# SPARTA AQUFIER SUMMARY

# BASELINE MONITORING PROJECT, FY 2001

APPENDIX 1

OF THE

TRIENNIAL SUMMARY REPORT, 2003

FOR THE

ENVIRONMENTAL EVALUATION DIVISION

OF

LOUISIANA DEPARTMENT OF ENVIRONMENTAL QUALITY

PARTIAL FUNDING PROVIDED THROUGH 106 CWA

# SPARTA AQUIFER SUMMARY

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## 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 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 from a particular aquifer, a summary report on each aquifer sampled was prepared separately. Collectively, these aquifer summaries will make up the project Triennial Summary Report.

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

These data show that in July and August, 2000, thirteen wells were sampled which produce from the Sparta aquifer. Ten of the thirteen are classified as public supply, the remaining three are classified as industrial wells. The wells are located in nine parishes in the north-central 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 Sparta aquifer system is within the Eocene Sparta formation of the Claiborne group. The aquifer units consist of fine to medium sand with interbedded coarse sand, silty clay and lignite. Interconnected sands become more massive and coarsen slightly with depth and are laterally discontinuous. The Sparta aquifer is confined downdip by the clays of the overlying Cook Mountain formation and the clays and silty clays of the Cane river formation.

## HYDROGEOLOGY

The Sparta aquifer is recharged through direct infiltration of rainfall, the movement of water through overlying terrace and alluvial deposits, and leakage from the Cockfield and Carrizo-Wilcox aquifers. The Sparta is pumped in a large area of north central Louisiana and in a narrow band through Natchitoches and Sabine parishes. The two areas are separated by a saltwater ridge below the Red River valley. Ground water movement is eastward toward the Mississippi River Valley and southward toward the Gulf of Mexico, except when altered by heavy pumping, and the hydraulic conductivity varies between 25 to 100 feet/day.

The maximum depths of occurrence of freshwater in the Sparta range from 200 feet above sea level, to 1,700 feet below sea level. The range of thickness of the fresh water interval in the Sparta is 50 to 700 feet. The depths of the Sparta wells that were monitored in conjunction with the Baseline Monitoring Project range from 153 to 773 feet.

## PROJECT PARAMETERS

The field parameters checked at each sampling site and the list of water quality analytical parameters are shown in Table 1-2. Those project inorganic (total metals) parameters analyzed in the laboratory are listed in Table 1-3. 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 project analytical parameters include three other categories of compounds: volatiles, semi-volatiles, and pesticides/PCB's. As there was only one confirmed detection of a compound from these three categories, tables were not prepared. A discussion of these detections can be found in the following section. Also, in order for the reader to be aware of the total list of analytes, Tables 1-4, 1-5 and 1-6 were included in this report.

Tables 1-7 and 1-8 provide an overview of water quality and inorganic data for the Sparta aquifer, listing the minimum, maximum, and average results for these parameters. Table 1-9 and 1-10 compares these same parameter's averages to historical Baseline Project-derived data for the Sparta aquifer, from fiscal years 1995 and 1998.

Figures 1-2, 1-3, 1-4, and 1-5 respectively, represent the contoured data for pH, TDS, chloride and iron.

## INTERPRETATION OF DATA

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.

Laboratory data show that no project well that was sampled during the Fiscal Year 2001 monitoring of the Sparta aquifer exceeded a Primary MCL.

Those project 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, which are defined as non-enforceable taste, odor, or appearance guidelines. Field and laboratory data contained in Tables 1-2 and 1-3 show that six of the thirteen wells sampled in the Sparta aquifer exceeded the secondary MCL (SMCL) for pH, five of the wells exceeded the SMCL for total dissolved solids, six exceeded the SMCL for color, three exceeded the SMCL for chloride, and three exceeded the SMCL for iron.

pH (SMCL = 6.5 – 8.5 standard units):

CA-105 – 8.62 SU
MO-253 – 8.52 SU
OU-597 – 8.56 SU
L-32 – 8.84 SU
OU-506 – 8.80 SU
UN-205 – 8.57 SU

Total Dissolved Solids (SMCL = 500 ppm):

CA-105 – 652.0 ppm
MO-253 – 1,164.0 ppm
OU-506 – 518.0 ppm
OU-597 – 1,026.0 ppm
UN-205 – 732.0 ppm

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

BI-212 – 24.0 PCU
CA-105 – 55.0 PCU
MO-253 – 25.0 PCU
OU-506 – 28.0 PCU
OU-597 – 42.0 PCU
W-165 – 48.0 PCU

Chloride (SMCL = 250 ppm):

MO-253 – 389 ppm
OU-597 – 360 ppm
UN-205 – 317 ppm

Iron (SMCL = 300 ppb):

BI-212 – 2,300 ppb
CL-203 – 1,220 ppb (original)
W-165 – 2,300 ppb
CL-203 – 1,280 ppb (duplicate)

Volatile Organic Compounds:

Benzene (MCL = 5.0 ppb) was detected in the original sample of well WB-269 with a concentration of 1.8 ppb, and in the duplicate sample of this well with a concentration of 2.0 ppb. While the original sample was below the laboratory practical quantitation limit (PQL) of 2.0 ppb, the duplicate sample was equal to the PQL, validating the presence of benzene. Additionally, this well has a known benzene contamination, further validating the lab results. It should also be noted that the well owner is aware of the situation, and is treating the water from this well to reduce the amount of benzene prior to distribution while the Environmental Technology and Remediation Services Divisions of DEQ are working to remediate the situation.

Chloroform (no MCL established for chloroform) was detected in well WB-241, with a reported concentration of 1.1 ppb, which is below the PQL of 2.0 ppb. Because no MCL is established for this compound, and due to the reported results being below the lab PQL, no confirmatory sample was collected from this well. Therefore, the presence of chloroform in this well cannot be confirmed.

Semi-volatile Organic Compounds/Pesticides/PCB's:

Bis(2-ethylhexyl)phthalate was reported in the field blank and in each of the wells sampled in August, from a level of 8 ppb to 20 ppb. Two ppb of di-n-octylphthalate was reported in the field and lab method blanks as well. The lab also reported an "out of control limits for the continuing calibration standard" situation for phthalates. Taking into consideration these conditions, it is the opinion of this Office that the reported phthalates are due to field/lab contamination and are to be considered invalid.

No other compound from this category of compounds was detected in any of the samples collected from the Sparta aquifer project wells.

## COMPARISON TO HISTORICAL BASELINE DATA

Analytical and field data show that the quality and characteristics of ground water produced from the Sparta aquifer has not changed significantly when comparing current data to that of the two previous sampling rotations (three and six years prior). These comparisons can be found in Tables 1-9 and 1-10 of this summary. While there are general fluctuations over the six-year period, only two parameters show a consistent change. Color has decreased from an average of 25.9 PCU to a current average of 17.7 PCU, while the iron concentration has increased from an average 212.5 ppb to a current average 517.4 ppb.

## SUMMARY AND RECOMMENDATIONS

In summary, the data show that the ground water produced from this aquifer is soft[1], and is of good quality when considering short-term or long-term health risk guidelines. Laboratory data show that no project well that was sampled during the Fiscal Year 2001 monitoring of the Sparta aquifer exceeded a Primary MCL. The data also show that this aquifer is of fair quality when considering taste, odor, or appearance guidelines. Comparison to historical Baseline-derived data show that there has been no significant change in the quality or characteristics of the Sparta aquifer, except for the consistent decrease in color and increase in iron values.

It is recommended that the project wells assigned to the Sparta aquifer be re-sampled as planned, in approximately three years. In addition, several wells should be added to the thirteen 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 1-1 List of Project Wells Sampled

| PROJECT NUMBER | PARISH | WELL NUMBER | DATE SAMPLED | OWNER | DEPTH (FEET) | WELL USE |
|---|---|---|---|---|---|---|
| 199411 | BIENVILLE | BI-192 | 07/11/2000 | LUCKY WATER SYSTEM | 153 | PUBLIC SUPPLY |
| 199413 | BIENVILLE | BI-212 | 07/11/2000 | STONE CONTAINER CORP. | 490 | INDUSTRIAL |
| 199414 | CALDWELL | CA-105 | 08/08/2000 | VIXEN WATER SYSTEM | 525 | PUBLIC SUPPLY |
| 200021 | CLAIBORNE | CL-203 | 08/08/2000 | TOWN OF HOMER | 460 | PUBLIC SUPPLY |
| 199408 | LINCOLN | L-31 | 08/08/2000 | CITY OF RUSTON | 636 | PUBLIC SUPPLY |
| 198806 | LINCOLN | L-32 | 08/08/2000 | CITY OF RUSTON | 652 | PUBLIC SUPPLY |
| 199308 | MOREHOUSE | MO-253 | 08/07/2000 | VILLAGE OF COLLINSTON | 773 | PUBLIC SUPPLY |
| 199108 | OUACHITA | OU-506 | 08/07/2000 | ANGUS CHEMICAL | 506 | INDUSTRIAL |
| 199109 | OUACHITA | OU-597 | 08/07/2000 | RIVERWOOD INTERNATIONAL | 710 | INDUSTRIAL |
| 199703 | UNION | UN-205 | 07/10/2000 | D'ARBONNE WATER SYSTEM | 725 | PUBLIC SUPPLY |
| 198623 | WINN | W-165 | 07/11/2000 | TOWN OF WINNFIELD | 456 | PUBLIC SUPPLY |
| 198822 | WEBSTER | WB-241 | 07/10/2000 | TOWN OF SPRINGHILL | 408 | PUBLIC SUPPLY |
| 198823 | WEBSTER | WB-269 | 07/10/2000 | CITY OF MINDEN | 280 | PUBLIC SUPPLY |

## Table 1-2 Summary of Water Quality Parameters

| WELL NUMBER | TEMP. °C | PH SU | SP. COND. MMHOS/CM | SAL. PPT | TSS PPM | TDS PPM | ALK. PPM | HARD. PPM | TURB. NTU | SP. COND. UMHOS/CM | COLOR PCU | CL PPM | $SO_4$ PPM | TOT. P PPM | TKN PPM | $NH_3$ (AS N) PPM | NITRITE-NITRATE (AS N) PPM |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | *FIELD PARAMETERS* | | | | *LABORATORY PARAMETERS* | | | | | | | | | | | | |
| BI-192 | 20.04 | 7.21 | 0.025 | 0.01 | <4.0 | 27.0 | 5.2 | 6.9 | 1.9 | 27.9 | <1.0 | <1.25 | <1.25 | <0.05 | <0.05 | <0.10 | 1.57 |
| BI-212 | NO DATA | | | | <4.0 | 182.0 | 83.4 | 29.5 | 2.9 | 200.7 | 24.0 | 7.10 | 9.30 | 0.17 | 0.36 | 0.22 | 0.02 |
| CA-105 | 26.65 | 8.62 | 0.954 | 0.47 | <4.0 | 652.0 | 535.0 | <5.0 | <1.0 | 1,026.0 | 55.0 | 16.30 | <1.25 | 0.77 | 0.74 | 0.64 | 0.03 |
| CL-203 | 21.58 | 6.76 | 0.124 | 0.06 | <4.0 | 116.0 | 48.9 | 19.5 | <1.0 | 128.5 | 8.0 | 5.30 | 6.90 | 0.08 | 0.12 | <0.10 | 0.06 |
| CL-203* | 21.58 | 6.76 | 0.124 | 0.06 | <4.0 | 116.0 | 49.0 | 19.6 | <1.0 | 130.3 | 12.0 | 5.30 | 7.10 | NO DATA | 0.22 | <0.10 | 0.05 |
| L-31 | 24.42 | 7.71 | 0.340 | 0.16 | <4.0 | 244.0 | 140.0 | 6.2 | <1.0 | 362.2 | 9.0 | 23.80 | 11.60 | 0.22 | 0.35 | 0.20 | 0.02 |
| L-32 | 24.59 | 8.84 | 0.313 | 0.15 | <4.0 | 214.0 | 142.0 | <5.0 | 2.0 | 332.2 | 8.0 | 9.50 | 14.70 | 0.26 | 0.19 | 0.23 | 0.03 |
| MO-253 | 26.26 | 8.52 | 1.965 | 1.00 | <4.0 | 1,164.0 | 395.0 | 6.2 | 4.0 | 2,091.0 | 25.0 | 389.00 | <1.25 | 0.49 | 1.32 | 0.80 | 0.02 |
| OU-506 | 23.22 | 8.80 | 0.855 | 0.42 | <4.0 | 518.0 | 282.0 | <5.0 | 1.3 | 908.8 | 28.0 | 122.00 | <1.25 | 0.47 | 0.91 | 0.51 | 0.03 |
| OU-597 | 25.80 | 8.56 | 1.745 | 0.88 | <4.0 | 1,026.0 | 329.0 | 7.4 | 2.2 | 1,867.0 | 42.0 | 360.00 | <1.25 | 0.52 | 0.83 | 0.80 | 0.02 |
| UN-205 | 25.25 | 8.57 | 1.329 | 0.66 | <4.0 | 732.0 | 157.0 | 11.7 | <1.0 | 1,405.0 | 3.0 | 317.00 | <1.25 | 0.26 | 0.88 | 0.77 | 0.05 |
| W-165 | NO DATA | | | | <4.0 | 380.0 | 266.0 | <5.0 | 1.9 | 631.3 | 48.0 | 31.70 | 5.90 | 0.67 | 0.46 | 0.35 | 0.02 |
| WB-241 | 24.22 | 7.83 | 0.350 | 0.17 | <4.0 | 224.0 | 152.0 | 34.5 | <1.0 | 384.5 | 1.0 | 25.20 | 11.20 | <0.05 | 0.11 | <0.10 | 0.06 |
| WB-269 | 20.85 | 6.97 | 0.192 | 0.09 | <4.0 | 136.0 | 45.2 | 25.9 | 2.1 | 201.5 | <1.0 | 18.60 | 20.50 | 0.07 | 0.11 | 0.10 | 1.27 |
| WB-269* | 20.85 | 6.97 | 0.192 | 0.09 | <4.0 | 136.0 | 44.7 | 26.5 | <1.0 | 202.8 | 2.0 | 18.80 | 20.40 | NO DATA | 0.11 | 0.10 | 1.25 |

* Denotes duplicate sample.

## Table 1-3 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 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BI-192 | <5.0 | <1.0 | 19.8 | <1.0 | <1.0 | <5.0 | <5.0 | 267.0 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <5.0 | <10.0 |
| BI-212 | <5.0 | <1.0 | 67.7 | <1.0 | <1.0 | <5.0 | <5.0 | 2,300.0 | <0.05 | <5.0 | NO DATA | <5.0 | <10.0 | <5.0 | 32.1 |
| CA-105 | <5.0 | <1.0 | 15.9 | <1.0 | <1.0 | <5.0 | <5.0 | 28.6 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <2.0 | <10.0 |
| CL-203 | <5.0 | <1.0 | 65.8 | <1.0 | <1.0 | <5.0 | <5.0 | 1,220.0 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <2.0 | 17.3 |
| CL-203* | <5.0 | <1.0 | 69.1 | <1.0 | <1.0 | <5.0 | <5.0 | 1,280.0 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <2.0 | 12.1 |
| L-31 | <5.0 | <1.0 | 11.4 | <1.0 | <1.0 | <5.0 | <5.0 | 112.0 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <2.0 | 15.9 |
| L-32 | <5.0 | <1.0 | 4.7 | <1.0 | <1.0 | <5.0 | <5.0 | 23.3 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <2.0 | 14.4 |
| MO-253 | <5.0 | <1.0 | 26.6 | <1.0 | <1.0 | <5.0 | <5.0 | 27.0 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <2.0 | <10.0 |
| OU-506 | <5.0 | <1.0 | 8.3 | <1.0 | 1.7 | <5.0 | <5.0 | <20.0 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <2.0 | <10.0 |
| OU-597 | <5.0 | <1.0 | 43.6 | <1.0 | <1.0 | <5.0 | <5.0 | 31.3 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <2.0 | <10.0 |
| UN-205 | <5.0 | <1.0 | 30.5 | <1.0 | <1.0 | <5.0 | 8.4 | 22.4 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <5.0 | 13.9 |
| W-165 | <5.0 | <1.0 | 67.7 | <1.0 | <1.0 | <5.0 | <5.0 | 2,300.0 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <5.0 | 32.1 |
| WB-241 | <5.0 | <1.0 | 90.5 | <1.0 | <1.0 | <5.0 | <5.0 | 41.8 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <5.0 | <10.0 |
| WB-269 | <5.0 | <1.0 | 120.0 | <1.0 | <1.0 | <5.0 | 9.9 | 51.4 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <5.0 | <10.0 |
| WB-269* | <5.0 | <1.0 | 114.0 | <1.0 | <1.0 | <5.0 | <5.0 | 46.6 | <0.05 | <5.0 | <5.0 | <5.0 | <10.0 | <5.0 | 39.6 |

* Denotes duplicate sample.

## Table 1-4 List of VOC Analytical Parameters

BASELINE MONITORING PROJECT

VOLATILE ORGANICS BY EPA METHOD 624

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

PQL = Practical Quantitation Limit
ppb = parts per billion

## Table 1-5 List of Semi-volatile Analytical Parameters

BASELINE MONITORING PROJECT

SEMIVOLATILE ORGANICS BY EPA METHOD 625

| COMPOUND | PQL (ppb) |
|---|---|
| N-Nitrosodimethylamine | 2 |
| Chlorobenzene | 2 |
| Phenol | 2 |
| Bis(2-chloroethyl)ether | 2 |
| 2-Chlorophenol | 2 |
| 1,3-Dichlorobenzene | 2 |
| 1,4-Dichlorobenzene | 2 |
| 1,2-Dichlorobenzene | 2 |
| Bis(2-chloroisopropyl)ether | 6 |
| N-Nitroso-di-n-propylamine | 4 |
| Hexachloroethane | 2 |
| Nitrobenzene | 2 |
| Isophorone | 2 |
| 2,4-Dimethylphenol | 4 |
| 2-Nitrophenol | 6 |
| 1,3,5-Trichlorobenzene | 2 |
| Bis(2-chloroethoxy)methane | 2 |
| 1,2,4-Trichlorobenzene | 2 |
| Naphthalene | 2 |
| 2,4-Dichlorophenol | 4 |
| Hexachlorobutadiene | 2 |
| 1,2,3-Trichlorobenzene | 2 |
| 4-Chloro-3-methylphenol | 4 |
| Hexachlorocyclopentadiene | 6 |
| 1,2,4,5-Tetrachlorobenzene | 2 |
| 2,4,6-Trichlorophenol | 6 |
| 1,2,3,4-Tetrachlorobenzene | 2 |
| 2-Chloronaphthalene | 2 |
| Dimethylphthalate | 2 |
| 2,6-Dinitrotoluene | 4 |
| Acenaphthylene | 2 |
| 4-Nitrophenol | 6 |
| 2,4-Dinitrophenol | 12 |
| Acenaphthene | 2 |
| Pentachlorobenzene | 2 |
| 2,4-Dinitrotoluene | 6 |
| Diethylphthalate | 2 |
| 4-Chlorophenyl phenyl ether | 2 |

**Table 1-5 (Cont'd)**
Semivolatile Parameters

| COMPOUND | PQL (ppb) |
|---|---|
| Fluorene | 2 |
| 4,6-Dinitro-2-methylphenol | 12 |
| N-Nitrosodiphenylamine/Dipheny | 2 |
| 4-Bromophenyl phenyl ether | 2 |
| Hexachlorobenzene | 2 |
| Pentachlorophenol | 10 |
| Phenathrene | 2 |
| Anthracene | 2 |
| Di-n-butylphthalate | 2 |
| Fluoranthene | 2 |
| Benzidine | 20 |
| Pyrene | 2 |
| Butylbenzylphthalate | 2 |
| Bis(2-ethylhexyl)phthalate | 2 |
| 3,3'-Dichlorobenzidine | 10 |
| Benzo(a)anthracene | 6 |
| Chrysene | 4 |
| Di-n-octylphthalate | 2 |
| Benzo(b)fluoranthene | 6 |
| Benzo(k)fluoranthene | 6 |
| Benzo(a)Pyrene | 6 |
| Indeno(1,2,3-cd)pyrene | 6 |
| Dibenz(a,h)anthracene | 6 |
| Benzo(g,h,i)perylene | 6 |

**Table 1-6 List of Pesticide and PCB Analytical Parameters**
BASELINE MONITORING PROJECT

SEMIVOLATILE ORGANICS BY EPA METHOD 625

| COMPOUND | 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 |
| PCB 1221/ PCB 1232 | 10 |
| PCB 1016/ PCB 1242 | 10 |
| PCB 1254 | 10 |
| PCB 1248 | 10 |
| PCB 1260 | 10 |

## Table 1-7 Water Quality Statistics

Fiscal Year 2001

| PARAMETER | MINIMUM | MAXIMUM | AVERAGE |
|---|---|---|---|
| PH (SU) | 6.76 | 8.84 | 7.86 |
| Temperature $^{O}$C | 20.04 | 26.65 | 23.49 |
| Sp. Conductivity (mmhos/cm) (Field) | 0.025 | 1.965 | 0.654 |
| Salinity (ppt) | 0.01 | 1.00 | 0.32 |
| TSS (ppm) | <4 | <4 | <4 |
| TDS (ppm) | 27.0 | 1164.0 | 391.1 |
| Alkalinity (ppm) | 5.2 | 535.0 | 178.3 |
| Hardness (ppm) | <5 | 34.5 | 13.6 |
| Turbidity (NTU) | <1 | 4.00 | 1.45 |
| Sp. Conductivity (umhos/cm) (Lab) | 27.9 | 2091.0 | 660.0 |
| Color (PCU) | <5 | 55.0 | 17.7 |
| Chloride (ppm) | <1.25 | 389.0 | 90.0 |
| Sulfate (ppm) | <1.25 | 20.50 | 7.42 |
| Nitrite-Nitrate, as N (ppm) | 0.02 | 1.57 | 0.30 |
| Phosphorus (ppm) | <0.05 | 0.77 | 0.31 |
| TKN (ppm) | <0.05 | 1.32 | 0.45 |
| Ammonia (ppm) | <0.10 | 0.80 | 0.33 |

## Table 1-8 Inorganic Statistics

Fiscal Year 2001

| PARAMETER | MINIMUM | MAXIMUM | AVERAGE |
|---|---|---|---|
| Antimony (ppb) | <5 | <5 | <5 |
| Arsenic (ppb) | <5 | <5 | <5 |
| Barium (ppb) | 4.7 | 120.0 | 50.4 |
| Beryllium (ppb) | <1 | <1 | <1 |
| Cadmium (ppb) | <1 | 1.7 | <1 |
| Chromium (ppb) | <5 | <5 | <5 |
| Copper (ppb) | <5 | 9.9 | <5 |
| Iron (ppb) | <20.0 | 2300.0 | 517.4 |
| Lead (ppb) | <10.0 | <10.0 | <10.0 |
| Mercury (ppb) | <0.05 | <0.05 | <0.05 |
| Nickel (ppb) | <5 | <5 | <5 |
| Selenium (ppb) | <5 | <5 | <5 |
| Silver (ppb) | <1 | <1 | <1 |
| Thallium (ppb) | <5 | <5 | <5 |
| Zinc (ppb) | <10 | 39.6 | 14.2 |

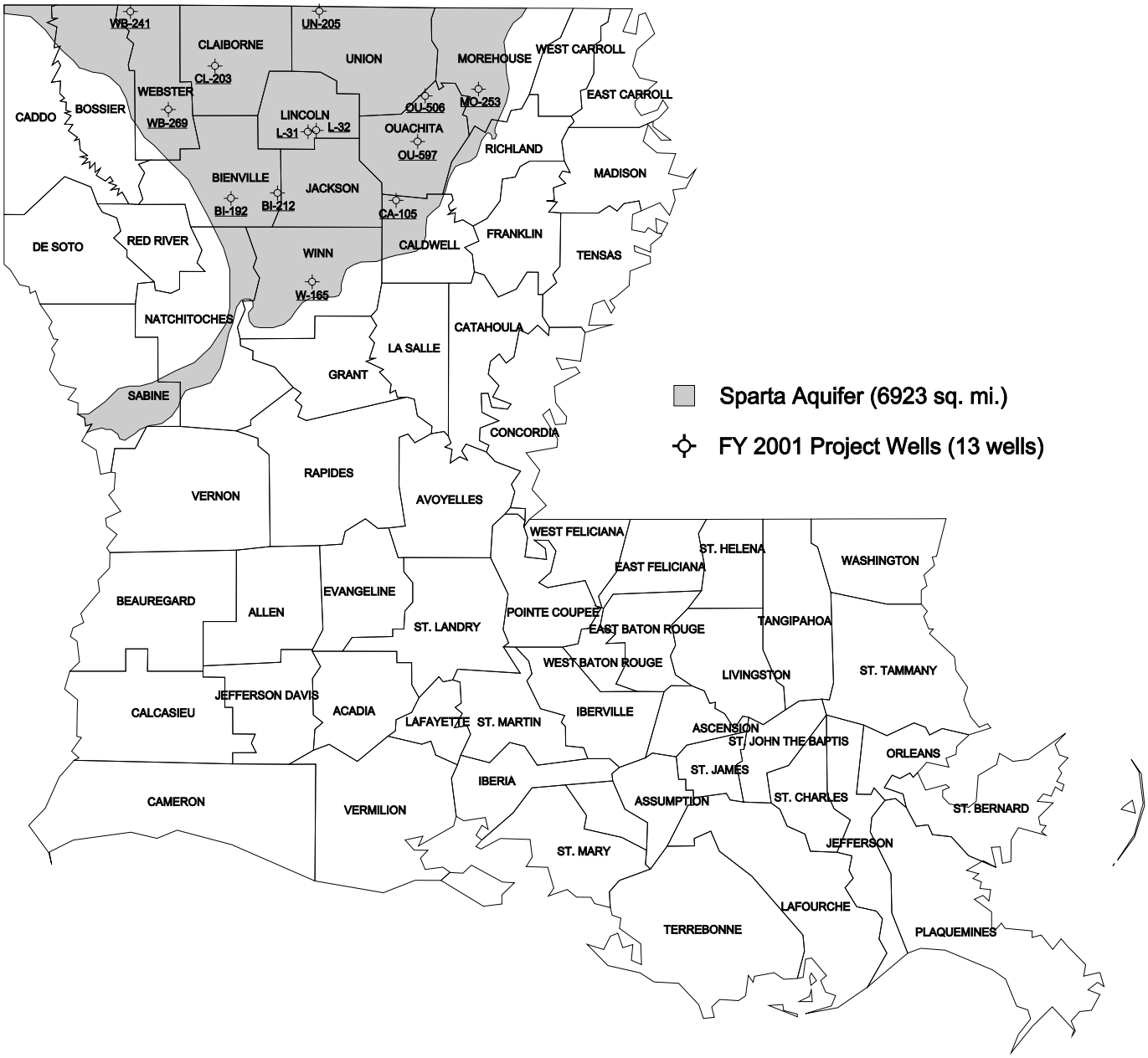
## Table 1-9 Three-year Water Quality Statistics

| PARAMETER | FY 1995 AVERAGE | FY 1998 AVERAGE | FY 2001 AVERAGE |
|---|---|---|---|
| PH (SU) | 7.23 | 7.76 | 7.86 |
| Temperature $^{O}$C | 23.10 | 23.65 | 23.49 |
| Sp. Conductivity (mmhos/cm) (Field) | 0.646 | 0.654 | 0.654 |
| Salinity (ppt) | 0.30 | 0.32 | 0.32 |
| TSS (ppm) | <4 | <4 | <4 |
| TDS (ppm) | 356.5 | 442.7 | 391.1 |
| Alkalinity (ppm) | 185.5 | 203.2 | 178.3 |
| Hardness (ppm) | 21.7 | 10.0 | 13.6 |
| Turbidity (NTU) | 1.32 | 2.21 | 1.45 |
| Sp. Conductivity (umhos/cm) (Lab) | 619.1 | 687.7 | 660.0 |
| Color (PCU) | 25.9 | 21.7 | 17.7 |
| Chloride (ppm) | 85.8 | 89.0 | 90.0 |
| Sulfate (ppm) | 6.55 | 8.21 | 7.42 |
| Nitrite-Nitrate, as N (ppm) | 0.28 | 0.32 | 0.30 |
| Phosphorus (ppm) | 0.36 | 0.31 | 0.31 |
| TKN (ppm) | 0.58 | 0.52 | 0.45 |
| Ammonia (ppm) | 0.34 | 0.46 | 0.33 |

## Table 1-10 Three-year Inorganic Statistics

| PARAMETER | FY 1995 AVERAGE | FY 1998 AVERAGE | FY 2001 AVERAGE |
|---|---|---|---|
| Antimony (ppb) | <5 | <5 | <5 |
| Arsenic (ppb) | <5 | <5 | <5 |
| Barium (ppb) | 36.5 | 30.7 | 50.4 |
| Beryllium (ppb) | <1 | <1 | <1 |
| Cadmium (ppb) | <1 | 1.00 | <1 |
| Chromium (ppb) | <5 | <5 | <5 |
| Copper (ppb) | 10.2 | 10.2 | <5 |
| Iron (ppb) | 212.5 | 283.7 | 517.4 |
| Lead (ppb) | <10 | <10 | <10.0 |
| Mercury (ppb) | <0.05 | <0.05 | <0.05 |
| Nickel (ppb) | 5.1 | <5 | <5 |
| Selenium (ppb) | <5 | <5 | <5 |
| Silver (ppb) | <1 | 1.2 | <1 |
| Thallium (ppb) | <5 | <5 | <5 |
| Zinc (ppb) | 16.2 | 20.8 | 14.2 |

# BASELINE MONITORING PROJECT WELLS OF THE SPARTA 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 1-1 Location Plat, Sparta Aquifer**

# SPARTA AQUIFER - pH

Baseline Monitoring Project, FY 2001

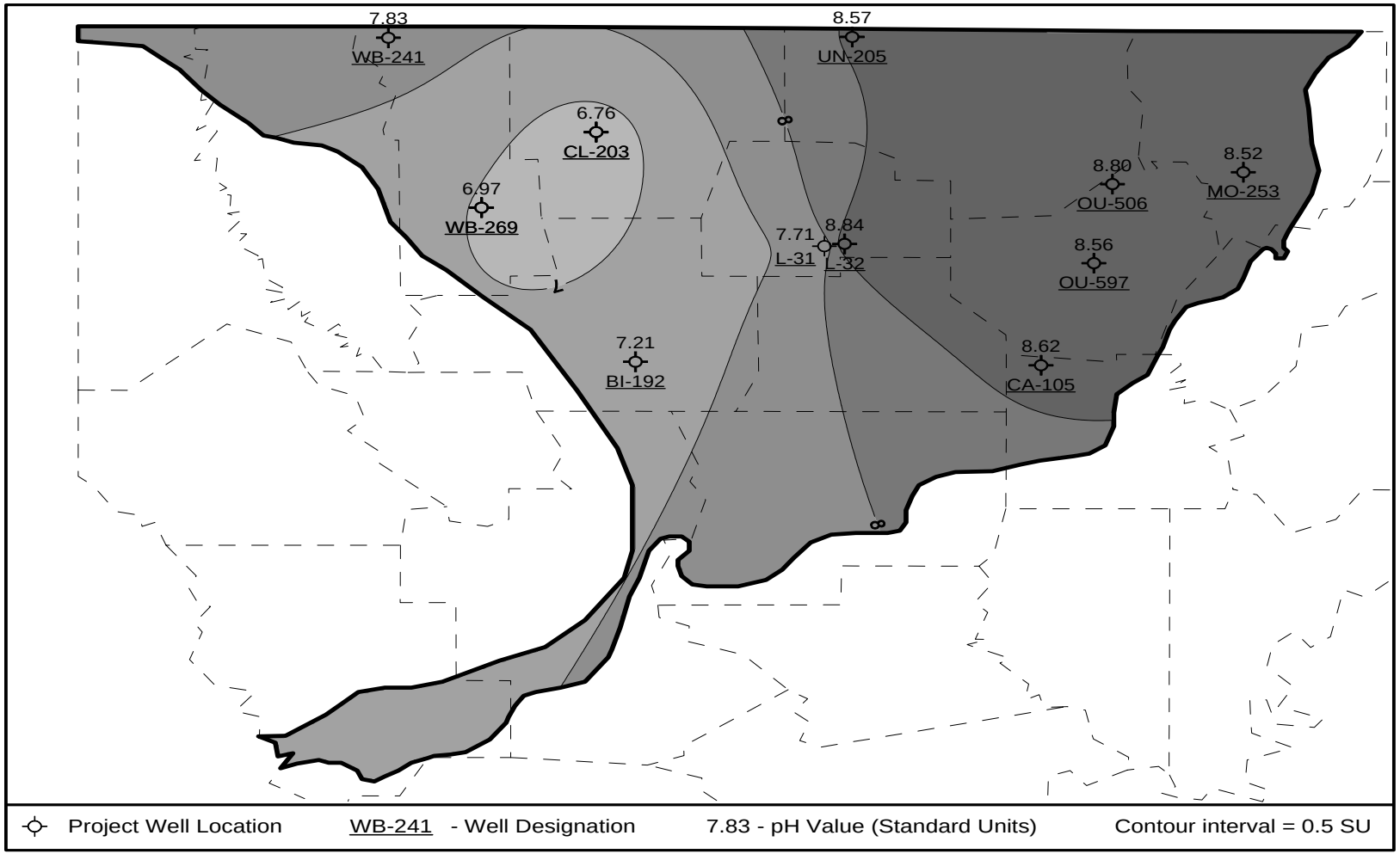



**Figure 1-2 Map of pH Data**

# SPARTA AQUIFER - TDS

## Baseline Monitoring Project, FY 2001

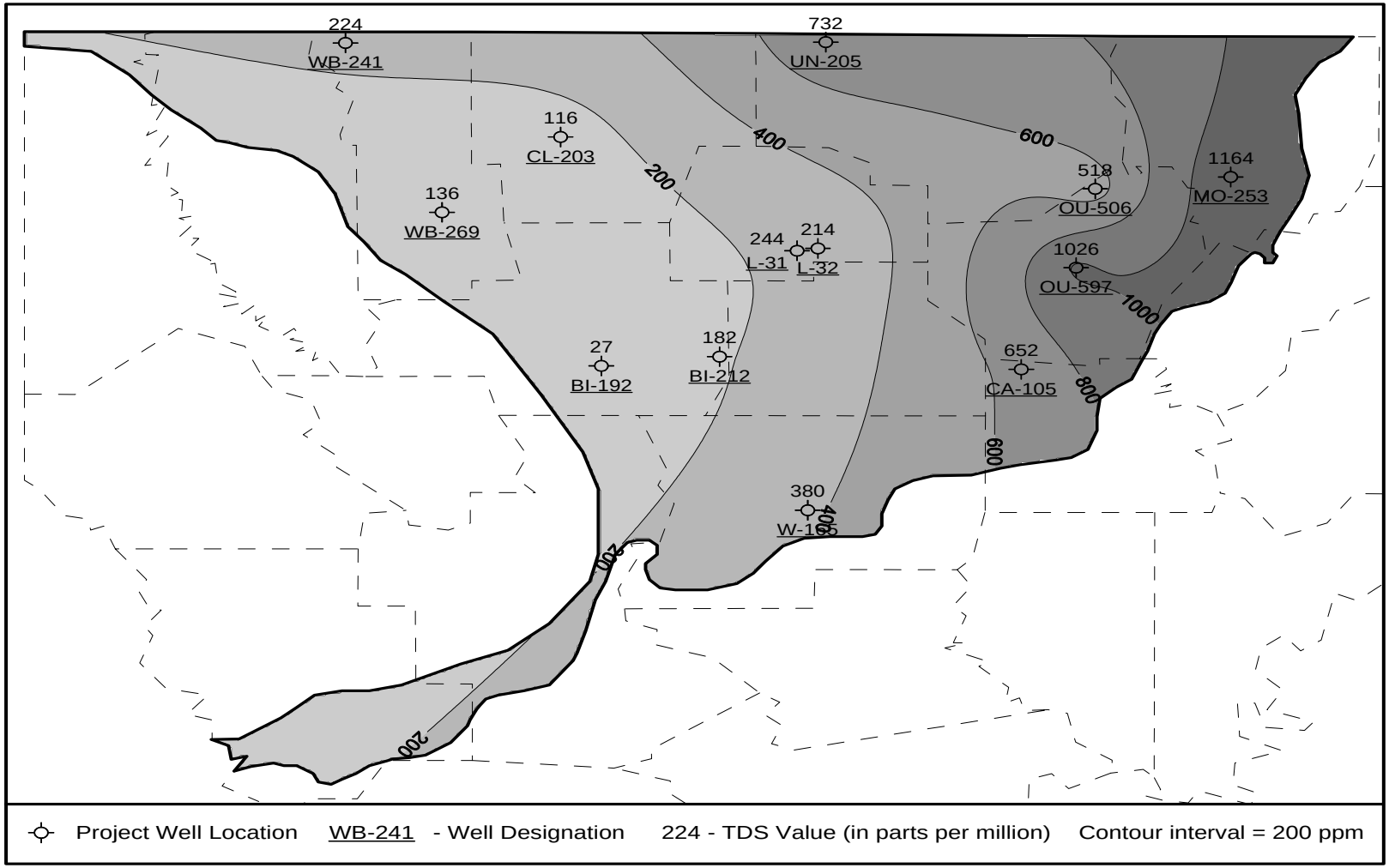



**Figure 1-3 Map of TDS Data**

# SPARTA AQUIFER - CHLORIDE

## Baseline Monitoring Project, FY 2001

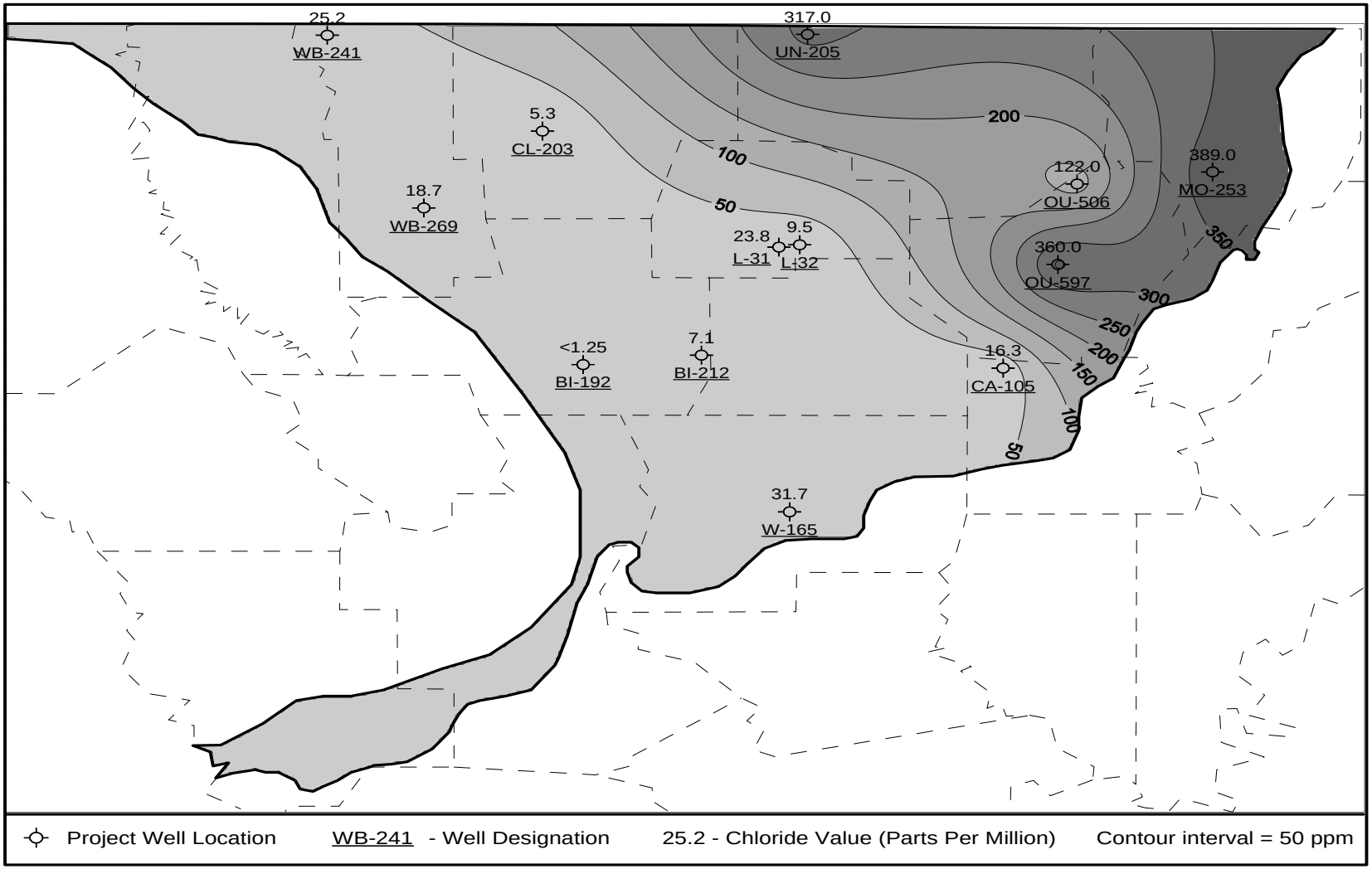



**Figure 1-4 Map of Chloride Data**

# SPARTA AQUIFER - IRON

## Baseline Monitoring Project, FY 2001

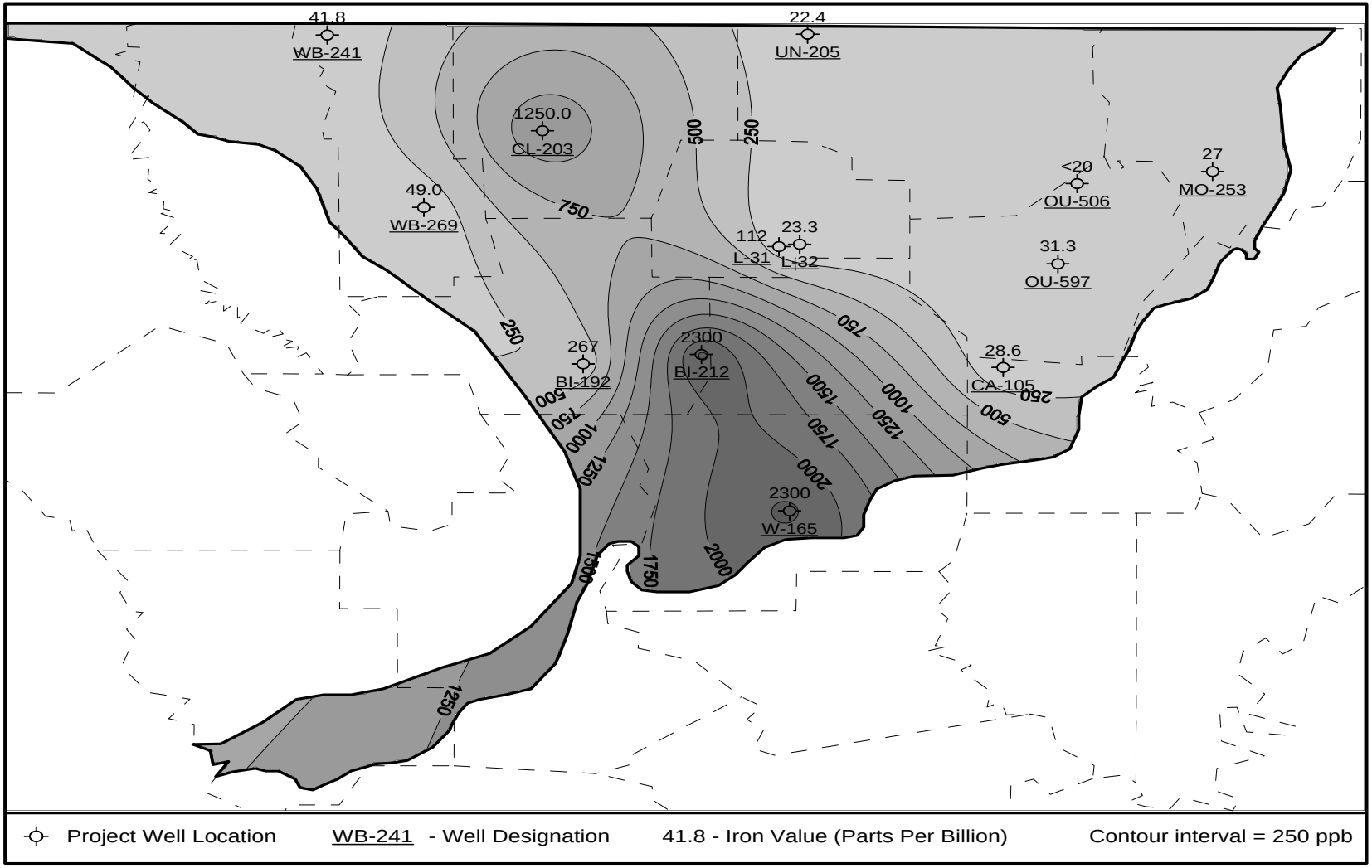



**Figure 1-5 Map of Iron Data**