NORTH LOUISIANA TERRACE AQUIFER SUMMARY, 2013
AQUIFER SAMPLING AND ASSESSMENT PROGRAM

DEQ
LOUISIANA

APPENDIX 6 TO THE 2015 TRIENNIAL SUMMARY REPORT
PARTIAL FUNDING PROVIDED BY THE CWA

Contents

BACKGROUND

The Louisiana Department of Environmental Quality's (LDEQ) Aquifer Sampling and Assessment Program (ASSET) is an ambient monitoring program established to determine and monitor the quality of groundwater produced from Louisiana's major freshwater aquifers. The ASSET Program samples approximately 200 water wells located in 14 aquifers and aquifer systems across the state. The sampling process is designed so that all 14 aquifers and aquifer systems are monitored on a rotating basis, within a three-year period so that each well is monitored every three years.

In order to better assess the water quality of a particular aquifer, an attempt is made to sample all ASSET Program wells producing from it in a narrow time frame. To more conveniently and economically promulgate those data collected, a summary report on each aquifer is prepared separately. Collectively, these aquifer summaries make up, in part, the ASSET Program's Triennial Summary Report.

Analytical and field data contained in this summary were collected from wells producing from the North Louisiana Terrace aquifer, during the 2013 state fiscal year (July 1, 2012 - June 30, 2013). This summary will become Appendix 6 of ASSET Program Triennial Summary Report for 2015.

These data show that in April 2013, 11 wells were sampled which produce from the North Louisiana Terrace aquifer. Seven of these wells are classified as public supply, three as domestic, and one as industrial. The wells are located in seven parishes in the central, northeast, and northwest areas of the state.

Figure 6-1 shows the geographic locations of the North Louisiana Terrace aquifer and the associated wells, whereas Table 6-1 lists the wells in the aquifer along with their total depths, use made of produced waters, and date sampled.

Well data for registered water wells were obtained from the Louisiana Department of Natural Resources water well registration data file.

GEOLOGY

The Pleistocene Terrace aquifers that make up the North Louisiana Terrace aquifer occur as blanket terrace deposits in central Louisiana and as erosional remnants of dissected terraces northward. The Prairie, intermediate, and high terraces typically consist of unconsolidated, fining upward sequences of gravel, sand, silt, and clay and are overlain by Holocene alluvium in the valleys of the larger streams. The older terraces generally have a coarser texture and the fine-grained top stratum is often eroded. The aquifer deposits are typically poorly to well sorted and consist of coarse sand and gravel in the lower parts grading to fine sand toward the top. The North Louisiana Terrace is unconfined in most areas, but may be confined by silt and clay locally.

HYDROGEOLOGY

Recharge is primarily from the direct infiltration of rainfall in interstream, upland outcrop areas and can be relatively rapid where the overlying silts and clays are thin or missing. Water in the terrace aquifers moves downgradient and laterally and is discharged into streams that have eroded valleys into the aquifer units. Water levels typically reflect variations in precipitation and seasonal withdrawals by wells. The hydraulic conductivity of the North Louisiana Terrace varies between 150 and 270 feet/day.

The maximum depths of occurrence of freshwater in the North Louisiana Terrace range from 100 feet above sea level, to 100 feet below sea level. The range of thickness of the fresh water interval in the North Louisiana Terrace is 50 to 150 feet. The depths of the North Louisiana Terrace wells that were monitored in conjunction with the ASSET Program range from 49 to 158 feet.

PROGRAM PARAMETERS

The field parameters checked at each ASSET well sampling site and the list of conventional parameters analyzed in the laboratory are shown in Table 6-2. The inorganic (total metals) parameters analyzed in the laboratory are listed in Table 6-3. These tables also show the field and analytical results determined for each analyte. For quality control, duplicate samples were taken for each parameter at wells BO-208 and LS-264.

In addition to the field, conventional, and inorganic (total metals) analytical parameters, the target analyte list includes three other categories of compounds: volatiles, semi-volatiles, and pesticides/PCBs. Due to the large number of analytes in these categories, tables were not prepared showing the analytical results for these compounds. A discussion of any detections from any of these three categories, if necessary, can be found in their respective sections. Tables 6-8, 6-9 and 6-10 list the target analytes for volatiles, semi-volatiles and pesticides/PCBs, respectively.

Tables 6-4 and 6-5 provide a statistical overview of field and conventional data, and inorganic data for the North Louisiana Terrace aquifer, listing the minimum, maximum, and average results for these parameters. Tables 6-6 and 6-7 compare these same parameter averages to historical ASSET-derived data for the North Louisiana Terrace aquifer, from fiscal years 1995, 1998, 2001, 2004, 2007, and 2010.

The average values listed in the above referenced tables are determined using all valid, reported results, including those reported as non-detect, or less than the detection limit (< DL). Per Departmental policy concerning statistical analysis (including contouring purposes), one-half the DL is used in place of zero when non-detects are encountered. However, the minimum value is reported < DL, not one-half the DL. If all values for a particular analyte are reported as < DL, then the minimum, maximum, and average values are all reported as < DL.

Due to the variability in the laboratory's reporting detection limits caused by dilution factors, whenever an analyte in question is not detected, the standard reporting detection limit value for each analytical method is used as the DL when performing statistical calculations.

Figures 6-2, 6-3, 6-4, and 6-5 respectively, represent the contoured data for pH, total dissolved solids, chloride, and iron. Charts 6-1 through 6-16 represent the trend of the graphed parameter, based on the averaged value of that parameter for each three-year reporting period. Discussion of historical data and related trends is found in the **Water Quality Trends and Comparison to Historical ASSET Data** section.

INTERPRETATION OF DATA

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, the ASSET Program does use the MCLs as a benchmark for further evaluation.

EPA has set secondary standards, which are defined as non-enforceable taste, odor, or appearance guidelines. Field and laboratory data contained in Tables 6-2 and 6-3 show that one or more secondary MCL (SMCL) was exceeded in seven of the 11 wells sampled in the North Louisiana Terrace aquifer, with a total of eight SMCLs exceeded.

Field and Conventional Parameters

Table 6-2 shows the field and conventional parameters for which samples are collected at each well and the analytical results for those parameters. Table 6-4 provides an overview of this data for the North Louisiana Terrace aquifer, listing the minimum, maximum, and average results for these parameters.

Federal Primary Drinking Water Standards: A review of the analysis listed in Table 6-2 shows that no primary MCL was exceeded for field or conventional parameters for this reporting period. Those ASSET wells reporting turbidity levels greater than 1.0 NTU do not exceed the Primary MCL of 1.0, as this standard applies to public supply water wells that are under the direct influence of surface water. The Louisiana Department of Health has determined that no public water supply well in Louisiana was in this category.

Federal Secondary Drinking Water Standards: A review of the analysis listed in Table 6-2 shows that four wells exceeded the SMCL for pH and one well exceeded the SMCL for total dissolved solids (TDS). Laboratory results override field results in exceedance determinations, thus only lab results will be counted in determining SMCL exceedance numbers for TDS. Following is a list of SMCL parameter exceedances with well number and results:

pH (SMCL = 6.5 – 8.5 Standard Units):

BI-208 – 6.31 SU (Original and Duplicate)
LS-264 – 6.16 SU (Original and Duplicate)
G-432 – 5.84 SU
OU-5524Z – 5.60 SU

Total Dissolved Solids (SMCL = 500 mg/L or 0.5 g/L):

	LAB RESULTS (in mg/L)	FIELD MEASURES (in g/L)
MO-364	620 mg/L	0.505 g/L

Inorganic Parameters

Table 6-3 shows the inorganic (total metals) parameters for which samples are collected at each well and the analytical results for those parameters. Table 6-5 provides an overview of inorganic data for the North Louisiana Terrace aquifer, listing the minimum, maximum, and average results for these parameters.

Federal Primary Drinking Water Standards: A review of the analyses listed in Table 6-3 shows that no primary MCL was exceeded for total metals.

Federal Secondary Drinking Water Standards: Laboratory data contained in Table 6-3 shows that three wells exceeded the secondary MCL for iron:

Iron (SMCL = 300 µg/L):

BO-578 – 647 µg/L
BO-7896Z – 1,660 µg/L
RR-254 – 1,570 µg/L

Volatile Organic Compounds

Table 6-8 shows the volatile organic compound (VOC) parameters for which samples are collected at each well. Due to the number of analytes in this category, analytical results are not tabulated; however detections of VOCs are discussed in this section.

Chloroform and methyl tert-butyl ether (MTBE) were detected at low levels separately in two wells. Chloroform was reported in public supply well MO-124 at 2.2 µg/L, and MTBE was reported in public supply well MO-364 (a backup well) at 1.3 µg/L. Neither of these VOCs have drinking water standards established for them; however, close attention will be given to this category of compounds in subsequent sampling episodes of this aquifer.

No other VOC was detected at or above its detection limit during the FY 2013 sampling of the North Louisiana Terrace aquifer.

Semi-Volatile Organic Compounds

Table 6-9 shows the semi-volatile organic compound (SVOC) parameters for which samples are collected at each well. Due to the number of analytes in this category, analytical results are not tabulated; however any detection of a SVOC would be discussed in this section.

No SVOC was detected at or above its detection limit during the FY 2013 sampling of the North Louisiana Terrace aquifer.

Pesticides and PCBs

Table 6-10 shows the pesticide and PCB parameters for which samples are collected at each well. Due to the number of analytes in this category, analytical results are not tabulated; 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 FY 2013 sampling of the North Louisiana Terrace aquifer.

WATER QUALITY TRENDS AND COMPARISON TO HISTORICAL ASSET DATA

Analytical and field data show that the quality and characteristics of groundwater produced from the North Louisiana Terrace aquifer exhibit some changes when comparing current data to that of the six previous sampling rotations (three, six, nine, twelve, fifteen, and eighteen years prior). These comparisons can be found in Tables 6-6 and 6-7, and in Charts 6-1 to 6-16 of this summary. Over the eighteen year period, eight analytes have shown a general increase in their average concentrations. These analytes are: pH, alkalinity, barium, chloride, hardness, salinity, specific conductance (field), and TDS. For this same time period, 10 analytes have demonstrated a decrease in their average concentrations: temperature, color, sulfate, iron, total phosphorus, TKN, nitrite-nitrate, ammonia, copper, and zinc.

Current sample results show that seven wells reported one or more SMCL exceedances with a total of eight exceedances. Historical data show that in the FY 2010 sampling of the North Louisiana Terrace aquifer, there were nine wells with one or more SMCL exceedances for a total of 15 SMCL exceedances.

SUMMARY AND RECOMMENDATIONS

In summary, the data show that the groundwater produced from this aquifer is moderately hard[1] and is of good quality when considering short-term or long-term health risk guidelines. Laboratory data show that no ASSET well that was sampled during the Fiscal Year 2013 monitoring of the North Louisiana Terrace aquifer exceeded an MCL. The data also show that this aquifer is of fair to good quality when considering taste, odor or appearance guidelines, with 11 SMCLs exceeded in seven wells.

Comparison to historical ASSET-derived data shows some change in the quality or characteristics of the North Louisiana Terrace aquifer, with eight parameters showing consistent increases in average concentration, ten parameters decreasing in average concentration, while remaining parameters show no consistent change or remained below detection limits.

It is recommended that the wells assigned to the North Louisiana Terrace aquifer be resampled as planned, in approximately three years. In addition, several wells should be added to the 11 currently in place to increase the well density for this aquifer.

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

Table 6-1: List of Wells Sampled, North Louisiana Terrace Aquifer–FY 2013

Well ID	Parish	Date	Owner	Depth (Feet)	Well Use
BI-208	Bienville	04/17/2013	Private Owner	100	Domestic
BO-434	Bossier	04/17/2013	Red Chute Utilities	94	Public Supply
BO-578	Bossier	04/16/2013	Village Water System	85	Public Supply
BO-7896Z	Bossier	04/17/2013	Private Owner	96	Domestic
G-342	Grant	04/04/2013	Vangaurd Synfuels, LLC	49	Industrial
G-432	Grant	04/04/2013	Central Grant Water System	158	Public Supply
LS-264	La Salle	04/03/2013	City of Jena	105	Public Supply
MO-124	Morehouse	04/16/2013	Texas Gas	133	Public Supply
MO-364	Morehouse	04/16/2013	People Water Service	154	Public Supply
OU-5524Z	Ouachita	04/16/2013	Private Owner	95	Domestic
RR-254	Red River	04/17/2013	East Cross Water System	93	Public Supply

Table 6-2: Summary of Field and Conventional Data, North Louisiana Terrace Aquifer–FY 2013

Well ID	Temp Deg. C	pH SU	Sp. Cond. mmhos/cm	Sal. ppt	TDS g/L	Alk mg/L	Cl mg/L	Color PCU	Sp. Cond. umhos/cm	SO4 mg/L	TDS mg/L	TSS mg/L	Turb. NTU	NH3 mg/L	Hard. mg/L	Nitrite-Nitrate (as N) mg/L	TKN mg/L	Tot. P mg/L
LABORATORY DETECTION LIMITS† →						5	0.25/ 1.25	1	10	0.25/12.5	10	4	0.3	0.05	5	0.01/ 0.1	0.1	0.05
	FIELD PARAMETERS					LABORATORY PARAMETERS												
BI-208	18.05	6.31	0.085	0.04	0.055	8	10.3	< DL	NA	1.72	150	< DL	< DL	< DL	16	1.52	0.31	< DL
BI-208*	18.05	6.31	0.085	0.04	0.055	10	10.5	< DL	NA	1.69	163	< DL	< DL	< DL	16	1.58	0.32	< DL
BO-434	17.47	7.09	0.211	0.10	0.137	82	10.7	< DL	NA	4.37	223	< DL	< DL	< DL	80	0.26	0.26	0.20
BO-578	18.30	7.63	0.405	0.20	0.263	172	28.2	< DL	NA	< DL	340	< DL	3.15	0.52	112	< DL	0.35	0.25
BO-7896Z	18.40	7.30	0.697	0.34	0.453	256	47.8	5.0	NA	13.30	477	< DL	12.10	0.31	280	< DL	0.35	0.17
G-342	17.66	6.98	0.099	0.05	0.064	10	12.3	4.7	104	4.01	220	< DL	< DL	< DL	< DL	2.54	0.58	< DL
G-432	17.17	5.84	0.045	0.02	0.029	12	4.0	4.7	47	0.64	73	< DL	< DL	< DL	< DL	0.35	0.27	< DL
LS-264	16.75	6.16	0.122	0.06	0.080	22	13.0	< DL	127	10.60	140	< DL	< DL	< DL	< DL	0.36	0.67	< DL
LS-264*	16.75	6.16	0.122	0.06	0.080	20	13.1	< DL	130	10.70	193	< DL	< DL	< DL	< DL	0.33	0.58	< DL
MO-124	18.98	6.54	0.305	0.15	0.198	84	40.4	9.0	NA	< DL	283	< DL	< DL	< DL	128	0.66	0.39	0.07
MO-364	18.15	7.26	0.777	0.39	0.505	66	123.0	< DL	NA	128.00	620	< DL	< DL	< DL	216	1.05	0.25	1.02
OU-5524Z	18.39	5.60	0.131	0.06	0.085	30	17.9	< DL	NA	1.91	220	< DL	< DL	< DL	20	0.06	0.31	0.11
RR-254	17.76	6.98	0.166	0.08	0.108	16	14.6	5.0	NA	10.40	143	< DL	< DL	< DL	40	< DL	0.73	< DL

†Detection limits vary due to dilution factor *Denotes Duplicate Sample NA – Not Analyzed Shaded cells exceed EPA Secondary Standards

Table 6-3: Summary of Inorganic (Total Metals) Data, North Louisiana Terrace Aquifer–FY 2013

Well ID	Antimony ug/L	Arsenic ug/L	Barium ug/L	Beryllium ug/L	Cadmium ug/L	Chromium ug/L	Copper ug/L	Iron ug/L	Lead ug/L	Mercury ug/L	Nickel ug/L	Selenium ug/L	Silver ug/L	Thallium ug/L	Zinc ug/L
Laboratory Detection Limits	5	4	5	2	2	4	2	100	1	0.0002	3	5	1	2	6
BI-208	< DL	< DL	69.7	< DL	< DL	< DL	5.0	< DL	< 1	NA	< DL	< DL	< DL	< DL	8.4
BI-208*	< DL	< DL	69.3	< DL	< DL	< DL	3.8	< DL	< 1	NA	< DL	< DL	< DL	< DL	7.1
BO-434	< DL	< DL	64.7	< DL	< DL	< DL	< DL	< DL	< 1	NA	< DL	< DL	< DL	< DL	26.1
BO-578	< DL	< DL	227.0	< DL	< DL	< DL	< DL	647	< 1	NA	< DL	< DL	< DL	< DL	< DL
BO-7896Z	< DL	< DL	473.0	< DL	< DL	< DL	< DL	1,660	< 1	NA	< DL	< DL	< DL	< DL	< DL
G-342	< DL	< DL	108.0	< DL	< DL	< DL	3.2	< DL	< 1	< DL	< DL	< DL	< DL	< DL	< DL
G-432	< DL	< DL	46.2	< DL	< DL	< DL	4.5	< DL	2.9	< DL	< DL	< DL	< DL	< DL	< DL
LS-264	< DL	< DL	59.1	< DL	< DL	< DL	4.6	< DL	4.7	< DL	< DL	< DL	< DL	< DL	< DL
LS-264*	< DL	< DL	57.2	< DL	< DL	< DL	4.6	< DL	4.2	< DL	< DL	< DL	< DL	< DL	< DL
MO-124	< DL	< DL	124.0	< DL	< DL	< DL	6.0	132	< 1	NA	< DL	< DL	< DL	< DL	< DL
MO-364	< DL	< DL	103.0	< DL	< DL	8.2	< DL	223	< 1	NA	< DL	< DL	< DL	< DL	8.6
OU-5524Z	< DL	< DL	46.1	< DL	< DL	< DL	23.3	324	1.6	NA	< DL	< DL	< DL	< DL	9.2
RR-254	< DL	< DL	21.4	< DL	< DL	< DL	< DL	1,570	< 1	NA	< DL	< DL	< DL	< DL	7.3

*Denotes Duplicate Sample NA – Not Analyzed Shaded cell exceed EPA Secondary Standards

Table 6-4: FY 2013 Field and Conventional Statistics, ASSET Wells

	PARAMETER	MINIMUM	MAXIMUM	AVERAGE
FIELD	Temperature (°C)	16.75	18.98	17.84
	pH (SU)	5.60	7.63	6.63
	Specific Conductance (mmhos/cm)	0.045	0.777	0.250
	Salinity (ppt)	0.02	0.39	0.12
	TDS (g/L)	0.029	0.505	0.162
LABORATORY	Alkalinity (mg/L)	8	256	61
	Chloride (mg/L)	4.0	123	27
	Color (PCU)	< DL	9.0	2.5
	Specific Conductance (umhos/cm)	Statistics not determined, only 4 of 11 well samples analyzed by lab.		
	Sulfate (mg/L)	< DL	128.00	14.43
	TDS (mg/L)	73	620	250
	TSS (mg/L)	< DL	< DL	< DL
	Turbidity (NTU)	< DL	12.10	1.30
	Ammonia, as N (mg/L)	< DL	0.52	0.08
	Hardness (mg/L)	< DL	280	71
	Nitrite - Nitrate, as N (mg/L)	< DL	2.54	0.67
	TKN (mg/L)	0.25	0.73	0.42
	Total Phosphorus (mg/L)	< DL	1.02	0.15

Table 6-5: FY 2013 Inorganic (Total Metals) Statistics, ASSET Wells

PARAMETER	MINIMUM	MAXIMUM	AVERAGE
Antimony (ug/L)	< DL	< DL	< DL
Arsenic (ug/L)	< DL	< DL	< DL
Barium (ug/L)	21.4	473.0	113.0
Beryllium (ug/L)	< DL	< DL	< DL
Cadmium (ug/L)	< DL	< DL	< DL
Chromium (ug/L)	< DL	8.2	< DL
Copper (ug/L)	< DL	23.3	4.62
Iron (ug/L)	< DL	1,660	377
Lead (ug/L)	< DL	4.7	1.4
Mercury (ug/L)	< DL	< DL	< DL
Nickel (ug/L)	< DL	< DL	< DL
Selenium (ug/L)	< DL	< DL	< DL
Silver (ug/L)	< DL	< DL	< DL
Thallium (ug/L)	< DL	< DL	< DL
Zinc (ug/L)	< DL	26.1	6.8

Table 6-6: Triennial Field and Conventional Statistics, ASSET Wells

	PARAMETER	AVERAGE VALUES BY FISCAL YEAR						
		FY 1995	FY 1998	FY 2001	FY 2004	FY 2007	FY 2010	FY 2013
FIELD	Temperature (^{O}C)	20.18	19.79	18.97	19.43	19.43	18.71	17.84
	pH (SU)	6.27	5.88	6.81	6.51	6.19	6.55	6.63
	Specific Conductance (mmhos/cm)	0.28	0.26	0.32	0.55	0.32	0.46	0.250
	Salinity (Sal.) (ppt)	0.12	0.13	0.15	0.27	0.16	0.23	0.12
	TDS (Total dissolved solids) (g/L)	-	-	-	0.36	0.21	0.30	0.162
LABORATORY	Alkalinity (Alk.) (mg/L)	81.70	69.60	97.68	112.42	75.16	126.31	61
	Chloride (Cl) (mg/L)	22.68	20.99	25.03	80.74	44.31	67.53	27
	Color (PCU)	17.69	6.43	8.75	< DL	-	9.42	2.5
	Specific Conductance (umhos/cm)	278.00	268.06	352.94	558.24	315.19	476.77	*
	Sulfate (SO4) (mg/L)	25.95	32.62	41.53	38.32	12.98	18.64	14.43
	TDS (Total dissolved solids) (mg/L)	220	192	239	331	202	435	250
	TSS (Total suspended solids) (mg/L)	6.62	< DL	< DL	7.73	< DL	7.46	< DL
	Turbidity (Turb.) (NTU)	11.08	9.49	3.09	35.05	1.44	4.75	1.30
	Ammonia, as N (NH3) (mg/L)	0.19	0.25	0.18	0.18	< DL	< DL	0.08
	Hardness (mg/L)	49	64	90	152	75	124	71
	Nitrite - Nitrate , as N (mg/L)	0.67	1.27	0.68	0.43	0.88	0.48	0.67
	TKN (mg/L)	0.69	0.36	0.24	0.25	0.11	0.28	0.42
	Total Phosphorus (P) (mg/L)	0.24	0.14	0.15	0.15	0.12	0.19	0.15

* Statistics not determined, only 4 of 11 well samples analyzed by lab.

Table 6-7: Triennial Inorganic (Total Metals) Statistics, ASSET Wells

PARAMETER	AVERAGE VALUES BY FISCAL YEAR						
	FY 1995	FY 1998	FY 2001	FY 2004	FY 2007	FY 2010	FY 2013
Antimony (ug/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Arsenic (ug/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Barium (ug/L)	117.3	90.5	93.9	202.2	166.6	256.0	113.0
Beryllium (ug/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Cadmium (ug/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Chromium (ug/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Copper (ug/L)	6.57	55.75	11.77	27.52	16.41	6.88	4.62
Iron (ug/L)	2,244	1,077	522	3,624	453	839	377
Lead (ug/L)	< DL	< DL	< DL	3.64	3.24	1.43	1.37
Mercury (ug/L)	0.07	< DL	< DL	< DL	< DL	< DL	< DL
Nickel (ug/L)	7.18	3.44	6.89	< DL	< DL	< DL	< DL
Selenium (ug/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Silver (ug/L)	< DL	< DL	< DL	-	< DL	< DL	< DL
Thallium (ug/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Zinc (ug/L)	25.0	46.4	119.2	33.8	11.1	7.6	6.8

Table 6-8: VOC Analytical Parameters

COMPOUND	METHOD	DETECTION LIMIT (ug/L)
ETHYL BENZENE	624	0.5
CIS-1,3-DICHLOROPROPENE	624	0.5
TRANS-1,3-DICHLOROPROPENE	624	0.5
1,4-DICHLOROBENZENE	624	0.5
1,2-DICHLOROETHANE	624	0.5
TOLUENE	624	0.5
CHLOROBENZENE	624	0.5
DIBROMOCHLOROMETHANE	624	0.5
TETRACHLOROETHYLENE (PCE)	624	0.5
TRANS-1,2-DICHLOROETHENE	624	0.5
TERT-BUTYL METHYL ETHER	624	0.5
1,3-DICHLOROBENZENE	624	0.5
CARBON TETRACHLORIDE	624	0.5
CHLOROFORM	624	0.5
BENZENE	624	0.5
1,1,1-TRICHLOROETHANE	624	0.5
BROMOMETHANE	624	0.5
CHLOROMETHANE	624	0.5
CHLOROETHANE	624	0.5
VINYL CHLORIDE	624	0.5
METHYLENE CHLORIDE	624	0.5
BROMOFORM	624	0.5
BROMODICHLOROMETHANE	624	0.5
1,1-DICHLOROETHANE	624	0.5
1,1-DICHLOROETHENE	624	0.5
TRICHLOROFLUOROMETHANE (FREON-11)	624	0.5
1,2-DICHLOROPROPANE	624	0.5
1,1,2-TRICHLOROETHANE	624	0.5
TRICHLOROETHYLENE (TCE)	624	0.5
1,1,2,2-TETRACHLOROETHANE	624	0.5
1,2,3-TRICHLOROBENZENE	624	0.5
1,2-DICHLOROBENZENE	624	0.5
ETHYL BENZENE	624	0.5
CIS-1,3-DICHLOROPROPENE	624	0.5

Table 6-9: SVOC Analytical Parameters

COMPOUND	METHOD	DETECTION LIMIT (ug/L)
1,2,4-TRICHLOROBENZENE	625	5
2,4,6-TRICHLOROPHENOL	625	5
2,4-DICHLOROPHENOL	625	5
2,4-DIMETHYLPHENOL	625	5
2,4-DINITROPHENOL	625	20
2,4-DINITROTOLUENE	625	5
2,6-DINITROTOLUENE	625	5
2-CHLORONAPHTHALENE	625	5
2-CHLOROPHENOL	625	5
2-NITROPHENOL	625	10
3,3'-DICHLOROBENZIDINE	625	5
4,6-DINITRO-2-METHYLPHENOL	625	10
4-BROMOPHENYL PHENYL ETHER	625	5
4-CHLORO-3-METHYLPHENOL	625	5
4-CHLOROPHENYL PHENYL ETHER	625	5
4-NITROPHENOL	625	20
ACENAPHTHENE	625	5
ACENAPHTHYLENE	625	5
ANTHRACENE	625	5
BENZIDINE	625	20
BENZO(A)ANTHRACENE	625	5
BENZO(A)PYRENE	625	5
BENZO(B)FLUORANTHENE	625	5
BENZO(G,H,I)PERYLENE	625	5
BENZO(K)FLUORANTHENE	625	5
BENZYL BUTYL PHTHALATE	625	5
BIS(2-CHLOROETHOXY) METHANE	625	5
HEXACHLOROCYCLOPENTADIENE	625	5
HEXACHLOROETHANE	625	5
INDENO(1,2,3-C,D)PYRENE	625	5
ISOPHORONE	625	5
NAPHTHALENE	625	5
NITROBENZENE	625	5
N-NITROSODIMETHYLAMINE	625	5
N-NITROSODI-N-PROPYLAMINE	625	5
N-NITROSODIPHENYLAMINE	625	5

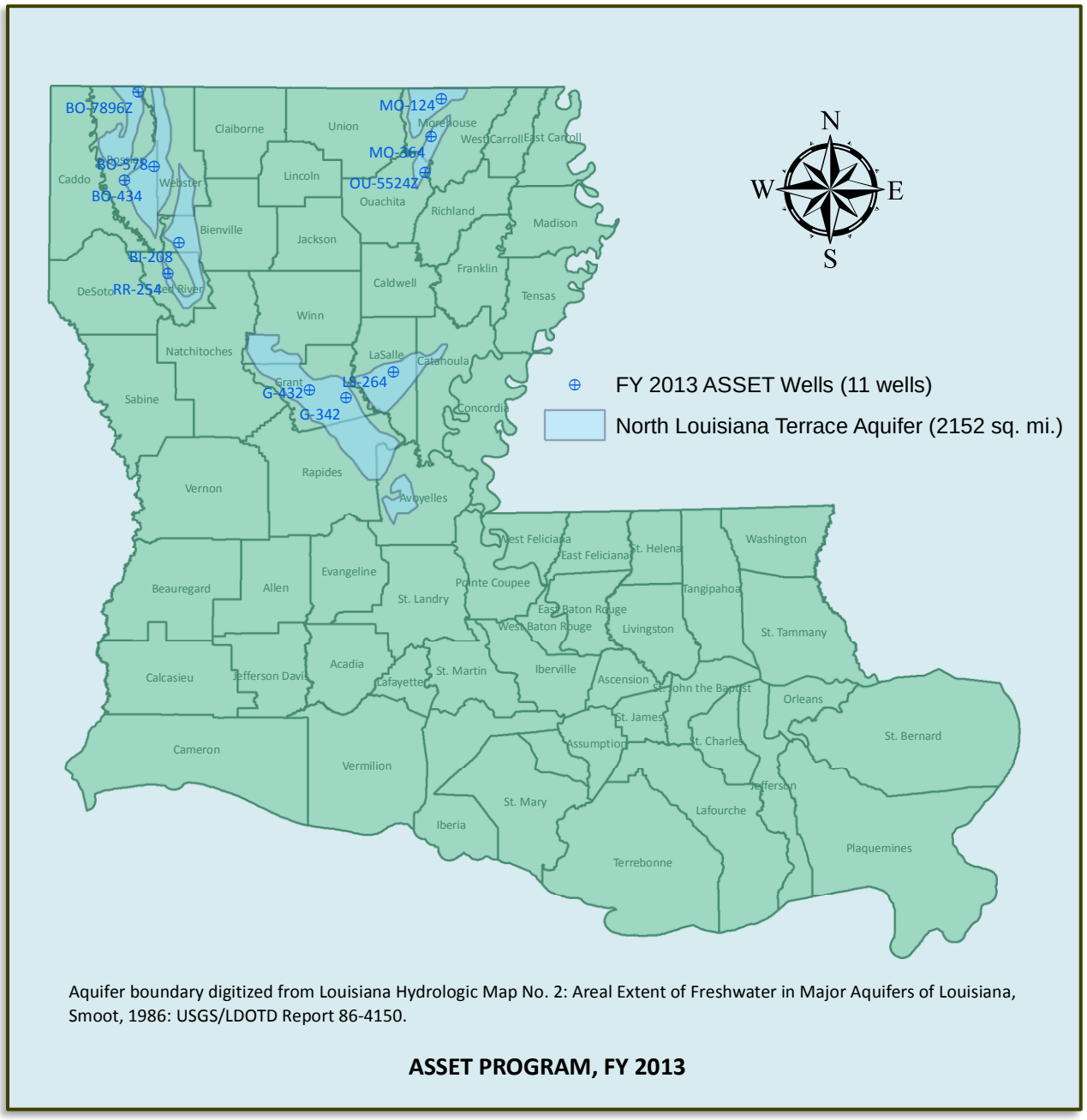
Table 6-9: SVOCs (Continued)

COMPOUND	METHOD	DETECTION LIMIT (ug/L)
PENTACHLOROBENZENE	625	5
PENTACHLOROPHENOL	625	10
PHENANTHRENE	625	5
PHENOL	625	5
PYRENE	625	5
TETRACHLOROBENZENE(S), TOTAL	625	10

Table 6-10: Pesticides and PCBs

COMPOUND	METHOD	DETECTION LIMITS (ug/L)
4,4'-DDD	8081	0.1
4,4'-DDE	8081	0.1
4,4'-DDT	8081	0.1
Aldrin	8081	0.05
Alpha-Chlordane	8081	0.05
alpha-BHC	8081	0.05
beta-BHC	8081	0.05
delta-BHC	8081	0.05
gamma-BHC	8081	0.05
Dieldrin	8081	0.1
Endosulfan I	8081	0.05
Endosulfan II	8081	0.1
Endosulfan Sulfate	8081	0.1
Endrin	8081	0.1
Endrin Aldehyde	8081	0.1
Endrin Ketone	8081	0.1
Heptachlor	8081	0.05
Heptachlor Epoxide	8081	0.05
Methoxychlor	8081	0.5
Toxaphene	8081	2
Gamma-Chlordane	8081	0.05
PCB-1016	8082	1
PCB-1221	8082	1
PCB-1232	8082	1
PCB-1242	8082	1
PCB-1248	8082	1
PCB-1254	8082	1
PCB-1260	8082	1

Figure 6-1: Location Plat, North Louisiana Terrace 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.

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Figure 6-2: Map of pH Data

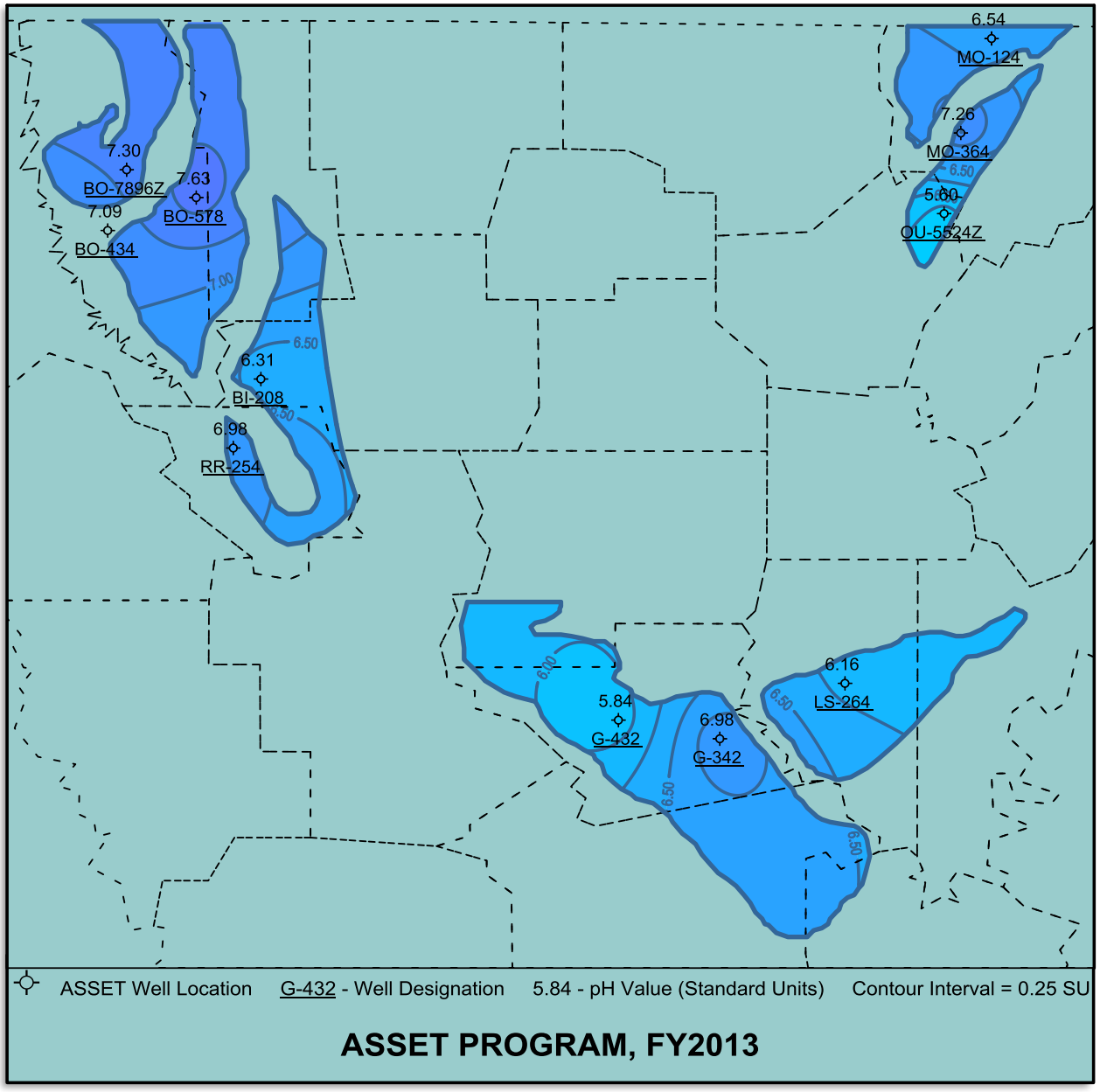

Figure 6-3: Map of TDS Lab Data

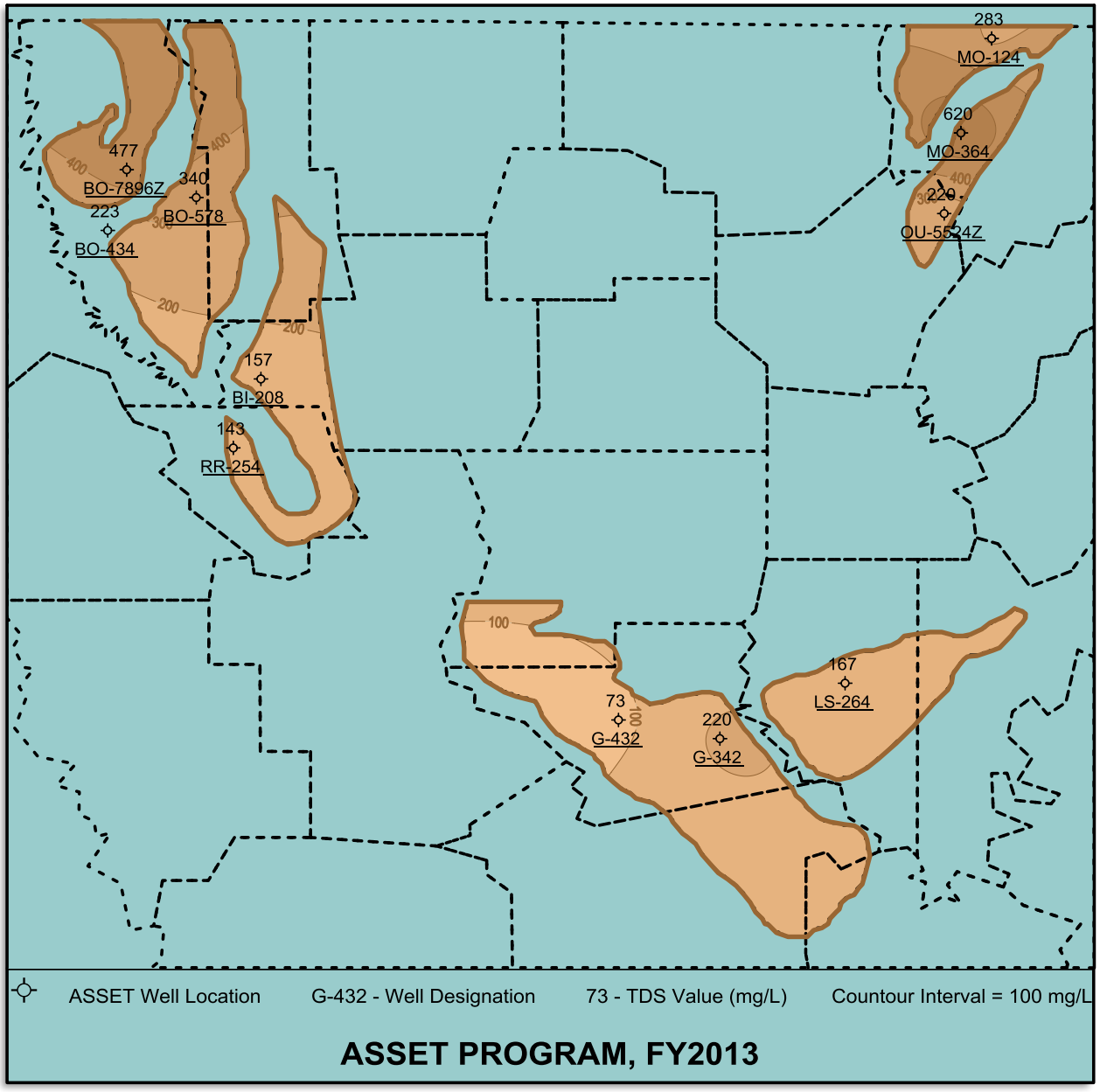

Figure 6-4: Map of Chloride Data

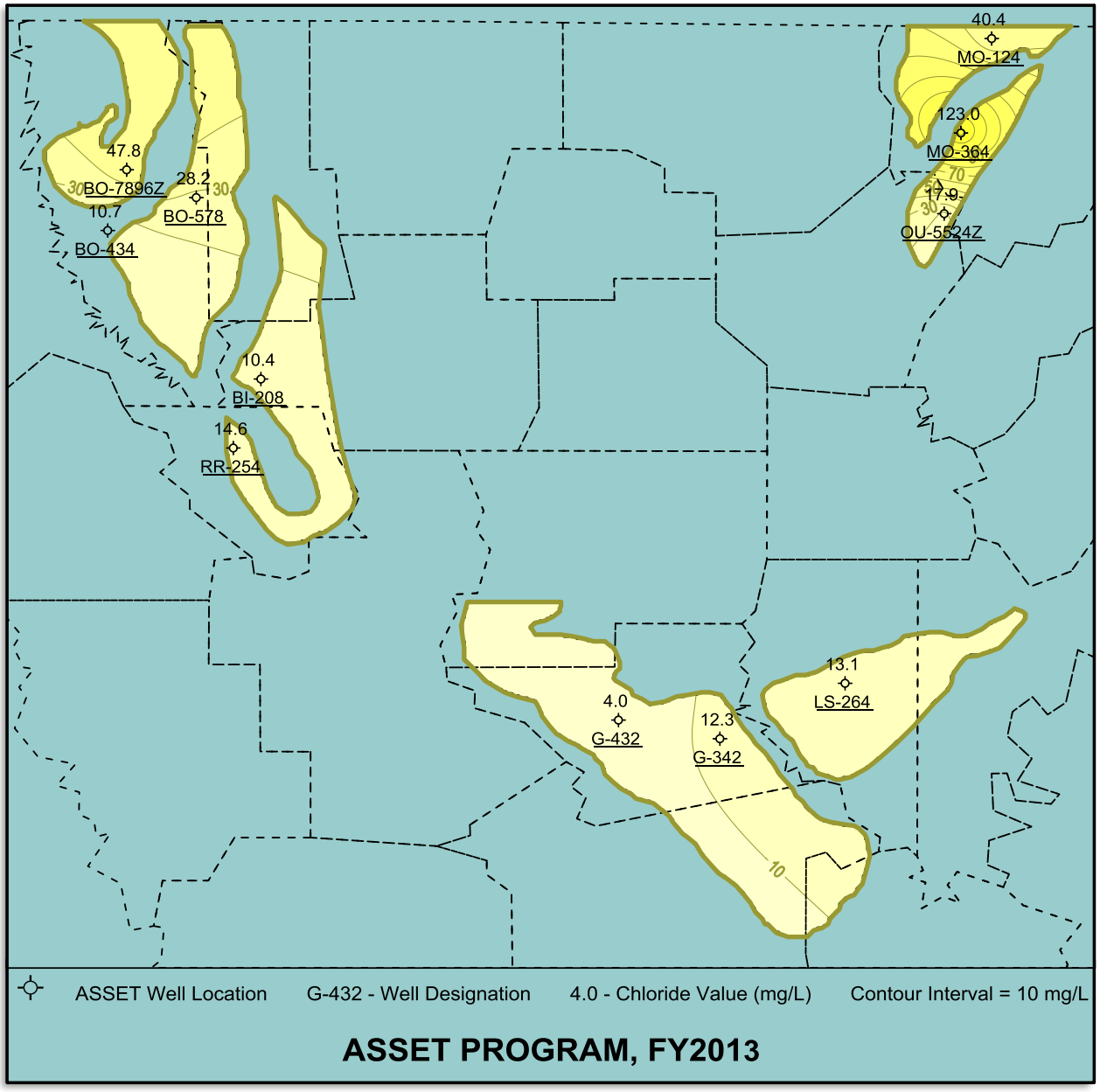

Figure 6-5: Map of Iron Data

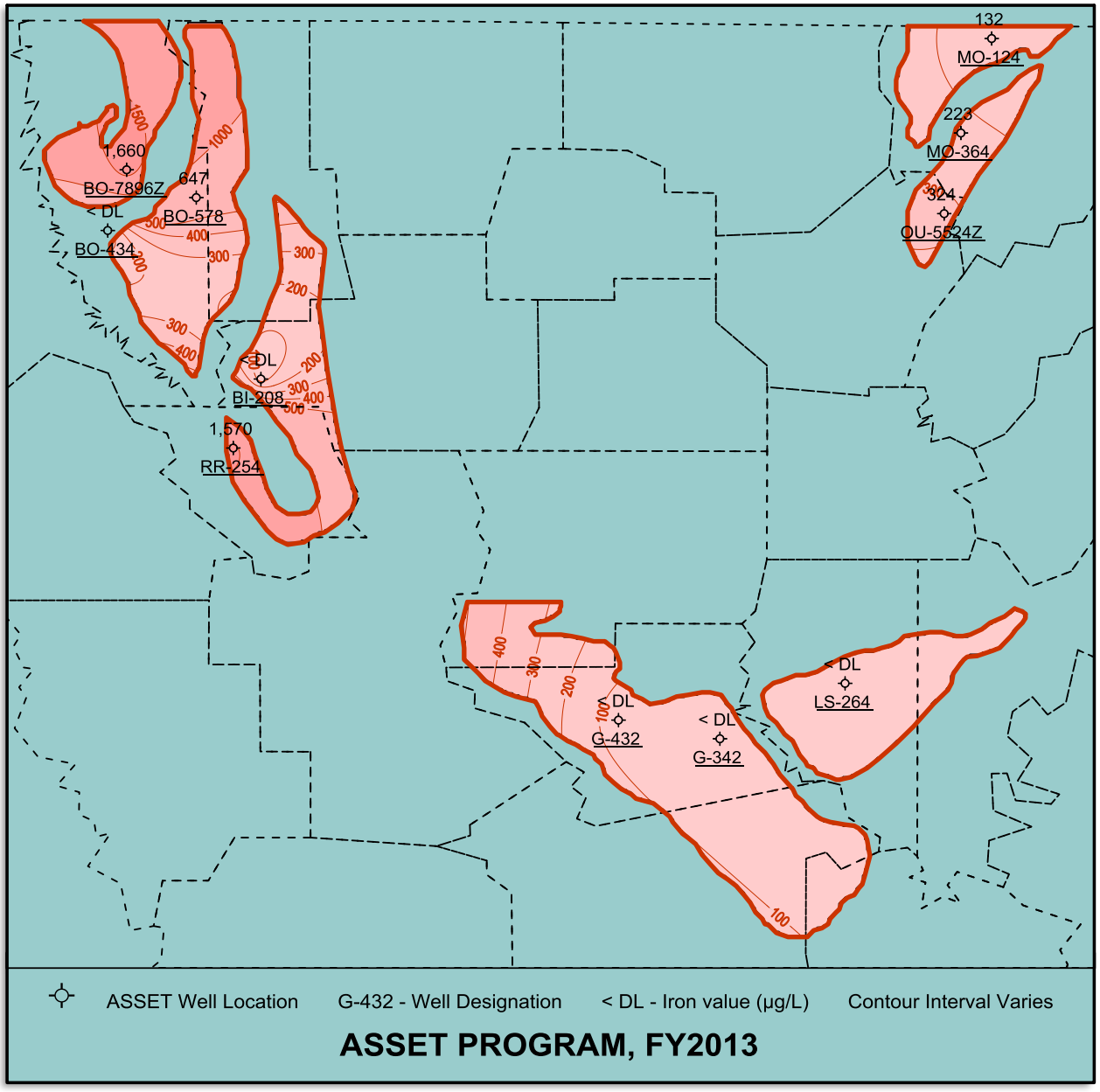

Chart 6-1: Temperature Trend

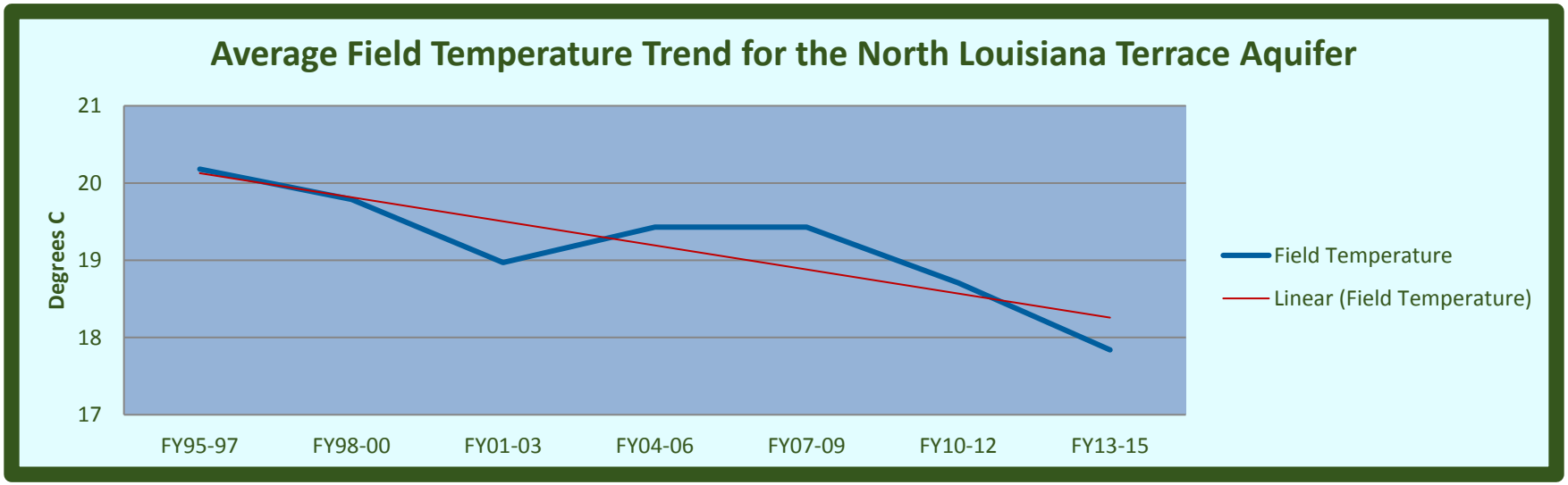

Chart 6-2: pH Trend

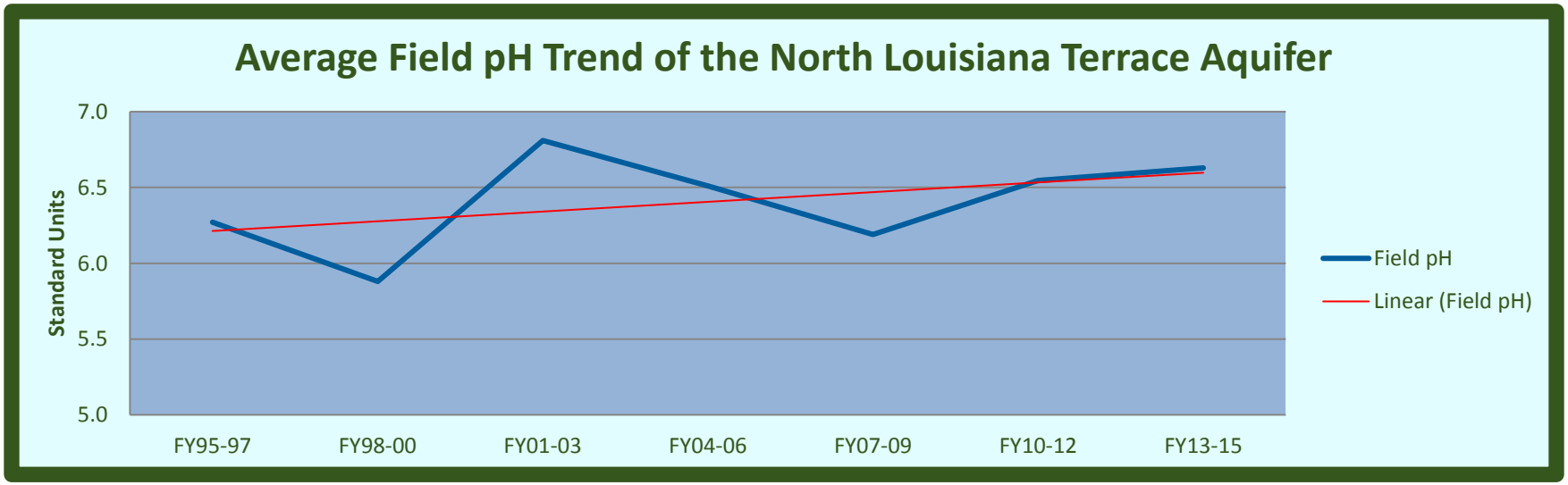

Chart 6-3: Field Specific Conductance Trend

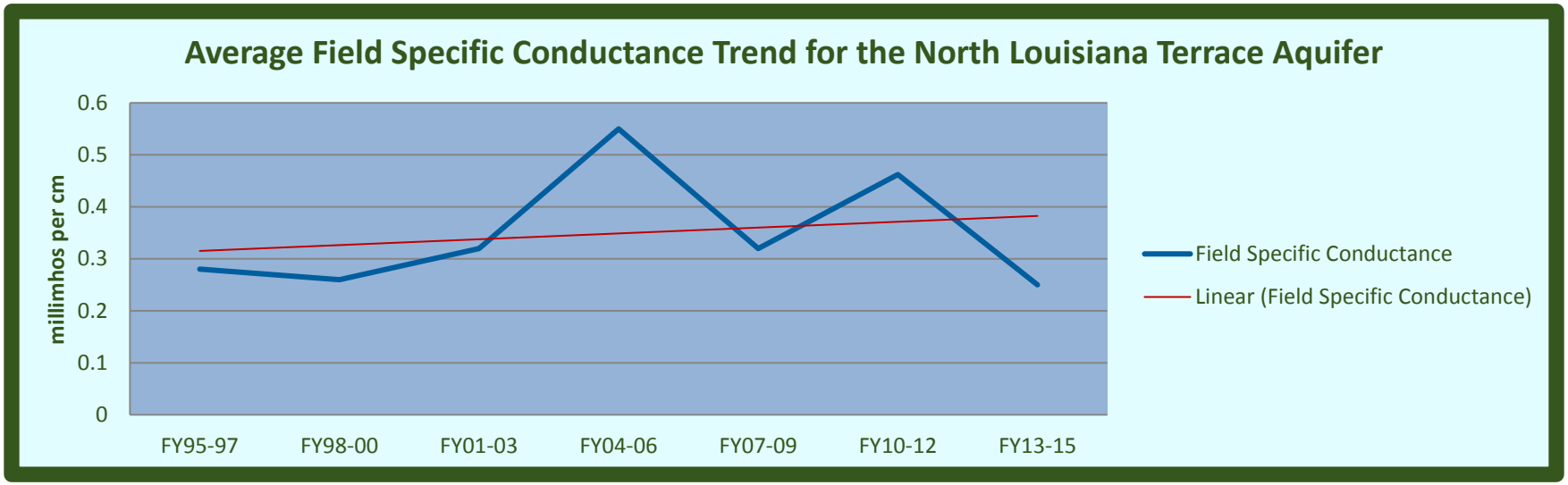

Chart 6-4: Lab Specific Conductance Trend

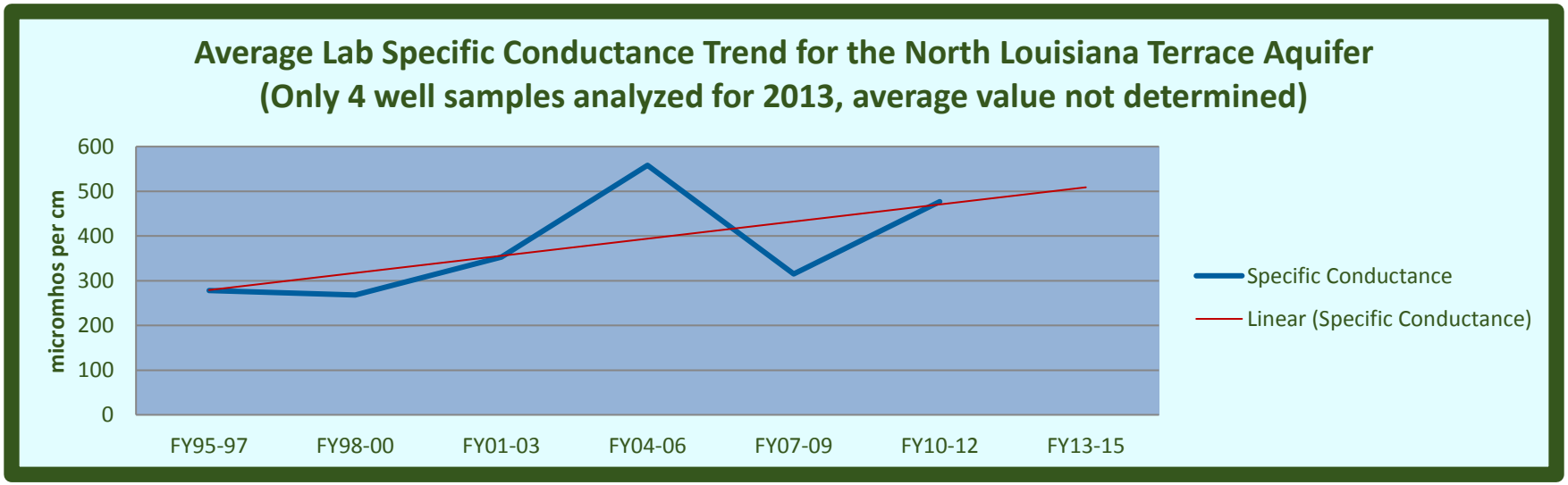

Chart 6-5: Field Salinity Trend

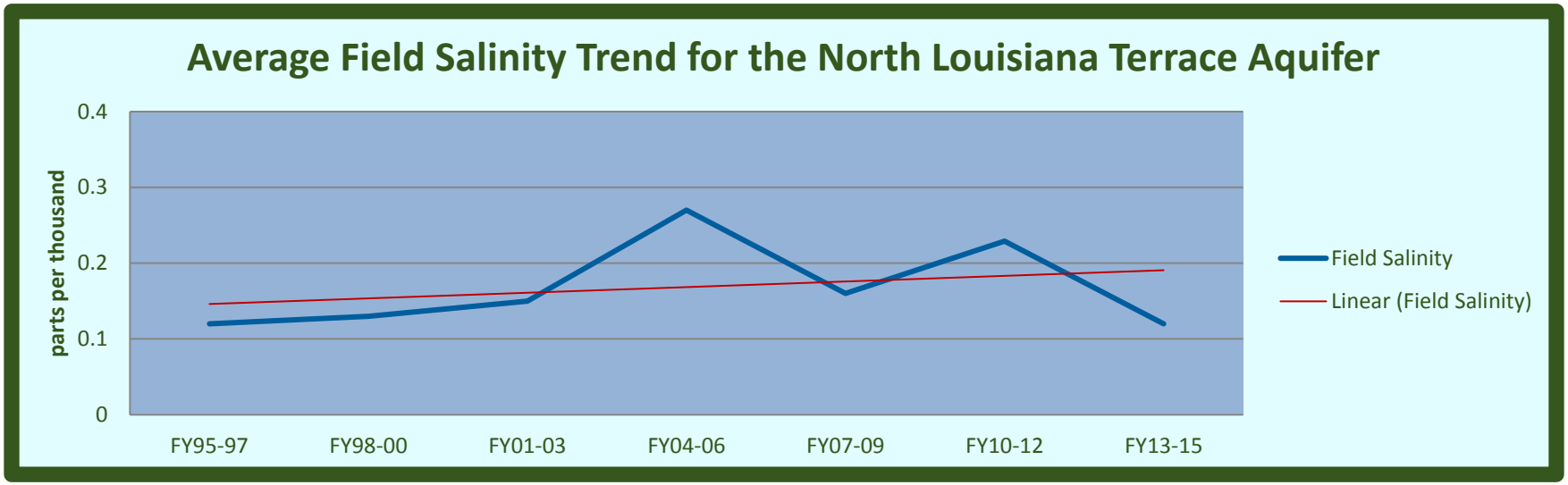

Chart 6-6: Chloride Trend

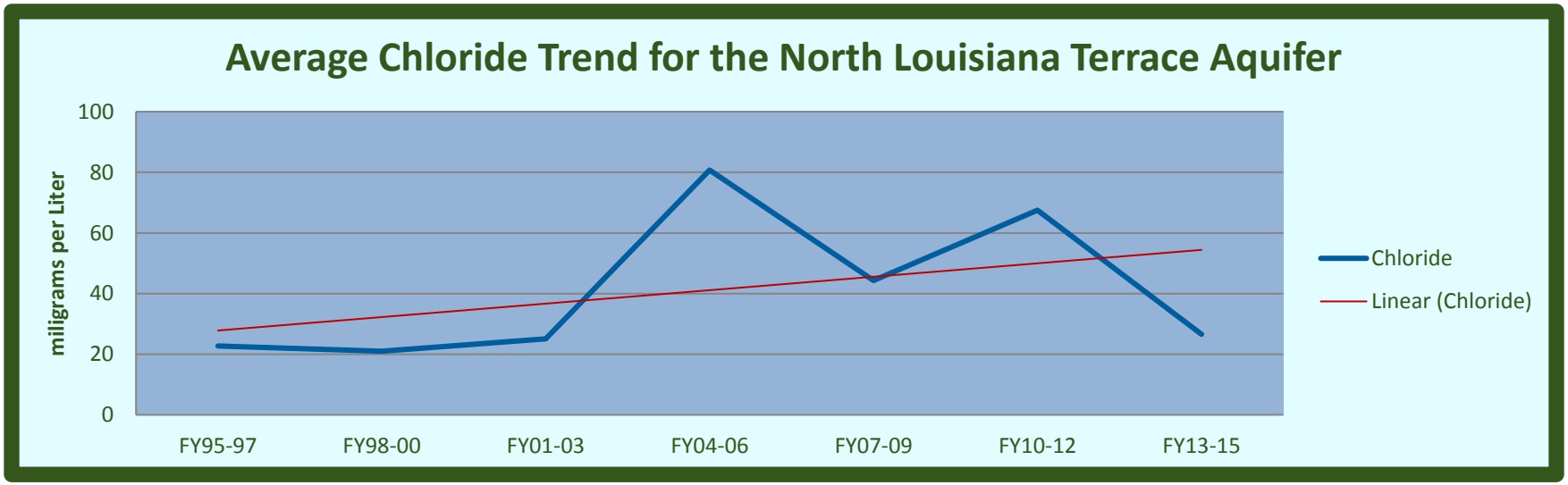

Chart 6-7: Alkalinity Trend

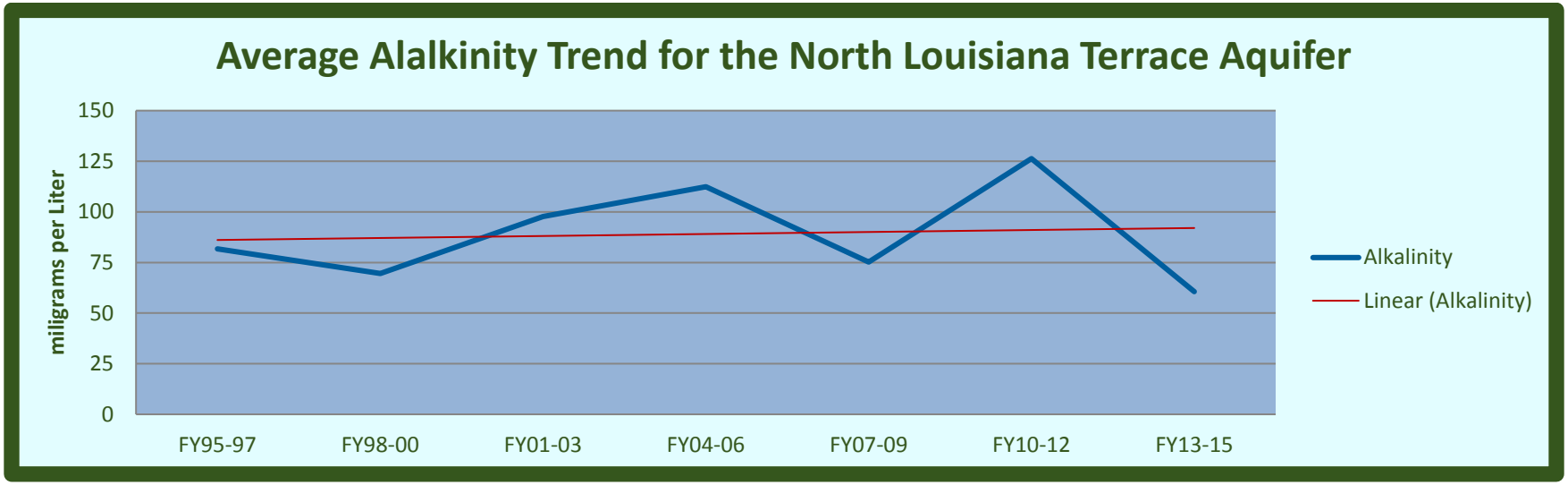

Chart 6-8: Color Trend

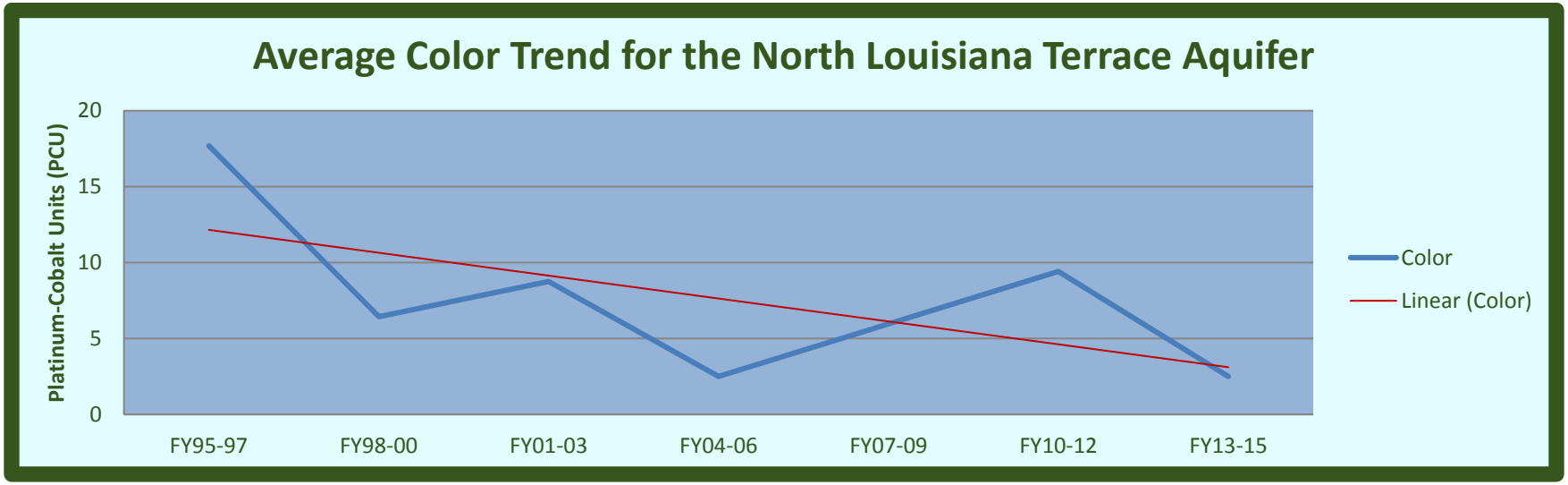

Chart 6-9: Sulfate (SO4) Trend

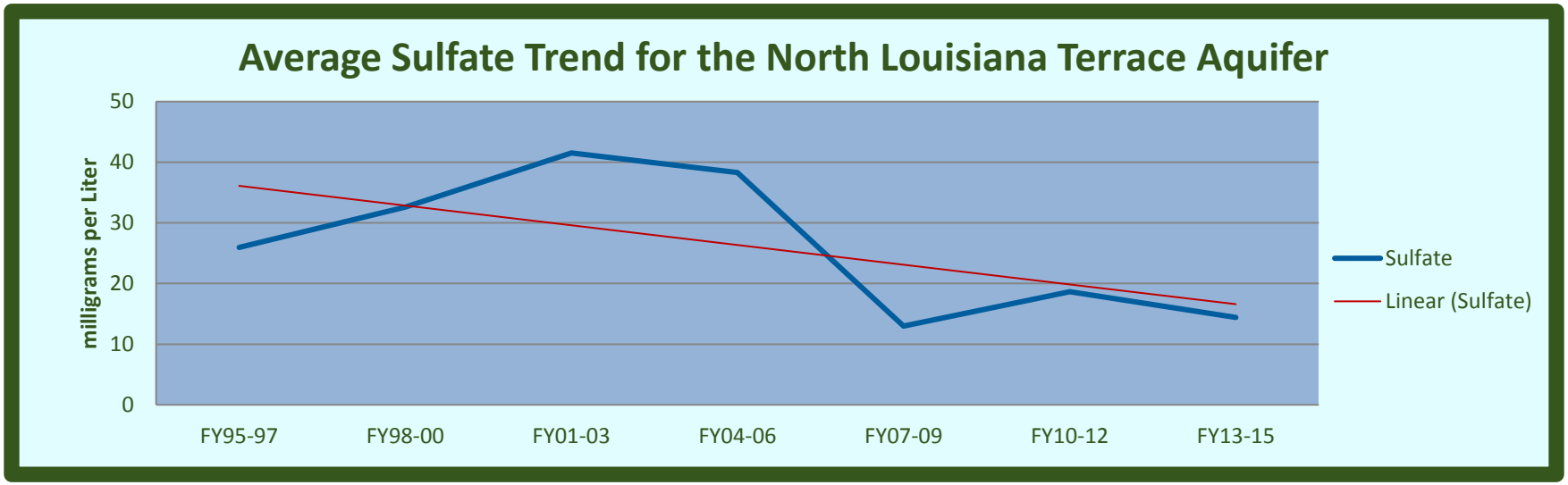

Chart 6-10: Total Dissolved Solids (TDS) Trend

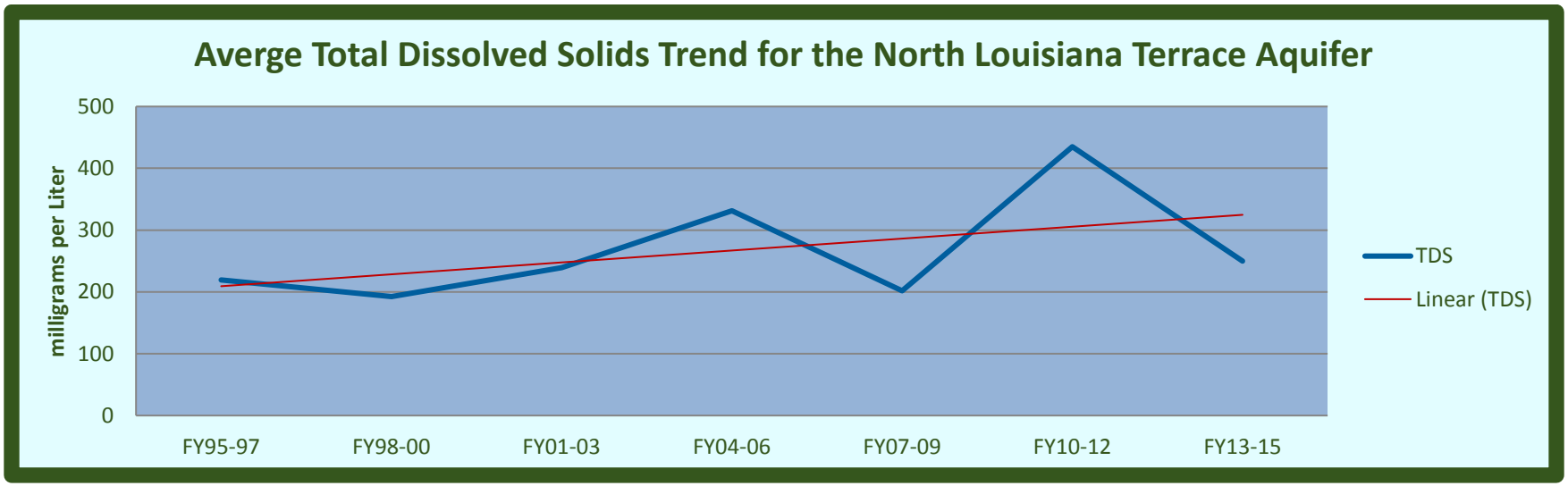

Chart 6-11: Hardness Trend

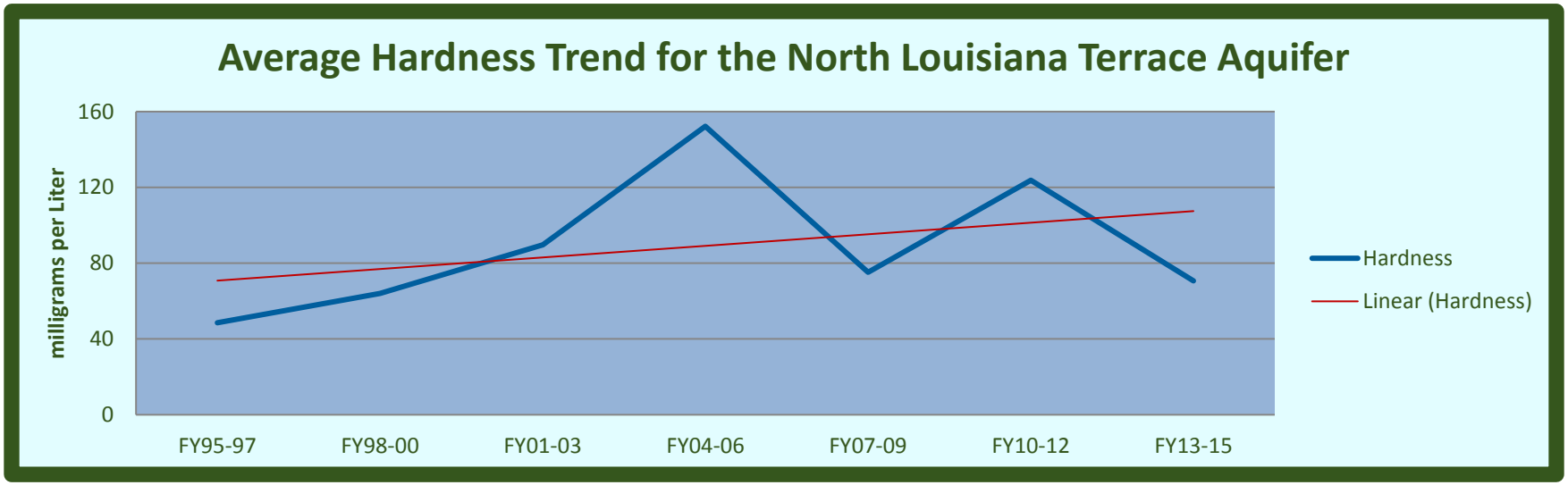

Chart 6-12: Ammonia (NH3) Trend

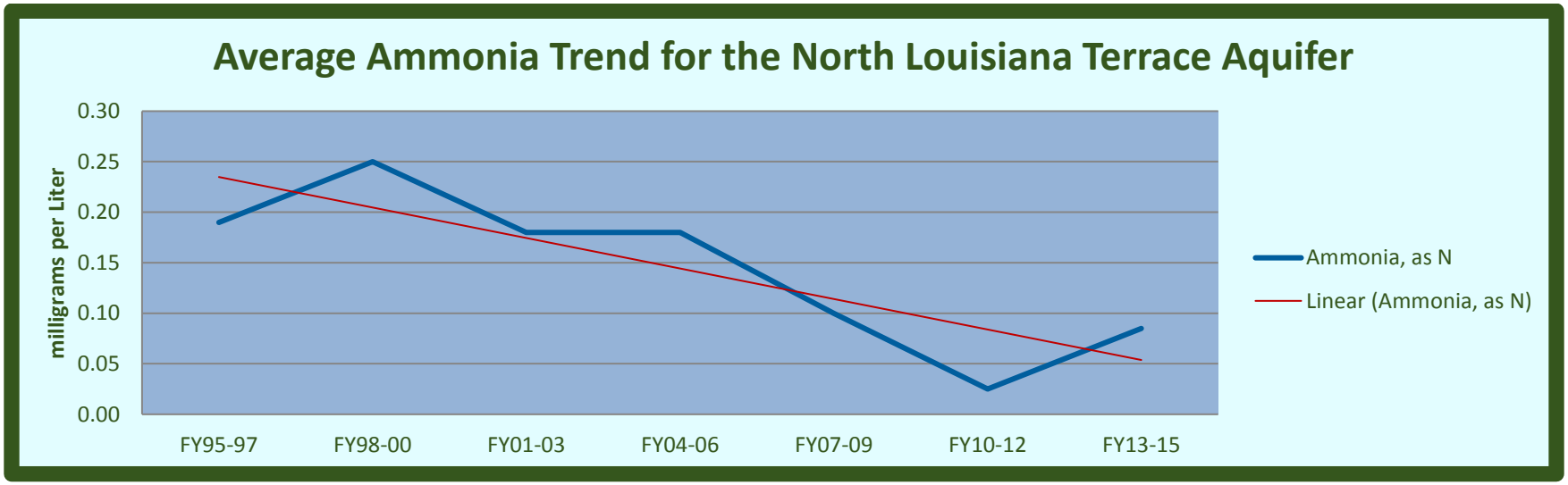

Chart 6-13: Nitrite – Nitrate Trend

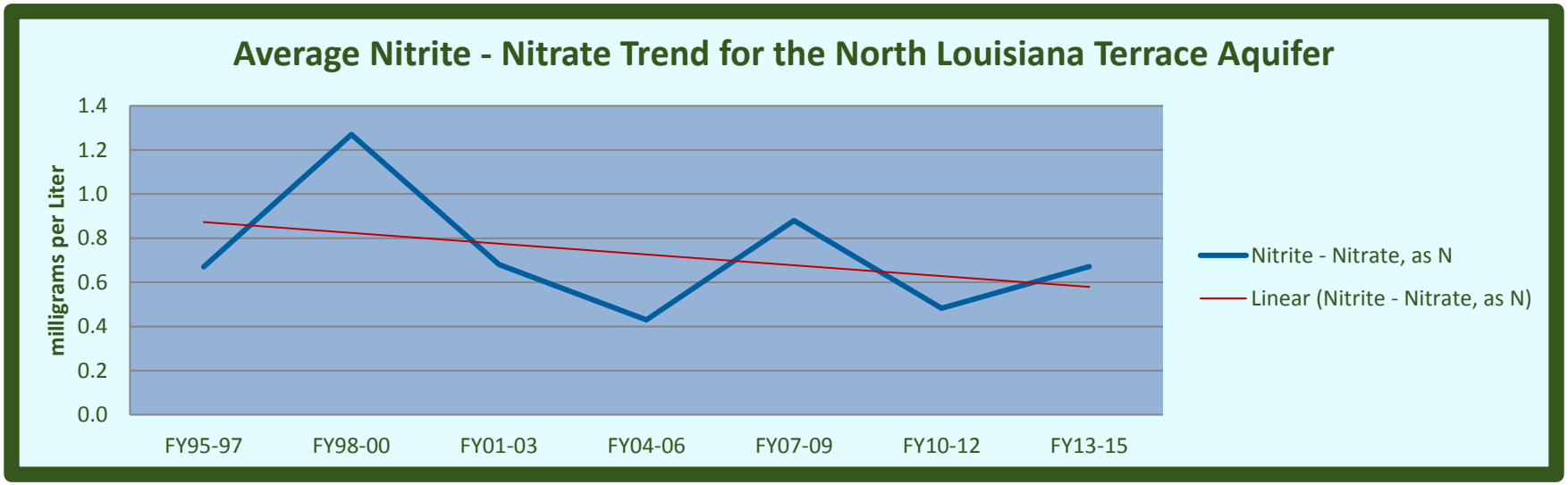

Chart 6-14: TKN Trend

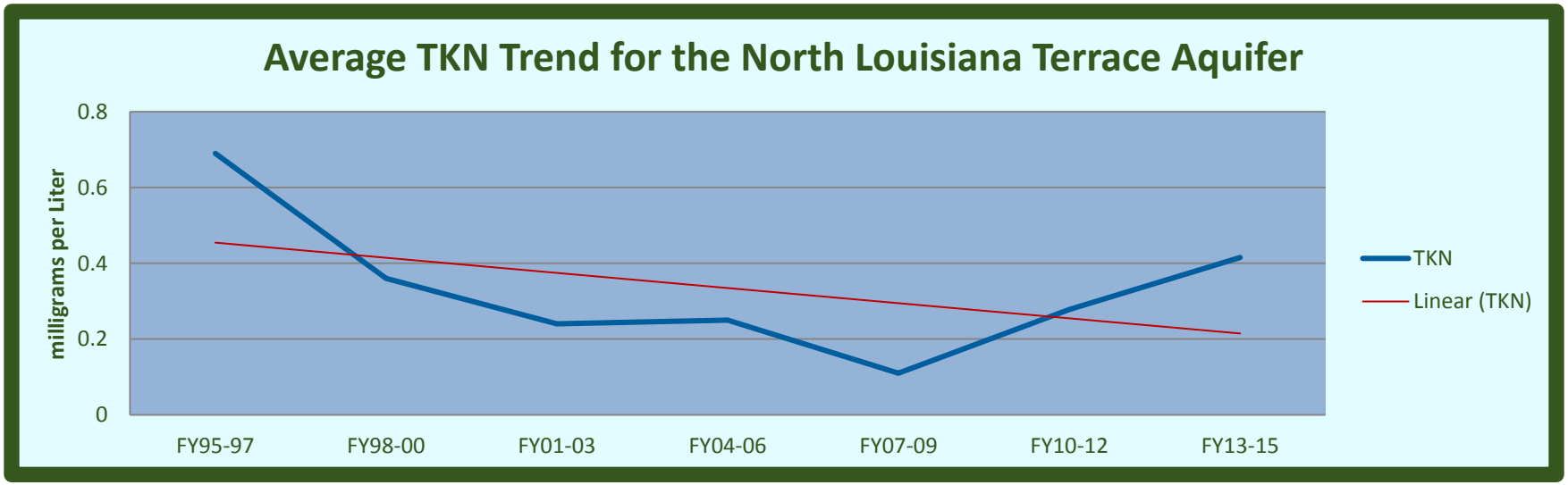

Chart 6-15: Total Phosphorus Trend

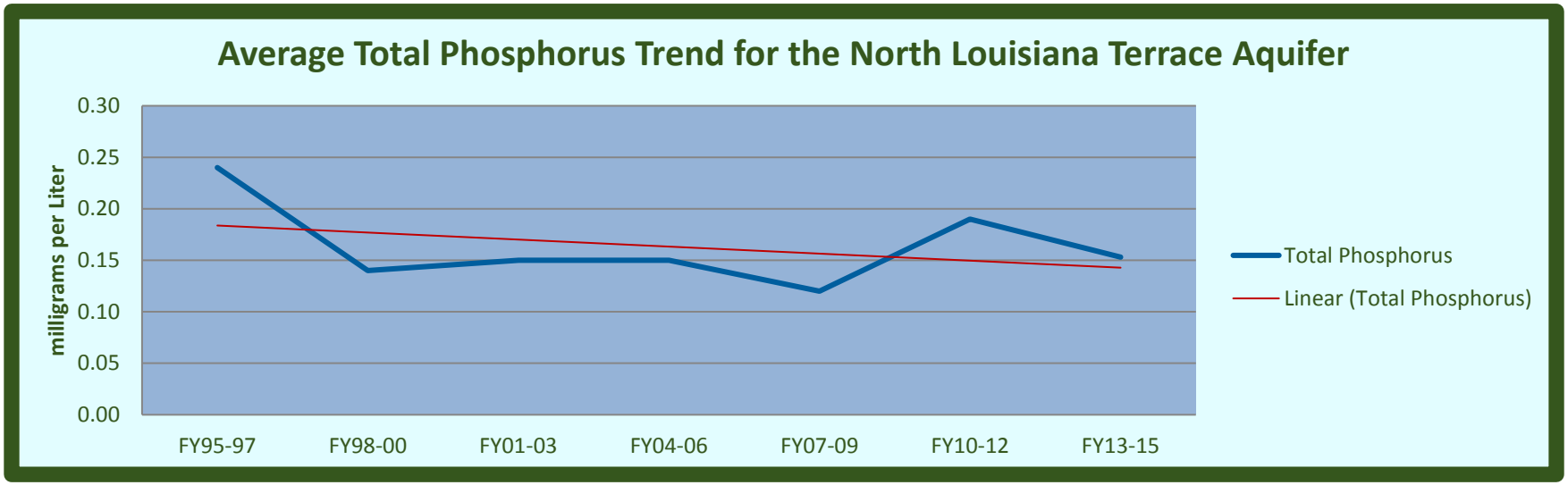

Chart 6-16: Iron Trend