
Water Cost (\$ per ac-ft)	\$241
Water Cost (\$ per 1,000 gallons)	\$0.74
Annual Costs - Gruver	
Debt Service (6 percent for 20 years)	\$273,800
Electricity	\$1,000
Price to Purchase Water (\$0.15 per 1,000 gal)	\$7,100
Operation and Maintenance	\$29,300
Total Annual Cost	\$311,200
UNIT COSTS (Until Amortized)	
Water Cost (\$ per ac-ft)	2131.506849
Water Cost (\$ per 1,000 gallons)	\$6.54
UNIT COSTS (After Amortization)	
Water Cost (\$ per ac-ft)	\$256
Water Cost (\$ per 1,000 gallons)	\$0.79
Annual Costs - Spearman	
Debt Service (6 percent for 20 years)	\$194,200
Electricity	\$1,700
Price to Purchase Water (\$0.15 per 1,000 gal)	\$16,200
Operation and Maintenance	\$34,000
Total Annual Cost	\$246,100
UNIT COSTS (Until Amortized)	
Water Cost (\$ per ac-ft)	743.5045317
Water Cost (\$ per 1,000 gallons)	\$2.28
UNIT COSTS (After Amortization)	
Water Cost (\$ per ac-ft)	\$157
Water Cost (\$ per 1,000 gallons)	\$0.48

Table E-23, Continued

Annual Costs - Stinnet	Cost
Debt Service (6 percent for 20 years)	\$377,400
Electricity	\$2,600
Price to Purchase Water (\$0.15 per 1,000 gal)	\$7,700
Operation and Maintenance	\$37,600
Total Annual Cost	\$425,300
UNIT COSTS (Until Amortized)	
Water Cost (\$ per ac-ft)	\$2,708.92
Water Cost (\$ per 1,000 gallons)	\$8.31
UNIT COSTS (After Amortization)	
Water Cost (\$ per ac-ft)	\$305
Water Cost (\$ per 1,000 gallons)	\$0.94

Table E-24
Livestock WUGs with Needs of 250 ac-ft/yr
Install Additional Groundwater Wells in Ogallala Aquifer

Owner: Unknown
Quantity: 250 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	300 gpm	1	Ea.	\$97,500	\$97,500
Storage (stock ponds or troughs)	30,000 AF	1	Ea.	\$20,000	\$20,000
Engineering and Contingencies (35%)					\$41,100
Subtotal for Wellfield and Treatment					\$158,600
TOTAL CONSTRUCTION COST					\$158,600
Interest During Construction			(6 months)		\$3,400
TOTAL CAPITAL COST					\$162,000
Annual Costs					
Debt Service (6 percent for 20 years)					\$14,100
Operation and Maintenance					\$3,500
Total Annual Cost					\$17,600
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$70
Water Cost (\$ per 1,000 gallons)					\$0.22
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$14
Water Cost (\$ per 1,000 gallons)					\$0.04

Table E-25
Livestock WUGs with Needs of 500 ac-ft/yr
Install Additional Groundwater Wells in Ogallala Aquifer

Owner: Unknown
Quantity: 500 AF/Y

Capital Costs	Size	Quantity	Unit	Unit Price	Cost
Wellfield and Treatment					
Wells	600 gpm	1	Ea.	\$115,000	\$115,000
Storage (stock ponds or troughs)	50,000 AF	1	Ea.	\$30,000	\$30,000
Engineering and Contingencies (35%)					\$50,800
Subtotal for Wellfield and Treatment					\$195,800
TOTAL CONSTRUCTION COST					\$195,800
Interest During Construction			(6 months)		\$4,200
TOTAL CAPITAL COST					\$200,000
Annual Costs					
Debt Service (6 percent for 20 years)					\$17,400
Operation and Maintenance					\$4,400
Total Annual Cost					\$21,800
UNIT COSTS (Until Amortized)					
Water Cost (\$ per ac-ft)					\$44
Water Cost (\$ per 1,000 gallons)					\$0.13
UNIT COSTS (After Amortization)					
Water Cost (\$ per ac-ft)					\$9
Water Cost (\$ per 1,000 gallons)					\$0.03