

APPENDIX 3

**WILLIAMSON CREEK AQUIFER SUMMARY
BASELINE MONITORING PROJECT, EPA FY'00
(July 1999 Through June 2000)**

**PART I
OF
TRIENNIAL SUMMARY REPORT
FOR THE
ENVIRONMENTAL EVALUATION DIVISION
OF
LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY**

PARTIAL FUNDING PROVIDED THROUGH CWA 106 GRANT

WILLIAMSON CREEK AQUIFER SUMMARY

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BACKGROUND

To better assess the water quality of a particular aquifer at a given point in time, an attempt was made during the project year to sample all project wells producing from a common aquifer in a narrow time frame. Also, to more conveniently and economically promulgate those data collected, these aquifer summaries will make up the project Triennial Summary Report.

Figure I-1 shows the geographic locations of the Williamson Creek Aquifer and the associated project wells, whereas Table I-1 lists the wells in the aquifer along with their total depths and the use made of produced waters and the date sampled.

These data show that in July and November of 1999, seven project wells were sampled which produce from the Williamson Creek Aquifer. Of these seven wells, three are classified as Public Supply, two are classified as Industrial wells, one is classified as a Domestic well, and one is classified as a Power Generation well. The wells are located in four parishes, in central and southwest Louisiana.

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

PROJECT FIELD AND ANALYTICAL PARAMETERS

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

In addition to the analytical parameters mentioned above, a list of project analytical parameters that include three other categories of compounds (volatiles, semi-volatiles, and pesticides/PCB's) is included. Due to the large number of analytes in these three categories, tables were not prepared for each well. However, in order for the reader to be aware of the total list of analytes, Tables I-4, I-5, and I-6 were included in this summary. These tables list the project analytes along with their Practical Quantitation Limits (PQLs) used during processing.

DISCUSSION OF WATER QUALITY DATA

Laboratory data from the July sampling of the Williamson Creek Aquifer show that all project wells and the field blank exhibited overall increased metals concentrations. This data was reviewed and compared with historical analytical data of this aquifer, and it was determined that these reported increased metals concentrations were in error. To confirm this determination, the water wells were re-sampled in November for metals. Vernon Parish well number V-420 was not re-sampled due to it being inaccessible at the time of re-sampling.

The November re-sampling did confirm the original determination that the increased metals concentrations were in error. Further investigation revealed that the nitric acid used for preservation was of a lesser quality than that which is normally used, probably contributing to the increase in metals concentrations.

For the purpose of this summary, all reported analytical data, except inorganic (metals), are from the July sampling event, while all metals data are from the November sampling event.

FEDERAL PRIMARY DRINKING WATER STANDARDS: Under the Federal Safe Drinking Water Act, EPA has established Maximum Contaminant Levels (MCL) 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.

Laboratory data show that four project water wells in the Williamson Creek Aquifer exceeded the Federal MCL of 6 parts per billion (ppb) for bis(2-ethylhexyl)phthalate (BEHP).

CO-163 – 26 ppb (duplicate sample)

R-867 – 165 ppb

R-1172 – 29 ppb

V-5858Z – 12 ppb

BEHP was not detected in the original sample from well CO-163, while a duplicate sample collected immediately following the original reported a level of 26 ppb for BEHP. Taking this into consideration and the EPA guidance document “Guidance For Data Usability In Risk Assessment, EPA 1992,” it is this Office’s opinion that the BEHP value found in well CO-163 is a false positive, and is not an actual concentration of the compound BEHP. The remainder of the wells mentioned above was resampled for BEHP and in the laboratory results from this resampling event, BEHP was not detected. Therefore, it is this Office’s opinion these exceedances were due to laboratory or field contamination.

Those project wells reporting turbidity levels of >1 NTU, do not exceed the MCL of 1.0, as this primary standard applies to surface water systems only.

FEDERAL SECONDARY DRINKING WATER STANDARDS: EPA has set secondary standards which are defined as non-enforceable taste, odor or appearance guidelines. Field and laboratory data contained in Table I-2 shows that one of the wells sampled in the Williamson Creek Aquifer exceeded the Secondary Maximum Contaminant Level (SMCL) for pH. Project well BE-407 exceeded the SMCL for pH of 6.5 – 8.5 standard units (S.U.) with a value of 8.56 in the initial sample and 8.57 in the resampling of the well.

SELECTED WATER QUALITY MAPS: For the reader’s convenience, maps showing the contoured values for pH, TDS, chloride, and iron are included in this summary report in Figures I-2 through I-5.

SUMMARY AND RECOMMENDATIONS

In summary, the analytical data show that the ground water from this aquifer is of good quality when considering short-term or long-term health risks and taste, odor or appearance guidelines.

It is recommended that the several project wells assigned to the Williamson Creek Aquifer be resampled as planned, in approximately three years. In addition, several wells should be added to those currently sampled to increase the well density for this aquifer.

Table I-1 List of Project Wells Sampled

PROJECT NUMBER	PARISH	WELL NUMBER	MONTH SAMPLED, 1999	OWNER	DEPTH (Feet)	WELL USE	AQUIFER
199614	BEAUREGARD	BE-407	JULY, NOVEMBER	BOISE CASCADE	1657	INDUSTRIAL	WILLIAMSON CREEK
199326	CONCORDIA	CO-163	JULY, NOVEMBER	U. S. ARMY CORPS OF ENGINEERS	513	PUBLIC SUPPLY	WILLIAMSON CREEK
199902	RAPIDES	R-1172	JULY, NOVEMBER	CLECO-RODEMACHER	298	POWER GENERATION	WILLIAMSON CREEK
199111	RAPIDES	R-867	JULY, NOVEMBER	INTERNATIONAL PAPER CO.	385	INDUSTRIAL	WILLIAMSON CREEK
198813	RAPIDES	R-932	JULY, NOVEMBER	CITY OF ALEXANDRIA	466	PUBLIC SUPPLY	WILLIAMSON CREEK
198620	VERNON	V-420	JULY	U.S. ARMY/FORT POLK	920	PUBLIC SUPPLY	WILLIAMSON CREEK
199615	VERNON	V-5858Z	JULY, NOVEMBER	PRIVATE OWNER	248	DOMESTIC	WILLIAMSON CREEK

Table I-2 Summary of Water Quality Data

WELL NUMBER	TEMP. OC	pH SU	COND. Mmhos /cm	SAL. ppt	TSS ppm	TDS ppm	ALK. ppm	HARD. ppm	TURB. NTU	COND. Umhos /cm	COLOR PCU	Cl ppm	SO4 ppm	TOT. P ppm	TKN ppm	NH3 (as N) ppm	NITRITE-NITRATE (as N) ppm
BE-407	30.97	8.56	0.41	0.19	<4.0	294.0	210.0	9.0	<1.0	414.0	5.0	7.70	8.74	0.20	0.71	0.26	0.02
CO-163	18.94	7.79	0.577	0.28	<4.0	354.0	161.0	26.4	2.3	593.0	5.0	93.20	<1.25	0.18	0.56	0.48	<0.02
CO-163*	18.94	7.79	0.577	0.28	<4.0	390.0	165.0	25.8	2.7	599.0	5.0	91.60	<1.25	0.18	0.61	0.39	0.02
R-1172	21.45	7.8	0.3	0.14	<4.0	235.9	134.0	6.4	<1.0	321.0	<5.0	13.50	17.40	0.16	0.41	0.29	0.02
R-867	21.79	7.31	0.319	0.15	<4.0	232.1	101.0	18.1	2.3	327.0	5.0	37.20	9.56	0.16	0.41	0.17	<0.02
R-932	22.42	7.55	0.341	0.16	<4.0	226.1	168.0	17.2	1.3	331.0	5.0	9.50	<1.25	0.27	<0.05	<0.10	0.51
V-420	25.70	7.12	0.24	0.11	5.5	228.0	101.0	19.3	27.0	250.0	5.0	20.40	4.91	0.26	No Data	0.11	0.02
V-5858Z	24.48	7.9	0.464	0.22	<4.0	302.0	161.0	147.0	2.8	478.0	5.0	53.80	3.22	0.15	0.28	<0.10	0.30

* Denotes duplicate sample.

Table I-3 Summary of Inorganic Data

WELL NUMBER	ARSENIC ppb	SILVER ppb	BARIUM ppb	BERYLLIUM ppb	CADMIUM ppb	CHROMIUM ppb	COPPER ppb	IRON ppb	MERCURY ppb	NICKEL ppb	ANTIMONY ppb	SELENIUM ppb	LEAD ppb	THALLIUM ppb	ZINC ppb
BE-407	<5.0	<1.0	37.1	<1.0	<1.0	<5.0	<5.0	<10.0	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	40.1
CO-163	<5.0	<1.0	88.2	<1.0	<1.0	<5.0	<5.0	173.7	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	1160.0
R-1172	<5.0	<1.0	16.1	<1.0	<1.0	18.3	<5.0	59.0	<0.05	16.5	<5.0	<5.0	<10.0	<5.0	80.0
R-867	<5.0	<1.0	45.3	<1.0	<1.0	<5.0	7.9	271.8	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	10.1
R-932	<5.0	<1.0	54.1	<1.0	<1.0	<5.0	<5.0	31.1	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0
V-5858Z	<5.0	1.1	337.8	<1.0	<1.0	<5.0	<5.0	94.8	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	10.9
V-5858Z*	<5.0	1.1	314.3	<1.0	<1.0	<5.0	<5.0	98.1	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	18.2

* Denotes duplicate sample.

Table I-4 List of VOC Analytical Parameters
BASELINE MONITORING PROJECT

VOLATILE ORGANICS BY EPA METHOD 8260

COMPOUNDS	PQL (ppb)
DICHLOROFUOROMETHANE	5
CHLOROMETHANE	2
VINYL CHLORIDE	2
BROMOMETHANE	2
CHLOROETHANE	2
TRICHLOROFUOROMETHANE	5
1,1-DICHLOROETHENE	2
METHYLENE CHLORIDE	2
TRANS-1,2-DICHLOROETHENE	2
METHYL-t-BUTYL ETHER	2
1,1-DICHLOROETHANE	2
2,2 DICHLOROPROPANE	2
CIS-1,2 DICHLOROETHENE	2
BROMOCHLOROMETHANE	2
CHLOROFORM	2
1,1,1-TRICHLOROETHANE	2
1,1 DICHLOROPROPENE	2
CARBON TETRACHLORIDE	2
BENZENE	2
1,2-DICHLOROETHANE	2
TRICHLOROETHENE	2
1,2-DICHLOROPROPANE	2
BROMODICHLOROMETHANE	2
DIBROMOMETHANE	2
CIS-1,3-DICHLOROPROPENE	2
TOLUENE	2
TRANS-1,3-DICHLOROPROPENE	2
1,1,2-TRICHLOROETHANE	2
1,3--DICHLOROPROPANE	2
TETRACHLOROETHENE	2
1,2-DIBROMOETHANE	2
DIBROMOCHLOROMETHANE	2
CHLOROBENZENE	2
ETHYLBENZENE	2
1,1,1,2-TETRACHLOROETHANE	2
P&M XYLENE	4
O-XYLENE	2
STYRENE	2
BROMOFORM	2

Table I-4 (Cont'd)
 Volatile Organic (VOC) Parameters

COMPOUNDS	PQL (ppb)
ISOPROPYLBENZENE	2
1,1,2,2-TETRACHLOROMETHANE	2
1,2,3,-TRICHLOROPROPANE	2
BROMOBENZENE	2
n-PROPYLBENZENE	2
2-CHLOROTOLUENE	2
4-CHLOROTOLUENE	2
1,3,5-TRIMETHYLBENZENE	2
TERT-BUTYLBENZENE	2
1,2,4-TRIMETHYLBENZENE	2
SEC-BUTYLBENZENE	2
P-ISOPROPYLTOLUENE	2
1,3-DICHLOROBENZENE	2
1,4-DICHLOROBENZENE	2
n-BUTYLBENZENE	2
1,2-DIBROMO-3-CHLOROPROPANE	2
NAPHTHALENE	2
1,2,4-TRICHLOROBENZENE	2
HEXACHLOROBUTADIENE	2
1,2-DICHLOROBENZENE	2
1,2,3-TRICHLOROBENZENE	2

PQL = Practical Quantitation Limit
 ppb = parts per billion

**Table I-5 List of Semi-volatile Analytical Parameters
BASELINE MONITORING PROJECT**

SEMIVOLATILE ORGANICS BY EPA METHOD 8270

COMPOUNDS	PQL (ppb)
N-Nitrosodimethylamine	10
2-Picoline	10
Methyl methanesulfonate	10
Ethyl methanesulfonate	20
Phenol	10
Aniline	10
Bis(2-chloroethyl)ether	10
2-Chlorophenol	10
1,3-Dichlorobenzene	10
1,4-Dichlorobenzene	10
Benzyl alcohol	10
1,2-Dichlorobenzene	10
2-Methylphenol	10
Bis(2-chloroisopropyl)ether	10
4-Methylphenol	10
N-Nitroso-di-n-propylamine	10
Hexachloroethane	20
Acetophenone	10
Nitrobenzene	10
N-Nitrosopiperidine	20
Isophorone	10
2,4-Dimethylphenol	10
2-Nitrophenol	10
Benzoic acid	50
Bis(2-chloroethoxy)methane	10
2,4-Dichlorophenol	10
a,a-Dimethylphenethylamine	10
1,2,4-trichlorobenzene	10
Benzidine	50
Pyrene	10
p-Dimethylaminoazobenzene	10
Butylbenzylphthalate	10
Bis(2-ethylhexyl)phthalate	10

Table I-5 (Cont'd)
Semivolatile Parameters

COMPOUNDS	PQL (ppb)
3,3'-Dichlorobenzidine	20
Benzo(a)anthracene	10
Chrysene	10
Di-n-octylphthalate	10
7,12-Dimethylbenz(a)anthracene	10
Benzo(b)fluoranthene	10
Benzo(k)fluoranthene	10
Benzo(a)pyrene	10
3-Methylcholanthrene	10
Dibenz(a,j)acridine	10
Indeno(1,2,3-cd)pyrene	10
Dibenz(a,h)anthracene	10
Benzo(g,h,i)perylene	10
Napthalene	10
4-Chloroaniline	10
2,6-Dichlorophenol	10
Hexachlorobutadiene	10
N-Nitrose-di-n-butylamine	10
4-Chloro-3-methylphenol	20
2-Methylnapthalene	10
Hexachlorocyclopentadiene	10
1,2,4,5-Tetrachlorobenzene	10
2,4,6-Trichlorophenol	10
2,4,5-Trichlorophenol	10
2-Chloronapthalene	10
1-Chloronapthalene	10
2-Nitroaniline	50
Dimethylphthalate	10
2,6-Dinitrotoluene	10
Acenaphthylene	10
3-Nitroaniline	50
4-Nitrophenol	50
2,4-Dinitrophenol	50
Acenaphthene	10

Table I-5 (Cont'd)
Semivolatile Parameters

COMPOUNDS	PQL (ppb)
2,4-Dinitrotoluene	10
Pentachlorobenzene	10
Dibenzofuran	10
1-Naphthylamine	10
Diethylphthalate	10
2,3,4,6-Tetrachlorophenol	10
2-Naphthylamine	10
4-Chlorophenyl phenyl ether	10
4-Nitroaniline	50
Fluorene	10
4,6-Dinitro-2-methylphenol	50
4-Aminobiphenyl	20
1,2-Diphenylhydrazine	10
Phenacetin	20
4-Bromophenyl phenyl ether	10
Hexachlorobenzene	10
Pronamide	10
N-Nitrosodiphenylamine/Diphenylamine	10
Pentachlorophenol	50
Pentachloronitrobenzene	20
Phenathrene	10
Anthracene	10
Di-n-butylphthalate	10
Fluoranthene	10

**Table I-6 List of Pesticide and PCB Analytical Parameters
BASELINE MONITORING PROJECT**

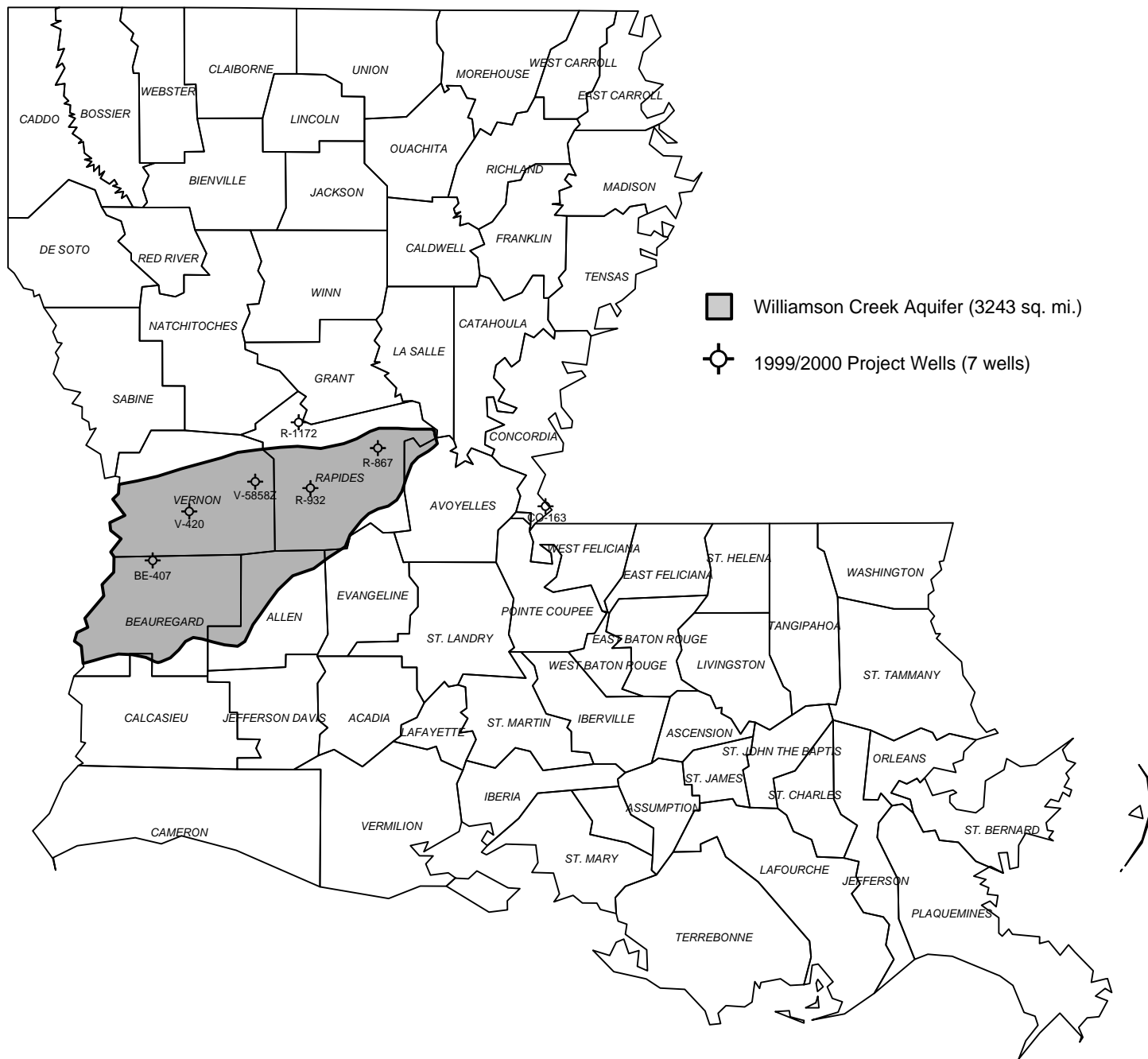
SEMIVOLATILE ORGANICS BY EPA METHOD 8270

COMPOUNDS	PQL (ppb)
Alpha BHC	2
Beta BHC	2
Gamma BHC	2
Delta BHC	2
Heptachlor	2
Aldrin	2
Heptachlor epoxide	2
Chlordane	2
Endosulfan I	2
4,4'-DDE	2
Dieldrin	2
4,4'DDD	2
Endrin	2
Toxaphene	2
Endosulfan II	2
Endrin Aldehyde	2
4,4'DDT	2
Endosulfan Sulfate	2
Methoxychlor	2
Endrin Ketone	2

SEMIVOLATILE ORGANICS BY EPA METHOD 8270

COMPOUNDS	PQL (ppb)
PCB 1221/ PCB 1232	10
PCB 1016/ PCB 1242	10
PCB 1254	10
PCB 1248	10
PCB 1260	10

BASELINE MONITORING PROJECT WELLS OF THE WILLIAMSON CREEK AQUIFER



Aquifer boundary digitized from Louisiana Hydrologic Map No. 2: Areal Extent of Freshwater in Major Aquifers of Louisiana. Smoot, 1988; USGS/LDOTD Report 86-4150

Figure I-1 Location Plat, Williamson Creek Aquifer

WILLIAMSON CREEK AQUIFER - pH (SU)

Baseline Monitoring Project, FY1999-2000

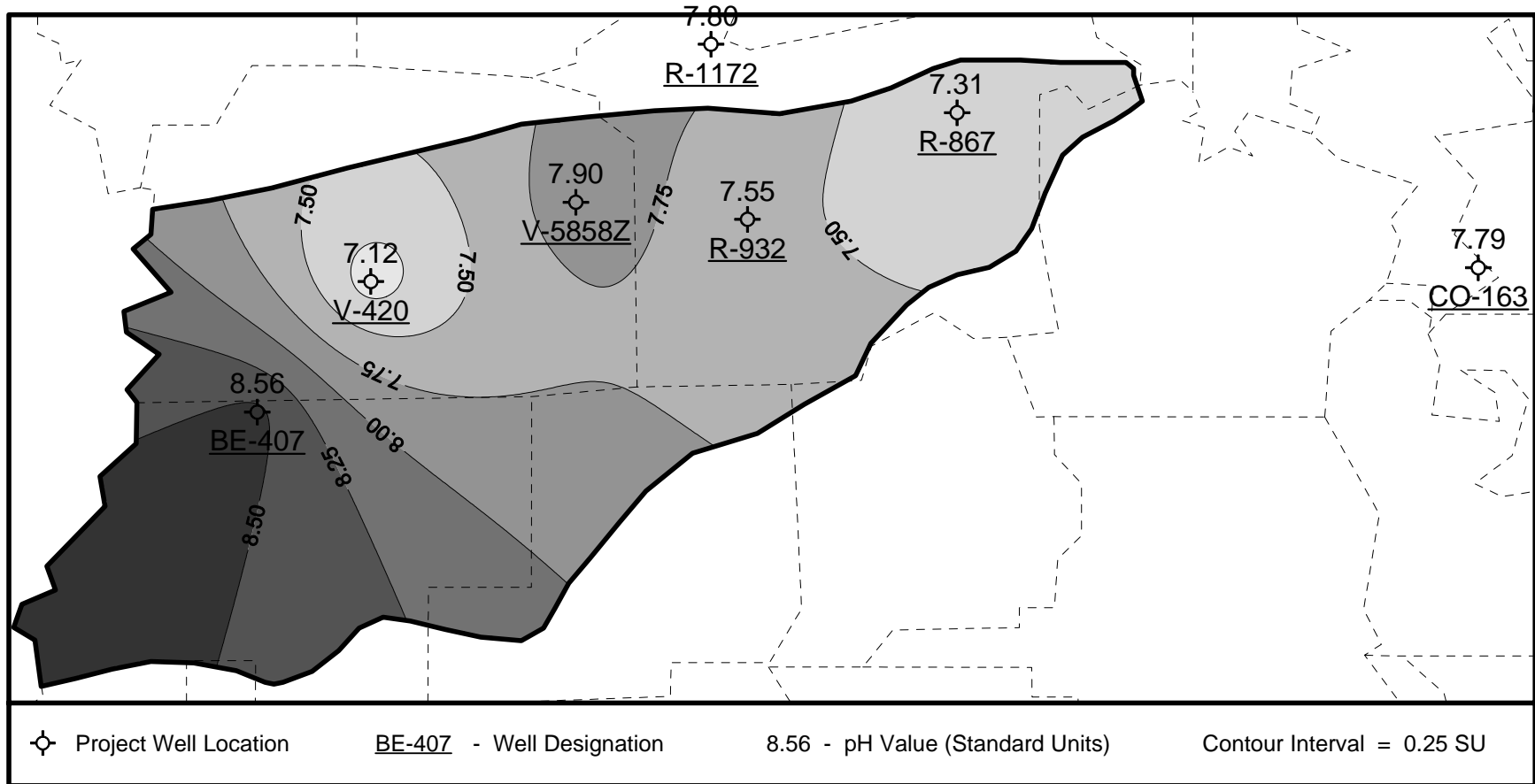


Figure I-2 Map of pH Data

WILLIAMSON CREEK AQUIFER - TDS (PPM)

Baseline Monitoring Project, FY1999-2000

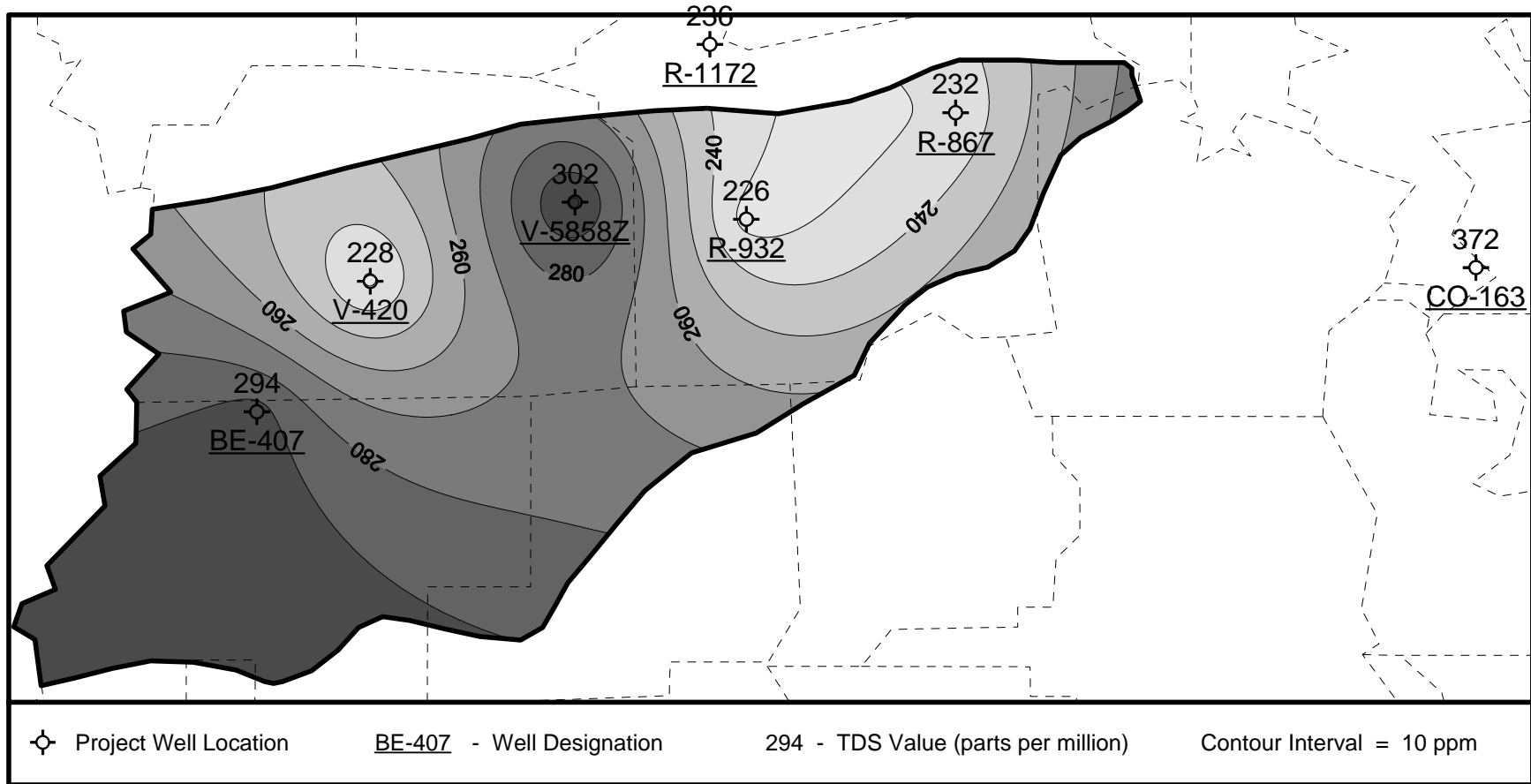


Figure I-3 Map of TDS Data

WILLIAMSON CREEK AQUIFER - CHLORIDE (PPM)

Baseline Monitoring Project, FY1999-2000

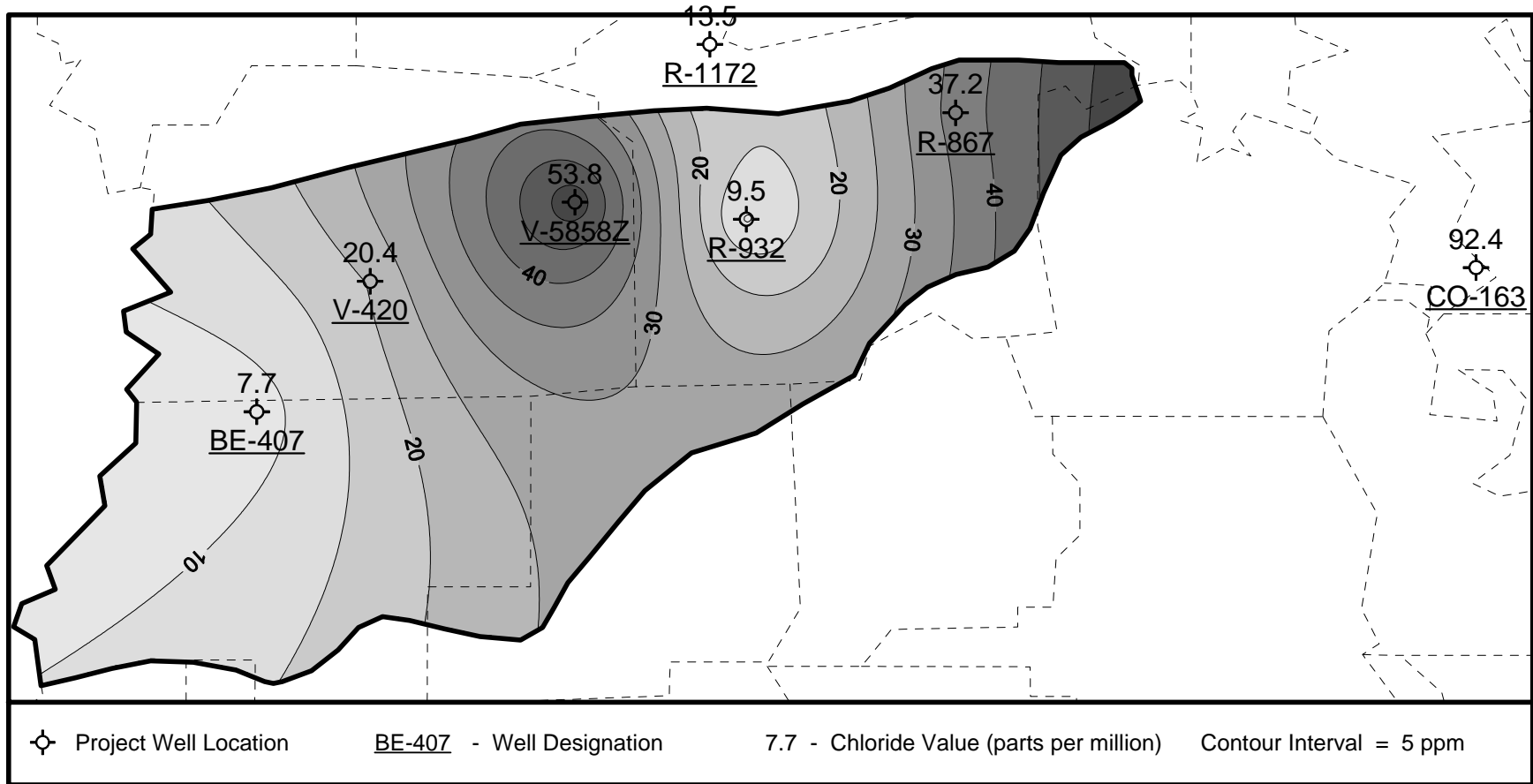


Figure I-4 Map of Chloride Data

WILLIAMSON CREEK AQUIFER - IRON (PPB)

Baseline Monitoring Project, FY1999-2000

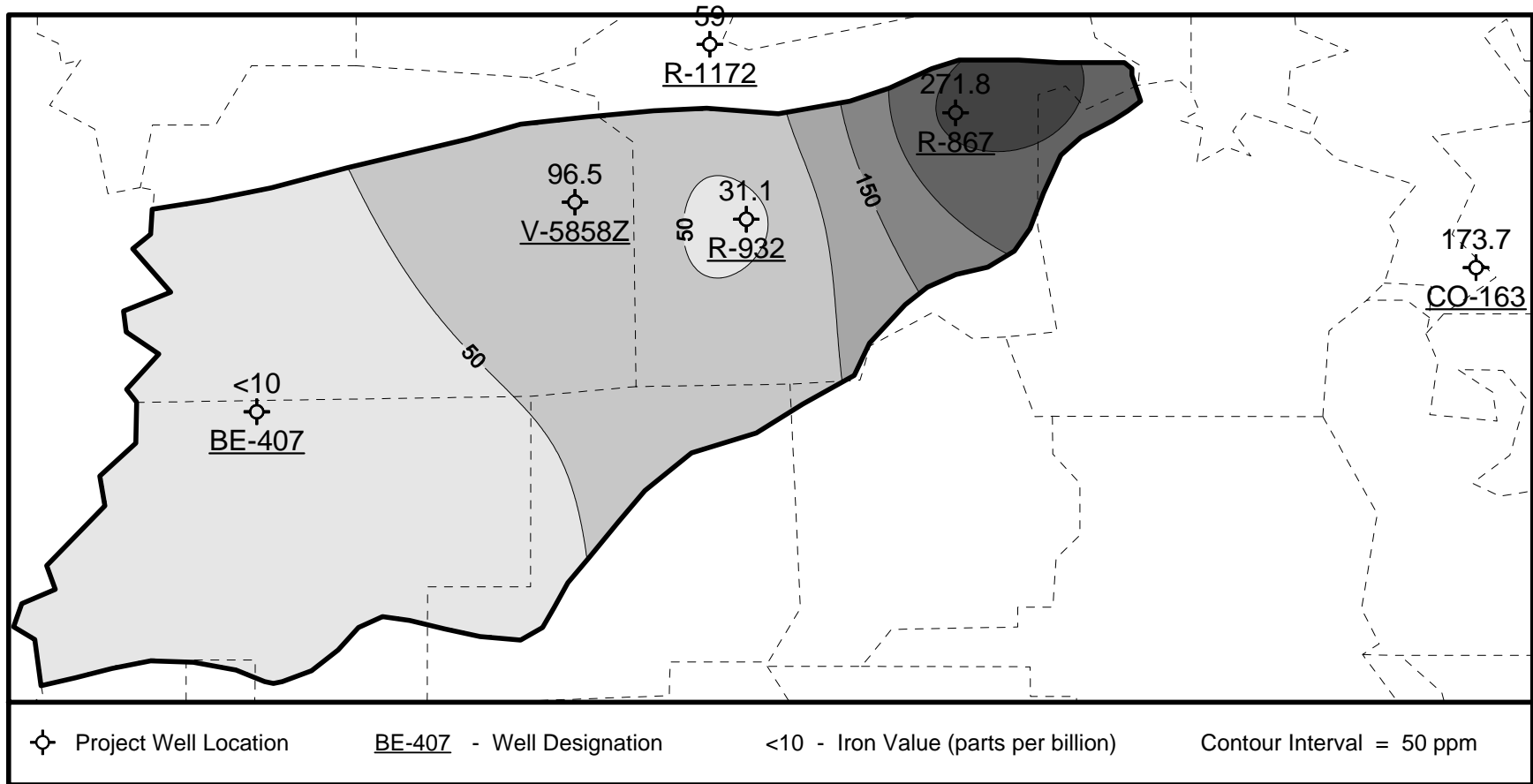


Figure I-5 Map of Iron Data