APPENDIX 3

JASPER EQUIVALENT AQUIFER SYSTEM SUMMARY

BASELINE MONITORING PROJECT, EPA FY'00

(July 1999 Through June 2000)

PART IV

OF

TRIENNIAL SUMMARY REPORT

FOR THE

ENVIRONMENTAL EVALUATION DIVISION

OF

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

PARTIAL FUNDING PROVIDED THROUGH CWA 106 GRANT

JASPER EQUIVALENT AQUIFER SYSTEM 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 IV-1 shows the geographic locations of the Jasper Equivalent Aquifer System and the associated project wells, whereas Table IV-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 March, April, and May of 2000, fifteen project wells were sampled which produce from the Jasper Equivalent Aquifer System. Of these fifteen wells, twelve are classified as Public Supply wells, one is classified as a Domestic well, one is classified as an Industrial well, and one is classified as an Irrigation well. The wells are located in nine parishes in southeast 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 IV-2. Those project inorganic (total metals) parameters analyzed in the laboratory are listed in Table IV-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 IV-4, IV-5, and IV-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

FEDERAL PRIMARY DRINKING WATER STANDARDS: Under the Federal Safe Drinking Water Act, EPA has established Primary Maximum Contaminant Levels (MCL) for pollutants that may pose a health risk in public drinking water. A Primary 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 the duplicate sample of project well ST-763 exceeded the Primary MCL of 6 parts per billion (ppb) for bis(2-ethylhexyl)phthalate (BEHP) at 12 ppb. However, BEHP was below the quantitation limit of 10 ppb in the initial sample. Taking this into consideration and taking into consideration 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 ST-763 is a false positive and is not a result of the compound coming from the well. Therefore, it is this Office's opinion this exceedance was 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 show that eleven of the wells sampled in the Jasper Equivalent Aquifer System exceeded the Secondary Maximum Contaminant Level (SMCL) for pH and that one well exceeded the SMCL for color.

pH (SMCL=6.5 – 8.5 standard units (S.U.)):

EF-272 – 9.11 S.U.

EB-630 – 9.43 S.U.

EB-770 – 9.17 S.U.

LI-185 – 8.58 S.U.

PC-275 – 9.60 S.U.

LI-229 – 8.95 S.U.

SH-104 – 9.18 S.U.

ST-FOLSOM – 8.81 S.U.

ST-763 – 8.65 S.U.

TA-826 – 8.81 S.U.

WA-248 – 8.54 S.U.

Eleven out of the fifteen wells that were sampled exhibited pH values outside of the SMCL. In fact, all of the wells that were sampled exhibited elevated pH levels. Where available, the data from previous sampling events of the project wells in the Jasper Equivalent Aquifer system were examined to compare past pH results with these current results. These comparisons showed that the pH levels were indeed elevated. It is therefore this Office's opinion that the pH values exhibited in the current sampling of the Jasper Equivalent Aquifer system are erroneous, and are due to a malfunction of the sampling equipment. The pH data for this round of sampling of the Jasper Equivalent will therefore be excluded from this summary and from any further analysis.

Color (SMCL=15 color units (PCU)):

ST-995 – 17 PCU

FEDERAL LEAD ACTION LEVEL: Under the Federal Safe Drinking Water Act, EPA has established an Action Level of 15 ppb for lead to ensure that this contaminant does not pose either a short-term or long-term health risk in public drinking water. While not all wells sampled were public supply wells, this Office does use this Action Level as a benchmark for further evaluation. Laboratory data contained in Table IV-3 show that one of the wells sampled exceeded the Action Level for lead. ST-995 exceeded the Action Level with a concentration of 15.5 ppb. The owner of this well was notified of this level. No further action has been taken as a result of this lead level since the well is classified as an irrigation well and not a drinking water supply well.

SELECTED WATER QUALITY MAPS: For the reader's convenience, maps showing the contoured values for TDS, chloride, and iron are included in this summary report in Figures IV-2 through IV-4. Please note that a contour map of the pH values is not included in this summary as the pH values have been excluded due to the reasons stated above.

SUMMARY AND RECOMMENDATIONS

In summary, the data show that this aquifer is of good quality when considering short-term or long-term health risk guidelines. The data also show that this aquifer is of good quality when considering taste, odor, or appearance guidelines.

Eleven out of the fifteen wells that were sampled exhibited pH values outside of the SMCL. In fact, all of the wells that were sampled exhibited elevated pH levels. Comparisons with past pH results confirmed that the current pH levels were elevated. It is therefore this Office's opinion that the pH values exhibited in the current sampling of the Jasper Equivalent Aquifer system are erroneous, and are due to a malfunction of the sampling equipment. The pH data for this round of sampling of the Jasper Equivalent will therefore be excluded from this summary and from any further analysis.

It is recommended that the several project wells assigned to the Jasper Equivalent 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 IV-1 List of Project Wells Sampled

PROJECT NUMBER	PARISH	WELL NUMBER	DATE SAMPLED	OWNER	DEPTH (Feet)	WELL USE
199003	EAST BATON ROUGE	EB-630	03/13/2000	BATON ROUGE WATER CO.	2253	PUBLIC SUPPLY
200012	EAST BATON ROUGE	EB-770	03/13/2000	CITY OF ZACHARY	2080	PUBLIC SUPPLY
200014	EAST FELICIANA	EF-272	03/13/2000	LA. WAR VETS HOME	1325	PUBLIC SUPPLY
198613	LIVINGSTON	LI-185	04/10/2000	CITY OF DENHAM SPRINGS	2610	PUBLIC SUPPLY
200015	LIVINGSTON	LI-229	04/10/2000	WARD 2 WATER DISTRICT	1826	PUBLIC SUPPLY
200017	LIVINGSTON	LI-257	04/10/2000	VILLAGE OF ALBANY	1842	PUBLIC SUPPLY
200013	POINTE COUPEE	PC-275	03/13/2000	PRIVATE OWNER	1912	DOMESTIC
200016	ST. HELENA	SH-104	04/10/2000	CAL MAINE FOODS	1652	INDUSTRIAL
200019	ST. TAMMANY	ST-763	05/09/2000	LDOTD	2230	PUBLIC SUPPLY
200005	ST TAMMANY	ST-995	05/08/2000	PRIVATE OWNER	2290	IRRIGATION
200020	ST. TAMMANY	ST-FOLSOM	05/09/2000	VILLAGE OF FOLSOM	2265	PUBLIC SUPPLY
199324	TANGIPAHOA	TA-560	04/10/2000	TOWN OF ROSELAND	2032	PUBLIC SUPPLY
199404	TANGIPAHOA	TA-826	05/08/2000	CITY OF PONCHATOULA	2015	PUBLIC SUPPLY
200018	WASHINGTON	WA-248	05/09/2000	TOWN OF FRANKLINTON	2700	PUBLIC SUPPLY
199701	WEST FELICIANA	WF-264	03/13/2000	W. FELICIANA PARISH	960	PUBLIC SUPPLY

Table IV-2 Summary of Water Quality Data

WELL NUMBER	TEMP. °C	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
EB-630	34.14	0.529	0.25	11.0	334.0	194.0	<5.0	1.0	542.0	3.0	43.30	6.90	0.27	0.39	0.21	0.02
EB-770	30.57	0.337	0.16	12.0	240.0	167.0	<5.0	<1.0	347.0	3.0	2.90	6.40	0.31	0.20	0.20	0.02
EF-272	25.57	0.307	0.14	9.0	213.0	151.0	<5.0	<1.0	324.0	1.0	4.10	5.30	0.36	0.26	<0.10	0.03
LI-185	32.25	0.264	0.12	<4.0	184.0	126.0	7.0	<1.0	270.0	4.0	3.60	8.70	0.22	<0.05	<0.10	0.02
LI-229	28.12	0.308	0.15	<4.0	193.0	152.0	<5.0	<1.0	315.0	3.0	2.98	9.13	0.19	0.35	0.13	0.02
LI-257	28.85	0.233	0.11	<4.0	169.0	109.0	<5.0	<1.0	241.0	2.0	3.50	9.20	0.18	0.27	0.24	0.02
LI-257*	28.85	0.233	0.11	<4.0	165.0	109.0	<5.0	<1.0	240.0	2.0	3.60	9.10	0.20	0.27	0.23	0.03
PC-275	24.39	0.625	0.30	<4.0	408.0	289.0	<5.0	1.5	659.0	12.0	27.50	4.70	0.37	1.13	0.44	0.02
PC-275*	24.39	0.625	0.30	4.0	400.0	289.0	<5.0	1.9	663.0	15.0	27.40	4.60	0.33	1.25	0.46	0.02
SH-104	25.65	0.397	0.19	<4.0	239.0	200.0	<5.0	<1.0	413.0	6.0	3.68	8.26	0.43	0.26	0.18	0.02
ST-763	31.48	0.711	0.34	<4.0	428.0	231.0	7.5	<1.0	726.6	12.0	87.90	5.30	0.17	0.82	0.75	0.02
ST-763*	31.48	0.711	0.34	<4.0	420.0	231.0	7.4	<1.0	727.6	12.0	87.80	5.40	0.14	0.80	0.70	<0.02
ST-995	28.30	0.185	0.09	66.3	160.0	85.2	8.1	1.3	189.2	2.0	3.10	8.00	0.43	0.88	0.18	<0.02
ST-FOLSOM	30.10	0.257	0.12	<4.0	172.0	124.0	<5.0	<1.0	259.5	2.0	3.30	8.80	0.20	0.24	0.20	<0.02
TA-560	28.64	0.210	0.10	<4.0	164.0	96.7	<5.0	<1.0	218.0	4.0	3.20	8.70	0.48	0.18	<0.10	0.02
TA-826	31.09	0.323	0.15	<4.0	219.0	159.0	6.6	1.8	326.6	5.0	3.30	9.30	0.19	0.30	0.13	<0.02
WA-248	31.08	0.341	0.16	<4.0	221.0	161.0	<5.0	<1.0	346.7	17.0	8.80	7.60	0.39	0.46	0.36	<0.02
WF-264	24.08	0.269	0.13	4.3	196.0	135.0	9.1	<1.0	283.0	2.0	2.50	6.00	0.15	0.36	0.19	0.02

* Denotes duplicate sample.

Please note that pH has been reported due to the reasons stated on page 2, “Federal Secondary Drinking Water Standards” and in the summary section.

Table IV-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
EB-630	<5.0	<1.0	14.4	<1.0	<1.0	<5.0	<5.0	26.2	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0
EB-770	<5.0	<1.0	6.1	<1.0	<1.0	<5.0	<5.0	49.9	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	13.2
EF-272	<5.0	<1.0	<5.0	<1.0	<1.0	<5.0	<5.0	67.6	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	49.1
LI-185	<5.0	<1.0	19.6	<1.0	1.9	<5.0	<5.0	<20.0	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0
LI-229	<5.0	<1.0	11.9	<1.0	1.1	<5.0	<5.0	<20.0	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0
LI-257	<5.0	<1.0	6.7	<1.0	2.4	<5.0	<5.0	64.2	<0.05	<5.0	<5.0	5.7	<10.0	<5.0	80.3
LI-257*	<5.0	<1.0	6.7	<1.0	2.5	<5.0	<5.0	63.5	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0
PC-275	<5.0	<1.0	<5.0	<1.0	<1.0	<5.0	<5.0	<20.0	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	75.5
PC-275*	<5.0	<1.0	9.1	<1.0	<1.0	<5.0	<5.0	<20.0	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	75.5
SH-104	<5.0	<1.0	<5.0	<1.0	1.1	<5.0	<5.0	27.6	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0
ST-763	<5.0	<1.0	24.7	<1.0	<1.0	<5.0	190.0	<10.0	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	35.0
ST-763*	<5.0	<5.0	22.1	<1.0	<1.0	<5.0	<5.0	<10.0	<0.05	<5.0	<5.0	6.8	<10.0	<5.0	<10.0
ST-995	<5.0	<1.0	10.7	<1.0	<1.0	<5.0	22.2	29.5	<0.05	<5.0	<5.0	6.2	15.5	<5.0	<10.0
ST-FOLSOM	<5.0	<1.0	<5.0	<1.0	<1.0	<5.0	<5.0	<10.0	<0.05	<5.0	<5.0	9.3	<10.0	<5.0	12.4
TA-560	<5.0	<1.0	<5.0	<1.0	2.7	<5.0	<5.0	45.3	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0
TA-826	<5.0	<1.0	27.4	<1.0	<1.0	<5.0	<5.0	<10.0	<0.05	<5.0	<5.0	<5.0	<10.0	<1.0	<10.0
WA-248	<5.0	<1.0	<5.0	<1.0	1.2	<5.0	<5.0	29.1	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	21.6
WF-264	<5.0	<1.0	35.3	<1.0	<1.0	<5.0	<5.0	45.6	<0.05	<5.0	<5.0	<5.0	<10.0	<5.0	<10.0

* Denotes duplicate sample.

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

VOLATILE ORGANICS BY EPA METHOD 8260

COMPOUNDS	PQL (ppb)
DICHLOROFLUOROMETHANE	5
CHLOROMETHANE	2
VINYL CHLORIDE	2
BROMOMETHANE	2
CHLOROETHANE	2
TRICHLOROFLUOROMETHANE	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 IV-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 IV-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 IV-5 (Cont'd)
Semivolatile Parameters

COMPOUNDS	PQL (ppb)
3,3'-Dichlorobenzidine	20
Benzo(a)anthracene	10
Chrysene	10
Di-n-octylphthalate	10
7,12-Dimetnylbenz(a)anthracine	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 IV-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 IV-6 List of Pesticide and PCB Analytical Parameters
BASELINE MONITORING PROJECT

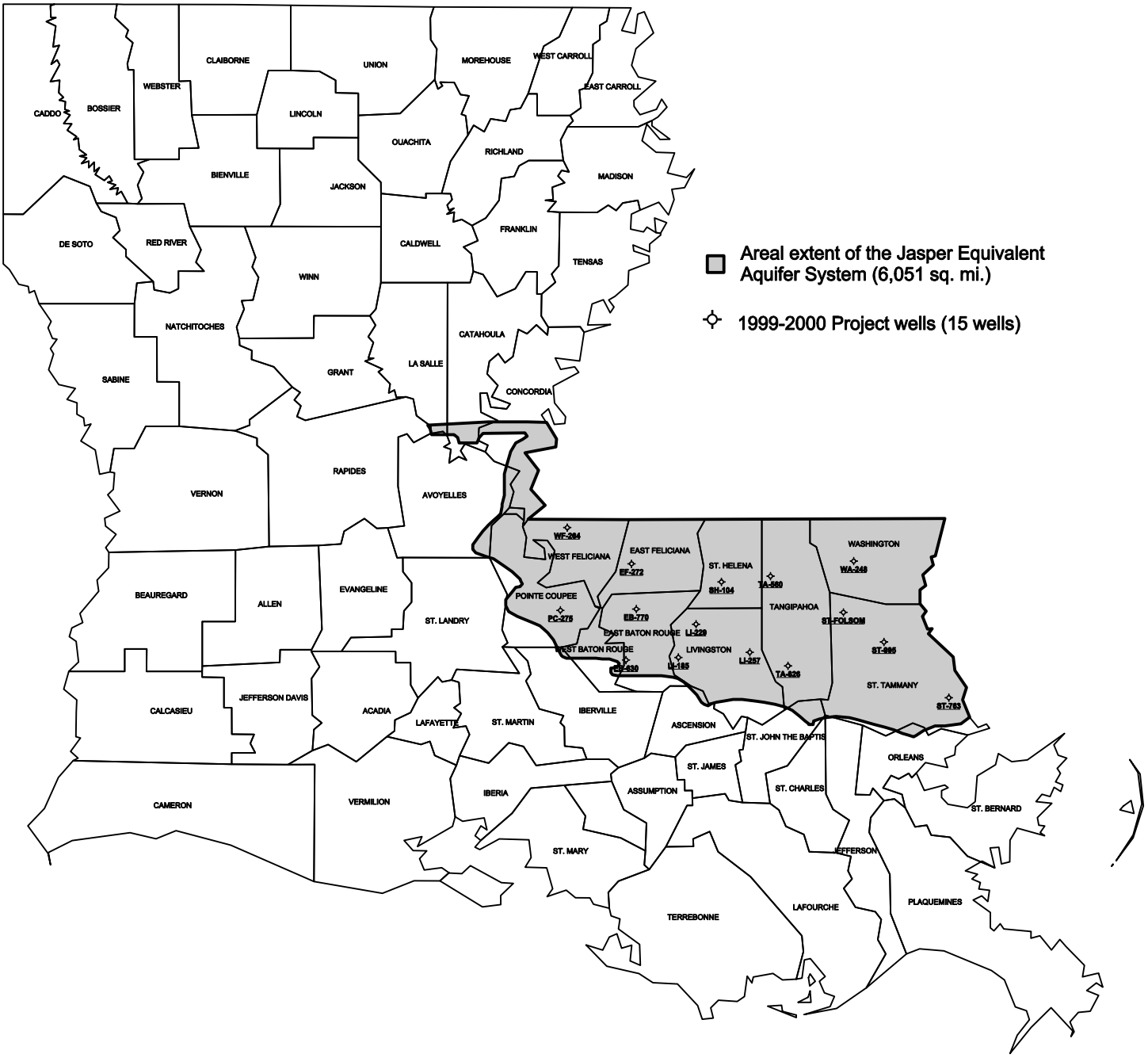
SEMIVOLATILE ORGANICS BY EPA METHOD 8270

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 JASPER EQUIVALENT AQUIFER SYSTEM



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 IV-1 Location Plat, Jasper Equivalent Aquifer System

JASPER EQUIVALENT AQUIFER SYSTEM - TDS (ppm)

Baseline Monitoring Project, FY1999-2000

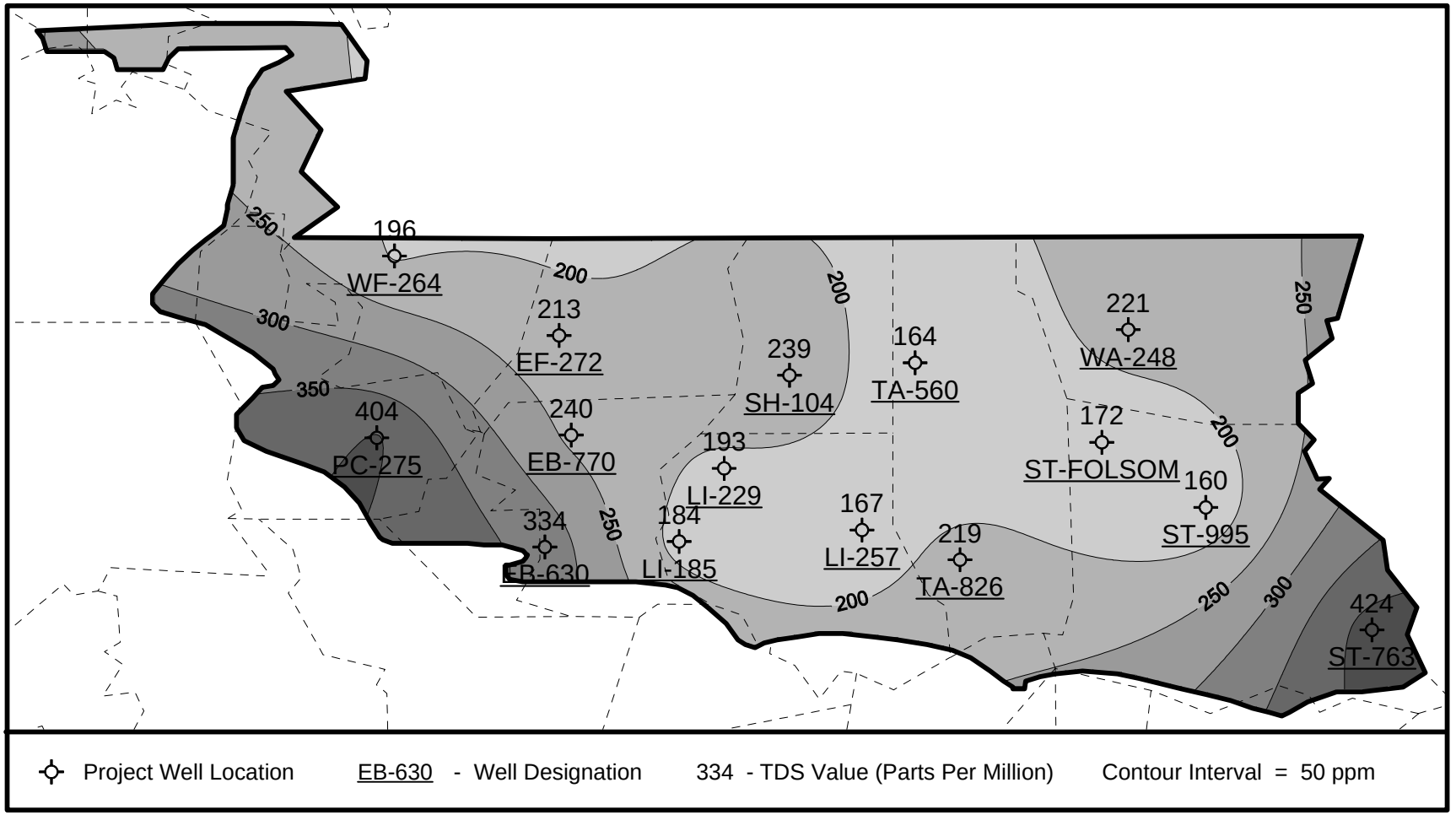


Figure IV-2 Map of TDS Data

JASPER EQUIVALENT AQUIFER SYSTEM - CHLORIDE (ppm)

Baseline Monitoring Project, FY1999-2000

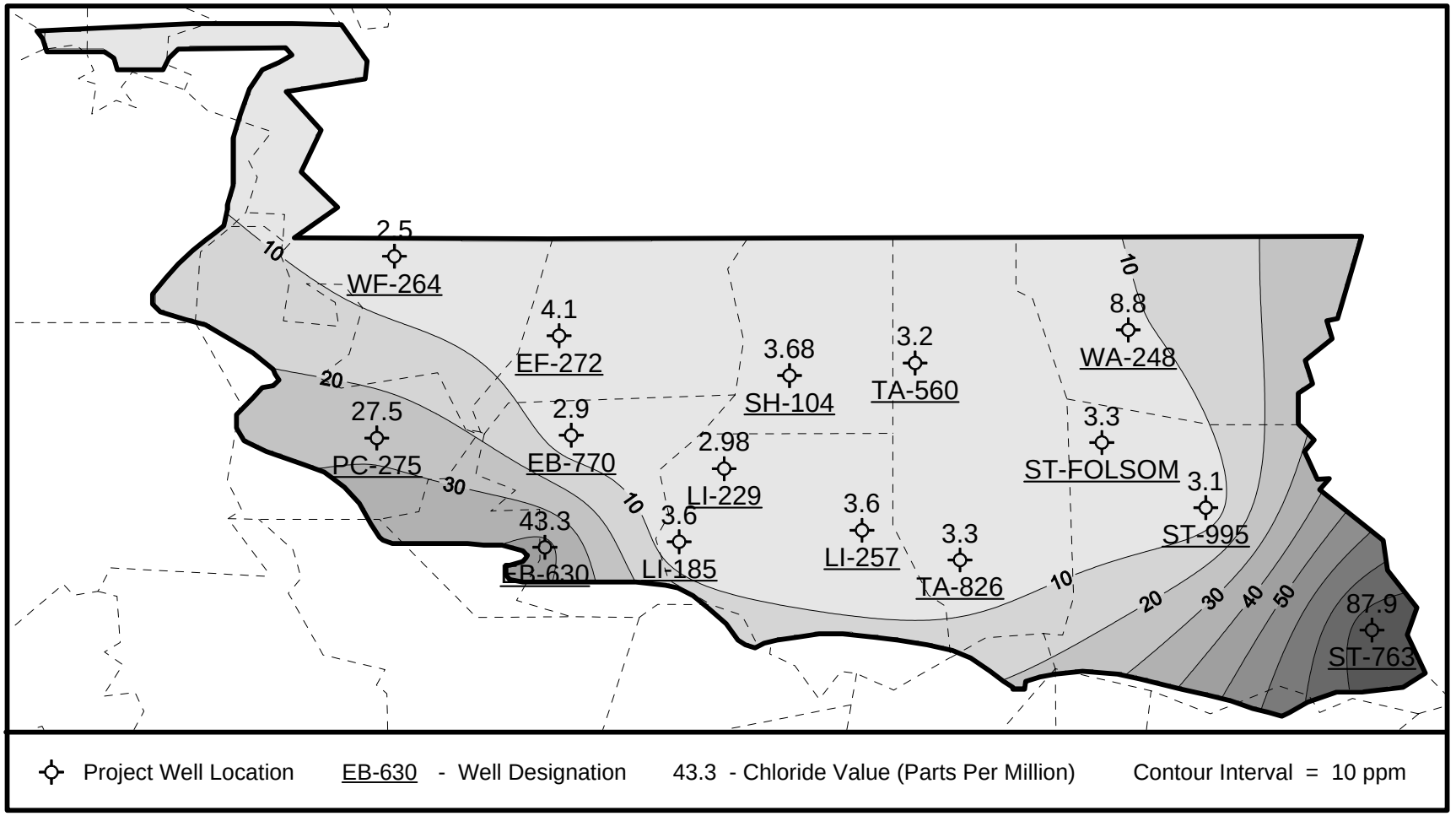


Figure IV-3 Map of Chloride Data

JASPER EQUIVALENT AQUIFER SYSTEM - IRON (ppb)

Baseline Monitoring Project, FY1999-2000

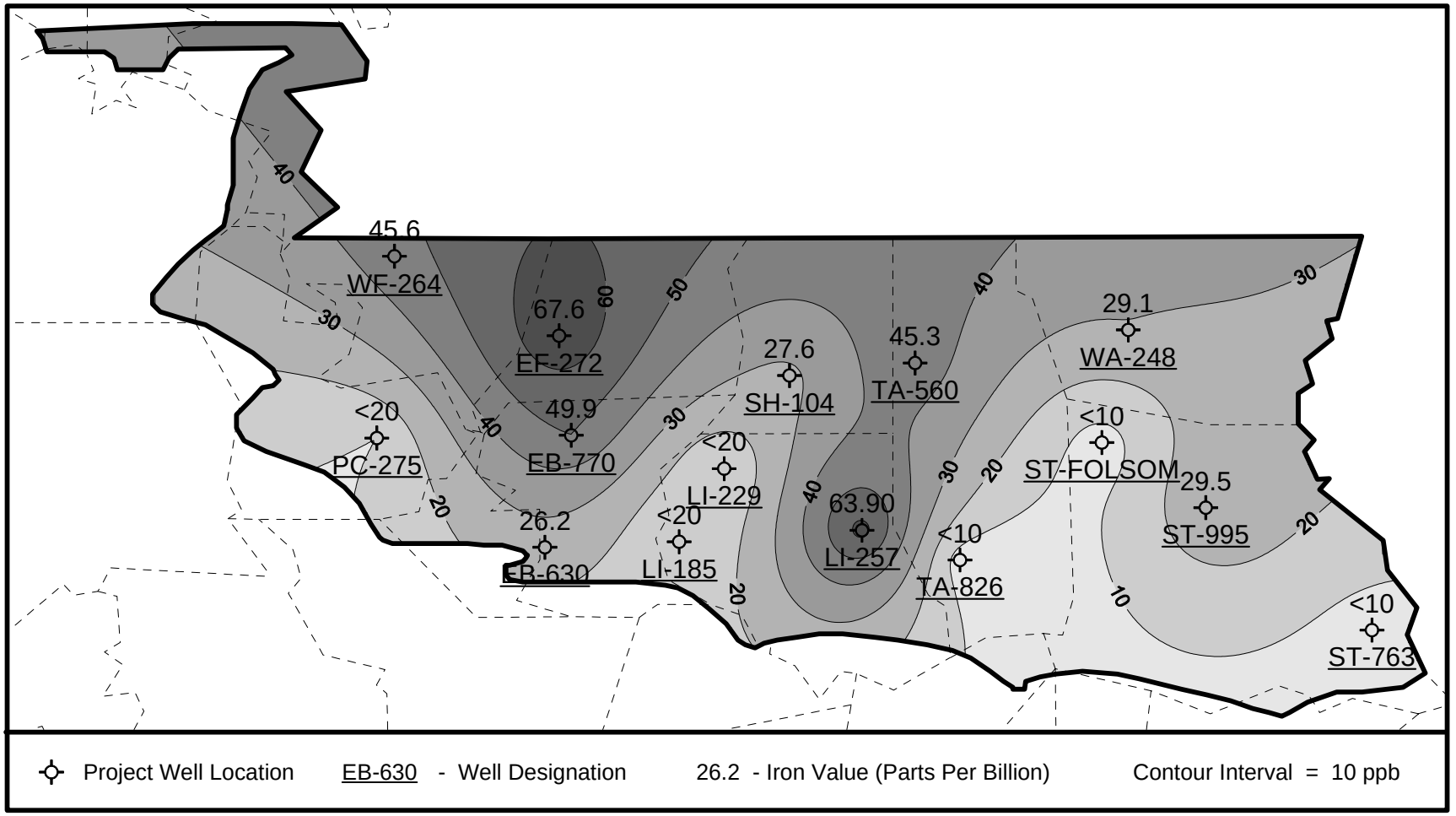


Figure IV-4 Map of Iron Data