CARRIZO-WILCOX AQUIFER SUMMARY

BASELINE MONITORING PROGRAM, FY 2004

APPENDIX 2

OF THE

TRIENNIAL SUMMARY REPORT, 2006

FOR THE

WATER QUALITY ASSESSMENT DIVISION

OF

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

PARTIAL FUNDING PROVIDED THROUGH 106 CWA

CARRIZO-WILCOX AQUIFER SUMMARY

TABLE OF CONTENTS

BACKGROUND

In order to better assess the water quality of a particular aquifer at a given point in time, an attempt was made during the current sampling cycle to sample all assigned wells producing from a common aquifer in a narrow time frame. Also, to more conveniently and economically promulgate those data collected from a particular aquifer, a summary report on each aquifer sampled was prepared separately. Collectively, these aquifer summaries will make up part of the Baseline Monitoring Program Triennial Summary Report for 2006.

Figure 2-1 shows the geographic locations of the Carrizo-Wilcox aquifer and the associated wells, whereas Table 2-2 lists the wells in the aquifer along with their total depths and the use made of produced waters and date sampled.

In October of 2003, eleven wells were sampled which produce from the Carrizo-Wilcox aquifer. Six of the eleven are classified as public supply, two are classified as industrial, two are classified as irrigation, and the remaining well is classified as a domestic well. The wells are located in six parishes in the northwest area of the state.

Well data for registered water wells were obtained from the Louisiana Department of Transportation and Development's Water Well Registration Data file.

GEOLOGY

The Carrizo-Wilcox aquifer system consists of the Carrizo Sand of the Eocene Claiborne group and the undifferentiated Wilcox group of Eocene and Paleocene age. The Wilcox deposits, outcropping in northwestern Louisiana, are the oldest deposits in the state containing fresh water. The Carrizo is discontinuous and consists of well-sorted, fine to medium grained, cross-bedded sands, with some silt and lignite. Well yields are restricted because the sand beds are typically thin, lenticular and fine textured. The system is confined downdip by the clays and silty clays of the overlying Cane River formation and the regionally confining clays of the underlying Midway group.

HYDROGEOLOGY

Primary recharge of the Carrizo-Wilcox aquifer occurs from direct infiltration of rainfall in interstream, upland outcrop-subcrop areas. Water also moves between overlying alluvial and terrace aquifers, the Sparta aquifer, and the Carrizo-Wilcox aquifer, according to hydraulic head differences. Water level fluctuations are mostly seasonal, and the hydraulic conductivity varies between 2-40 feet/day.

The maximum depths of occurrence of freshwater in the Carrizo-Wilcox range from 200 feet above sea level, to 1,100 feet below sea level. The range of thickness of the fresh water interval in the Carrizo-Wilcox is 50 to 850 feet. The depths of the Carrizo-Wilcox wells that were monitored in conjunction with the BMP range from 105 to 410 feet.

PROGRAM PARAMETERS

The field parameters checked at each sampling site and the list of water quality analytical parameters are shown in Table 2-2. The inorganic (total metals) parameters analyzed in the laboratory are listed in Table 2-3. These tables also show the field and analytical results determined for each analyte.

In addition to the above mentioned water quality and inorganic analytical parameters, a list of target analytical parameters include three other categories of compounds: volatiles, semi-volatiles, and pesticides/PCB's. Due to the large number of analytes in these categories, tables were not prepared. A discussion of any detections from these three categories can be found in the following section. Also, in order for the reader to be aware of the total list of analytes, Tables 2-8, 2-9 and 2-10 were included in this report.

Tables 2-4 and 2-5 provide an overview of water quality and inorganic data for the Carrizo-Wilcox aquifer, listing the minimum, maximum, and average results for these parameters. Tables 2-6 and 2-7 compare these same parameter averages to historical Baseline Program-derived data for the Carrizo-Wilcox aquifer, from fiscal years 1995, 1998 and 2001.

Figures 2-2, 2-3, 2-4, and 2-5 respectively, represent the contoured data for pH, TDS, chloride and iron.

INTERPRETATION OF DATA

FIELD, WATER QUALITY AND NUTRIENTS PARAMETERS

Federal Primary Drinking Water Standards: Under the Federal Safe Drinking Water Act, EPA has established maximum contaminant levels (MCLs) for pollutants that may pose a health risk in public drinking water. An MCL is the highest level of a contaminant that EPA allows in public drinking water. MCLs ensure that drinking water does not pose either a short-term or long-term health risk. While not all wells sampled were public supply wells, this Office does use the MCLs as a benchmark for further evaluation.

A review of the analyses listed on Table 2-2 shows that no primary MCL was exceeded for field, water quality, or nutrients parameters.

Those BMP wells reporting turbidity levels greater than 1.0 NTU do not exceed the Primary MCL of 1.0, as this standard applies to surface water systems only.

Federal Secondary Drinking Water Standards: EPA has set secondary standards that are defined as non-enforceable taste, odor, or appearance guidelines. Field and laboratory data contained in Table 2-2 show the following secondary MCLs (SMCL) were exceeded.

Color – SMCL = 15 PCU

BI-236 – 65 PCU
BO-274 – 55 PCU
CD-453 – 25 PCU
RR-5070Z – 106 PCU

Total Dissolved Solids (TDS) – SMCL = 500 ppm

BI-236 – 719 ppm
CD-453 – 641 ppm
CD-639 – 692 ppm
DS-327 – 663 ppm
DS-363 – 538 ppm

INORGANIC PARAMETERS

Table 2-3 shows the inorganic (total metals) parameters that are sampled for and the analytical results for those parameters for each well. Table 2-5 provides an overview of inorganic data for the Carrizo-Wilcox aquifer, listing the minimum, maximum, and average results for these parameters.

Federal Primary Drinking Water Standards: A review of the analyses listed on Table 2-3 shows that no primary MCL was exceeded for total metals.

Federal Secondary Drinking Water Standards: Laboratory data contained in Table 2-3 show the following secondary MCLs (SMCL) were exceeded.

Iron – SMCL = 300 ppb

BO-467 – 2,860 ppb
DS-363 – 340 ppb
RR-5070Z – 17,800 ppb
CD-327 – 441 ppb
CD-630 – 575 ppb

VOLATILE ORGANIC COMPOUNDS

Table 2-8 shows the volatile organic compound (VOC) parameters that are sampled for. Due to the large number of analytes in this category, a total list of the analytical results for each analyte is not provided, however any detection of a VOC would be discussed in this section.

No VOC was detected at or above its detection limit during the FY2004 sampling of the Carrizo-Wilcox aquifer.

SEMIVOLATILE ORGANIC COMPOUNDS

Table 2-9 shows the semivolatile (SVOC) organic compound parameters that are sampled for. Due to the large number of analytes in this category, a total list of the analytical results for each analyte is not provided, however any detection of a SVOC would be discussed in this section.

No SVOC was detected at or above its detection limit during the FY2004 sampling of the Carrizo-Wilcox aquifer.

PESTICIDES AND PCBS

Table 2-10 shows the pesticide and PCB parameters that are sampled for. Due to the large number of analytes in this category, a total list of the analytical results for each analyte is not provided, however any detection of a pesticide or PCB would be discussed in this section.

No pesticide or PCB was detected at or above its detection limit during the FY2004 sampling of the Carrizo-Wilcox aquifer.

COMPARISON TO HISTORICAL BASELINE DATA

Analytical and field data show that the quality and characteristics of ground water produced from the Carrizo-Wilcox aquifer has not changed significantly when comparing current data to that of the three previous sampling rotations (three, six and nine years prior). These comparisons can be found in Tables 2-6 and 2-7 of this summary. While there are general fluctuations over the nine-year period, seven parameters show a consistent change. Field and laboratory specific conductance, ammonia, barium and zinc have all shown general increases in their average concentrations since 1995, while sulfate and copper have both decreased in their average concentrations in the same time period.

SUMMARY AND RECOMMENDATIONS

In summary, the data show that the ground water produced from this aquifer is generally soft[1], and is of good quality when considering short-term or long-term health risk guidelines. Laboratory data show that no well that was sampled during the Fiscal Year 2004 monitoring of the Carrizo-Wilcox exceeded a primary MCL. The data also show that this aquifer is of fairly good quality when considering taste, odor, or appearance guidelines. A comparison to historical BMP data shows that while there are some general fluctuations, for the most part, the characteristics of the ground water produced from the Carrizo-Wilcox aquifer has not changed significantly since the FY 1995 sampling.

It is recommended that the wells assigned to the Carrizo-Wilcox aquifer be re-sampled as planned in approximately three years. In addition, several wells should be added to the eleven currently in place to increase the well density for this aquifer.

[1] Classification based on hardness scale from: *Peavy, H.S. et al. Environmental Engineering, 1985.*

Table 2-1 List of Wells Sampled

PARISH	WELL NUMBER	DATE SAMPLED	OWNER	DEPTH (Feet)	WELL USE
BIENVILLE	BI-236	10/13/2003	ALBERTA WATER SYSTEM	410	PUBLIC SUPPLY
BOSSIER	BO-274	10/7/2003	VILLAGE WATER SYSTEM	395	PUBLIC SUPPLY
BOSSIER	BO-275	10/6/2003	VILLAGE WATER SYSTEM	308	PUBLIC SUPPLY
CADDO	CD-453	10/7/200	CITY OF VIVIAN	228	PUBLIC SUPPLY
CADDO	CD-630	10/7/2003	PRIVATE OWNER	240	IRRIGATION
CADDO	CD-639	10/7/2003	S.I. PRECAST	200	INDUSTRIAL
CADDO	CD-642	10/7/2003	LOUISIANA LIFT	210	INDUSTRIAL
DE SOTO	DS-327	10/13/2003	CITY OF MANSFIELD	243	PUBLIC SUPPLY
DE SOTO	DS-363	10/13/2003	CITY OF MANSFIELD	280	PUBLIC SUPPLY
RED RIVER	RR-5070Z	10/13/2003	PRIVATE OWNER	105	DOMESTIC
SABINE	SA-502	10/14/2003	PRIVATE OWNER	213	IRRIGATION

Table 2-2 Summary of Field, Water Quality, and Nutrients Data

WELL NAME	PH SU	SAL. PPT	SP. COND. MMHOS/CM	TDS G/L	TEMP. DEG. C	ALK. PPM	NH3 PPM	CL PPM	COLOR PCU	HARD PPM	NITRITE-NITRATE (AS N) PPM	TKN PPM	TOT. P PPM	SP. COND. UMHOS/CM	SO4 PPM	TDS PPM	TSS PPM	TURB NTU
	LABORATORY DETECTION LIMITS →					2.0	0.1	1.25	5.0	5.0	0.05	0.1	0.05	10	1.3	4.0	4.0	1.0
	FIELD PARAMETERS					LABORATORY PARAMETERS												
BI-236	8.45	0.57	1.15	0.75	24.08	608	0.59	24.5	65	<5	<0.05	0.6	0.64	1174	<1.3	719	<4	1.1
BO-274	7.73	0.14	0.3	0.19	22.32	114	0.21	22.1	55	50.6	<0.05	0.51	0.5	298	2.7	208	<4	4.7
BO-275	7.62	0.31	0.64	0.42	21.47	246	1.28	48.3	<5	29.1	<0.05	1.41	0.2	708	18.3	371	<4	2.5
BO-275*	7.62	0.31	0.64	0.42	21.47	247	1.28	47.7	<5	28.9	<0.05	1.28	0.2	650	18.4	378	<4	1.2
CD-453	8.22	0.57	1.15	0.75	20.16	301	1.16	162	25	17.3	<0.05	1.52	0.43	1130	29.4	641	<4	<1
CD-630	7.63	0.22	0.45	0.29	21.46	204	0.31	18.2	<5	119	<0.05	0.42	0.21	439	6.9	285	<4	3.1
CD-639	7.61	0.63	1.26	0.82	21.00	370	0.95	170	12	39.8	<0.05	0.96	0.23	1254	7.1	692	<4	1.6
CD-642	7.69	0.26	0.53	0.34	20.98	240	0.82	28.9	<5	12.2	<0.05	0.79	0.12	544	3.8	327	<4	<1
DS-327	7.83	0.56	1.12	0.73	20.96	262	1.46	103	<5	74	<0.05	1.78	0.21	1110	145	663	<4	1.7
DS-363	8.43	0.46	0.93	0.60	20.61	378	0.62	<1.25	<5	<5	<0.05	†0.78	0.13	959	<1.3	538	<4	1.1
RR-5070Z	5.89	0.28	0.57	0.37	21.18	28.5	<0.1	149	<5	106	0.59	<0.1	0.93	577	8.6	495	<4	<1
SA-502	8.32	0.37	0.76	0.49	20.97	283	0.92	22.4	<5	<5	<0.05	1.31	0.21	751	76.4	457	<4	1.1

* Denotes duplicate sample.
† Denotes estimated value

Table 2-3 Summary of Inorganic Data

WELL NAME	Antimony ppb	Arsenic ppb	Barium ppb	Beryllium ppb	Cadmium ppb	Chromium ppb	Copper ppb	Iron ppb	Lead ppb	Mercury ppb	Nickel ppb	Selenium ppb	Silver ppb	Thallium ppb	Zinc ppb
Laboratory Detection Limits	5	5	1	1	1	5	5	20	10	0.05	5	5	1	5	10
BI-236	<5	<5	12	<1	<1	<5	<5	<20	<10	<0.05	<5	<5	<1	<5	<10
BO-274	<5	<5	56.4	<1	<1	<5	<5	2,860	<10	<0.05	<5	<5	<1	<5	205
BO-275	<5	<5	104	<1	<1	<5	<5	282	<10	<0.05	<5	<5	<1	<5	144
BO-275*	<5	<5	104	<1	<1	<5	<5	257	<10	<0.05	<5	<5	<1	<5	71.6
CD-453	<5	<5	38.8	<1	<1	<5	<5	35.2	<10	<0.05	<5	<5	<1	<5	<10
CD-630	<5	<5	177	<1	<1	<5	<5	575	<10	<0.05	<5	<5	<1	<5	32.7
CD-639	<5	<5	47.9	<1	<1	<5	<5	78	<10	<0.05	<5	<5	<1	<5	<10
CD-642	<5	<5	22.4	<1	<1	<5	<5	<20	<10	<0.05	<5	<5	<1	<5	<10
DS-327	<5	<5	94.2	<1	<1	<5	<5	441	<10	<0.05	<5	<5	<1	<5	26.5
DS-363	<5	<5	10.1	<1	<1	<5	13.3	340	12.1	<0.05	<5	<5	<1	<5	1,060
RR-5070Z	<5	<5	236	<1	<1	<5	<5	17,800	<10	<0.05	7.1	<5	<1	<5	34.8
SA-502	<5	<5	30.2	<1	<1	<5	<5	55.6	<10	<0.05	<5	<5	<1	<5	<10

* Denotes duplicate sample.

Table 2-4 Water Quality Statistics

Fiscal Year 2004

	PARAMETER	MINIMUM	MAXIMUM	AVERAGE
FIELD	Temperature °C	20.16	24.08	21.39
	pH (SU)	5.89	8.45	7.75
	Sp. Conductance (mmhos/cm)	0.301	1.268	0.80
	Salinity (ppt)	0.14	0.63	0.39
	TDS (g/L)	0.196	0.824	0.52
LABORATORY	Alkalinity (ppm)	28.5	608	273.5
	Chloride (ppm)	<1.25	170	66.5
	Color (PCU)	<5	65	14.8
	Specific Conductance (umhos/cm)	298	1254	799.5
	Sulfate (ppm)	<1.3	145	26.6
	TDS (ppm)	208	719	481.2
	TSS (ppm)	<4	<4	<4
	Turbidity (NTU)	<1	4.7	1.6
	Ammonia (ppm)	<0.1	1.46	0.81
	Hardness (ppm)	<5	119	41
	Nitrite-Nitrate, as N (ppm)	<0.05	0.59	0.07
	TKN (ppm)	<0.1	1.78	0.97
	Phosphorous (ppm)	0.12	0.93	0.33

Table 2-5 Inorganic Statistics

Fiscal Year 2004

PARAMETER	MINIMUM	MAXIMUM	AVERAGE
Antimony (ppb)	<5	<5	<5
Arsenic (ppb)	<5	<5	<5
Barium (ppb)	10.1	236	77.8
Beryllium (ppb)	<1	<1	<1
Cadmium (ppb)	<1	<1	<1
Chromium (ppb)	<5	<5	<5
Copper (ppb)	<5	13.3	<5
Iron (ppb)	<20	17,800	1,895
Lead (ppb)	<10	12.1	<10
Mercury (ppb)	<0.05	<0.05	<0.05
Nickel (ppb)	<5	7.1	<5
Selenium (ppb)	<5	<5	<5
Silver (ppb)	<1	<1	<1
Thallium (ppb)	<5	<5	<5
Zinc (ppb)	10	1,060	133.3

Table 2-6 Three-year Water Quality Averages

	PARAMETER	FY 1995 AVERAGE	FY 1998 AVERAGE	FY 2001 AVERAGE	FY 2004 AVERAGE
FIELD	Temperature ^{O}C	21.44	21.30	21.98	21.39
	pH (SU)	7.53	7.65	7.87	7.75
	Sp. Conductivity (mmhos/cm)	0.676	0.732	0.808	0.80
	Salinity (ppt)	0.35	0.36	0.40	0.39
	TDS (g/L)	-	-	-	0.52
LABORATORY	Alkalinity (ppm)	267.2	251.5	249.4	273.5
	Chloride (ppm)	59.2	71.6	69.7	66.5
	Color (PCU)	25.8	13.8	24.1	14.8
	Sp. Conductivity (umhos/cm)	726.4	772.4	748.1	799.5
	Sulfate (ppm)	30.1	30.5	28.7	26.6
	TDS (ppm)	434.7	435.7	449.6	481.2
	TSS (ppm)	<4	4.9	<4	<4
	Turbidity (NTU)	2.6	5.2	2.3	1.6
	Ammonia (ppm)	0.42	0.64	0.64	0.81
	Hardness (ppm)	52.4	42.2	31.3	41
	Nitrite-Nitrate, as N (ppm)	0.08	0.07	0.07	0.07
	TKN (ppm)	0.78	0.96	0.82	0.97
	Phosphorus (ppm)	0.29	0.24	0.26	0.33

Table 2-7 Three-year Inorganic Averages

PARAMETER	FY 1995 AVERAGE	FY 1998 AVERAGE	FY 2001 AVERAGE	FY 2004 AVERAGE
Antimony (ppb)	<5	<5	<5	<5
Arsenic (ppb)	5.13	<5	<5	<5
Barium (ppb)	51.9	75	69.5	77.8
Beryllium (ppb)	<2	<2	<2	<1
Cadmium (ppb)	<2	<2	<2	<1
Chromium (ppb)	<5	<5	<5	<5
Copper (ppb)	31. 6	24.7	6.9	5.7
Iron (ppb)	1521.8	1896.9	1352.8	1,897
Lead (ppb)	<10	<10	<10	10.2
Mercury (ppb)	<0.05	<0.05	<0.05	<0.05
Nickel (ppb)	13.1	<5	12.8	5.2
Selenium (ppb)	<5	<5	<5	<5
Silver (ppb)	<1	1.1	15.8	<1
Thallium (ppb)	<5	<5	<5	<5
Zinc (ppb)	33.5	164	60.4	135.4

Table 2-8 List of VOC Analytical Parameters

BASELINE MONITORING PROGRAM

COMPOUND	ANALYTICAL METHOD	CAS NUMBER	PQL (ppb)
1,1-Dichloroethane	624	75343	2
1,1-Dichloroethene	624	75354	2
1,1,1-Trichloroethane	624	71556	2
1,1,2-Trichloroethane	624	79005	2
1,1,2,2-Tetrachloroethane	624	79345	2
1,2-Dichlorobenzene	624	95501	2
1,2-Dichloroethane	624	107062	2
1,2-Dichloropropane	624	78875	2
1,3-Dichlorobenzene	624	541731	2
1,4-Dichlorobenzene	624	106467	2
BENZENE	624	71432	2
BROMOFORM	624	75252	2
CARBON TETRACHLORIDE	624	56235	2
CHLOROBENZENE	624	108907	2
DIBROMOCHLOROMETHANE	624	124481	2
CHLOROETHANE	624	75003	2
cis-1,3-Dichloropropene	624	10061015	2
Bromodichloromethane	624	75274	2
Methylene Chloride	624	75092	2
Ethyl Benzene	624	100414	2
Methyl Bromide	624	74839	2
Methyl Chloride	624	74873	2
Methylene Chloride	624	75092	2
o-Xylene	624	95476	2
Styrene	624	100425	2
METHYL-t-BUTYL ETHER	624	1634044	2
Tetrachloroethylene	624	127184	2
Toluene	624	108883	2
TRANS-1,2-DICHLOROETHENE	624	156605	2
trans-1,3-Dichloropropene	624	10061026	2
Trichloroethylene	624	79016	2
TRICHLOROFLUOROMETHANE	624	75694	2
CHLOROFORM	624	67663	2
Vinyl Chloride	624	75014	2

PQL = Practical Quantitation Limit
ppb = parts per billion

Table 2-9 List of Semi-volatile Analytical Parameters
BASELINE MONITORING PROGRAM

COMPOUND	ANALYTICAL METHOD	CAS NUMBER	PQL (ppb)
1,2-Dichlorobenzene	625	95501	10
1,2,4-Trichlorobenzene	625	120821	10
1,3-Dichlorobenzene	625	541731	10
1,4-Dichlorobenzene	625	106467	10
2-Chloronaphthalene	625	91587	10
2-Chlorophenol	625	95578	10
2-Methyl-4,6-dinitrophenol	625	534521	50
2-Nitrophenol	625	88755	10
2,4-Dichlorophenol	625	120832	10
2,4-Dimethylphenol	625	105679	10
2,4-Dinitrophenol	625	51285	50
2,4-Dinitrotoluene	625	121142	10
2,4,6-Trichlorophenol	625	88062	10
2,6-Dinitrotoluene	625	606202	10
3,3'-Dichlorobenzidine	625	91941	20
4-Bromophenyl phenyl ether	625	101553	10
4-Chloro-3-methylphenol	625	59507	10
4-Chlorophenyl phenyl ether	625	7005723	10
4-Nitrophenol	625	100027	50
Acenaphthene	625	83329	10
Acenaphthylene	625	208968	10
Anthracene	625	120127	10
Benzo[a]pyrene	625	50328	10
Benzo[k]fluoranthene	625	207089	10
Benz[a]anthracene	625	56553	10
Benzo[b]fluoranthene	625	205992	10
Benzo[g,h,i]perylene	625	191242	10
bis (2-Chloroethoxy) methane	625	111911	10
bis (2-Ethylhexyl) phthalate	625	117817	10
bis (2-Chloroethyl) ether	625	111444	10
bis (2-Chloroethyl) ether	625	111444	10
bis (2-Chloroisopropyl) ether	625	108601	10
Butyl benzyl phthalate	625	85687	10
Chrysene	625	218019	10
Diethyl phthalate	625	84662	10
Dimethyl phthalate	625	131113	10
Di-n-butyl phthalate	625	84742	10
Di-n-octyl phthalate	625	117840	10
Fluoranthene	625	206440	10
Fluorene	625	86737	10
Hexachlorobenzene	625	118741	10
Hexachlorobutadiene	625	87683	10
Hexachloroethane	625	67721	10

Table 2-9 (Cont'd)
Semivolatile Parameters

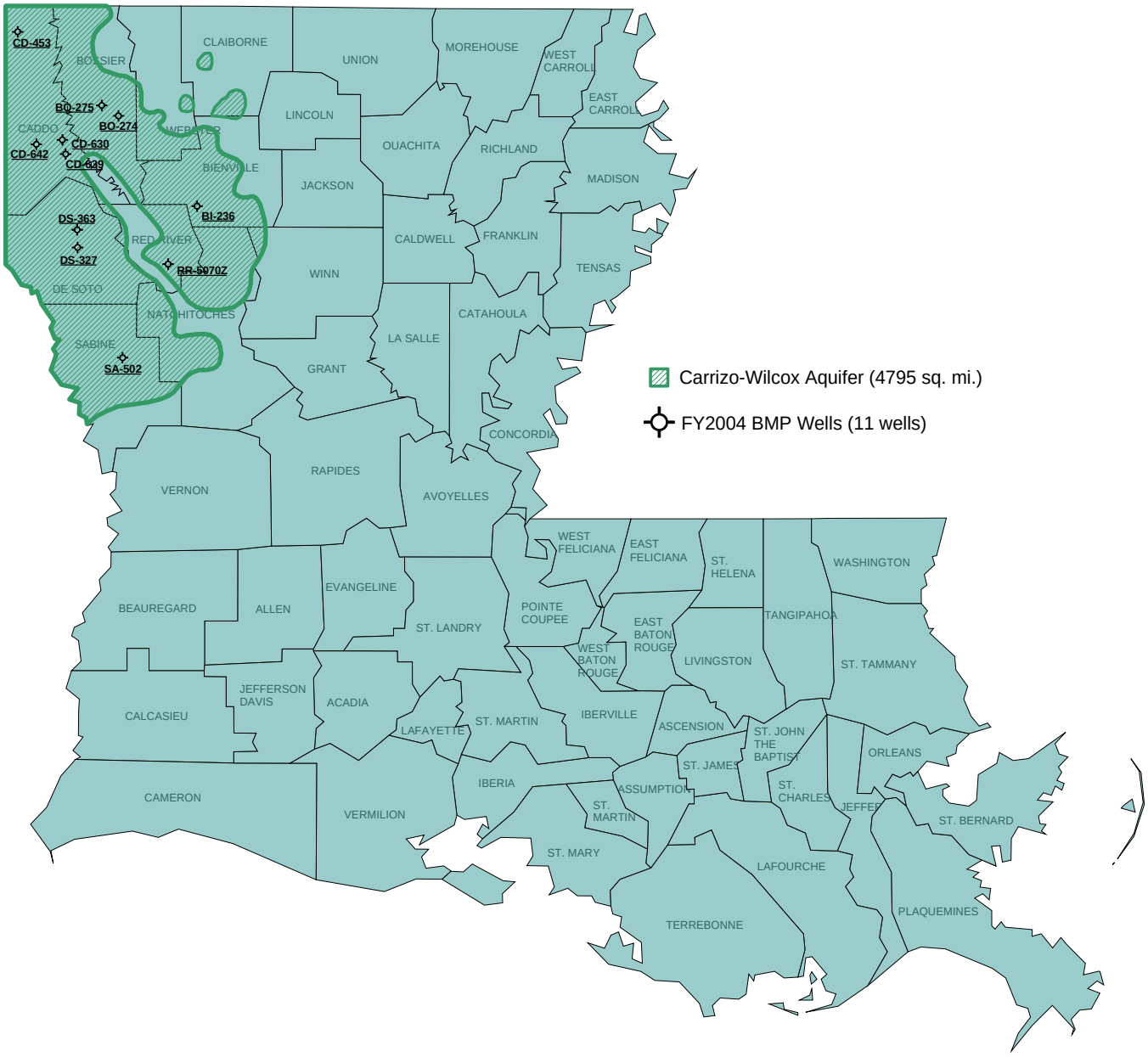
COMPOUND	ANALYTICAL METHOD	CAS NUMBER	PQL (ppb)
Indeno[1,2,3-cd]pyrene	625	193395	10
Isophorone	625	78591	10
Naphthalene	625	91203	10
Nitrobenzene	625	98953	10
n-Nitrosodi-n-propylamine	625	621647	10
Pentachlorophenol	625	87865	50
Phenanthrene	625	85018	10
Phenol	625	108952	10
Pyrene	625	129000	10

Table 2-10 List of Pesticide and PCB Analytical Parameters

BASELINE MONITORING PROGRAM

COMPOUND	ANALYTICAL METHOD	CAS NUMBER	PQL (ppb)
4,4'-DDD	625	72548	2
4,4'-DDE	625	72559	2
4,4'-DDT	625	50293	2
Aldrin	625	309002	2
alpha-BHC	625	319846	2
beta-BHC	625	319857	2
delta-BHC	625	319868	2
gamma-BHC	625	58899	2
Chlordane	625	57749	2
Dieldrin	625	60571	2
Endosulfan I	625	959988	2
Endosulfan II	625	33213659	2
Endosulfan Sulfate	625	1031078	2
Endrin	625	72208	2
Endrin aldehyde	625	7421934	2
Heptachlor	625	76448	2
Heptachlor epoxide	625	1024573	2
Toxaphene	625	8001352	75
Aroclor-1016	625	12674112	10
Aroclor-1221	625	11104282	10
Aroclor-1232	625	11141165	10
Aroclor-1242	625	53469219	10
Aroclor-1248	625	12672296	10
Aroclor-1254	625	11097691	10
Aroclor-1260	625	11096825	10

BASELINE MONITORING PROGRAM WELLS OF THE CARRIZO-WILCOX AQUIFER



Aquifer boundary digitized from Louisiana Hydrologic Map No. 2: Areal Extent of Freshwater in Major Aquifers of Louisiana, Smoot, 1986; USGS/LDOTD Report 86-4150.

Figure 2-1 Location Plat, Carrizo-Wilcox Aquifer

CARRIZO-WILCOX AQUIFER - pH

Baseline Monitoring Program, FY2004

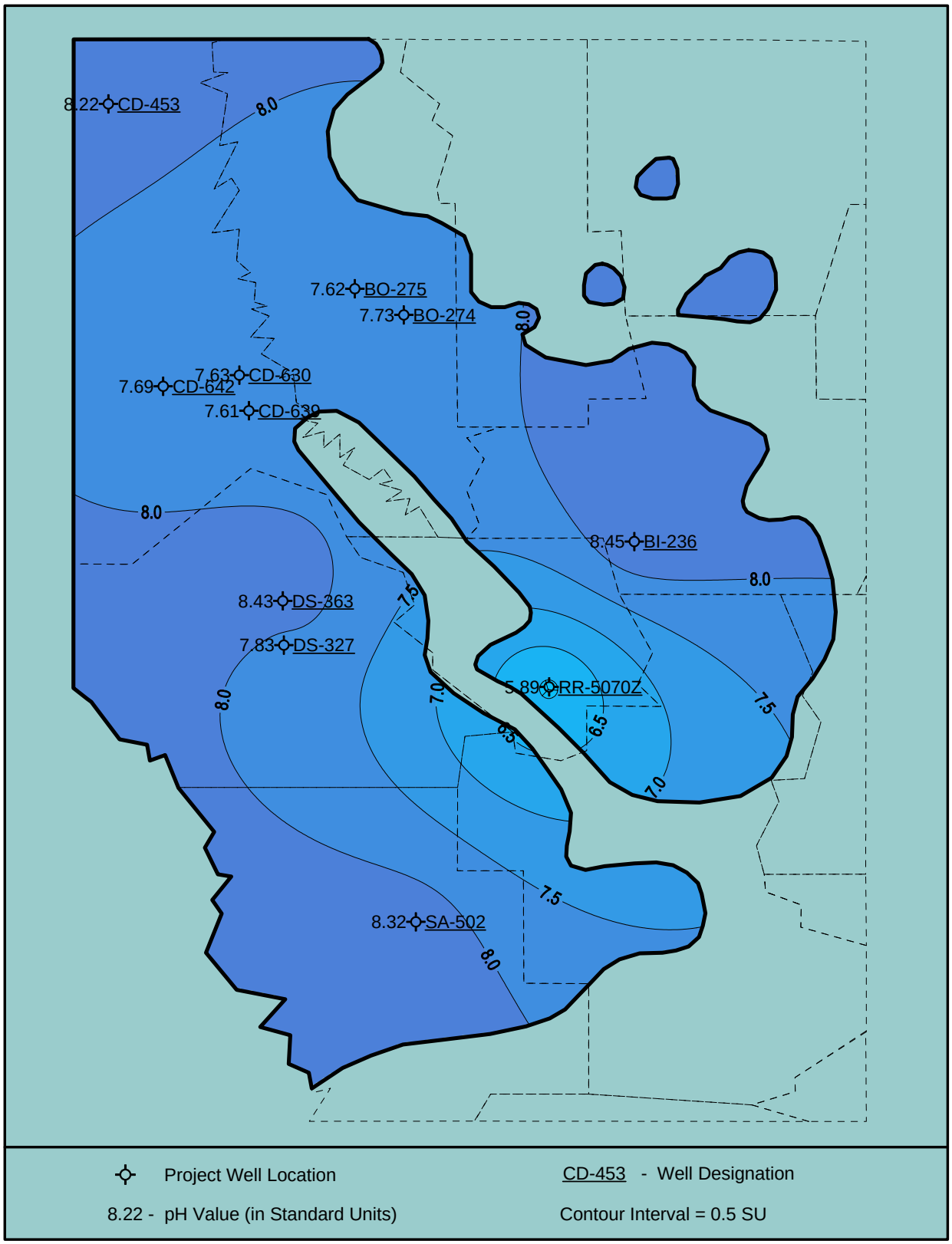


Figure 2-2 Map of pH Data

CARRIZO-WILCOX AQUIFER - TDS

Baseline Monitoring Program, FY2004

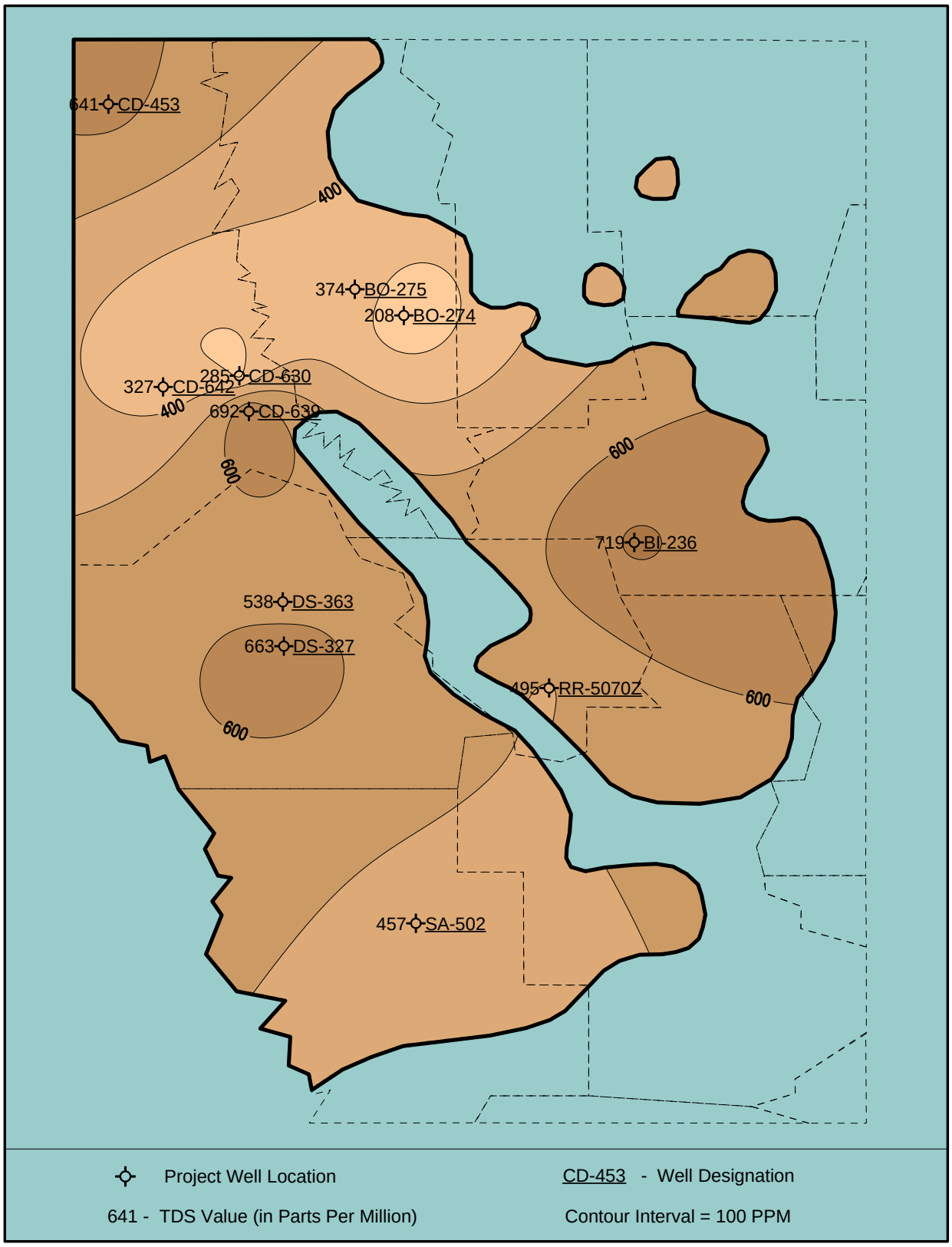


Figure 2-3 Map of TDS Data

CARRIZO-WILCOX AQUIFER - Chloride

Baseline Monitoring Program, FY2004

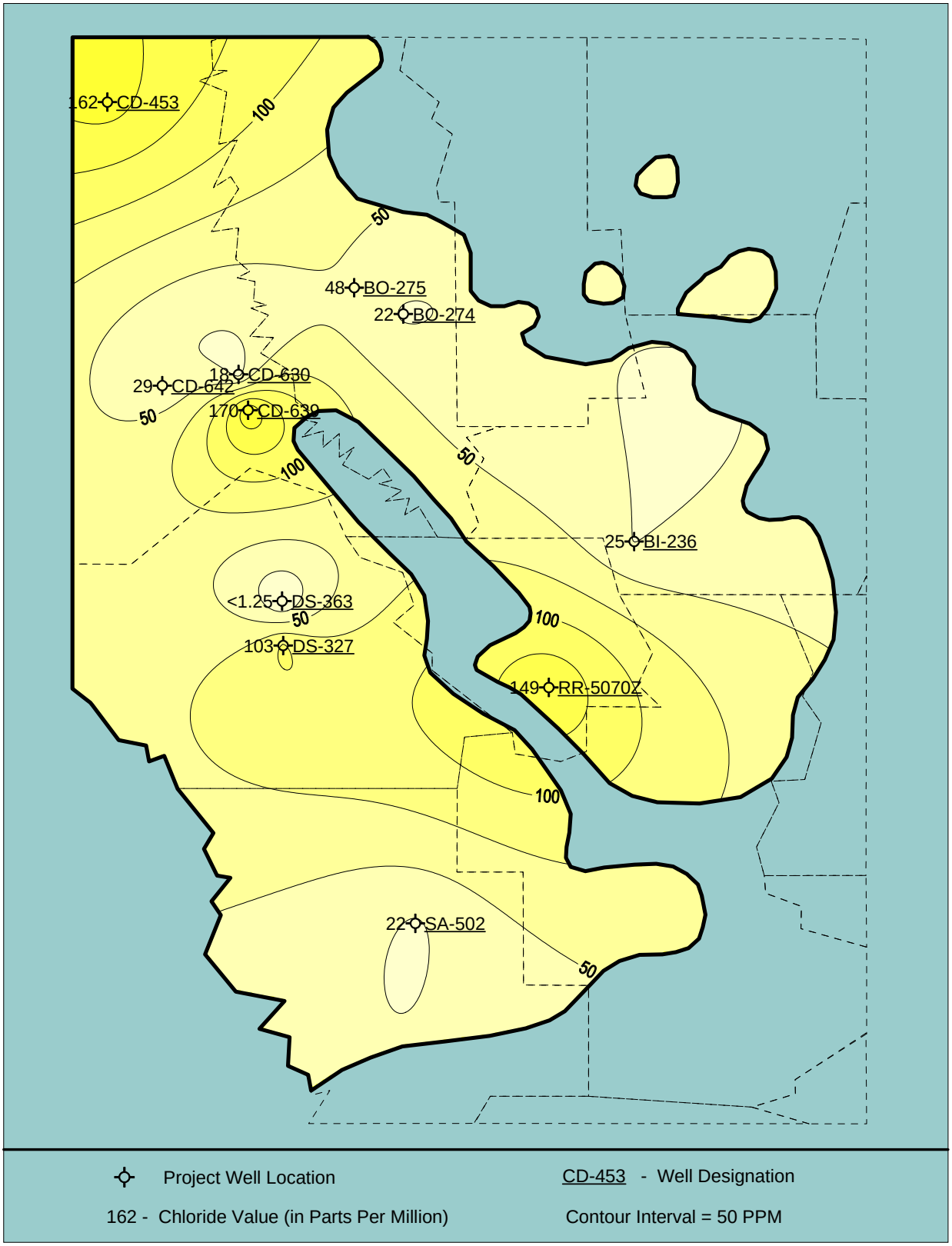


Figure 2-4 Map of Chloride Data

CARRIZO-WILCOX AQUIFER - Iron

Baseline Monitoring Program, FY2004

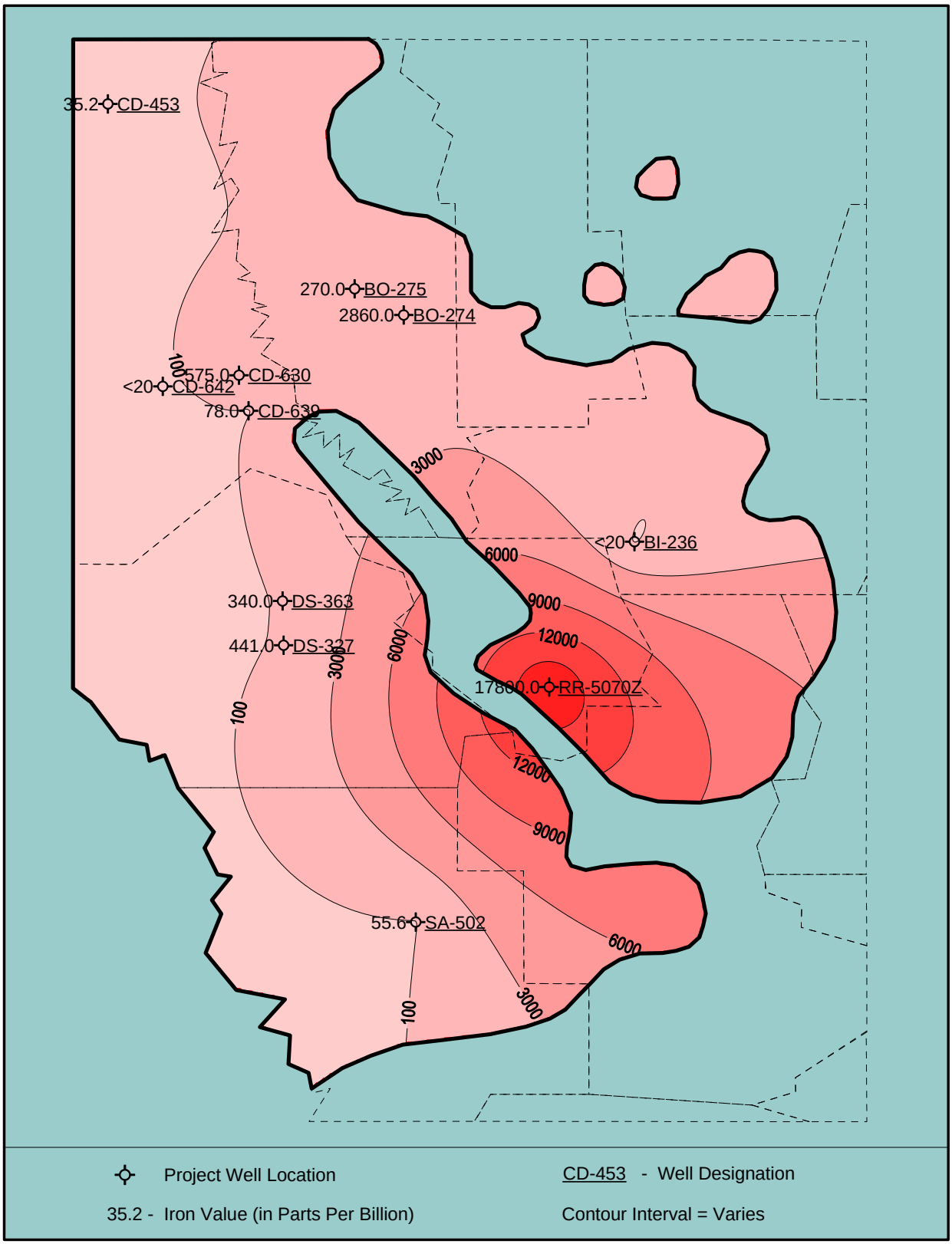


Figure 2-5 Map of Iron Data