EXHIBIT H

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TECHNICAL MEMORANDUM

DATE: March 14, 2005 **Project: 1172.03**

TO: Boyd Kraemer
CITY OF BENSON

FROM: Daniel Weber
ERROL L. MONTGOMERY & ASSOCIATES, INC.

SUBJECT: SUMMARY OF GROUNDWATER SUPPLY ALTERNATIVES FOR CITY OF BENSON, COCHISE COUNTY, ARIZONA

SUMMARY

The wellfield operated by the City of Benson (City) is shown on **Figure 1**. The wellfield consists of eight (8) wells that supply water to the City's main municipal distribution system. Two additional wells located at the airport supply water solely for airport operations. A pipeline linking the City's main distribution system to the airport wells does not exist. Wells near the center of the City, referred to in this study as "Central wells", are identified by the City as Lower, Upper, West, South, and Ball Park wells. Wells to the west of the City, referred to in this study as "West wells", are identified by the City as Jennella, 291, 302, Airport East, and Airport West wells. Other wells on **Figure 1** are existing and potential supply well locations for City of Benson and Whetstone Ranch.

Groundwater from the Central wells is reported to have elevated concentrations of arsenic and exceed the revised maximum contaminant level (MCL) of 10 micrograms per liter (µg/L) (**Figure 1**). Compliance with the revised standard is required by January 2006. Because groundwater from the Central wells exceeds the MCL for arsenic and because of age and declining performance of the wells, the City plans to phase out operation of these wells for potable use.

Concentration of arsenic is reported to be 7 µg/L or less in groundwater from the West wells. In order to phase out pumping at Central wells and comply with the revised arsenic MCL, the City should consider several short-term and long-term planning alternatives, including:

- increasing pumping and storage capacity at West wells;
- drilling new wells at existing or alternate well sites in the area of West wells;
- extending a pipeline from the main distribution system to the airport wells and increase storage along the pipeline;
- explore for groundwater and drill production wells north of Interstate 10 and along a potential pipeline route from the main distribution system to airport; and

- explore for groundwater in the area of Central wells, determine depth and source of high arsenic concentration, and design potential supply wells that target production from low arsenic zones in the aquifer.

RESULTS OF HYDROGEOLOGIC REVIEW AND ANALYSIS OF EXISTING DATA

Total annual groundwater pumped from City wells for the last 10 years is shown on **Figure 2**. Pumpage ranged from 684 acre-feet per year (AFY) or 424 gallons per minute (gpm) in 1995 to 857 AFY or 531 gpm in 2004. Pumping rate increased about 20 percent during the 10-year period or an average of 2 percent per year.

Pumping rates for City wells for 2004 are summarized in **Table 1**. In 2004, Central wells had a combined pumping rate of 726 AFY (450 gpm) and accounted for about 85 percent of total annual pumpage. West wells had a combined pumping rate of 126 AFY (78 gpm) and accounted for about 15 percent of total annual pumpage. Pumping at airport wells (Airport East and Airport West wells) accounted for less than 1 percent of total annual pumpage. **Figure 3** shows the distribution of pumping between City wells for 2004. **Table 1** and **Figure 3** include projected pumping rates at West wells that could be implemented if production were increased to 50 percent and 100 percent duty rate as pumping at Central wells is phased out.

Review of information on **Table 1** indicates that an increase in the duty rate for the West wells that are plumbed to the City (Jennella, 291, and 302) would be capable of supplying necessary demand in the short-term (1 to 2 years). However, an engineering analysis of pipeline, pressure zone, and storage capacity should be conducted to determine delivery feasibility. In addition, delivery feasibility should include chemical compatibility testing of water. Sudden introduction of water of different chemical quality (i.e., pH, Eh, TDS, etc.) to older pipelines has in some cases been reported to cause dissolution of chemical scale, resulting in delivery of water to customers that is potentially turbid and damaging to home plumbing.

RECOMMENDATIONS

Short-term testing at Jennella, 291, and 302 wells conducted in early February indicated that the aquifer penetrated by these wells is capable of yielding additional groundwater supply. However, small casing diameter of the wells likely precludes a substantial increase in pump size and pumping rate. Because aquifer conditions are favorable in the area of these wells, demand in the mid-term (2 to 5 years) could be met by large-diameter (12-inch to 16-inch casing) replacement wells drilled, in order of preference, at the following locations: 1) the 302 well site, 2) potential well sites along the pipeline route from 302 well to 291 well, and 3) well site northwest of Jennella well near the community college. Plans are in place to conduct aquifer testing at Jennella and 291 wells to provide additional data for evaluation of this alternative.

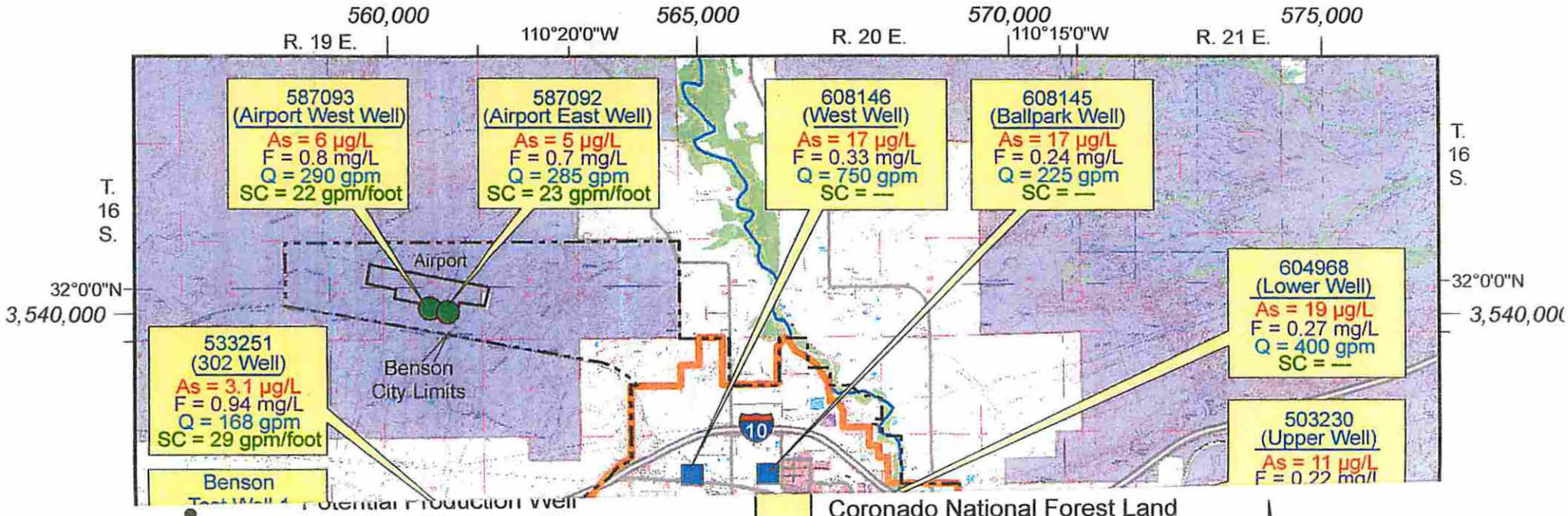
Because casing diameter at the airport wells is large enough to increase pump size and pumping rate, and because recent testing indicates favorable aquifer conditions for groundwater development, long-term demand (5 to 25 years) could be met by extending a pipeline from the airport to the City's distribution system. Along the pipeline, additional wells and storage would be required to maintain airport storage requirements. In this area, north of Interstate 10 and to the airport, a groundwater exploration program should be conducted to sight and design additional supply wells to meet City's groundwater supply demand beyond 25 years. Plans are in place to conduct aquifer testing at Airport wells to provide additional data for evaluation of this alternative.

Additional groundwater exploration to meet the City's long-term demand could be conducted in the area of existing Central wells. Because of high arsenic concentrations, the groundwater exploration program should identify depth and source of arsenic. If results of the exploration program indicate groundwater quantity and quality that meet potable demand criteria, properly designed supply wells should be constructed that mitigate arsenic levels and meet regulatory requirements.

Table 1. Pumping from City of Benson wells for 2004 and potential projected pumping rate at West wells after pumping at Central wells is phased out.

	All Wells for 2004 (measured)		Potential Projected Pumping at West Wells after Shut Down of Central Wells[a] (50 percent duty cycle)		Potential Projected Pumping at West Wells after Shut Down of Central Wells[a] (100 percent duty cycle)	
Well Identifier	Average gpm[b]	Average AFY[c]	Average gpm	Average AFY	Average gpm	Average AFY
Lower	134	216	---	---	---	---
Upper	94	151	---	---	---	---
West	150	243	---	---	---	---
South	39	63	---	---	---	---
Ball Park	33	53	---	---	---	---
Jennella	32	51	235	379	470	758
291 Well	15	24	85	137	170	274
302 Well	32	51	235	379	470	758
East Airport Well	1	2	145	234	290	468
West Airport Well	2	3	145	234	290	468
Sum of Central Wells (Lower, Upper, West, South, and Ball Park Wells)	450	726	---	---	---	---
Sum of West Wells (Jennella, 291, and 302 Wells)	78	126	555	895	1,110	1,791
Sum of West Wells (East and West Airport Wells)	3	5	290	468	580	936
Sum of all Wells	*531*	*857*	*845*	*1,363*	*1,690*	*2,726*

[a] *Pumping rate at West wells measured during field operations on February 8, 2005.*
[b] *gpm = gallons per minute*
[c] *AFY = acre-feet per year*



DRAFT

FIGURE 1. LOCATION MAP

1172.03\Basemap_PumpingData\02Mar2005

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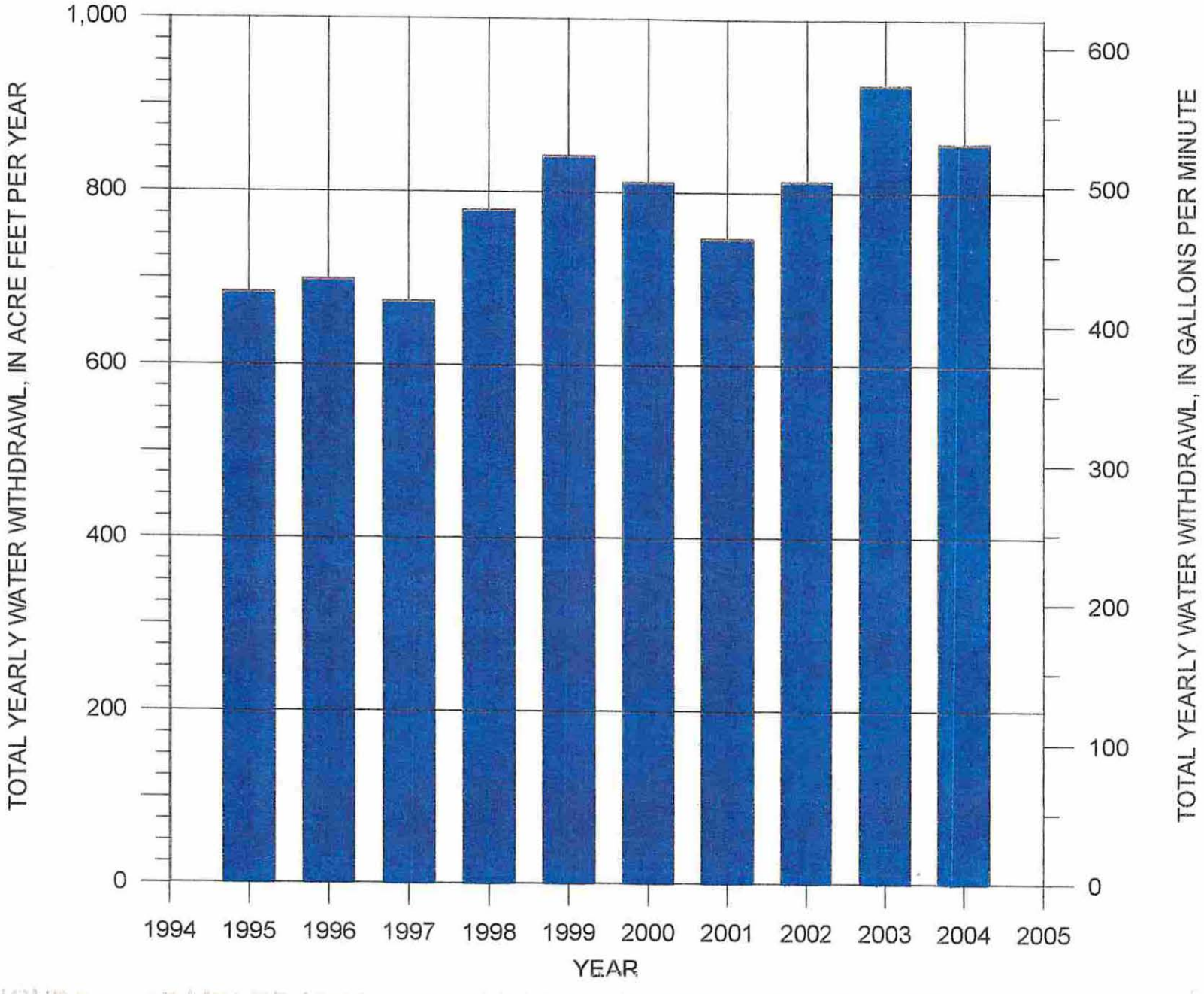


FIGURE 2. GRAPH OF TOTAL YEARLY GROUNDWATER PUMPED FOR CITY OF BENSON

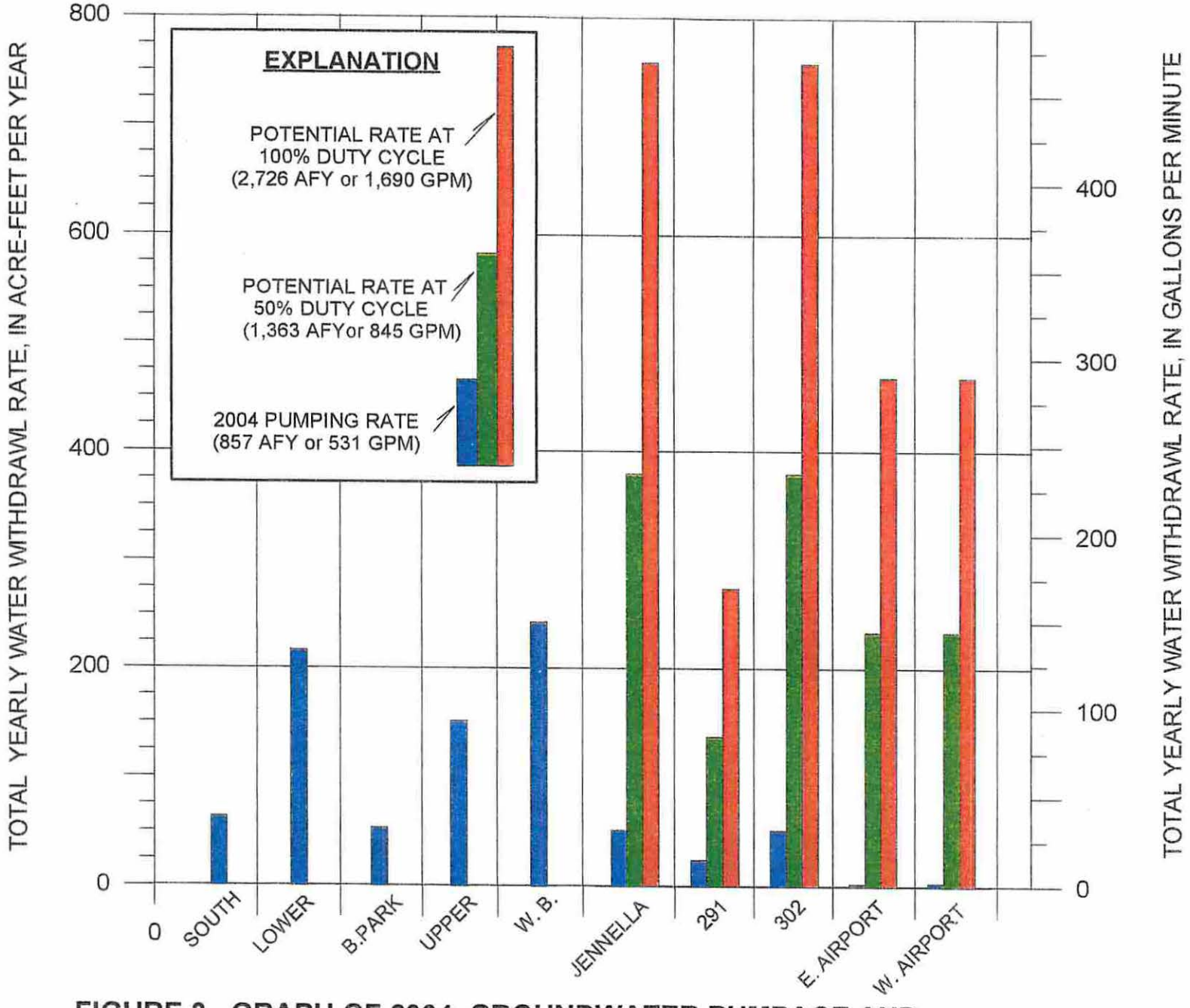
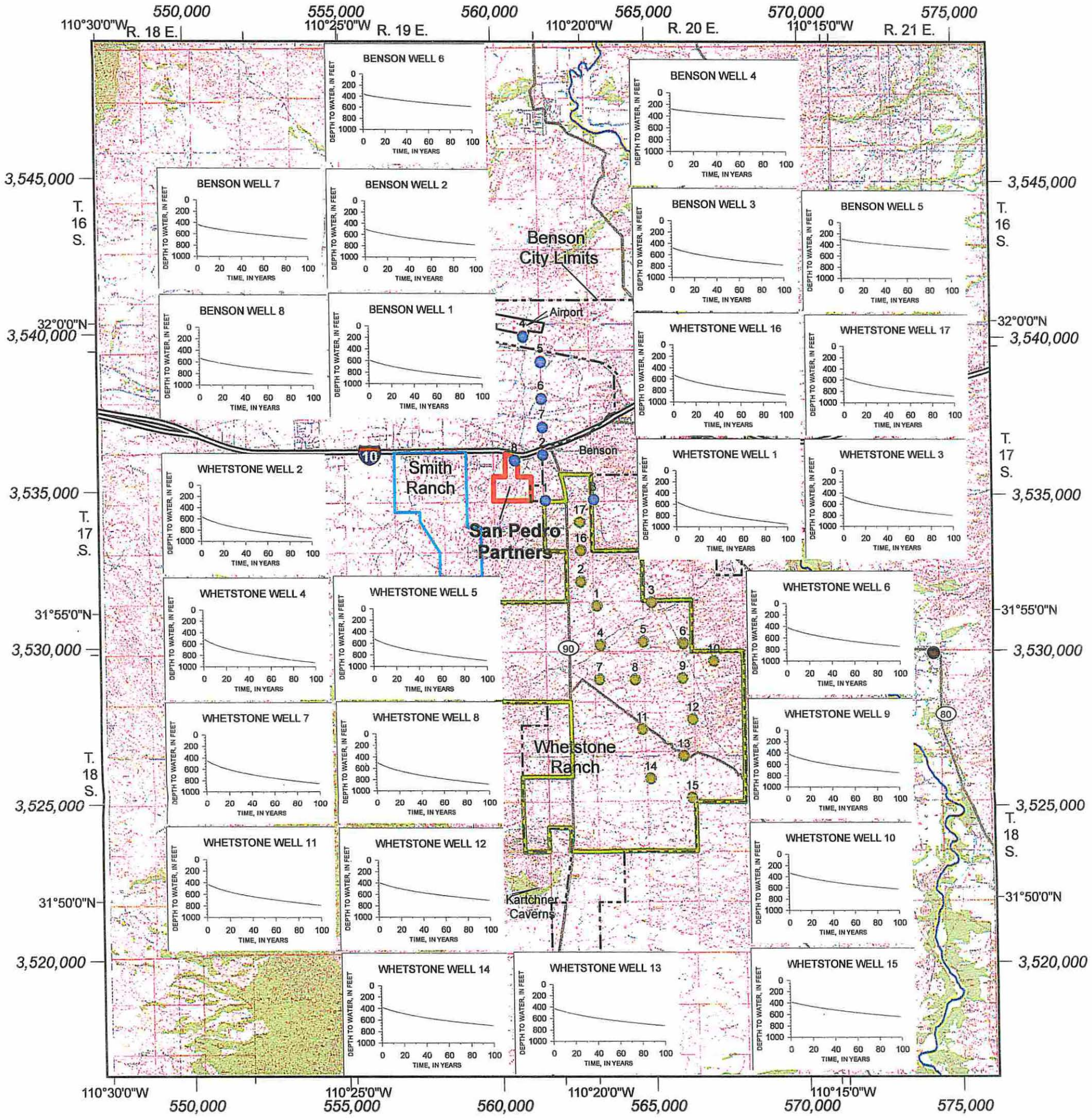


FIGURE 3. GRAPH OF 2004 GROUNDWATER PUMPAGE AND POTENTIAL GROUNDWATER PUMPAGE FOR WEST WELLS, CITY OF BENSON



EXPLANATION

- Potential Production Wells Benson
- Potential Production Wells Whetstone Ranch

N

0 1 2

MILES

FIGURE B2. DEPTH TO WATER PROJECTIONS FOR ANALYTICAL MODEL

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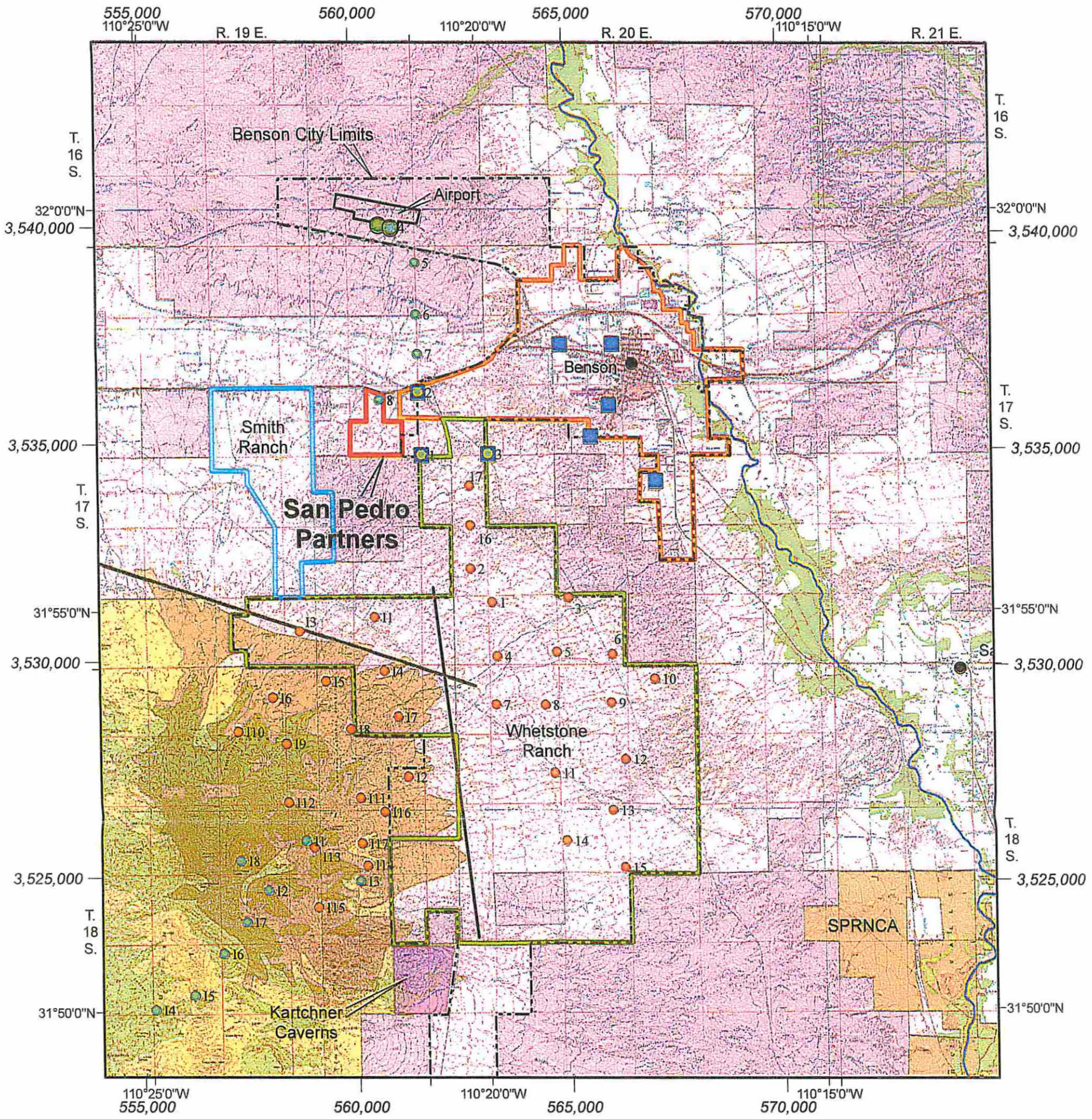
1179\Basemap_THWellsHydrographs\09March2005



EXPLANATION

- Existing City of Benson Wells
- Existing City of Benson Airport Wells
- 1, I1 — Potential Production and Image Wells, Benson
- 1, I1 — Potential Production and Image Wells, Whetstone Ranch
- Modeled Hydrologic Barrier Boundary
- Hydrologic Bedrock (Goode & Maddock, 2000)
- BLM Land (San Pedro Riparian National Conservation Area)
- State Land (includes Kartchner Caverns)
- Coronado National Forest Land
- Private Land

N

0 1 2 3

MILES

FIGURE B1. POTENTIAL PRODUCTION WELLS, CITY OF BENSON AND WHETSTONE RANCH

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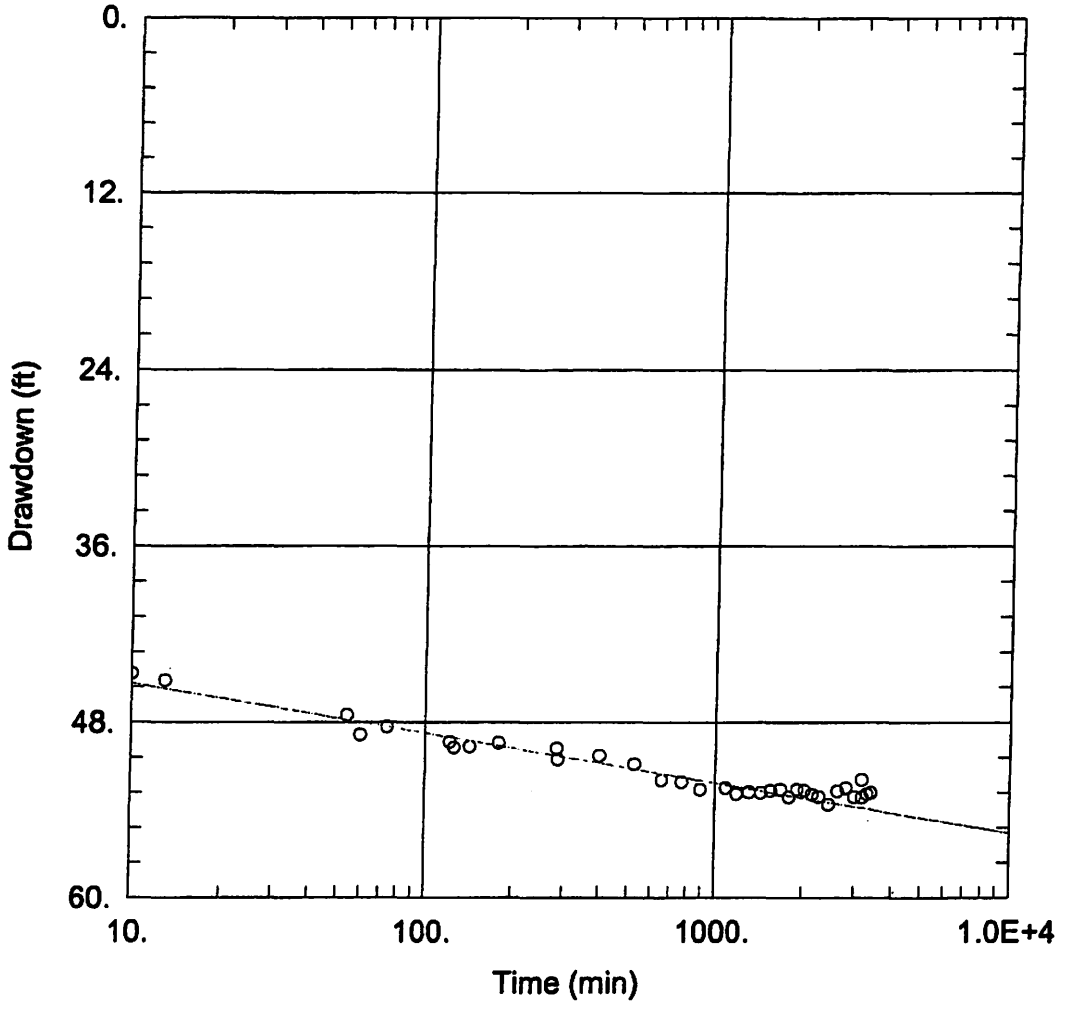
1179.01\Welloc_THWells\15Mar2005

APPENDIX A

Pumping Test Analyses for:

Test Well (D-17-20)32dba and Production Well PW-1



ASL 57-HOUR PUMPING TEST - SEPT/OCT 1994

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
32dba	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
o 32dba	0	1

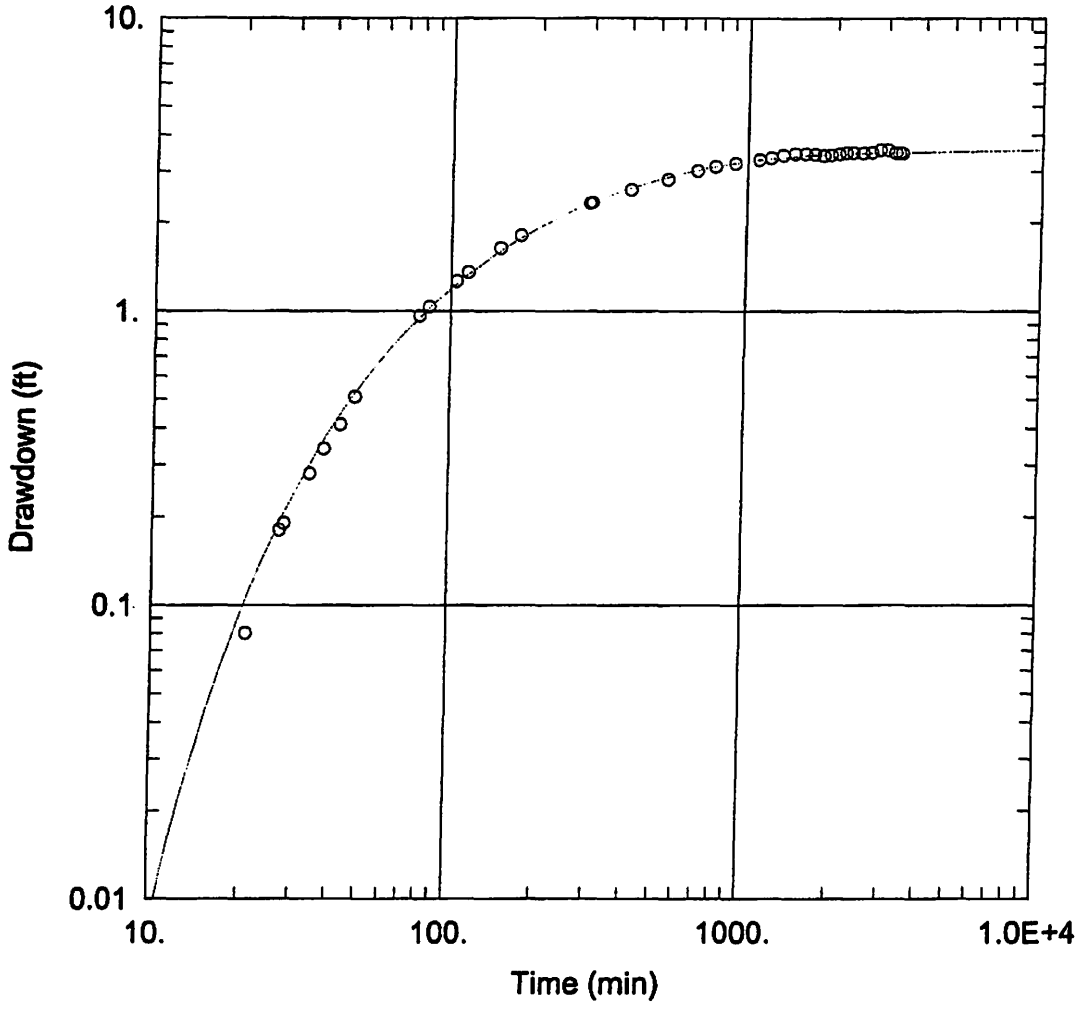
SOLUTION

Aquifer Model: Unconfined

Solution Method: Cooper-Jacob

T = 2.824E+4 gal/day/ft

S = 2.954E-12



ASL 57-HOUR PUMPING TEST - SEPT/OCT 1994

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
32dba	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
o 32adc	0	951

SOLUTION

Aquifer Model: Unconfined

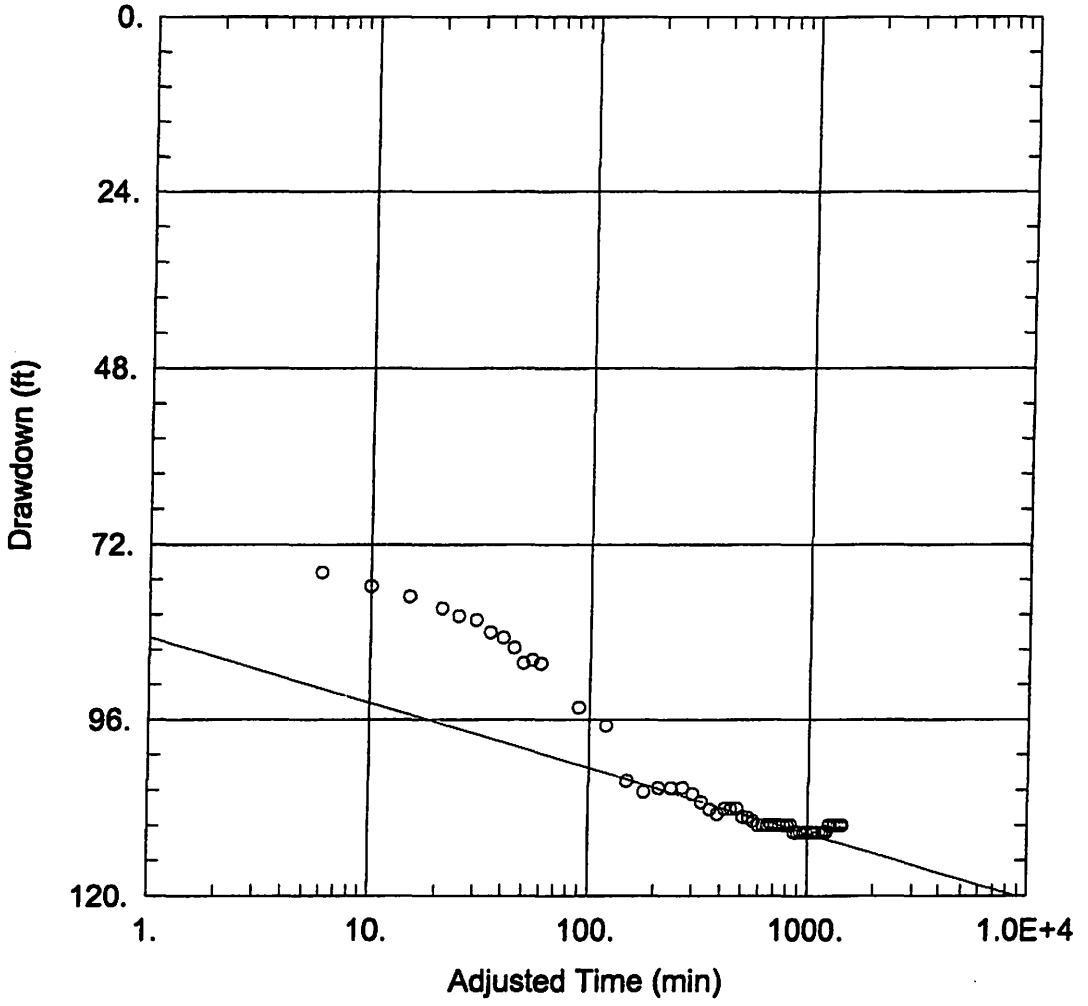
Solution Method: Neuman

T = 2.052E+4 gal/day/ft

S = 0.0003309

Sy = 0.102

ß = 0.08205



PW-1 TEST - JULY 2003

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
PW-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
o PW-1	0	1

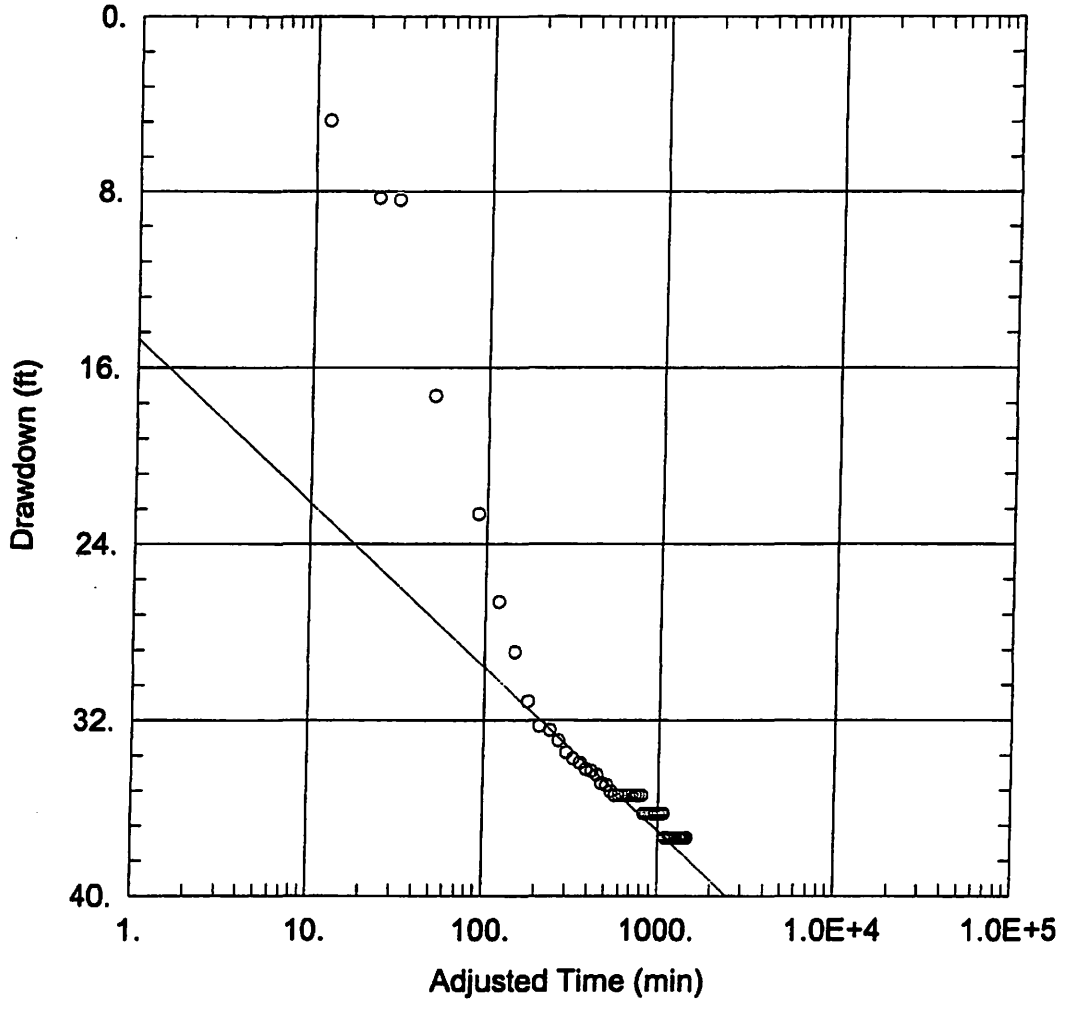
SOLUTION

Aquifer Model: Confined

Solution Method: Cooper-Jacob

T = 2.955E+4 gal/day/ft

S = 2.004E-9



PW-1 TEST - JULY 2003

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
PW-1	0	0

Observation Wells

Well Name	X (ft)	Y (ft)
o TW-1	0	77

SOLUTION

Aquifer Model: Unconfined

Solution Method: Cooper-Jacob

T = 3.541E+4 gal/day/ft

S = 1.326E-5

APPENDIX B

Results of Proposed Analytical Groundwater Modeling for
San Pedro Partners Project Site
Cochise County, Arizona

TABLE B-1. SUMMARY OF WELLS USED IN PROPOSED ANALYTICAL MODELING

Benson Wells and Image Wells

Id	Ident	POINT_X(m)	POINT_Y(m)	X (feet)	Y (feet)	Rate (afy)	Rate (gpd)	Rate (gpm)
1	1	561623.713	3534788.042	1842575.077	11596933	778.81	694800.9	482
2	2	561554.860	3536238.967	1842349.186	11601693	778.81	694800.9	482
3	3	563184.500	3534822.122	1847695.708	11597044	778.81	694800.9	482
4	4	560955.000	3540017.000	1840381.164	11614088	778.81	694800.9	482
5	5	561510.687	3539216.227	1842204.26	11611461	778.81	694800.9	482
6	6	561523.688	3538033.093	1842246.916	11607579	778.81	694800.9	482
7	7	561549.691	3537122.989	1842332.226	11604593	778.81	694800.9	482
8	8	560639.588	3536056.868	1839346.359	11601095	778.81	694800.9	482
1	I1	558807.977	3525863.591	1833337.211	11567653	778.81	694800.9	482
2	I2	557918.923	3524714.894	1830420.402	11563885	778.81	694800.9	482
3	I3	560066.600	3524939.964	1837466.501	11564623	778.81	694800.9	482
4	I4	555259.508	3521965.188	1821695.395	11554863	778.81	694800.9	482
5	I5	556174.133	3522302.066	1824696.096	11555969	778.81	694800.9	482
6	I6	556863.767	3523263.513	1826958.647	11559123	778.81	694800.9	482
7	I7	557407.359	3523993.905	1828742.065	11561519	778.81	694800.9	482
8	I8	557273.879	3525389.285	1828304.144	11566097	778.81	694800.9	482
Whetstone Wells and Image Wells								
3	3	565027.612	3531521.446	1853742.588	11586216	705.88	629737.7	437
2	2	562743.149	3532179.234	1846247.724	11588374	705.88	629737.7	437
4	4	563347.879	3530147.059	1848231.723	11581706	705.88	629737.7	437
5	5	564740.166	3530259.567	1852799.536	11582076	705.88	629737.7	437
7	7	563305.689	3529047.294	1848093.304	11578098	705.88	629737.7	437
8	8	564458.896	3529042.606	1851876.745	11578083	705.88	629737.7	437
11	11	564665.160	3527452.962	1852553.458	11572868	705.88	629737.7	437
14	14	564922.991	3525876.913	1853399.349	11567697	705.88	629737.7	437
15	15	566279.181	3525253.431	1857848.737	11565651	705.88	629737.7	437
13	13	566016.662	3526593.682	1856987.466	11570049	705.88	629737.7	437
12	12	566321.372	3527772.203	1857987.156	11573915	705.88	629737.7	437
9	9	566007.287	3529091.828	1856956.706	11578244	705.88	629737.7	437
10	10	567029.234	3529644.992	1860309.512	11580059	705.88	629737.7	437
6	6	566040.102	3530206.126	1857064.365	11581900	705.88	629737.7	437
1	1	563240.115	3531407.905	1847878.169	11585843	705.88	629737.7	437
16	16	562748.245	3533176.070	1846264.443	11591644	705.88	629737.7	437
17	17	562730.989	3534084.905	1846207.828	11594626	705.88	629737.7	437
2	I2	561221.885	3527357.601	1841256.76	11572555	705.88	629737.7	437
16	I16	560653.986	3526538.334	1839393.598	11569867	705.88	629737.7	437
17	I17	560118.285	3525803.962	1837636.069	11567458	705.88	629737.7	437
3	I3	558718.404	3530716.916	1833043.34	11583576	705.88	629737.7	437
4	I4	560689.290	3529808.044	1839509.423	11580594	705.88	629737.7	437
5	I5	559313.324	3529567.554	1834995.153	11579805	705.88	629737.7	437
7	I7	561006.120	3528754.060	1840548.878	11577136	705.88	629737.7	437
8	I8	559890.993	3528460.122	1836890.369	11576172	705.88	629737.7	437
11	I11	560090.255	3526869.585	1837544.107	11570954	705.88	629737.7	437
14	I14	560236.189	3525279.267	1838022.888	11565736	705.88	629737.7	437
15	I15	559079.863	3524335.397	1834229.213	11562640	705.88	629737.7	437
13	I13	558997.640	3525698.639	1833959.459	11567112	705.88	629737.7	437
12	I12	558406.929	3526762.979	1832021.452	11570604	705.88	629737.7	437
9	I9	558379.799	3528119.195	1831932.445	11575053	705.88	629737.7	437
10	I10	557251.736	3528398.197	1828231.497	11575969	705.88	629737.7	437
6	I6	558068.398	3529189.600	1830910.8	11578565	705.88	629737.7	437
1	I1	560477.193	3531055.586	1838813.575	11584687	705.88	629737.7	437

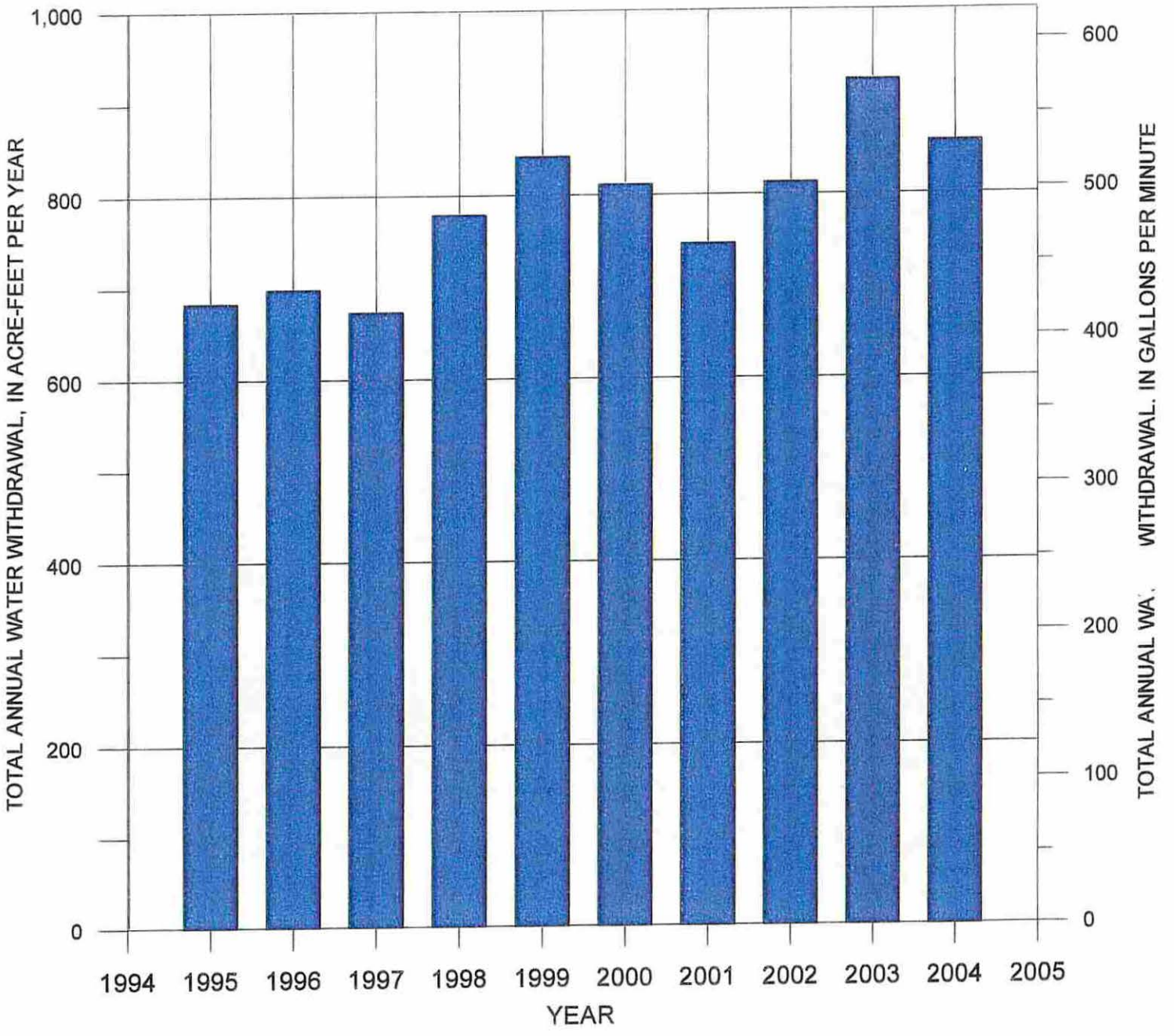


FIGURE 5. GRAPH OF TOTAL ANNUAL GROUNDWATER PUMPING FOR CITY OF BENSON

560,000 565,000 570,000 575,000

R. 19 E. 110°20'0"W R. 20 E. 110°15'0"W R. 21 E.

T. 16 S.

32°0'0"N

3,540,000

T. 17 S.

3,535,000

T. 18 S.

3,525,000

31°55'0"N

3,530,000

31°50'0"N

587093 (Airport West Well)
As = 6 µg/L
F = 0.8 mg/L
Q = 290 gpm
SC = 22 gpm/foot

587092 (Airport East Well)
As = 5 µg/L
F = 0.7 mg/L
Q = 285 gpm
SC = 23 gpm/foot

608146 (West Well)
As = 17 µg/L
F = 0.33 mg/L
Q = 750 gpm
SC = ---

608145 (Ballpark Well)
As = 17 µg/L
F = 0.24 mg/L
Q = 225 gpm
SC = ---

604968 (Lower Well)
As = 19 µg/L
F = 0.27 mg/L
Q = 400 gpm
SC = ---

503230 (Upper Well)
As = 11 µg/L
F = 0.22 mg/L
Q = 400 gpm
SC = ---

533111 (South Well)
As = 26 µg/L
F = 1.39 mg/L
Q = 450 gpm
SC = ---

533251 (302 Well)
As = 3.1 µg/L
F = 0.94 mg/L
Q = 168 gpm
SC = 29 gpm/foot

556791 (291 Well)
As = <3 µg/L
F = 1.14 mg/L
Q = 455 gpm
SC = 45 gpm/foot

567823 (Jennella Well)
As = 7.6 µg/L
F = 0.31 mg/L
Q = 474 gpm
SC = 13 gpm/foot

PW-1
As = 8 µg/L
F = 0.3 mg/L
Q = 1,000 gpm
SC = 9 gpm/foot

32dba
As = <50 µg/L
F = 1.5 mg/L
Q = 365 gpm
SC = 6 gpm/foot

Airport

Benson City Limits

Benson

Smith Ranch

San Pedro Partners

Whetstone Ranch

Saint David

SPRNCA

Kartchner Caverns

10

80

90

EXPLANATION

- City of Benson Well
- City of Benson Airport Well
- City of Benson/Whetstone Ranch Production Well
- Other Wells in ADWR "55" Registry
- Well and Identifier

PW-1
As = 8 µg/L — Arsenic, in micrograms per liter
F = 0.3 mg/L — Flouride, in milligrams per liter
Q = 1,000 gpm — Pumping Rate, in gallons per minute
SC = 9 gmp/foot — Specific Capacity, in gallons per minute per foot of drawdown
(--- = Not Measured)

- BLM Land (San Pedro Riparian National Conservation Area)
- State Land (includes Kartchner Caverns)
- Coronado National Forest Land
- Private Land

N

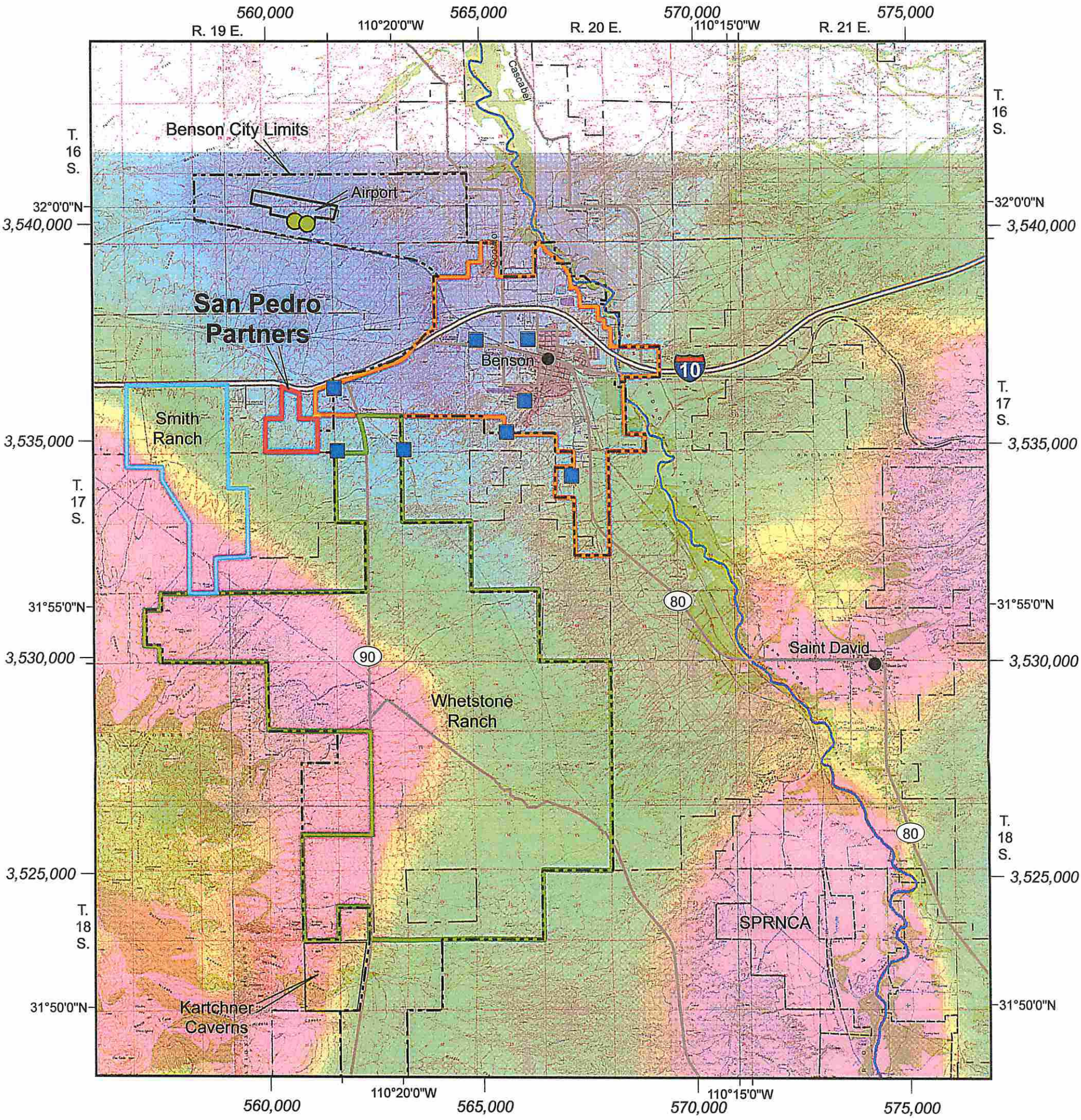
0 1 2 3

MILES

FIGURE 1. LOCATION MAP

1179.01\LocationMap_TechProp\12April2005

ERROL L. MONTGOMERY & ASSOCIATES, INC.



Source: Gettings & Houser (2000)

EXPLANATION

- City of Benson Wells
- City of Benson Airport Wells
- Increasing Depth to Bedrock

N

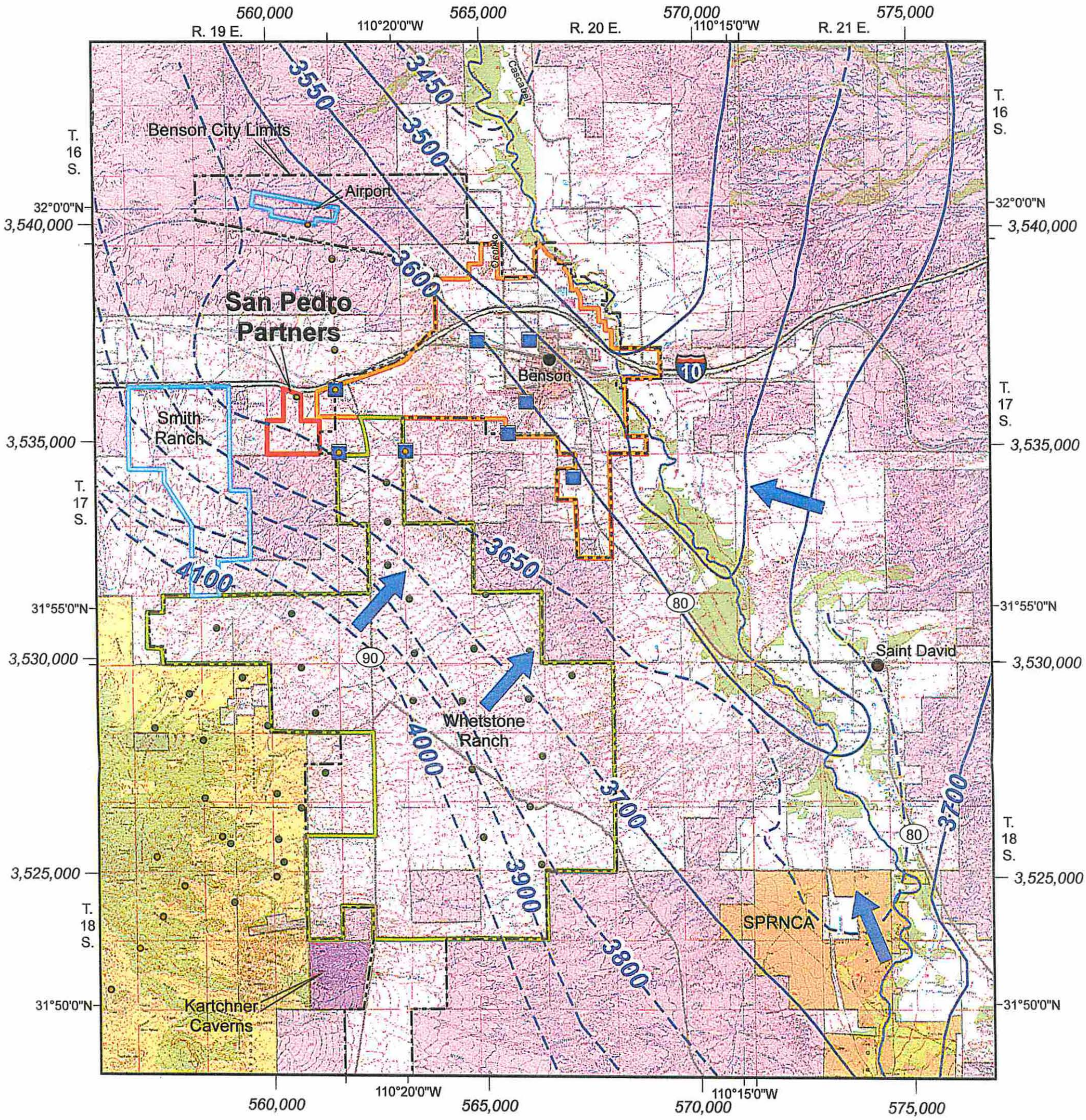
0 1 2 3

MILES

FIGURE 2. RESIDUAL GRAVITY ANOMALY

1179\Basemap_Gravity\12April2005

ERROL L. MONTGOMERY & ASSOCIATES, INC.



Source: Barnes & Putnam (2004)

EXPLANATION

- City of Benson Wells
- City of Benson Airport Wells
- 4000 — Contour of Groundwater Level Altitude, Winter 2001-2002, in feet above mean sea level
- Direction of Groundwater Movement

N

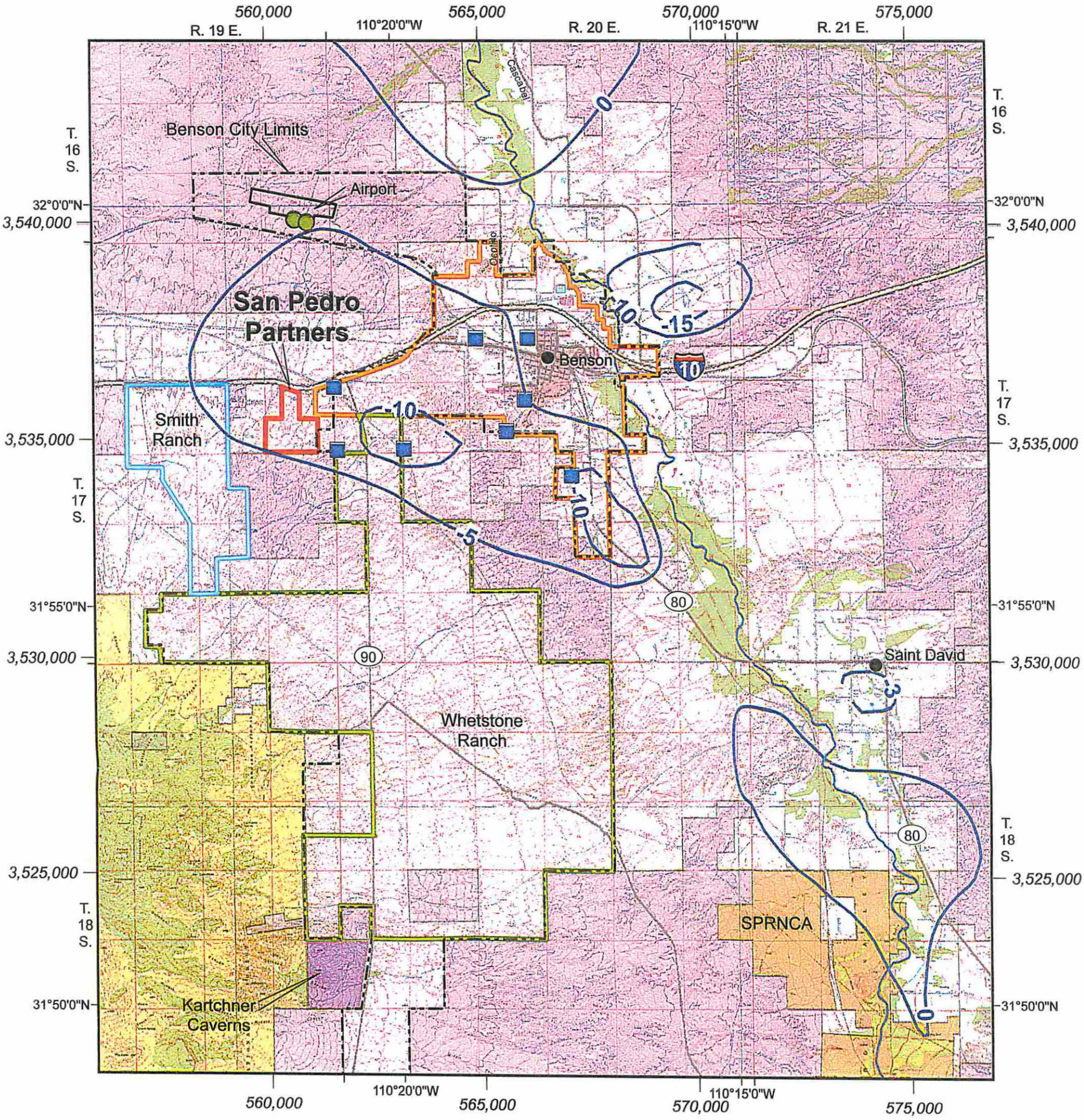
0 1 2 3

MILES

FIGURE 3. GROUNDWATER LEVEL ALTITUDE AND DIRECTION OF GROUNDWATER MOVEMENT

1179\Basemap_GWcontours\12April2005

ERROL L. MONTGOMERY & ASSOCIATES, INC.



Source: Barnes & Putnam (2004)

EXPLANATION

- City of Benson Wells
- City of Benson Airport Wells
- -5 Groundwater Level Decline, in feet

N

0 1 2 3

MILES

FIGURE 4. GROUNDWATER LEVEL DECLINE, 1990-2001

1179\Basemap_WLchange\12April2005

ERROL L. MONTGOMERY & ASSOCIATES, INC.

EXHIBIT I

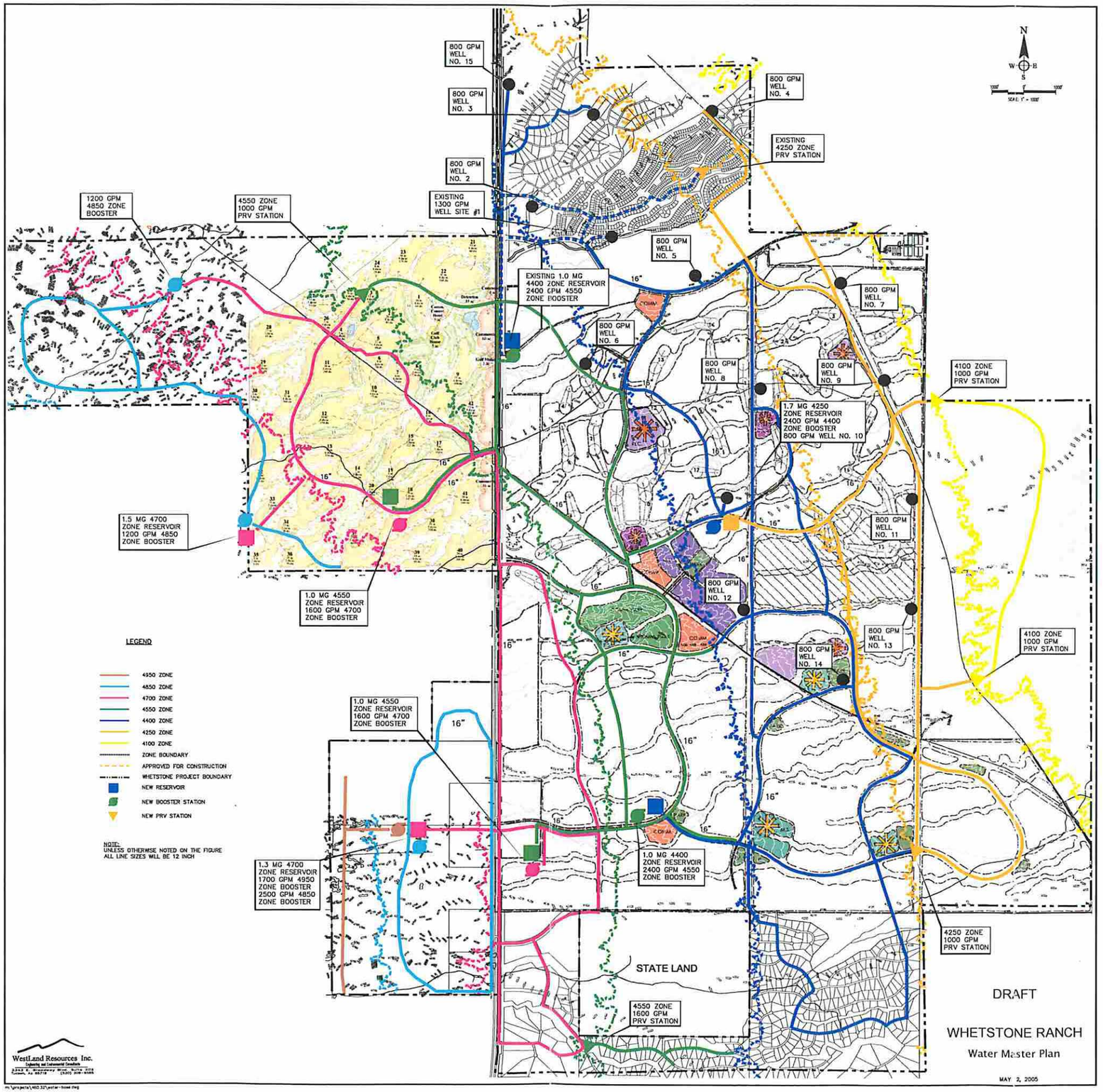
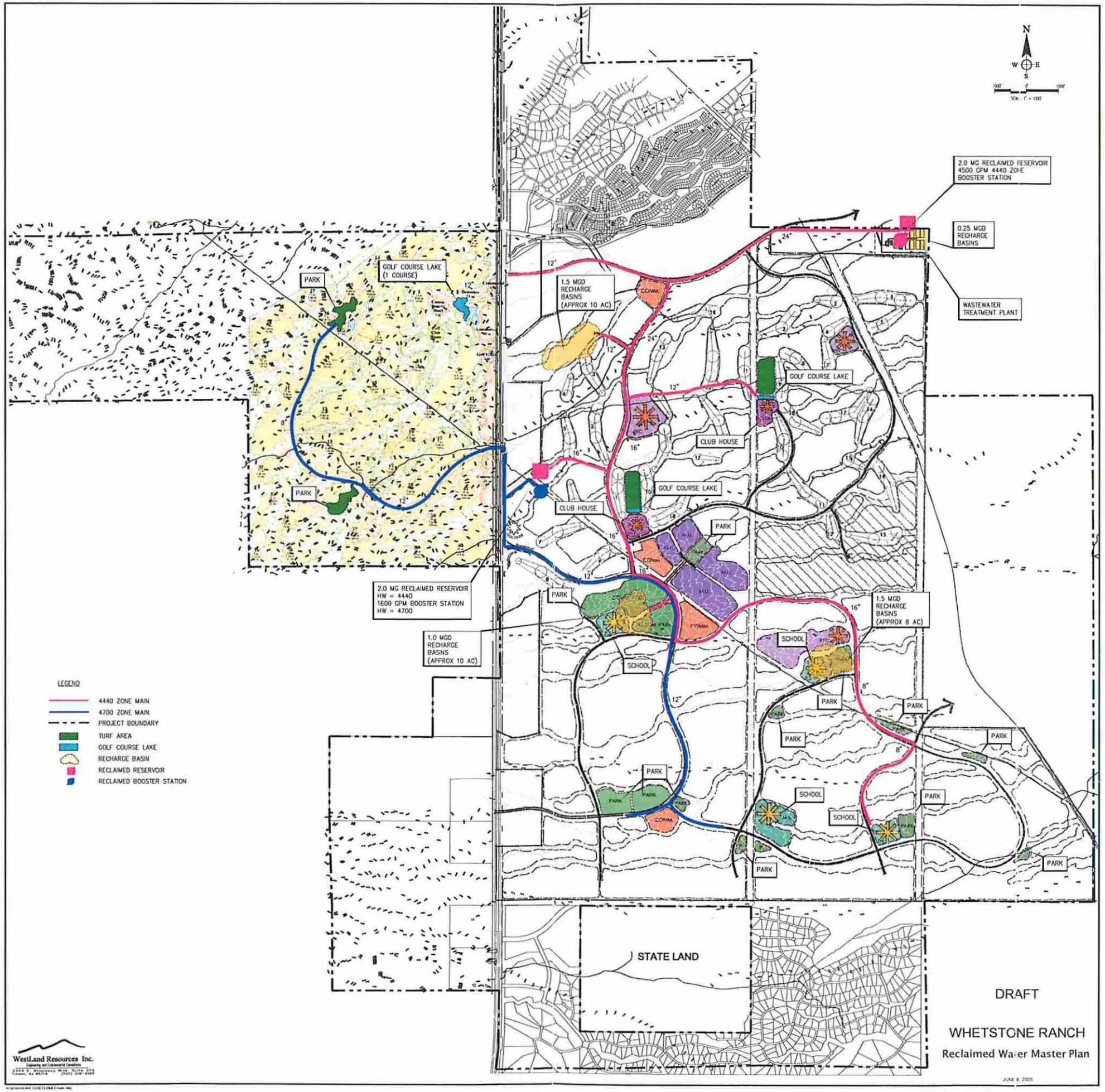

800 GPM WELL NO. 15
800 GPM WELL NO. 3
800 GPM WELL NO. 2
EXISTING 1300 GPM WELL SITE #1
800 GPM WELL NO. 4
EXISTING 4250 ZONE PRV STATION
800 GPM WELL NO. 5
1200 GPM 4850 ZONE BOOSTER
4550 ZONE 1000 GPM PRV STATION
EXISTING 1.0 MG 4400 ZONE RESERVOIR 2400 GPM 4550 ZONE BOOSTER
800 GPM WELL NO. 6
800 GPM WELL NO. 7
800 GPM WELL NO. 8
800 GPM WELL NO. 9
4100 ZONE 1000 GPM PRV STATION
1.7 MG 4250 ZONE RESERVOIR 2400 GPM 4400 ZONE BOOSTER 800 GPM WELL NO. 10
1.5 MG 4700 ZONE RESERVOIR 1200 GPM 4850 ZONE BOOSTER
1.0 MG 4550 ZONE RESERVOIR 1600 GPM 4700 ZONE BOOSTER
800 GPM WELL NO. 11
800 GPM WELL NO. 12
800 GPM WELL NO. 13
800 GPM WELL NO. 14
4100 ZONE 1000 GPM PRV STATION
1.0 MG 4550 ZONE RESERVOIR 1600 GPM 4700 ZONE BOOSTER
1.3 MG 4700 ZONE RESERVOIR 1700 GPM 4950 ZONE BOOSTER 2500 GPM 4850 ZONE BOOSTER
1.0 MG 4400 ZONE RESERVOIR 2400 GPM 4550 ZONE BOOSTER
4250 ZONE 1000 GPM PRV STATION
STATE LAND
4550 ZONE 1600 GPM PRV STATION
LEGEND
4950 ZONE
4850 ZONE
4700 ZONE
4550 ZONE
4400 ZONE
4250 ZONE
4100 ZONE
ZONE BOUNDARY
APPROVED FOR CONSTRUCTION
WHETSTONE PROJECT BOUNDARY
NEW RESERVOIR
NEW BOOSTER STATION
NEW PRV STATION
NOTE:
UNLESS OTHERWISE NOTED ON THE FIGURE ALL LINE SIZES WILL BE 12 INCH
N
W
E
S
DRAFT
WHETSTONE RANCH
Water Master Plan
MAY 2, 2005
WestLand Resources Inc.

EXHIBIT J


N
W E
S
2.0 MG RECLAIMED RESERVOIR
4500 GPM 4440 ZONE
BOOSTER STATION
0.25 MGD
RECHARGE
BASINS
WASTEWATER
TREATMENT PLANT
1.5 MGD
RECHARGE
BASINS
(APPROX 10 AC)
COMM
GOLF COURSE LAKE
(1 COURSE)
PARK
GOLF COURSE LAKE
CLUB HOUSE
GOLF COURSE LAKE
CLUB HOUSE
PARK
2.0 MG RECLAIMED RESERVOIR
HW = 4440
1600 GPM BOOSTER STATION
HW = 4700
1.0 MGD
RECHARGE
BASINS
(APPROX 10 AC)
SCHOOL
1.5 MGD
RECHARGE
BASINS
(APPROX 8 AC)
SCHOOL
SCHOOL
PARK
STATE LAND
LEGEND
4440 ZONE MAIN
4700 ZONE MAIN
PROJECT BOUNDARY
TURF AREA
GOLF COURSE LAKE
RECHARGE BASIN
RECLAIMED RESERVOIR
RECLAIMED BOOSTER STATION
WestLand Resources Inc.
DRAFT
WHETSTONE RANCH
Reclaimed Water Master Plan
JUNE 8, 2005