NORTH LOUISIANA TERRACE AQUIFER SUMMARY, 2016
AQUIFER SAMPLING AND ASSESSMENT PROGRAM

DEQ
LOUISIANA

APPENDIX 6 TO THE 2018 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 across the state. The sampling process is designed so that all 14 aquifers 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 2016 state fiscal year (July 1, 2015 - June 30, 2016). This summary will become Appendix 6 of ASSET Program Triennial Summary Report for 2018.

These data show that from May through October 2016, 10 wells were sampled which produce from the North Louisiana Terrace aquifer. Seven of these wells are classified as public supply, two as domestic, and one as industrial. The wells are located in six 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 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-578 and LS-264.

In addition to the field, conventional, and inorganic 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, 2010 ,and 2013.

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, 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.

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 10 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 three wells exceeded the SMCL for pH and one well exceeded the SMCL for total dissolved solids. Laboratory results override field results in exceedance determinations, thus only lab results will be counted in determining SMCL exceedance numbers for total dissolved solids. Following is a list of SMCL parameter exceedances with well number and results:

pH (SMCL = 6.5 – 8.5 Standard Units):

G-432	5.73 SU
OU-5524Z	6.10 SU
RR-254	6.49 SU

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

	LAB RESULTS (in mg/L)	FIELD MEASURES (in g/L)
G-432	896 mg/L	1.054 g/L

Inorganic Parameters

Table 6-3 shows the inorganic 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 inorganics.

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

Iron (SMCL = 300 µg/L):

BO-578	660 µg/L	Duplicate	660 µg/L
BO-7896Z	1420 µg/L		
G-342	5160 µg/L		
MO-364	310 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.

No VOC was detected at or above its detection limit during the FY 2016 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 2016 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 2016 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 seven previous sampling. These comparisons can be found in Tables 6-6 and 6-7, and in Charts 6-1 to 6-18 of this summary. Increasing or decreasing trend statements made here are based on an R-square value (slope) of 0.03 or greater. An R-square value of less than 0.03 is considered to have only a slight or no change.

Over the 21-year period, seven analytes have shown a general increase in their average concentrations. These analytes are: pH, specific conductance (field), salinity, chloride, total dissolved solids (lab), hardness, and barium. For this same time period, ten analytes have demonstrated a decrease in their average concentrations: temperature, color, sulfate, total dissolved solids (field), ammonia, nitrite-nitrate, total Kjeldahl nitrogen, copper, iron, 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 2013 sampling of the North Louisiana Terrace aquifer, there were seven wells with one or more SMCL exceedances for a total of 11 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 2016 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 eight 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 seven 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 ten 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 2016

Well ID	Parish	Date	Owner	Depth (Feet)	Well Use
BO-434	Bossier	8/3/2016	Red Chute Utilities	94	Public Supply
BO-578	Bossier	8/2/2016	Village Water System	85	Public Supply
BO-7896Z	Bossier	8/2/2016	Private Owner	96	Domestic
G-342	Grant	10/26/2016	Vangaurd Synfuels, LLC	49	Industrial
G-432	Grant	7/6/2016	Central Grant Water System	158	Public Supply
LS-264	La Salle	5/19/2016	City of Jena	105	Public Supply
MO-124	Morehouse	5/18/2016	Texas Gas	133	Public Supply
MO-364	Morehouse	5/18/2016	People Water Service	154	Public Supply
OU-5524Z	Ouachita	5/18/2016	Private Owner	95	Domestic
RR-254	Red River	8/3/2016	East Cross Water System	93	Public Supply

Table 6-2: Summary of Field and Conventional Data, North Louisiana Terrace Aquifer–FY 2016

Well ID	pH SU	Sal ppt	Sp Cond mmhos/cm	Temp Deg C	TDS g/L	Alk mg/L	Cl mg/L	Color PCU	Hard mg/L	Nitrite-Nitrate (as N) mg/L	NH3 mg/L	Tot P mg/L	Sp Cond µmhos/cm	SO4 mg/L	TDS mg/L	TKN mg/L	TSS mg/L	Turb NTU
Laboratory Reporting Limits →						2	1	5	5	0.05	0.1	0.05	1	1	10	0.1	4	0.1
	Field Parameters					Laboratory Parameters												
BO-434	6.67	0.11	0.224	13.21	0.146	82	11.1	< DL	100	0.65	< DL	0.30	177	4.6	135	0.11	< DL	1.10
BO-578	7.40	0.21	0.427	14.04	0.277	154	26.3	5	160	< DL	0.37	0.24	252	< DL	190	0.42	< DL	4.70
BO-578*	7.40	0.21	0.427	14.04	0.277	144	26.5	5	140	< DL	0.34	0.23	325	11.2	215	0.40	< DL	2.90
BO-7896Z	6.80	0.37	0.747	13.65	0.485	277	49.8	5	360	< DL	0.34	0.28	457	15.3	410	0.36	4	16.50
G-342	6.82	0.05	0.112	11.77	0.073	10	11.3	10	18	3.90	< DL	< DL	58	5.2	90	< DL	8	33.70
G-432	5.73	0.03	0.059	14.29	0.038	10	3.8	10	16	0.52	< DL	< DL	51	< DL	20	1.10	< DL	0.39
LS-264	6.64	0.11	0.241	16.08	0.157	37	13.3	5	26	0.75	0.10	0.16	NA	15.1	84	0.15	< DL	0.58
LS-264*	6.64	0.11	0.241	16.08	0.157	37	13.1	5	24	0.76	< DL	0.16	168	15.1	122	< DL	< DL	0.22
MO-124	6.87	0.15	0.319	16.08	0.208	84	43.2	< DL	96	1.00	< DL	0.15	329	< DL	212	0.28	< DL	1.70
MO-364	6.55	0.82	1.621	16.71	1.054	273	322.0	< DL	282	0.06	< DL	0.65	R	37.3	896	0.27	< DL	1.50
OU-5524Z	6.10	0.07	0.144	14.72	0.093	29	19.3	5	32	0.10	< DL	0.09	146	2.3	128	0.21	< DL	1.40
RR-254	6.49	0.11	0.221	13.86	0.144	43	33.5	< DL	80	0.41	< DL	< DL	179	1.8	150	< DL	< DL	0.26

*Denotes Duplicate Sample NA – Not Analyzed R – Rejected Data Shaded cells exceed EPA Secondary Standards

Table 6-3: Summary of Inorganic Data, North Louisiana Terrace Aquifer–FY 2016

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 Reporting Limits	1	1	1	0.5	1	1	3	50	1	0.2	1	1	0.5	0.5	5
BO-434	< DL	1.2	66.2	< DL	< DL	< DL	17.4	< DL	3.1	< DL	< DL	< DL	< DL	< DL	26.2
BO-578	< DL	< DL	240.0	< DL	< DL	< DL	< DL	660	< DL	< DL	< DL	< DL	< DL	< DL	< DL
BO-578*	< DL	< DL	239.0	< DL	< DL	< DL	< DL	660	< DL	< DL	< DL	< DL	< DL	< DL	< DL
BO-7896Z	< DL	2.1	477.0	< DL	< DL	< DL	< DL	1420	< DL	< DL	< DL	< DL	< DL	< DL	< DL
G-342	< DL	< DL	95.5	< DL	< DL	1.8	15.0	5160	17.5	< DL	1.3	< DL	< DL	< DL	5.3
G-432	< DL	< DL	47.2	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL
LS-264	< DL	< DL	44.3	< DL	< DL	1.5	12.0	< DL	2.8	< DL	1.9	< DL	< DL	< DL	< DL
LS-264*	< DL	< DL	45.4	< DL	< DL	1.3	10.1	< DL	2.7	< DL	1.7	< DL	< DL	< DL	< DL
MO-124	< DL	< DL	128.0	< DL	< DL	1.0	4.7	269	< DL	< DL	< DL	< DL	< DL	< DL	8.3
MO-364	< DL	< DL	379.0	< DL	< DL	1.0	< DL	310	< DL	< DL	5.2	< DL	< DL	< DL	14.5
OU-5524Z	< DL	< DL	44.4	< DL	< DL	1.4	6.1	241	< DL	< DL	< DL	< DL	< DL	< DL	< DL
RR-254	< DL	< DL	46.1	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL

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

Table 6-4: FY 2016 Field and Conventional Statistics, ASSET Wells

	PARAMETER	MINIMUM	MAXIMUM	AVERAGE
FIELD	pH (SU)	5.73	7.40	6.68
	Salinity (ppt)	0.03	0.82	0.20
	Specific Conductance (mmhos/cm)	0.059	1.621	0.399
	Temperature (^{O}C)	11.77	16.71	14.54
	Total Dissolved Solids (g/L)	0.038	1.054	0.259
LABORATORY	Alkalinity (mg/L)	10	277	98
	Chloride (mg/L)	3.8	322.0	47.8
	Color (PCU)	< DL	10	5
	Hardness (mg/L)	16	360	111
	Nitrite - Nitrate, as N (mg/L)	< DL	3.90	0.69
	Ammonia, as N (mg/L)	< DL	0.37	0.13
	Total Phosphorus (mg/L)	< DL	0.65	0.19
	Specific Conductance (µmhos/cm)	51	457	214
	Sulfate (mg/L)	< DL	37.3	9.1
	Total Dissolved Solids (mg/L)	20	896	221
	Total Kjeldahl Nitrogen (mg/L)	< DL	1.10	0.29
	Total Suspended Solids (mg/L)	< DL	8	< DL
	Turbidity (NTU)	0.22	33.70	5.41

Table 6-5: FY 2016 Inorganic Statistics, ASSET Wells

PARAMETER	MINIMUM	MAXIMUM	AVERAGE
Antimony (µg/L)	< DL	< DL	< DL
Arsenic (µg/L)	< DL	2.1	< DL
Barium (µg/L)	443.0	477.0	154.3
Beryllium (µg/L)	< DL	< DL	< DL
Cadmium (µg/L)	< DL	< DL	< DL
Chromium (µg/L)	< DL	1.8	< DL
Copper (µg/L)	< DL	17.4	6.2
Iron (µg/L)	< DL	5160	737
Lead (µg/L)	< DL	17.5	2.5
Mercury (µg/L)	< DL	< DL	< DL
Nickel (µg/L)	< DL	5.2	1.2
Selenium (µg/L)	< DL	< DL	< DL
Silver (µg/L)	< DL	< DL	< DL
Thallium (µg/L)	< DL	< DL	< DL
Zinc (µg/L)	< DL	26.2	6.2

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	FY 2016
FIELD	pH (SU)	6.27	5.88	6.81	6.51	6.19	6.55	6.63	6.68
	Salinity (ppt)	0.12	0.13	0.15	0.27	0.16	0.23	0.12	0.20
	Specific Conductance (mmhos/cm)	0.280	0.260	0.320	0.550	0.320	0.460	0.250	0.399
	Temperature (^{O}C)	20.18	19.79	18.97	19.43	19.43	18.71	17.84	14.54
	Total Dissolved Solids (g/L)	-	-	-	0.360	0.210	0.300	0.162	0.259
LABORATORY	Alkalinity (mg/L)	82	70	98	112	75	126	61	98
	Chloride (mg/L)	22.7	21.1	25.0	80.7	44.3	67.5	27.0	47.8
	Color (PCU)	18	6	9	< DL	-	9	2	5
	Hardness (mg/L)	49	64	90	152	75	124	71	111
	Nitrite - Nitrate, as N (mg/L)	0.67	1.27	0.68	0.43	0.88	0.48	0.67	0.69
	Ammonia, as N (mg/L)	0.19	0.25	0.18	0.18	< DL	< DL	0.08	0.13
	Total Phosphorus (mg/L)	0.24	0.14	0.15	0.15	0.12	0.19	0.15	0.19
	Specific Conductance (µmhos/cm)	278	268	353	558	315	477	-	214
	Sulfate (mg/L)	26.0	33.0	42.0	38.3	13.0	18.6	14.4	9.1
	Total Dissolved Solids (mg/L)	220	192	239	331	202	435	250	221
	Total Kjeldahl Nitrogen (mg/L)	0.69	0.36	0.24	0.25	0.11	0.28	0.42	0.29
	Total Suspended Solids (mg/L)	7	< DL	< DL	8	< DL	8	< DL	< DL
	Turbidity (NTU)	11.08	9.49	3.09	35.05	1.44	4.75	1.30	5.41

Table 6-7: Triennial Inorganic Statistics, ASSET Wells

PARAMETER	AVERAGE VALUES BY FISCAL YEAR							
	FY 1995	FY 1998	FY 2001	FY 2004	FY 2007	FY 2010	FY 2013	FY 2016
Antimony (µg/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Arsenic (µg/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Barium (µg/L)	117.3	90.5	93.9	202.2	166.6	256.0	113.0	154.3
Beryllium (µg/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Cadmium (µg/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Chromium (µg/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Copper (µg/L)	6.6	55.8	11.8	27.5	16.4	6.9	4.6	6.2
Iron (µg/L)	2244	1077	522	3624	453	839	377	737
Lead (µg/L)	< DL	< DL	< DL	3.6	3.2	1.4	1.4	2.5
Mercury (µg/L)	0.07	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Nickel (µg/L)	7.2	3.4	6.9	< DL	< DL	< DL	< DL	1.2
Selenium (µg/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Silver (µg/L)	< DL	< DL	< DL	-	< DL	< DL	< DL	< DL
Thallium (µg/L)	< DL	< DL	< DL	< DL	< DL	< DL	< DL	< DL
Zinc (µg/L)	25.0	46.4	119.2	33.8	11.1	7.6	6.8	6.2

Table 6-8: VOC Analytical Parameters

VOC ANAYTICAL PARAMETERS	METHOD	REPORTING LIMIT (µg/L)
1,1,1-TRICHLOROETHANE	624	0.50
1,1,2,2-TETRACHLOROETHANE	624	0.50
1,1,2-TRICHLOROETHANE	624	0.50
1,1-DICHLOROETHANE	624	0.50
1,1-DICHLOROETHENE	624	0.50
1,2-DICHLOROBENZENE	624	0.50
1,2-DICHLOROETHANE	624	0.50
1,2-DICHLOROPROPANE	624	0.50
1,3-DICHLOROBENZENE	624	0.50
1,4-DICHLOROBENZENE	624	0.50
BENZENE	624	0.50
BROMODICHLOROMETHANE	624	0.50
BROMOFORM	624	0.50
BROMOMETHANE	624	1.0
CARBON TETRACHLORIDE	624	0.50
CHLOROBENZENE	624	0.50
CHLOROETHANE	624	0.50
CHLOROFORM	624	0.50
CHLOROMETHANE	624	1.0
CIS-1,3-DICHLOROPROPENE	624	1.0
DIBROMOCHLOROMETHANE	624	0.50
ETHYL BENZENE	624	0.50
METHYLENE CHLORIDE	624	1.0
O-XYLENE (1,2-DIMETHYLBENZENE)	624	0.50
STYRENE	624	0.50
TERT-BUTYL METHYL ETHER	624	0.50
TETRACHLOROETHYLENE (PCE)	624	0.50
TOLUENE	624	0.50
TRANS-1,2-DICHLOROETHENE	624	0.50
TRANS-1,3-DICHLOROPROPENE	624	0.50
TRICHLOROETHYLENE (TCE)	624	0.50
TRICHLOROFLUOROMETHANE (FREON-11)	624	0.50
VINYL CHLORIDE	624	0.50
XYLENES, M & P	624	1.0

Table 6-9: SVOC Analytical Parameters

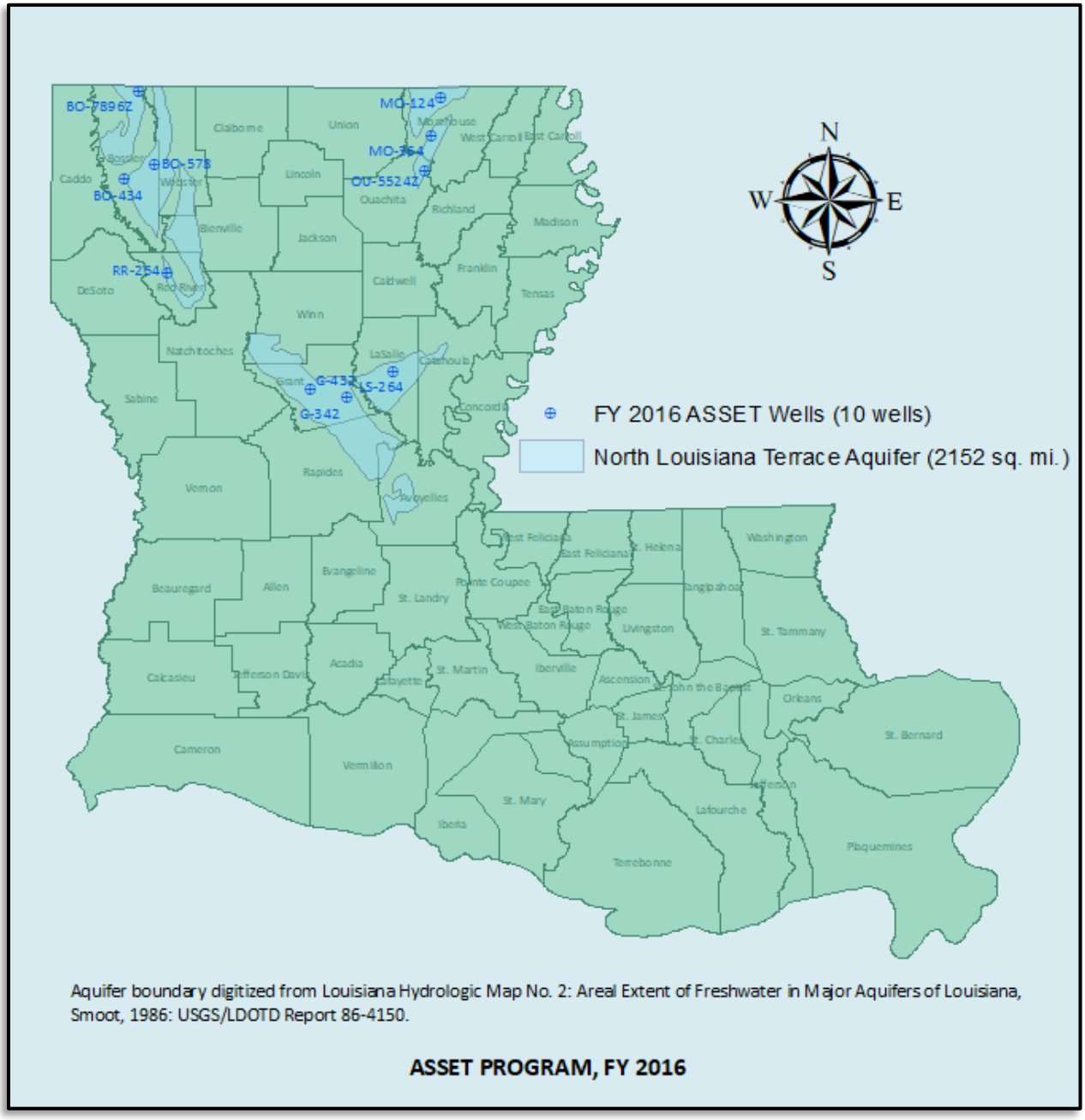
SVOC ANAYTICAL PARAMETERS	METHOD	REPORTING LIMIT (µg/L)
1,2,4-TRICHLOROBENZENE	625	5.0
2,4,6-TRICHLOROPHENOL	625	5.0
2,4-DICHLOROPHENOL	625	5.0
2,4-DIMETHYLPHENOL	625	5.0
2,4-DINITROPHENOL	625	20.0
2,4-DINITROTOLUENE	625	5.0
2,6-DINITROTOLUENE	625	5.0
2-CHLORONAPHTHALENE	625	5.0
2-CHLOROPHENOL	625	5.0
2-NITROPHENOL	625	5.0
3,3'-DICHLOROBENZIDINE	625	5.0
4,6-DINITRO-2-METHYLPHENOL	625	10.0
4-BROMOPHENYL PHENYL ETHER	625	5.0
4-CHLORO-3-METHYLPHENOL	625	5.0
4-CHLOROPHENYL PHENYL ETHER	625	5.0
4-NITROPHENOL	625	20.0
ACENAPHTHENE	625	0.20
ACENAPHTHYLENE	625	0.20
ANTHRACENE	625	0.20
BENZIDINE	625	20.0
BENZO(A)ANTHRACENE	625	0.20
BENZO(A)PYRENE	625	0.20
BENZO(B)FLUORANTHENE	625	0.20
BENZO(G,H,I)PERYLENE	625	0.20
BENZO(K)FLUORANTHENE	625	0.20
BENZYL BUTYL PHTHALATE	625	5.0
BIS(2-CHLOROETHOXY) METHANE	625	5.0
BIS(2-CHLOROETHYL) ETHER (2-CHLOROETHYL ETHER)	625	5.0
BIS(2-ETHYLHEXYL) PHTHALATE	625	5.0
CHRYSENE	625	0.20
DIBENZ(A,H)ANTHRACENE	625	0.20
DIETHYL PHTHALATE	625	5.0
DIMETHYL PHTHALATE	625	5.0
DI-N-BUTYL PHTHALATE	625	5.0
DI-N-OCTYLPHTHALATE	625	5.0
FLUORANTHENE	625	0.20
FLUORENE	625	0.20

SVOC ANAYTICAL PARAMETERS	METHOD	REPORTING LIMIT (µg/L)
HEXACHLOROBENZENE	625	5.0
HEXACHLOROBUTADIENE	625	5.0
HEXACHLOROCYCLOPENTADIENE	625	10.0
HEXACHLOROETHANE	625	5.0
INDENO(1,2,3-C,D)PYRENE	625	0.20
ISOPHORONE	625	5.0
NAPHTHALENE	625	0.20
NITROBENZENE	625	5.0
N-NITROSODIMETHYLAMINE	625	5.0
N-NITROSODI-N-PROPYLAMINE	625	5.0
N-NITROSODIPHENYLAMINE	625	5.0
PENTACHLOROPHENOL	625	5.00
PHENANTHRENE	625	0.20
PHENOL	625	5.0
PYRENE	625	0.20

Table 6-10: Pesticides and PCBs

Pest/PCB Analytical Parameters	METHOD	REPORTING LIMIT (µg/L)
ALDRIN	608	0.025
ALPHA BHC (ALPHA HEXACHLOROCYCLOHEXANE)	608	0.025
ALPHA ENDOSULFAN	608	0.025
ALPHA-CHLORDANE	608	0.025
BETA BHC (BETA HEXACHLOROCYCLOHEXANE)	608	0.025
BETA ENDOSULFAN	608	0.025
CHLORDANE	608	0.20
DELTA BHC (DELTA HEXACHLOROCYCLOHEXANE)	608	0.025
DIELDRIN	608	0.025
ENDOSULFAN SULFATE	608	0.025
ENDRIN	608	0.025
ENDRIN ALDEHYDE	608	0.025
ENDRIN KETONE	608	0.025
GAMMA-CHLORDANE	608	0.025
HEPTACHLOR	608	0.025
HEPTACHLOR EPOXIDE	608	0.025
METHOXYCHLOR	608	0.25
P,P'-DDD	608	0.025
P,P'-DDE	608	0.025
P,P'-DDT	608	0.025
PCB-1016 (AROCHLOR 1016)	608	0.80
PCB-1221 (AROCHLOR 1221)	608	0.80
PCB-1232 (AROCHLOR 1232)	608	0.80
PCB-1242 (AROCHLOR 1242)	608	0.80
PCB-1248 (AROCHLOR 1248)	608	0.80
PCB-1254 (AROCHLOR 1254)	608	0.80
PCB-1260 (AROCHLOR 1260)	608	0.80
TOXAPHENE	608	1.0

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.

ASSET PROGRAM, FY 2016

Chart 6-1: Temperature Trend

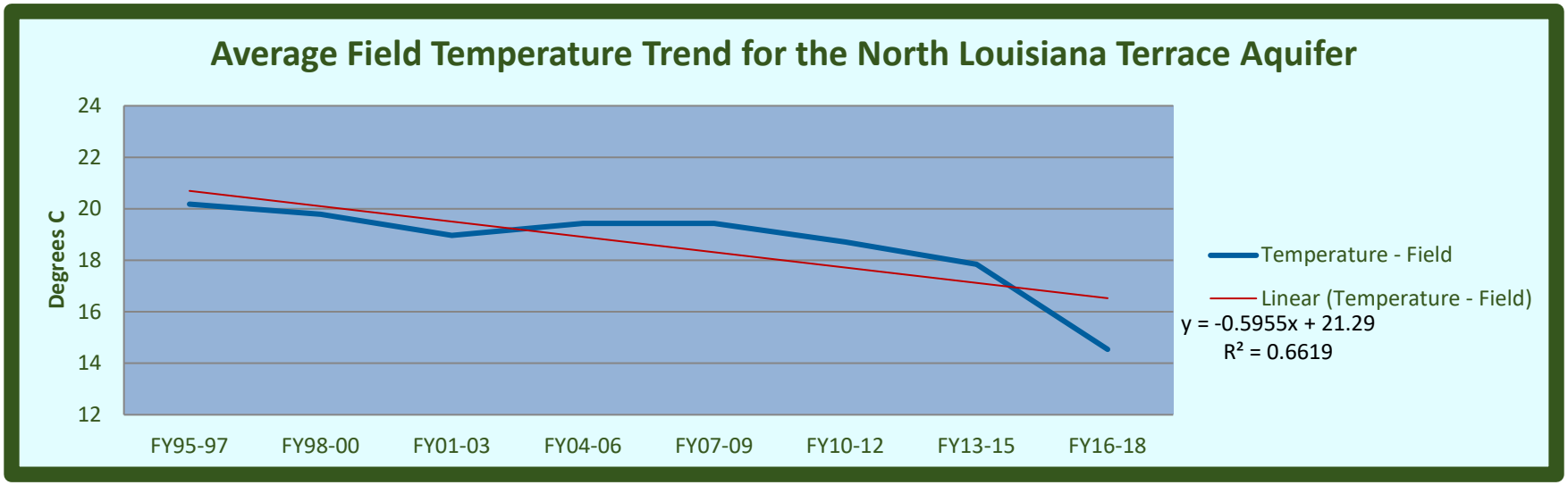


Chart 6-2: pH Trend

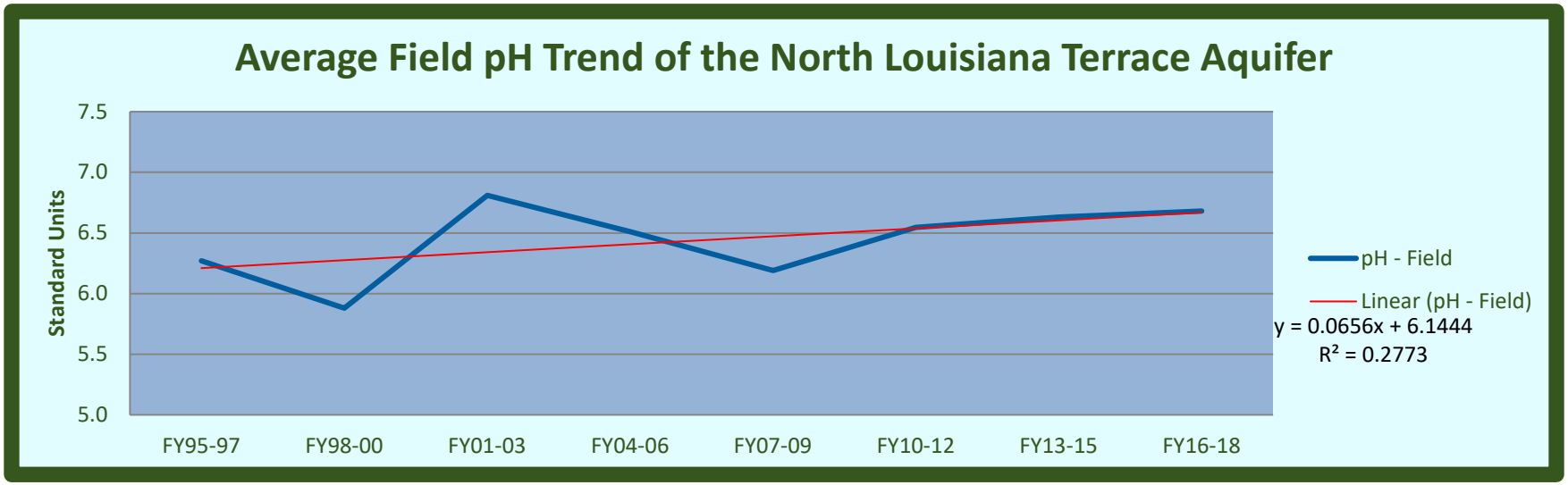


Chart 6-3: Specific Conductance Trend

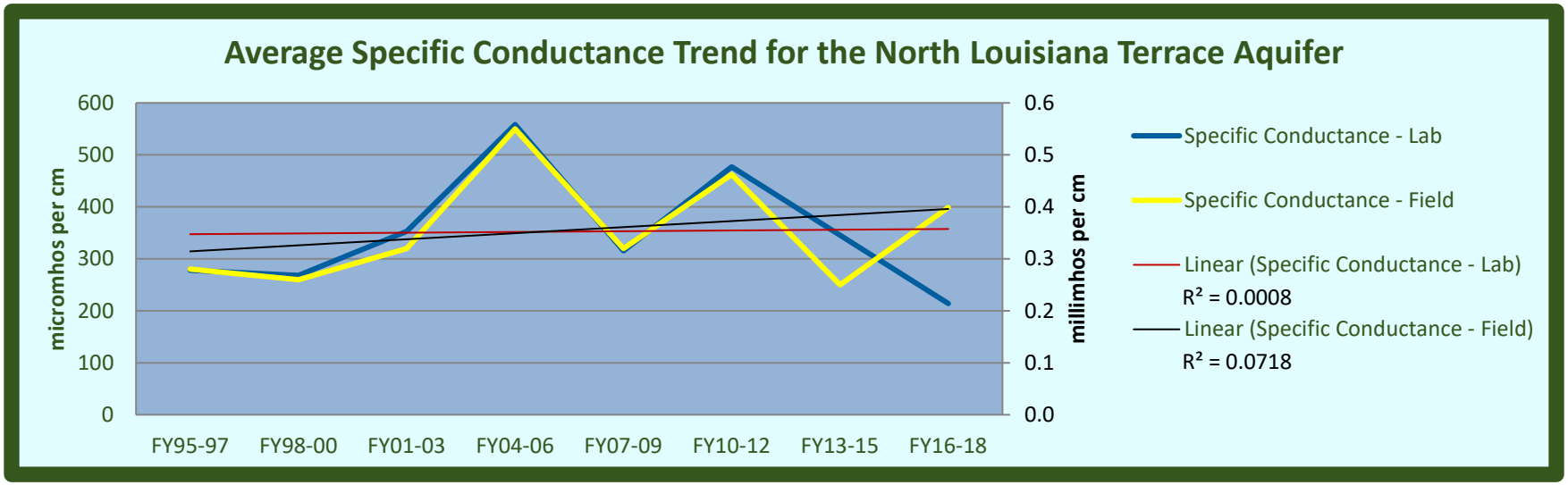


Chart 6-4: Field Salinity Trend

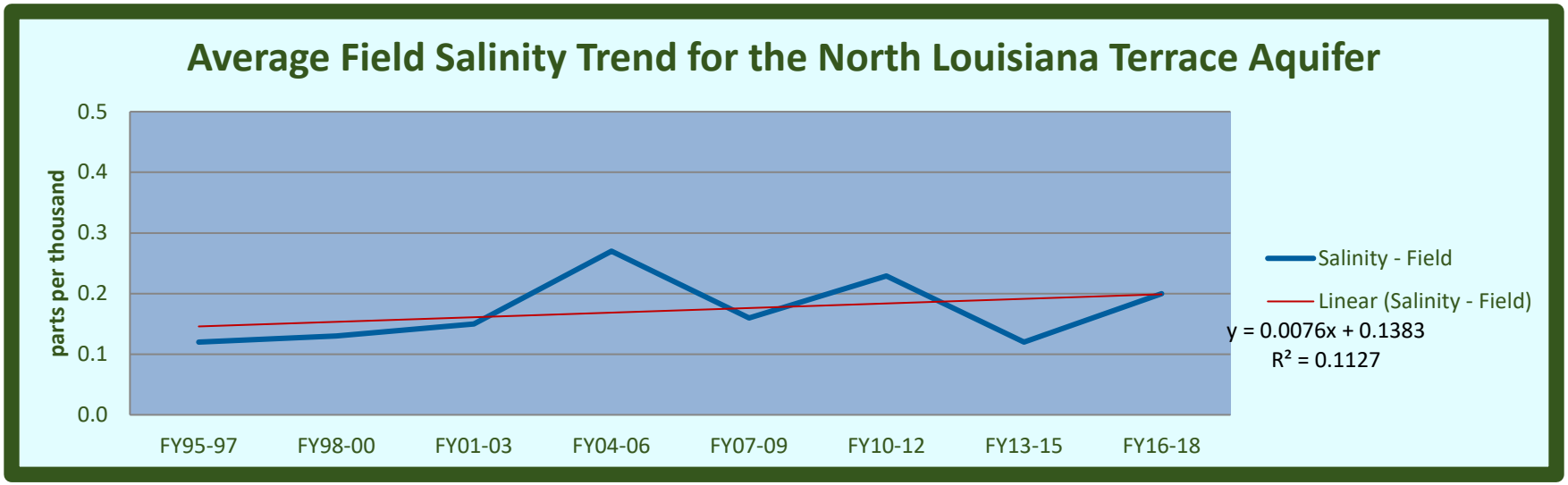


Chart 6-5: Chloride Trend

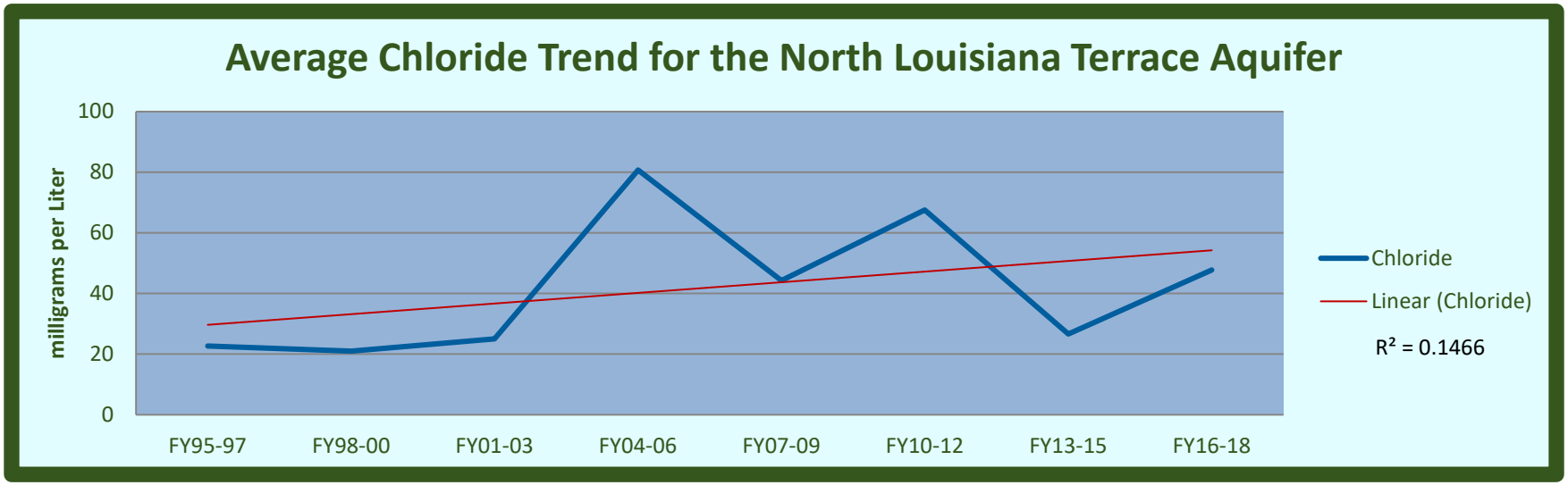


Chart 6-6: Alkalinity Trend

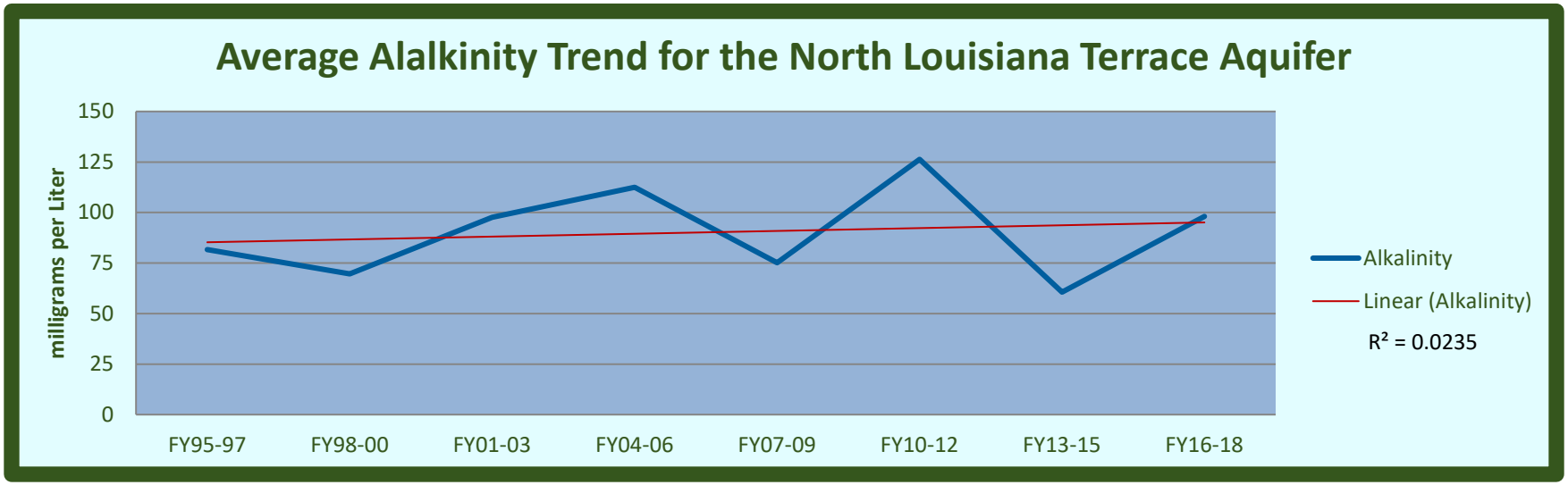


Chart 6-7: Color Trend

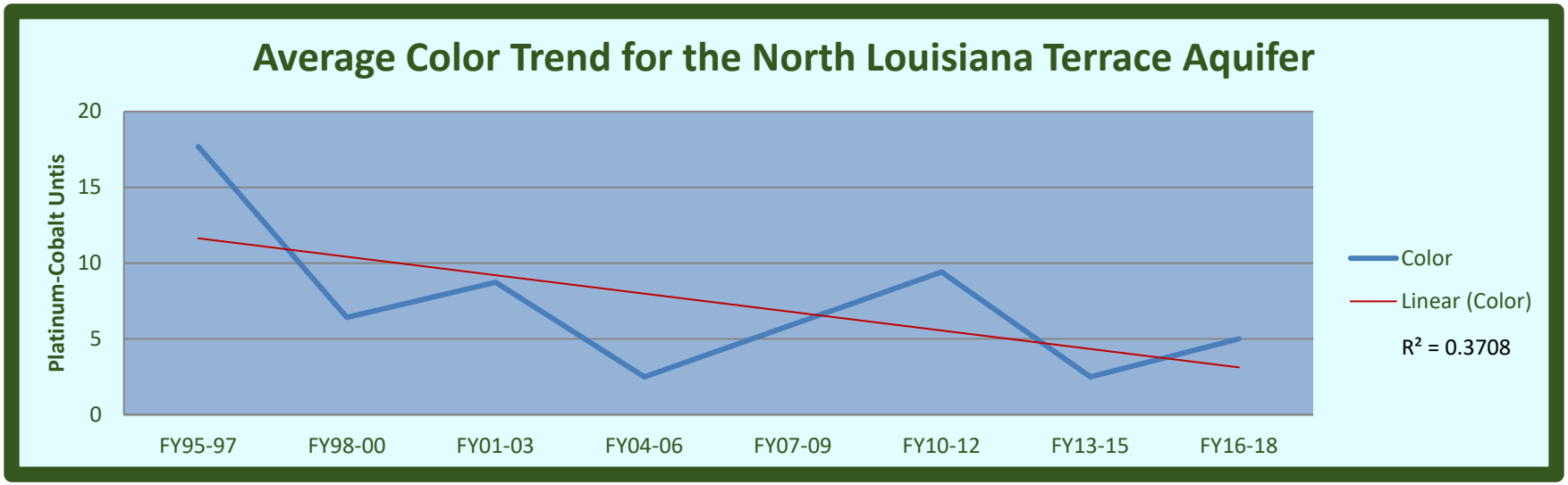


Chart 6-8: Sulfate Trend

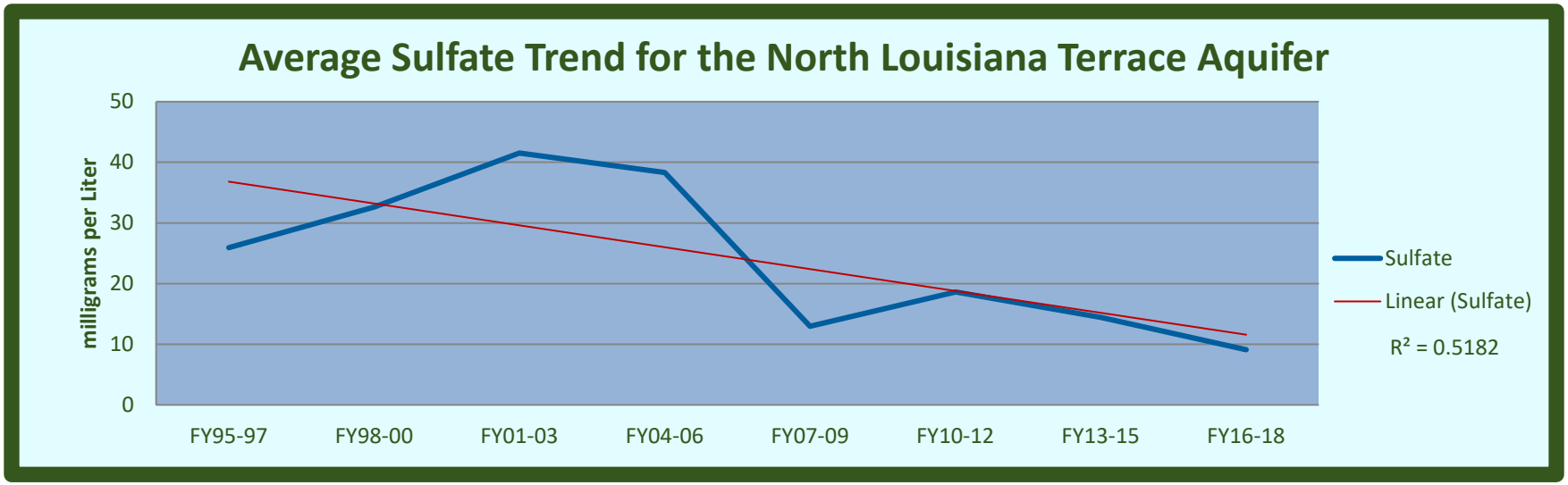


Chart 6-9: Total Dissolved Solids Trend

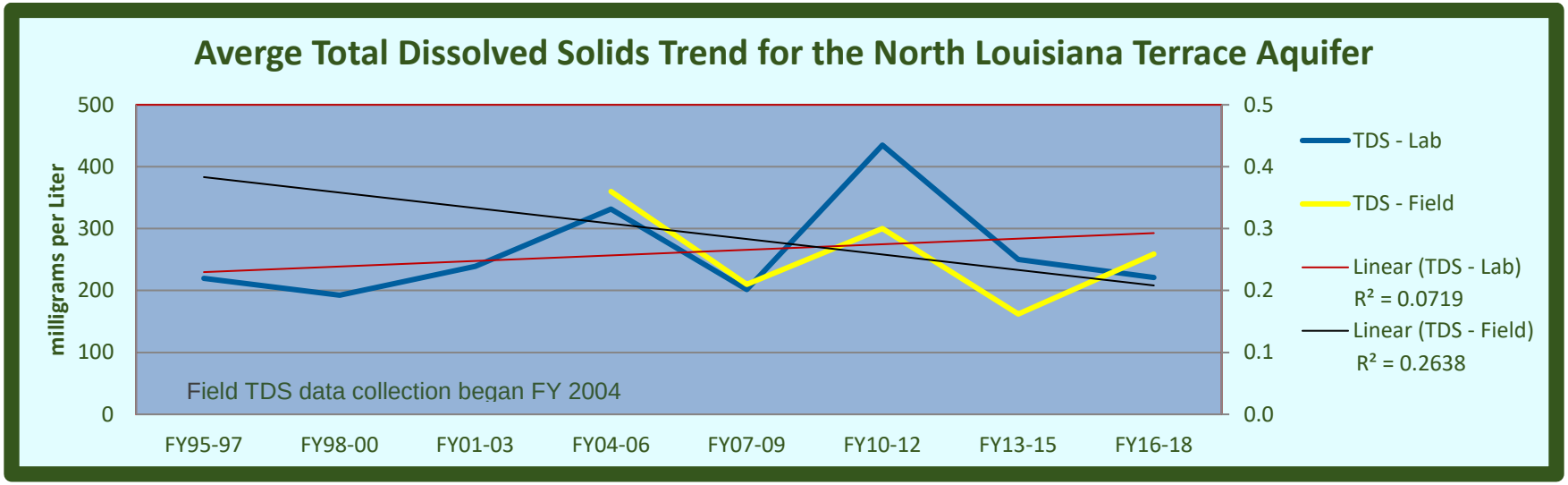


Chart 6-10: Hardness Trend

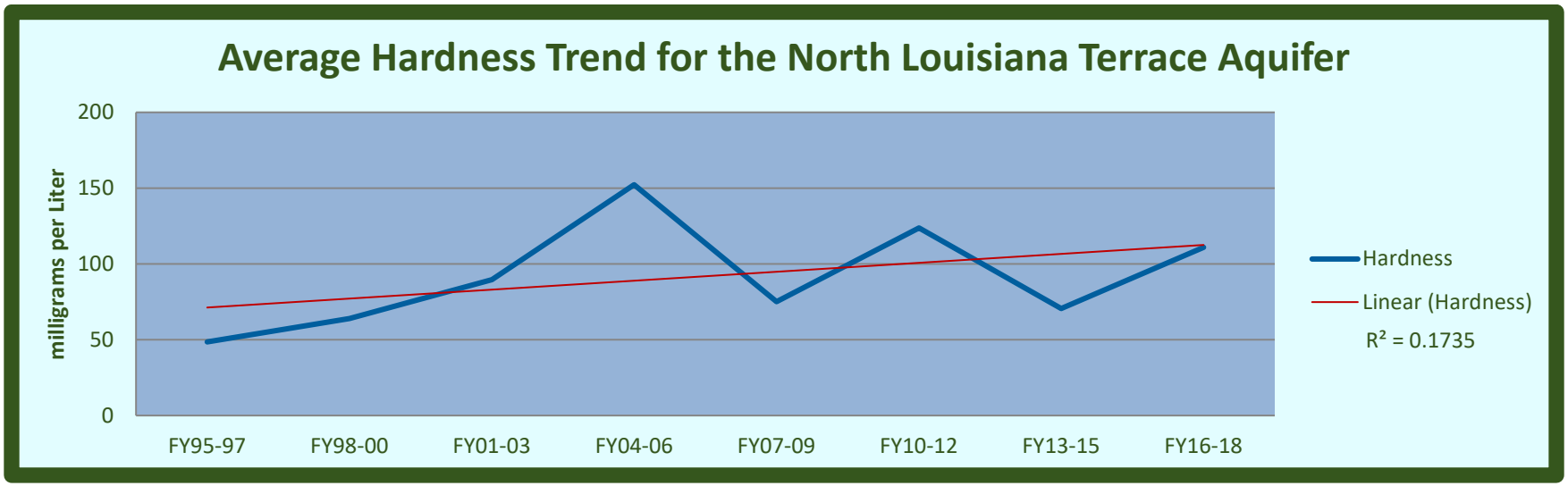


Chart 6-11: Ammonia Trend

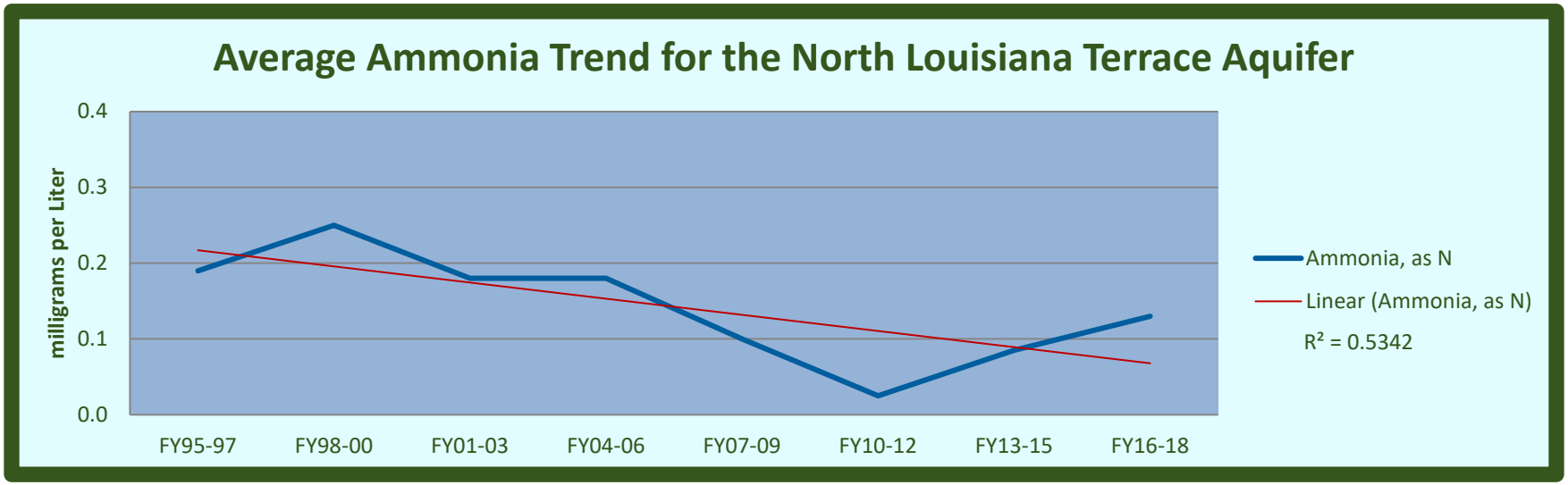


Chart 6-12: Nitrite – Nitrate Trend

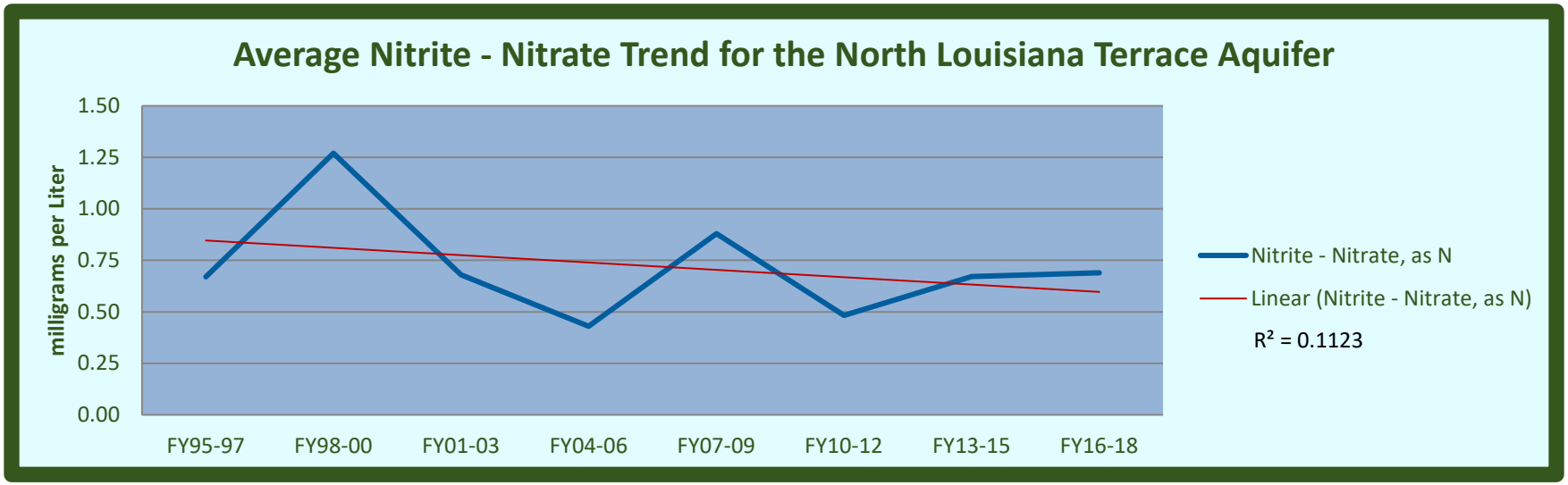


Chart 6-13: Total Kjeldahl Nitrogen Trend

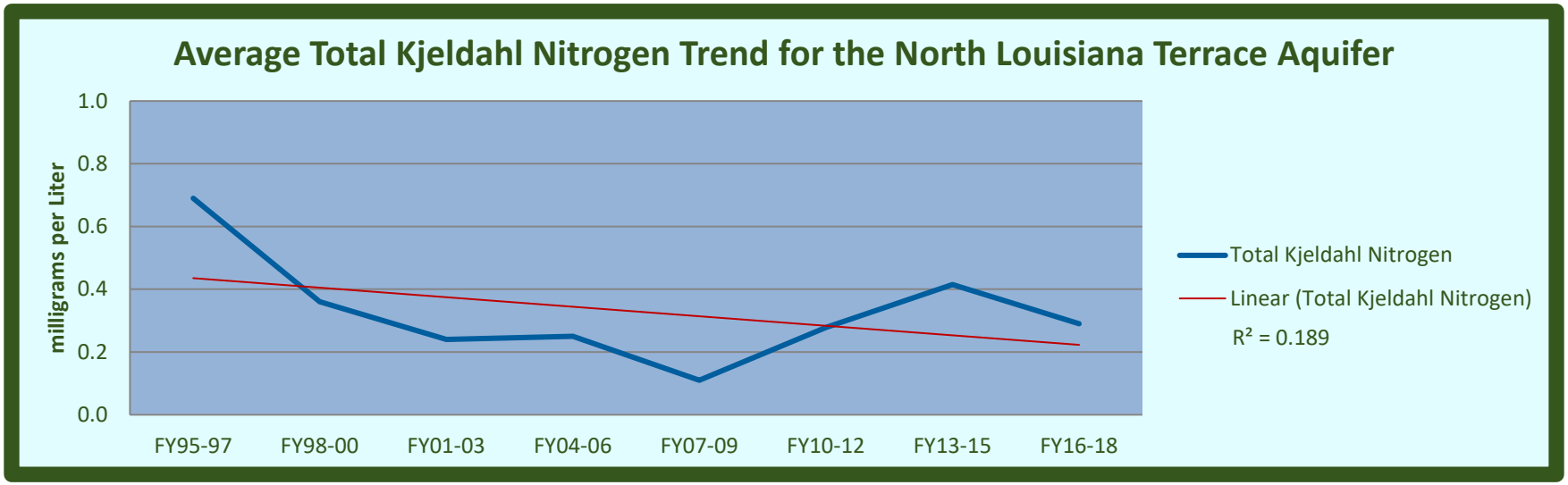


Chart 6-14: Total Phosphorus Trend

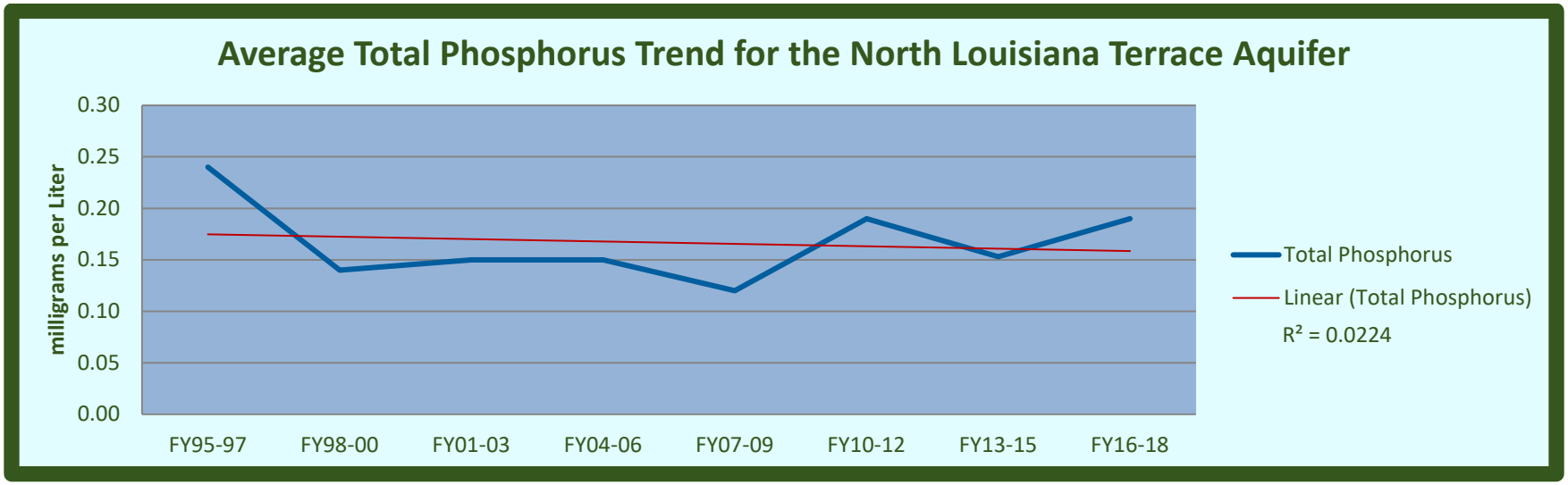


Chart 6-15: Barium Trend

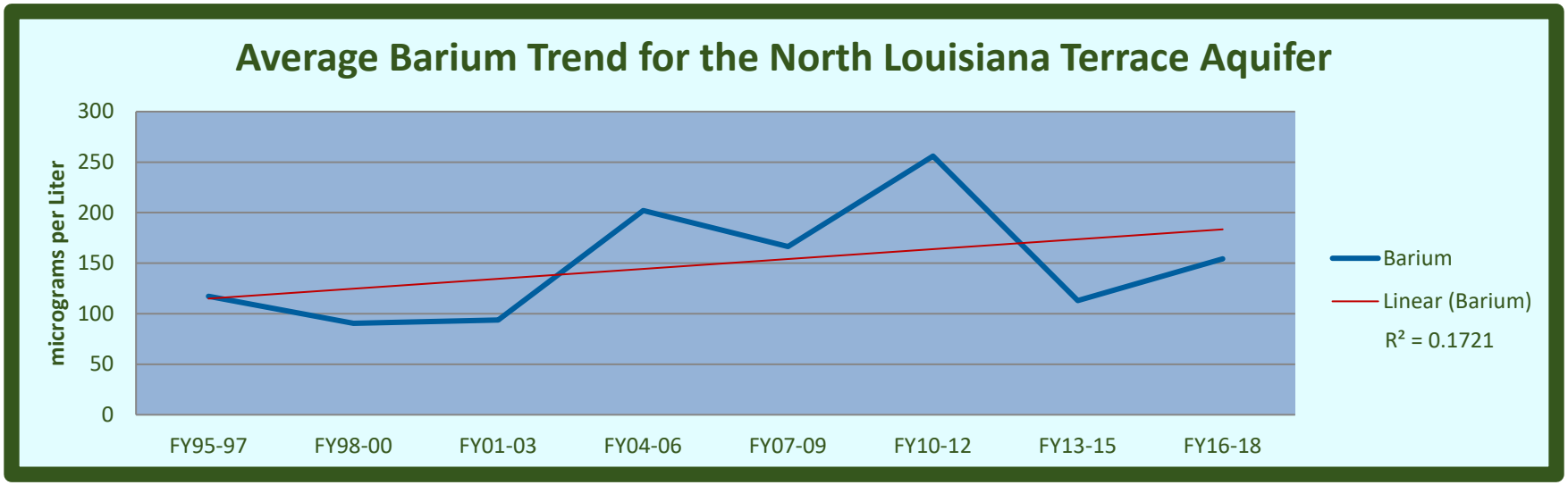


Chart 6-16: Copper Trend

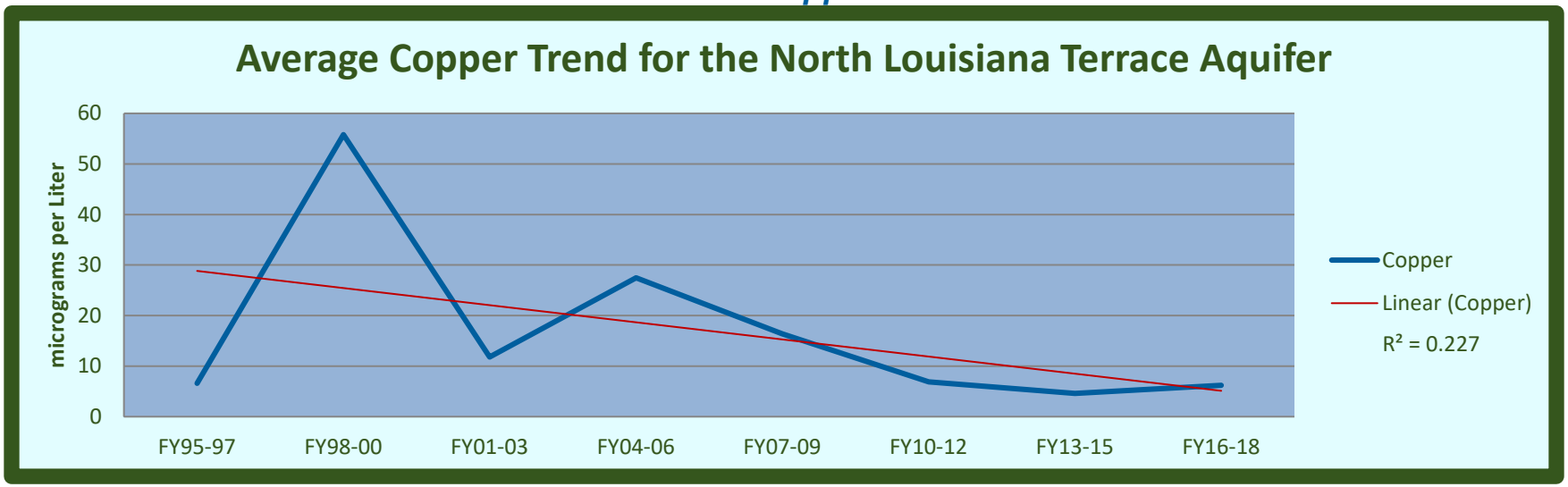


Chart 6-17: Iron Trend

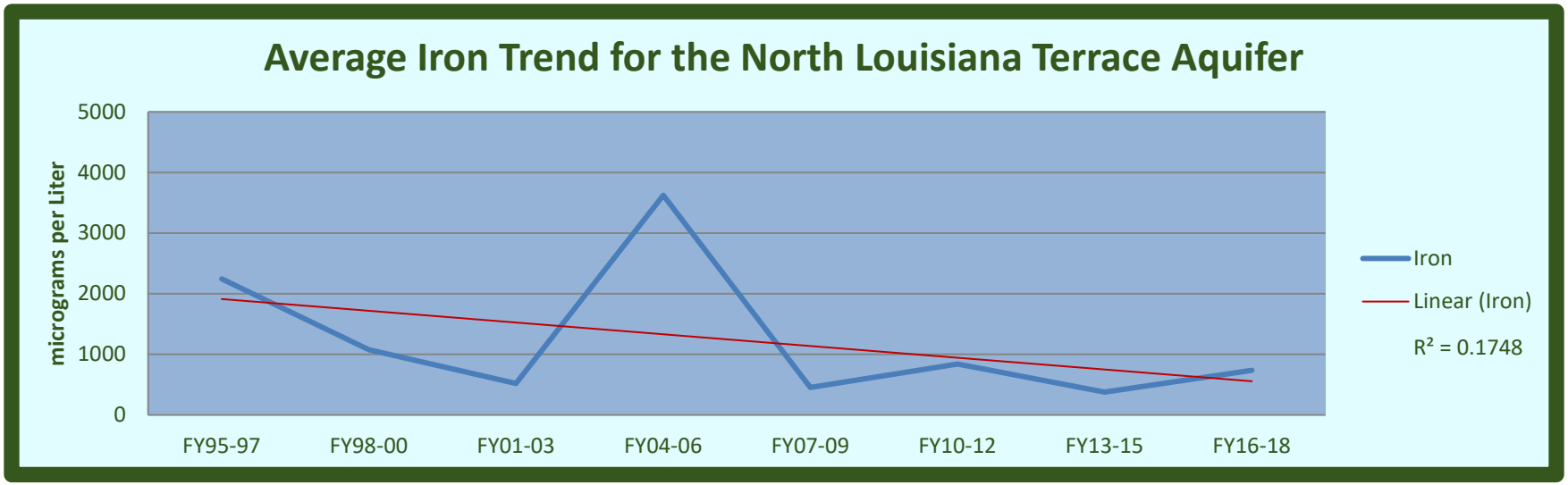


Chart 6-18: Zinc Trend