BAYOU COURTABLEAU

(LDEQ SUBSEGMENT 060204)

WATERSHED IMPLEMENTATION PLAN

For Fecal Coliform Bacteria, Turbidity and Dissolved Oxygen

DEQ
LOUISIANA

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Introduction

The Bayou Courtableau watershed is Subsegment 060204 in the Vermilion-Teche River Basin (Basin 06). The Vermilion-Teche River Basin is located in south-central Louisiana. The upper end of the Basin lies in the central part of the state near Alexandria, and the basin extends southward to the Gulf of Mexico. The Basin is bordered on the north and northeast by a low escarpment and the lower end of the Red River Basin. The Atchafalaya River Basin is to the east, and the Mermentau River Basin is to the west (LDEQ, 1996). Habitats within the Basin range from the upland pine forests northwest of Alexandria, to agricultural lands consisting primarily of corn and soybeans in the northern portion, and rice and sugarcane in the central and southern portions.

Subsegment 060204 is comprised of Bayou Courtableau and all tributaries, including Bayou Carron, Bayou Wauksha, Grand Gully, numerous unnamed tributaries west of Bayou Teche, and Little Bayou Darbonne, Big Bayou Darbonne, three diversion canals, and numerous unnamed tributaries east of Bayou Teche. The west and east sections of Bayou Courtableau merge near Port Barre and flow into Bayou Teche. Bayou Courtableau has been extensively hydromodified in all reaches west and east of Bayou Teche. The bayou and its tributaries are dominated by agriculture mainly on higher ground, and bottomland hardwood/swamp in lower areas. Subsegment 060204's designated uses are Primary Contact Recreation (PCR), Secondary Contact Recreation (SCR), and Fish and Wildlife Propagation (FWP).

Louisiana's 2022 Water Quality Integrated Report (IR) listed the Subsegment as impaired for PCR and FWP with suspected causes of fecal coliform (FC), and turbidity. The 2024 IR listed the Subsegment impaired for FWP with suspected causes of dissolved oxygen (DO), and turbidity. This watershed implementation plan will address the previous FC impairment and the current turbidity and DO impairments. The goal is to maintain the full support of PCR status, as well as address the current FWP impairments by implementing best management practices (BMPs) with the help of our partners and stakeholders in an effort to improve the water quality in Bayou Courtableau. This plan follows EPA's Nine Key Element format.

Figure 1 - Bayou Courtableau and Vermilion-Teche River Basin

USEPA'S Nine Key Elements

In October 2003, the United States Environmental Protection Agency (USEPA) published NPS Program and Grants Guidelines for States and Territories, which included nine key elements of acceptable Watershed Implementation Plans (WIPs). USEPA requires states to implement incremental funds in watersheds where WIPs have been developed.

USEPA'S NINE KEY ELEMENTS

a. Identification of sources and causes or groups of similar sources that will need to be controlled to achieve load reductions estimated in the WIP;

b. An estimate of load reductions expected for management measures described in paragraph (c);

c. A description of NPS management measures that will need to be implemented to achieve estimated load reductions in paragraph (b); and an identification of critical areas where those measures need to be implemented;

d. An estimate of technical and financial assistance, and/or associated costs and authorities necessary to implement the WIP;

e. An information/education component used to enhance public understanding of the project and encourage early and continued participation in selecting, designing and implementing NPS management measures;

f. A schedule for implementing management measures identified in the WIP that is reasonably expeditious;

g. A description of interim, measurable milestones or other control actions being implemented;

h. A set of criteria to determine whether load reductions are being achieved over time and whether substantial progress is being made toward meeting water quality standards;

i. A monitoring component to evaluate effectiveness of implementation efforts over time, measured against criteria established in paragraph (h).

Element A: Causes and Sources of Pollution

Integrated Report History

Bayou Courtableau has a history of designated use impairments. Recent and long-term impairments include turbidity and DO impairments to FWP, and FC impairment to PCR. Impairments identified in the 2022 and 2024 IRs are shown in Table 1.

Bayou Courtableau's PCR designated use has been impaired consistently from 2010 through 2022, with municipal point source discharges, managed pasture grazing, on site treatment systems (septic systems and similar decentralized systems), sewage discharges in unsewered areas, and livestock (grazing or feeding operations) as suspected sources . The water quality standard for PCR states that no more than 25% of samples collected from May 1 to October 31 can exceed 400 colony-forming units (cfu)/100 mL. For SCR, no more than 25% of samples collected year-round can exceed 2000 cfu/100 mL. The 2024 IR states that the Subsegment is no longer impaired for its PCR designated use.

The Bayou's FWP designated use has been impaired due to turbidity, sedimentation/siltation, and total suspended solids (TSS) since 2002. In 2014, sedimentation/siltation and TSS were replaced by turbidity as a representative for all three parameters in the IR. Suspected sources of impairment were listed as unknown through 2014. In 2016, the suspected source for turbidity was listed as agriculture. There is currently no numeric criterion for turbidity for Bayou Courtableau. The Environmental Regulatory Code states that turbidity shall not significantly exceed background, and background is defined as the natural condition of the water. Determination of background will be on a case-by-case basis, therefore state waters not specified shall be restricted to the appropriate background value plus 10 percent.

A study was initiated in 2020 to review existing turbidity data and supporting information to determine methods for developing appropriate numeric turbidity criteria for select waterbodies in Louisiana. The study focuses on subsegments without numeric criteria, but may also consider revisions of existing numeric criteria where changes are appropriate. LDEQ is currently working to finalize the project. This WIP will use a target of 25 NTU for Bayou Courtableau (see Element B for further discussion on this target).

FWP is also impaired due to DO in the 2024 IR – the suspected source is listed as unknown. The current criterion is May-September: 3.0 mg/L, October-April: 5.0 mg/L. The DO and FC impairments will be discussed further in Element B.

Table 1 – 2022/2024 Integrated Report Summary

Year	Subsegment Number	Subsegment Description	Water Body Type	Size (miles)	Designated Water Body Uses			Impaired Use for Suspected Cause	Suspected Causes of Impairment	IR Category for Suspected Causes	Suspected Sources of Impairment
					PCR	SCR	FWP				
2022	LA060204_00	Bayou Courtableau-From headwaters to West Atchafalaya Borrow Pit Canal	R	21.3	N	F	N	FWP	Turbidity	IRC 4a	Agriculture
								PCR	Fecal Coliform Bacteria		Sewage discharges in unsewered areas
2024					F	F	N	FWP	Dissolved Oxygen		Source Unknown
								FWP	Turbidity		Agriculture

R = River
N = Not fully supporting
F = Fully supporting
IRC 4a = Impaired but TMDL completed

Bayou Courtableau Land Use

The dominant land use (Table 2) in Bayou Courtableau is cropland, at 46%. This is typical of the Vermilion-Teche Basin, where cleared lands are used primarily for pasture (13%) and crops. The main crops are sorghum and soybeans, with some corn and rice in the northern reaches. Crawfish farming is often rotated with rice. Wetlands cover 37% of the Subsegment. The percentage of developed land is low (3%), but the area immediately surrounding the ambient site is primarily developed. This will have an effect on BMPs implemented in the area. Less than 1% of the Subsegment is forested (Figure 2). Land use data was downloaded from CroplandCROS of the USDA's National Agricultural Statistics Service.

Table 2 - Bayou Courtableau Land Use

Land Use	Percentage*	Acres
Cropland	47%	55,994
Wetlands	37%	44,512
Grass/Pasture	12%	13,980
Developed	4%	4,694
Upland Forest/ Water/ Other	<1%	1,124
Total	100%	120,304

Note: Percentage may total > 100% due to rounding

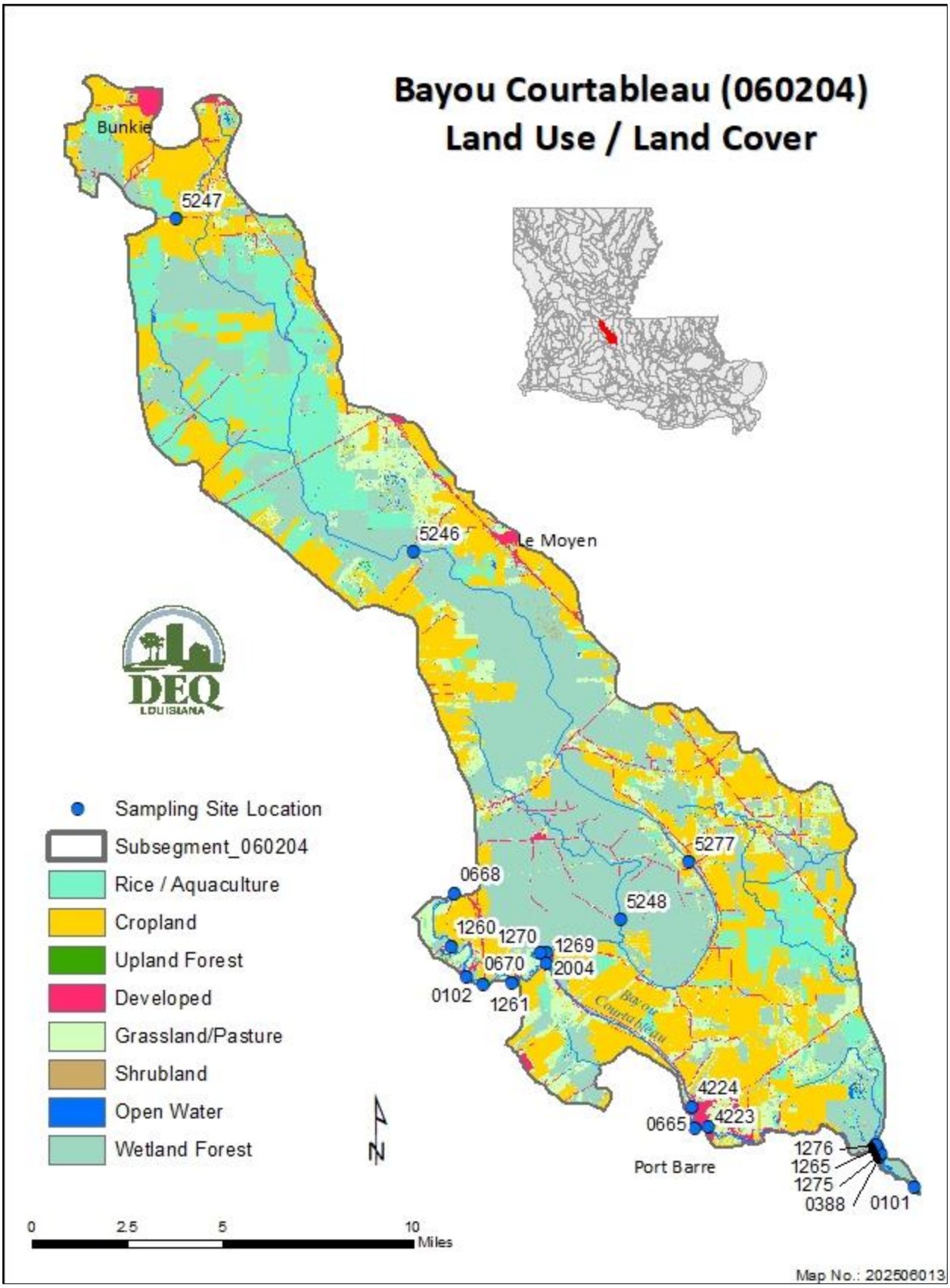

Figure 2 - Bayou Courtableau Land Use Map

Hydrology

Bayou Courtableau, 43 miles in length, flows through the town of Port Barre, and approximately three miles upstream from the town of Washington, it changes its name to Bayou Cocodrie. It empties into the Atchafalaya River, but is discontinuous at the Atchafalaya River Basin where it is interrupted by a levee and a flood control structure. Bayou Courtableau has been extensively hydromodified in all reaches west and east of Bayou Teche. It is characterized by frequent flow reverses and is deep and very sluggish (DO Total Maximum Daily Load [TMDL] study). The west and east sections of Bayou Courtableau merge near Port Barre and flow into Bayou Teche.

Historically, backwater flooding from the Atchafalaya River would supplement flows in Bayou Courtableau for distribution to Bayou Teche. Construction of the Atchafalaya River levees and the West Atchafalaya Basin Protection Levee (WABPL) began in the 1930s and reduced the amount of possible diversion from the Atchafalaya to Bayou Courtableau, when the connection of Bayou Courtableau with the Atchafalaya was severed. Although the levees retained all low flows in Bayou Courtableau, the area was cut off from water in the backwater area during high water. The Bayou Courtableau weirs, completed in 1942, were designed to divert all low flow under 18.0 feet mean sea level (msl) in Bayou Courtableau to Bayou Teche (LDEQ, 2014).

Bayou Courtableau Control and Drainage Structures

Bayou Courtableau has undergone extensive hydromodification and has several drainage structures that control flow and water levels. The Bayou Courtableau control structure at the north end of Henderson Lake is owned and operated by the United States Army Corps of Engineers (USACE). It is located approximately one mile south of U.S. Highway 190 between Port Barre and Krotz Springs. This structure has two main functions. The first is to serve as a diversion control structure; the second function is to aid in the maintenance of low flows in Bayou Teche and the Vermilion River for rice irrigation and water quality control. During periods of drought, water from the Atchafalaya River can be pumped in through the Vermilion-Teche pumping station, which is owned and operated by the USACE. That water is channeled to the Bayou Courtableau control structure via the Darbonne Bay conveyance channel.

The southern Bayou Courtableau control structure is operated by the St. Martin Parish Government with guidance from Louisiana Department of Wildlife & Fisheries (LDWF). The southern structure provides an outlet for flood flows into the Bayou Courtableau basin. There are also two concrete weirs adjacent to the structure that prevent low flow losses from Bayou Courtableau into the WABPL borrow pits, making low flows available for irrigation and water quality control in the Teche-Vermilion Basin.

Figure 3 - USACE Bayou Courtableau Control Structure

The Bayou Courtableau drainage structure was built in 1956. It is primarily a flood control relief structure, but it can also be used to divert fresh water from the Atchafalaya system into Bayou Courtableau. Low flows in Bayou Courtableau impact the entire Vermilion-Teche system south of that point, prompting the construction of a pumping station.

The Teche-Vermilion pumping station pumps water through the WABPL to the WABPL borrow pit and down the borrow pit to Darbonne Bayou. From that point, the water travels one mile westward to Bayou Courtableau where the flow splits. Some of the water flows downstream to the Courtableau weirs, Courtableau Drainage Structure, and the Courtableau-Borrow Pit Control Structure, where the gated structure can be opened to provide a small supplemental flow into the WABPL borrow pit. Most flows on Bayou Courtableau are diverted to Port Barre, where it empties into the origin of Bayou Teche. Continued development in the Vermilion-Teche River Basin has required dredging of streams in the drainage basin for flood control management, crop irrigation and, in some instances, navigation. Channelization has created uniform water depths and reduced flow gradients and velocities. All of these hydromodification activities designed for the controlled movement of water impact DO levels in the streams of the Vermilion-Teche.

A 17-foot stage is maintained at the Bayou Courtableau control structure on the WABPL from January 1 through the end of February. An 18-foot stage is maintained from March 1 to September 30, and a 16-foot stage from October 1 to December 31. If the stage at the Bayou Courtableau structure exceeds these stages, excess water is diverted into the Atchafalaya Basin floodway, and diversion pumping from the Atchafalaya River into Bayou Courtableau is temporarily discontinued.

In March (generally considered to be the high flow period), the portion of Bayou Courtableau north of Port Barre flows at 1,700 cubic feet per second (cfs) from the upper Basin. This drainage originates in the upper portion of the Vermilion-Teche Basin and passes through Bayou Courtableau as a result of the confluence of Bayous Cocodrie and Boeuf. The excess discharge flows over two weirs from Bayou Courtableau and into the WABPL borrow pit. In this case, flow is west-to-east. This is the reverse of the low flow scenario in October, in which the flow in Bayou Courtableau (pumping station side of Bayou Teche) is east-to-west as a result of freshwater diversion from the Atchafalaya River (from the Teche-Vermilion pumping station) to sustain flow in the system. Bayou Courtableau east of Port Barre may flow in either direction, depending on whether excess water comes "naturally" from the upper Vermilion-Teche Basin or from the Teche-Vermilion Pumping Station.

Climate

From 1981-2010, The National Weather Service's Lafayette Regional Airport Station shows that June has the highest monthly mean precipitation of 7.08 inches, and March has the lowest monthly mean precipitation at 3.79 inches. The highest maximum and minimum temperature normals are in July and August.

Table 3 - Climate Data 30 Year Normals (1981-2010) Lafayette Regional Airport

Month		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Temps. (°F)	Max.	62.1	65.3	72.2	79.3	86.3	90.5	92	92.6	88.7	81	72.3	64.2	78.9
	Min.	42.9	46.4	52.2	58.7	66.9	72.7	74.9	74.6	69.7	59.7	51	44.5	59.5
Precipitation (in.)		5.67	4.45	3.79	3.93	4.78	7.08	6.3	4.62	4.72	5.23	4.35	5.58	60.5

Source: National Weather Service https://www.weather.gov/lch/KLFT

Ambient Water Quality Monitoring Network Data

LDEQ collects surface water quality data in its Ambient Water Quality Monitoring Network (AWQMN) in waterbodies across the state. Ambient data is the primary LDEQ data source for its water quality assessment. Over 600 ambient water quality monitoring sites have been established since 1958, but not all sites are currently in use. In 1998, LDEQ established a four-year rotating monitoring program to expand the coverage of its monitoring efforts. LDEQ collects ambient surface water data at approximately 125 sites across the state each month. The most recent assessment utilized AWQMN data collected between October 1, 2018, and September 30, 2022, for the 2024 IR.

Ambient water quality monitoring was previously conducted during a "water year" which ran from October 1 of the first year through September 30 of the following year. Beginning with the 2022/2023 monitoring cycle, each water year runs from November 1 of the first year through October 31 of the following year. This assessment change was made to facilitate better statistical analysis of the PCR criterion for enterococci.

Subsegment 060204 has had two ambient sites. The first active ambient site was Site 0102 Bayou Courtableau East-Southeast of Port Barre. It was active from 1978 to 1998. The active ambient site was changed in 1998 to Site 0665, which is further west and slightly north of Site 0102. Site changes usually occur due to accessibility issues, or identification of a site more representative of water quality of a subsegment. Because of the age of the sampling data for the first ambient site, only data at the current active ambient site will be discussed in this WIP.

Ambient Site 0665

Site 0665 is located at the LA-103 bridge, 1.0 mile north-northeast of the US-190 and LA-103 intersection, 6.6 miles southeast of I-49 Exit 25, 7.7 miles east-northeast of Opelousas (Figure 4). Ambient data will be discussed further, along with recent IRs to describe impairment issues in the bayou and to determine load reductions needed to meet designated uses.

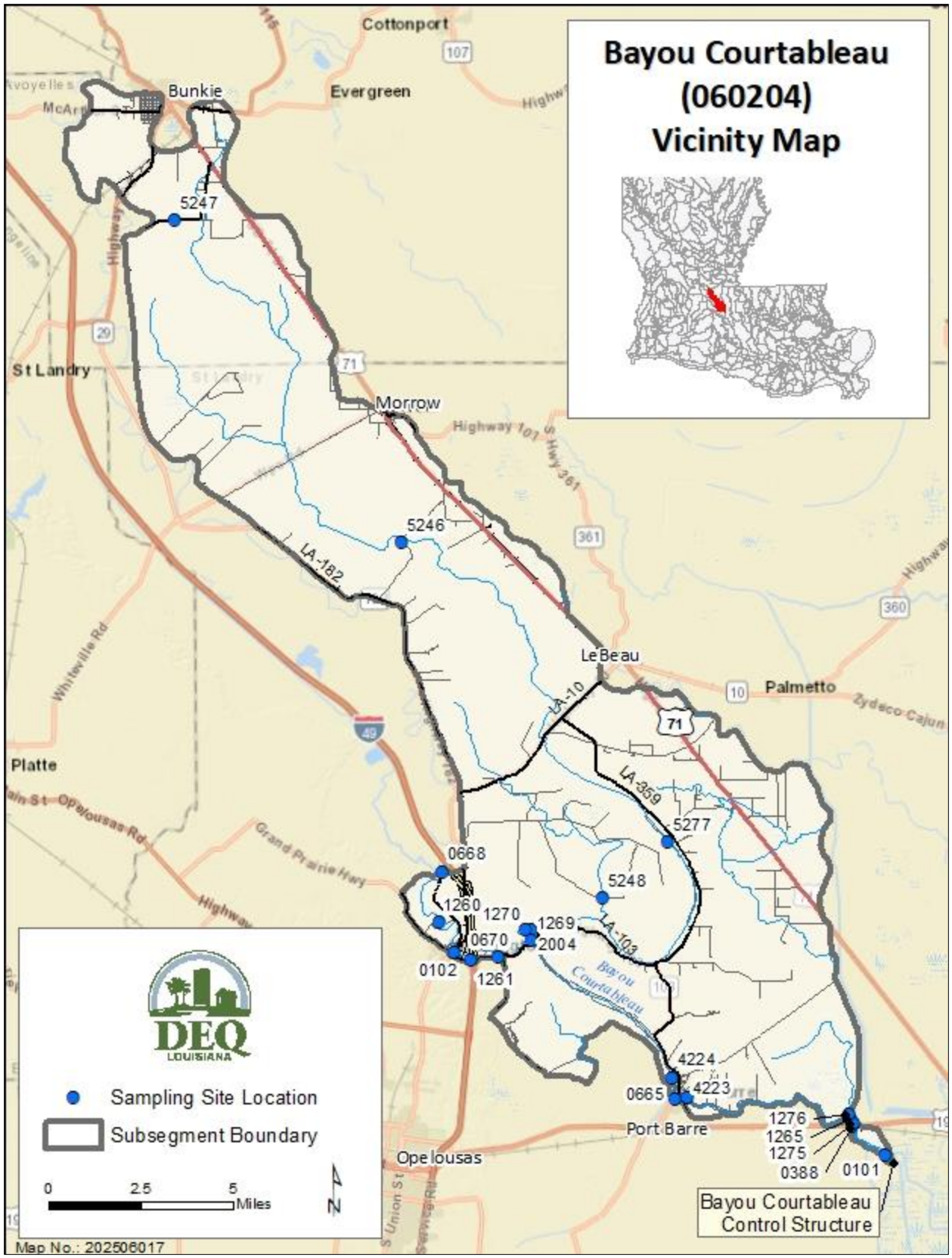

Figure 4 - Bayou Courtableau Sampling Sites

Table 4 shows ambient monitoring average concentrations of key parameters at Site 0665 for each monitoring cycle/water year.

Table 4 - Site 0665 Averages for Sampling Parameters

Sampling Period	DO (mg/L)	FC (cfu/100 mL)	Nit/Nit (mg/L)	TKN (mg/L)	TP (mg/L)	Turbidity (NTU)
1998	6.57	692	1	0.6	0.16	40
2003	*	575	0.46	0.98	0.18	40
2005	6.61	162	0.97	0.67	0.16	36
2008/2009	4.82	222	0.57	0.72	0.16	34.85
2012/2013	6.87	308	0.6	0.64	0.2	33.73
2016/2017	5.07	1048	0.59	0.99	0.25	59
2020/2021	6.01	409	0.18	0.42	0.25	74.6
Overall	5.89	528	0.67	0.73	0.18	42

* Insufficient data to calculate an average

Figures 5-10 depict the AWQMN historical data at Site 0665 from 1998 to 2021. Because ambient data is collected on a four-year cycle at a single location, and unforeseen issues can arise, past and potential future spatiotemporal data gaps are acknowledged. These gaps will be addressed by including baseline data collected for this project throughout the watershed bimonthly to help identify areas of high pollutant concentration and to prioritize areas for BMP implementation.

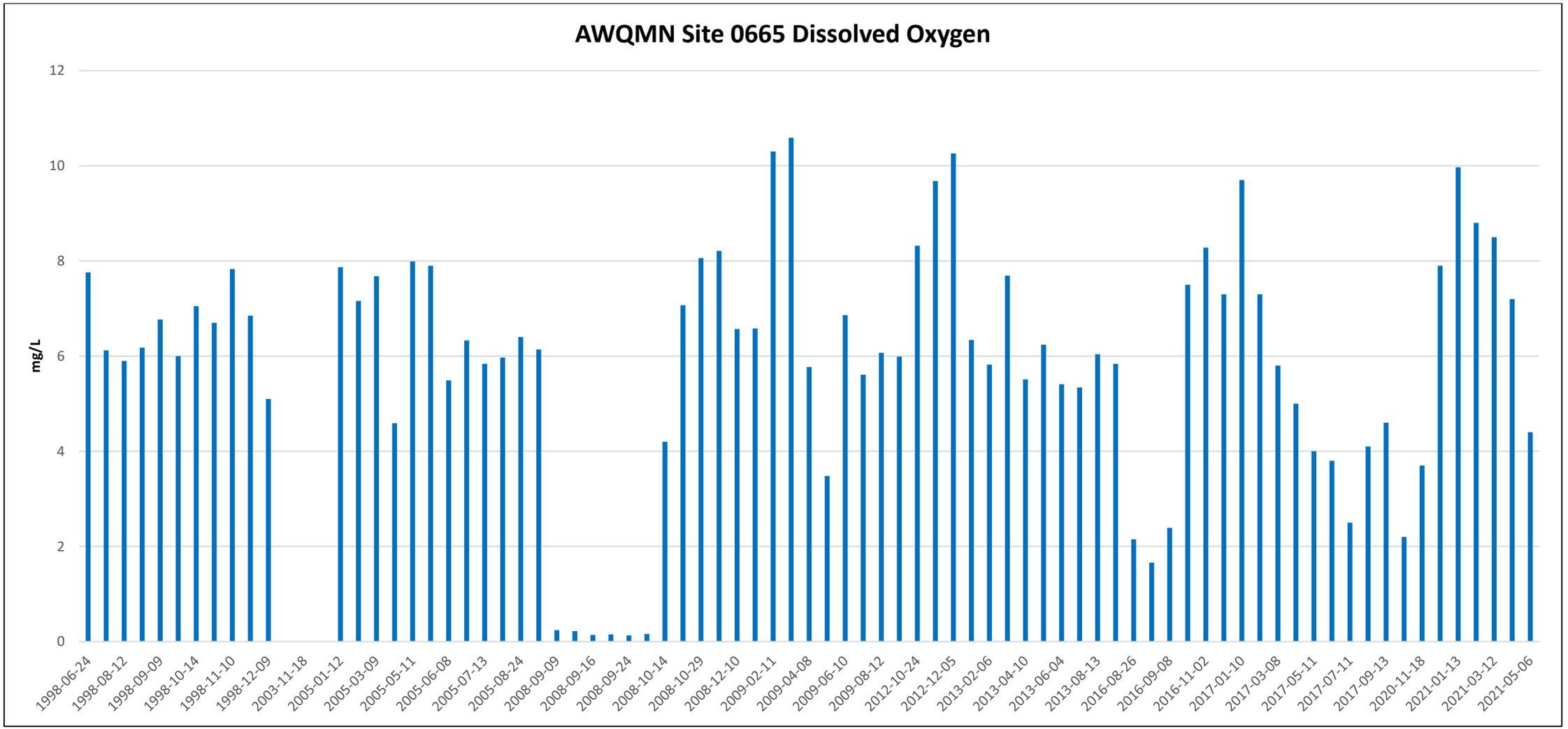

Figure 5 - AWQMN Site 0665 Dissolved Oxygen

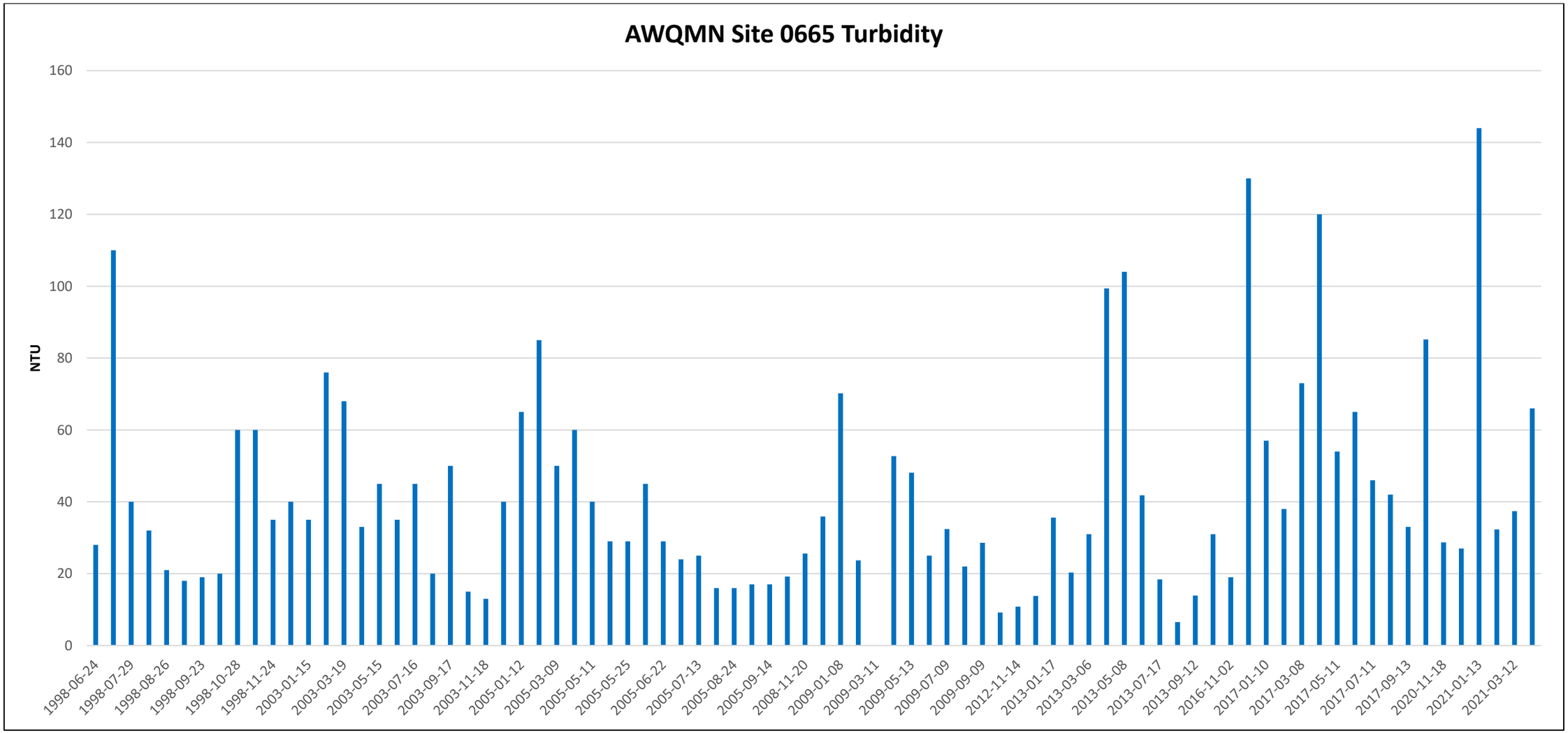

Figure 6 - AWQMN Site 0665 Turbidity

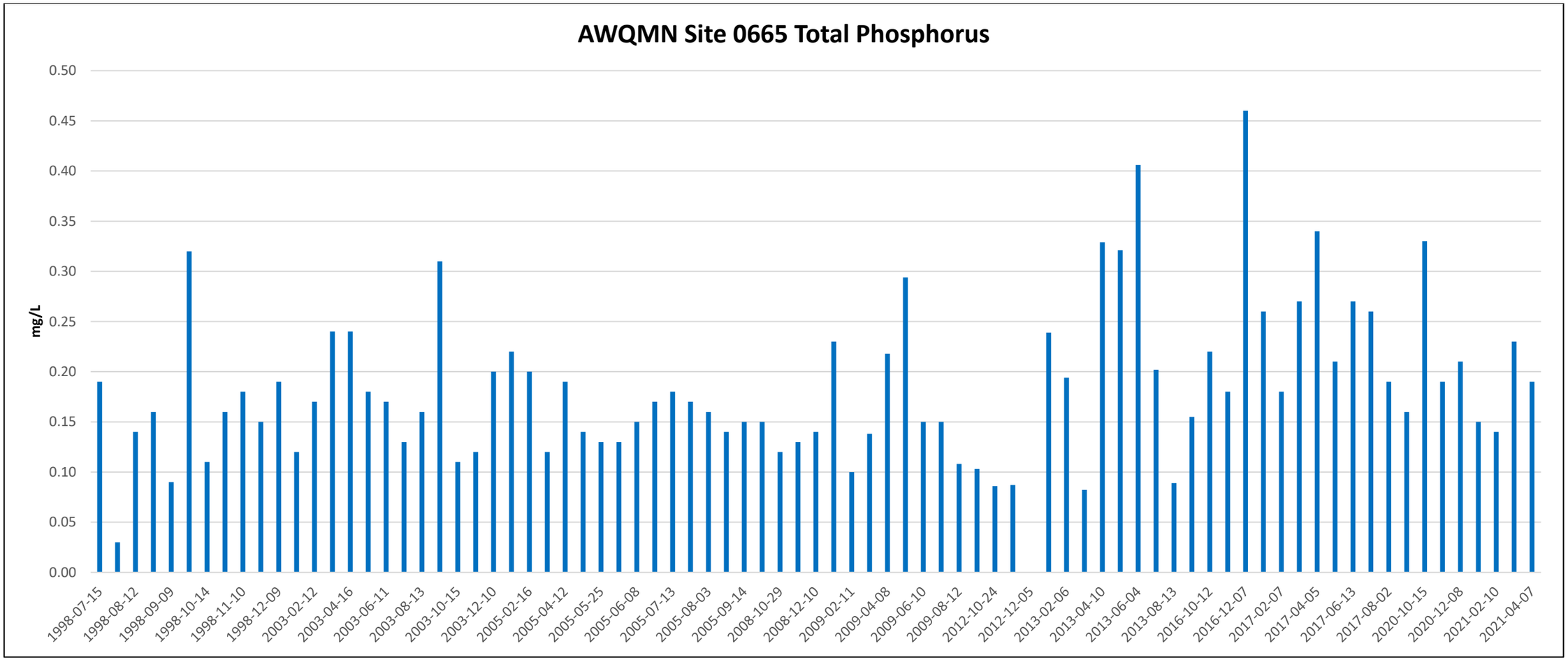

Figure 7 - AWQMN Site 0665 Total Phosphorus

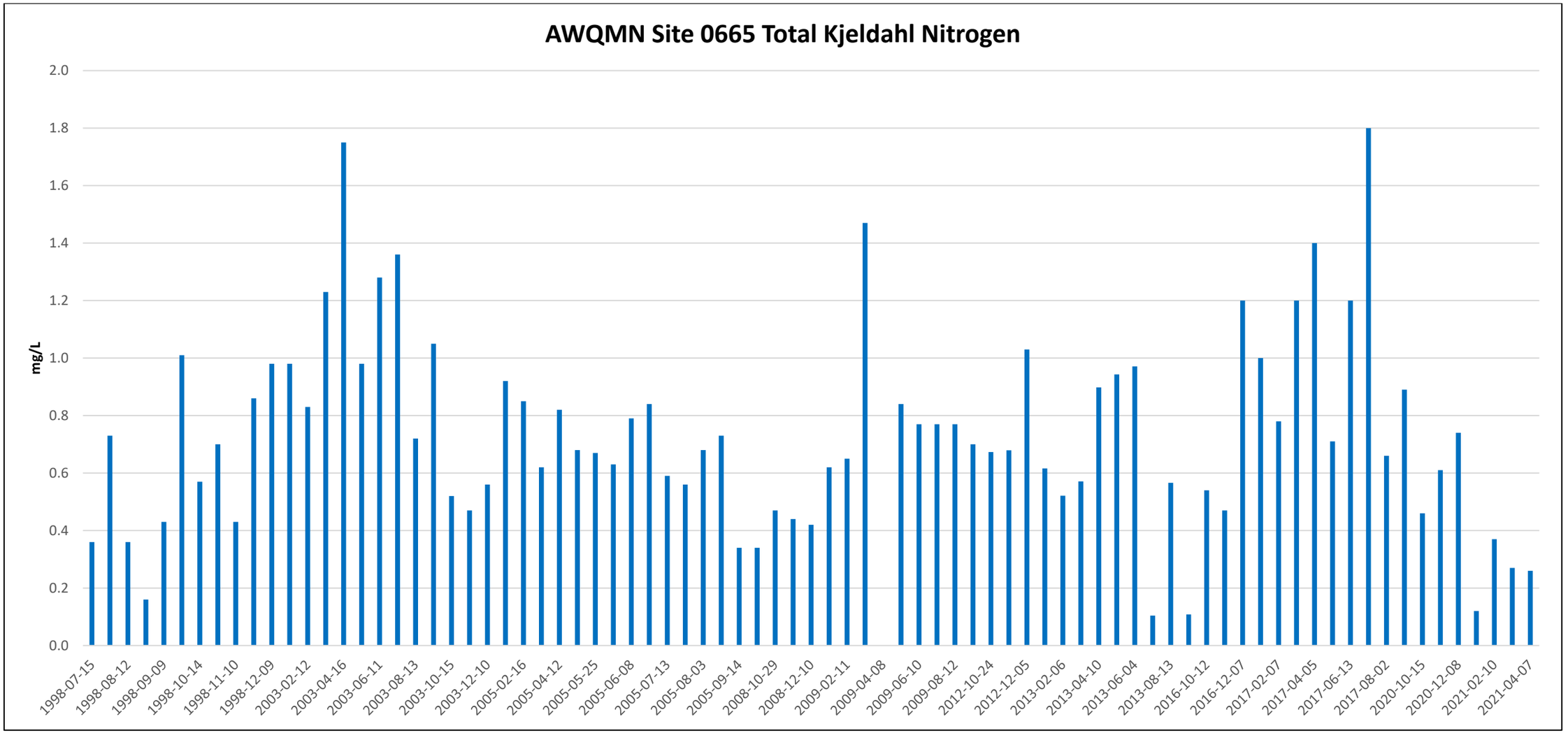

Figure 8 - AWQMN Site 0665 Total Kjeldahl Nitrogen

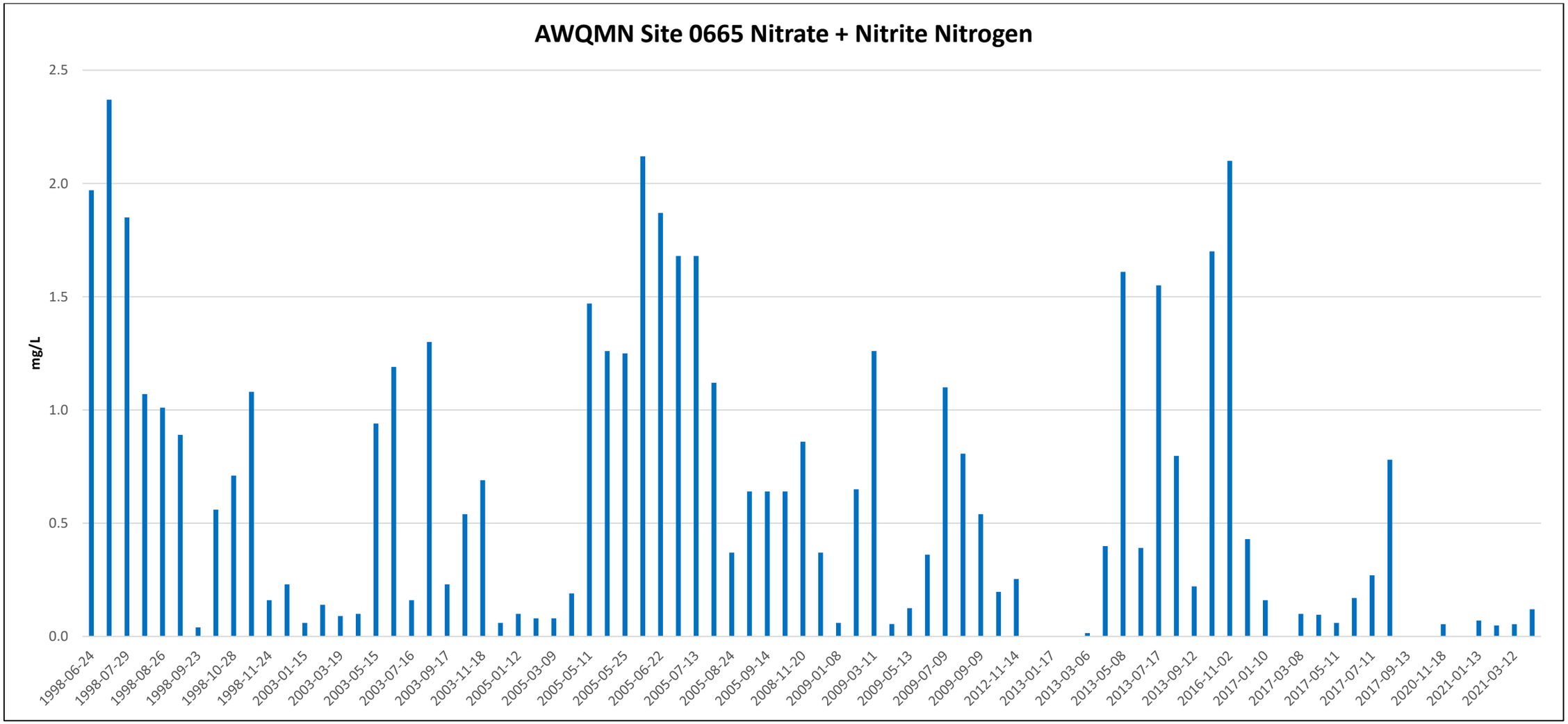

Figure 9 - AWQMN Site 0665 Nitrate + Nitrite Nitrogen

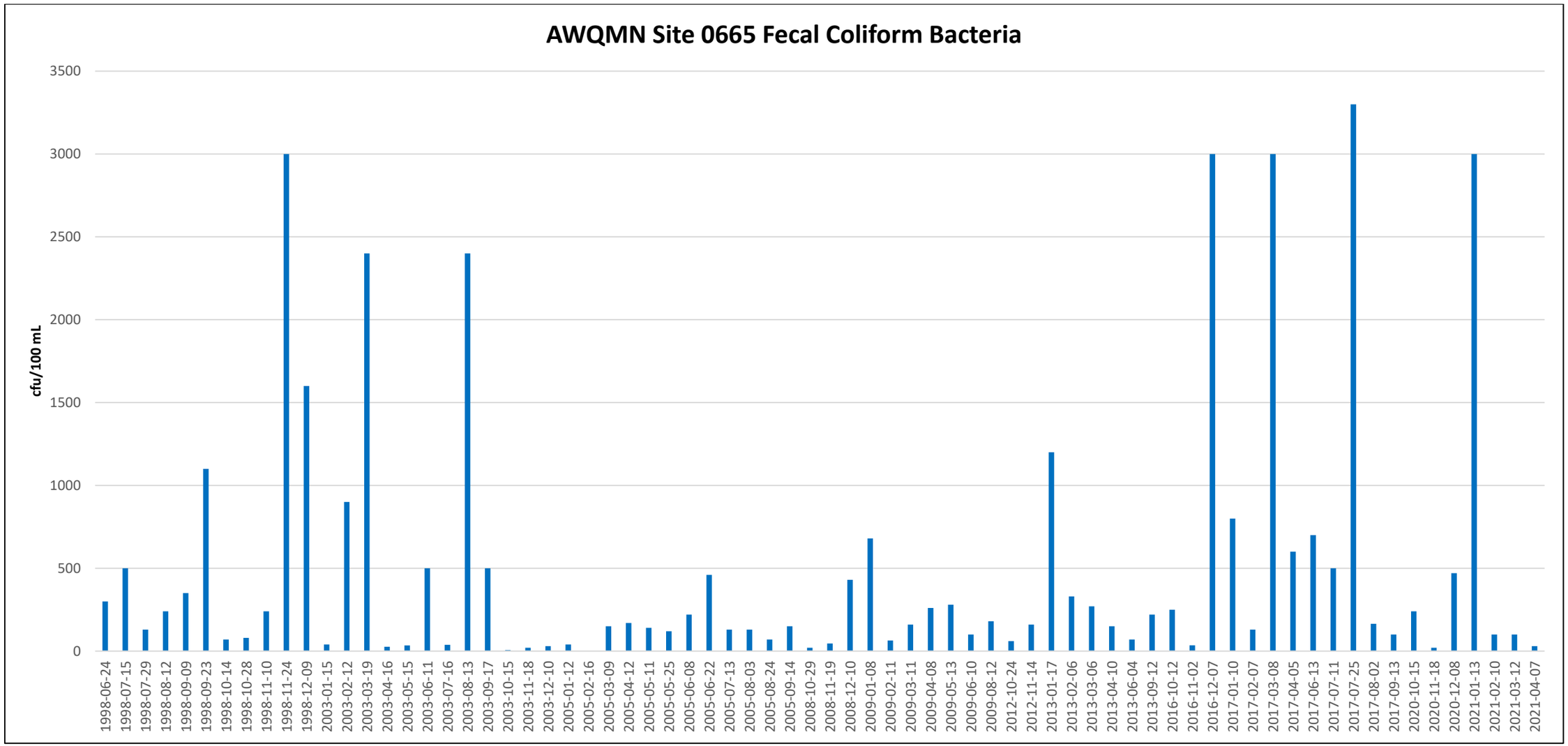

Figure 10 - AWQMN Site 0665 Fecal Coliform Bacteria

Dissolved Oxygen

Ambient data shows seasonal DO percent exceedances at Site 0665 have fluctuated from 1998 to 2021. There were no exceedances in the 1998 and 2012/2013 sampling years, and 55% exceedances May to September of 2008/2009. Other years had seasonal percentages that ranged from 11% to 38%. The waterbody must have fewer than 10% DO exceedances year-round to fully support the FWP designated use.

Table 5 - AWQMN Site 0665 DO Exceedance History

Year	October – April 5.0 mg/L	May – September 3.0 mg/L	Overall Exceedance Rate
1998	0%	0%	0%
2005	25%	0%	8%
2008/2009	11%	55%	35%
2012/2013	0%	0%	0%
2016/2017	0%	38%	27%
2020/2021	29%	0%	17%

Turbidity

Ambient data at Site 0665 shows the highest overall turbidity rate over 25 NTU during the 2016/2017 sampling cycle (92%). A turbidity exceedance greater than 30% in a sampling year indicates the subsegment is not supporting its FWP designated use.

Fecal Coliform Bacteria

Ambient data at Site 0665 showed the highest PCR percent exceedance rate in 2003 at 50%. It decreased to 11% in 2005 and increased to 43% during the 2016/2017 sampling year. During the 2020/2021 sampling year, it was 17%, which is fully supporting PCR. The highest SCR exceedance rate came in 2016/2017 at 17%, which is also fully supporting SCR. During the 2020/2021 sampling year there was only an 8% exceedance rate for SCR, fully supporting its SCR designated use. Activities in this plan will maintain healthy waters for recreational uses.

Table 6 - AWQMN Site 0665 FC/Turbidity Exceedance History

Year/Source/ Use	FC		Turbidity
	PCR	SCR	FWP
1998	25%	8%	67%
2003	50%	8%	75%
2005	11%	0%	67%
2008/2009	0%	0%	73%
2012/2013	0%	0%	42%

2016/2017	43%	17%	92%
2020/2021	17%	8%	92%

Figure 11 on the following page shows permitted OSDSs in Subsegment 060204. OSDSs were listed as a suspected source of impairment for FC.

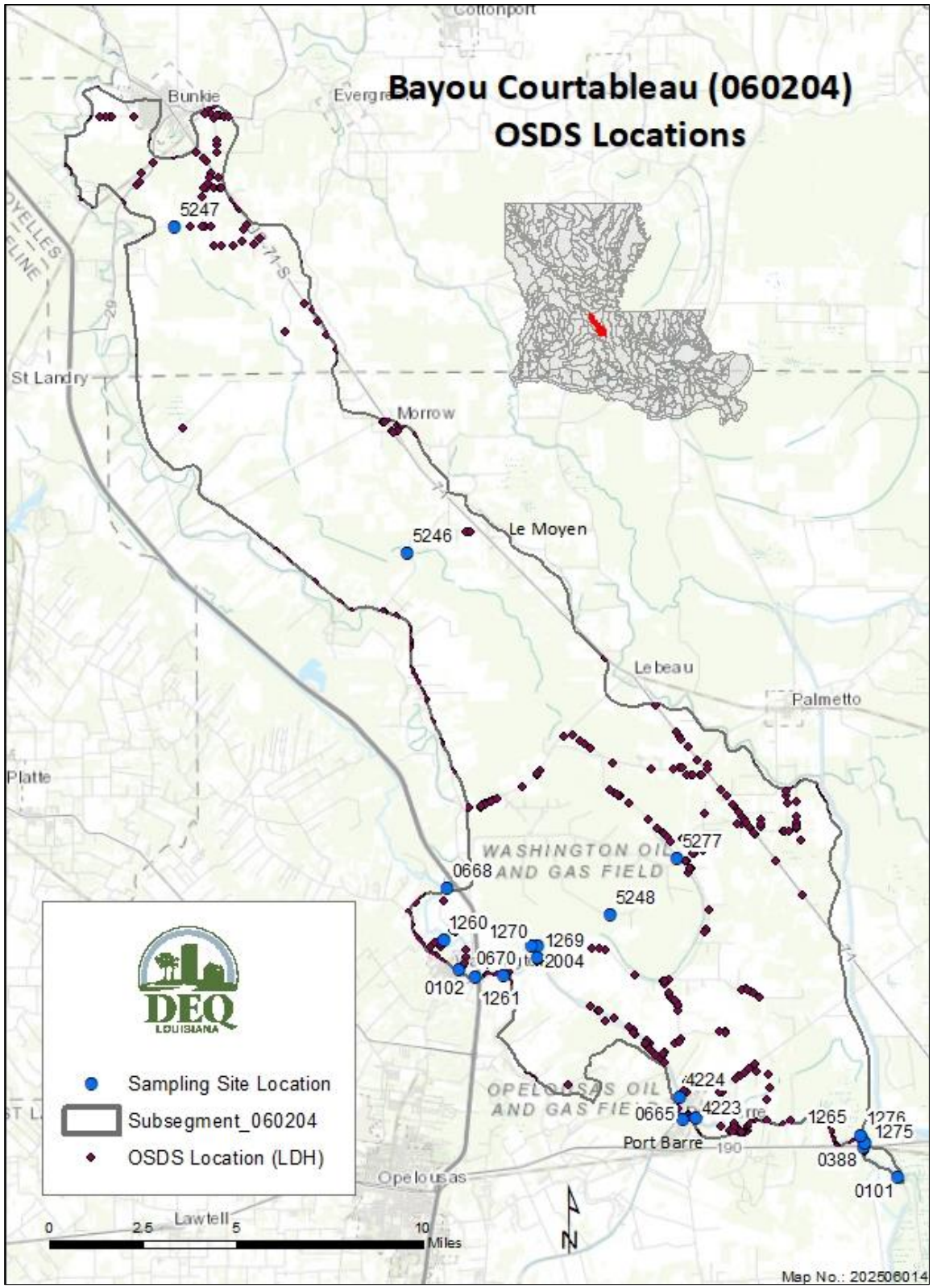

Figure 11 - LDH Permitted OSDS Sites

Table 7 and Figures 12-16 show the data from the most recent ambient sampling at AWQMN Site 0665. Values in red represent exceedances for that parameter. This data is used to determine reduction targets essential for estimating load reductions necessary to meet the standard for each designated use. This will be discussed further in Element B.

Table 7 - Ambient Data 2020-2021 Exceedances at Site 0665

	>2,000 year-round > 400 May to Oct. (CFU/100 ml)	No Criteria			>25 NTU	<3.0 May to Sep. <5.0 Oct. to Apr.
DATE	**FC (cfu/100 ml)**	**Nit+Nit (mg/L)**	**TKN (mg/L)**	**TP (mg/L)**	**TURB (NTU)**	**DO (mg/L)**
2020-10-15	240	-	0.46	0.33	85.2	2.2
2020-11-18	20	0.054	0.61	0.19	28.7	3.7
2020-12-08	470	-	0.74	0.21	27	7.9
2021-01-13	3,000	0.07	0.12	0.15	144	9.97
2021-02-10	100	0.048	0.37	0.14	32.3	8.8
2021-03-12	100	0.054	0.27	0.23	37.4	8.5
2021-04-07	30	0.12	0.26	0.19	66	7.2
2021-05-06	700	0.28	0.57	0.66	251	4.4
2021-06-09	50	0.32	0.4	0.24	61.6	4.5
2021-07-14	70	0.56	0.33	0.08	96.5	4.60
2021-08-04	50	0.052	0.61	0.27	13.8	6.2
2021-09-08	80	0.21	0.28	0.27	51.8	4.10

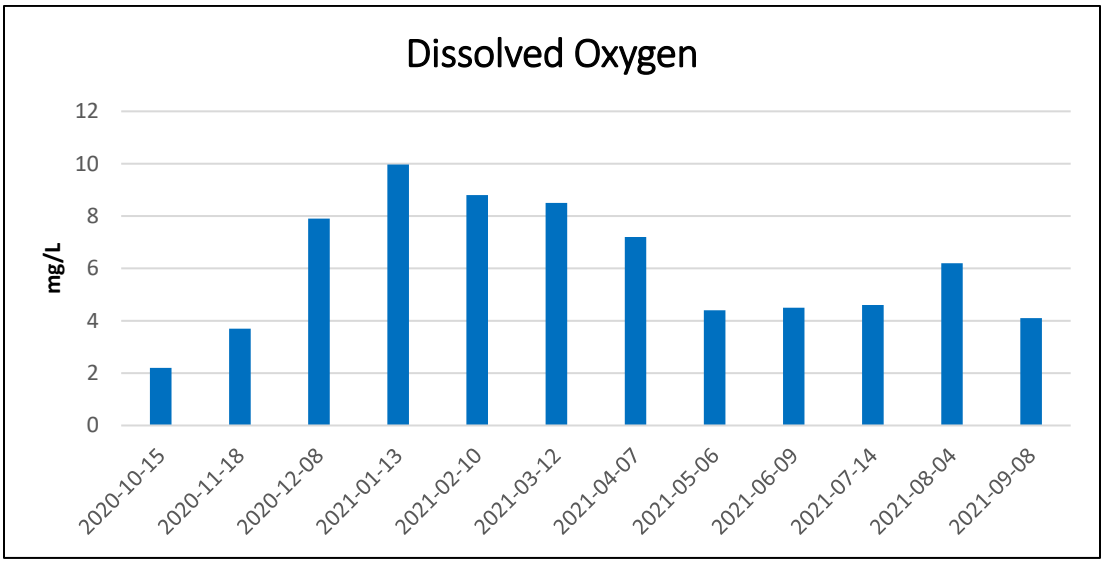

Figure 12 - Site 0665 2020-2021 Ambient Data: Dissolved Oxygen

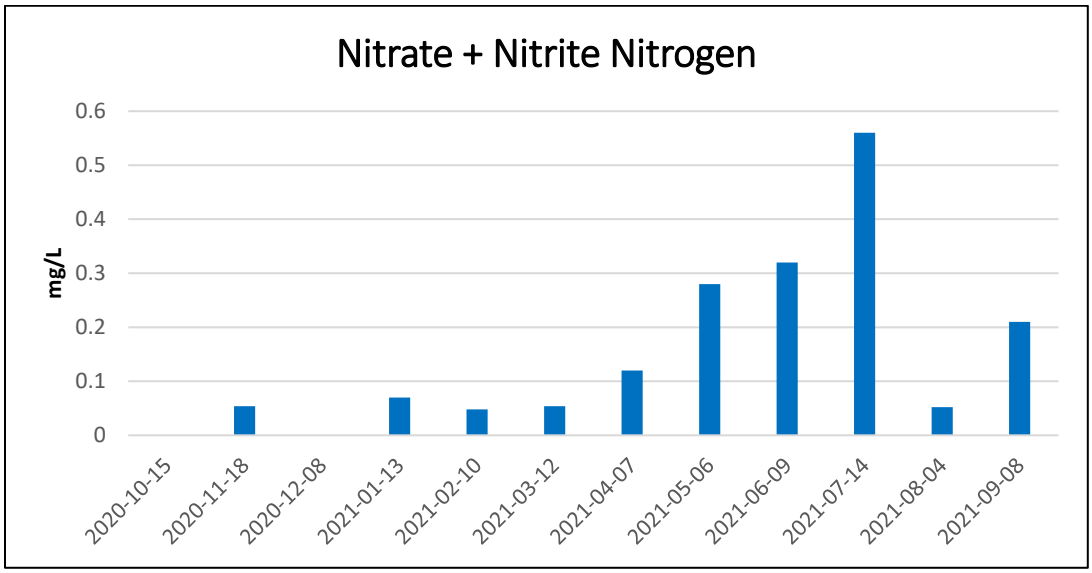

Figure 13 - Site 0665 2020-2021 Ambient Data: Nitrate + Nitrite Nitrogen

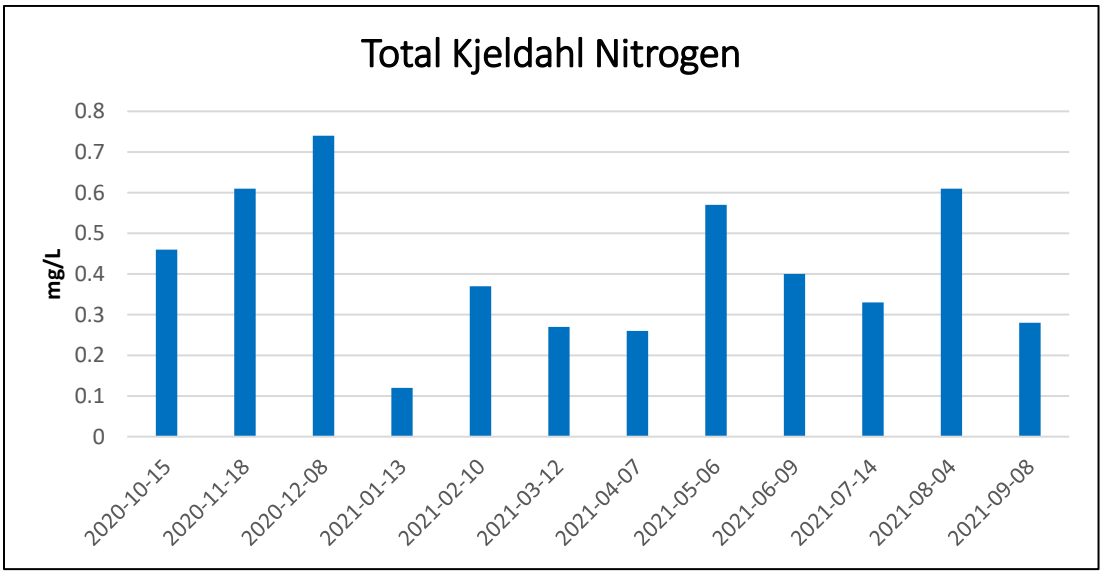

Figure 14 - Site 0665 2020-2021 Ambient Data: Total Kjejdahl Nitrogen

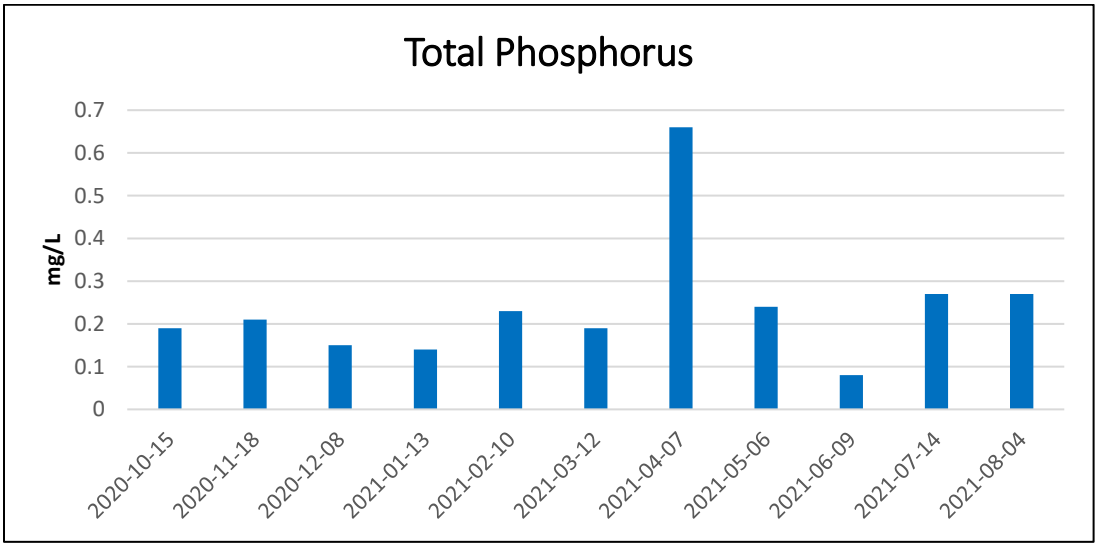

Figure 15 - Site 0665 2020-2021 Ambient Data: Total Phosphorus

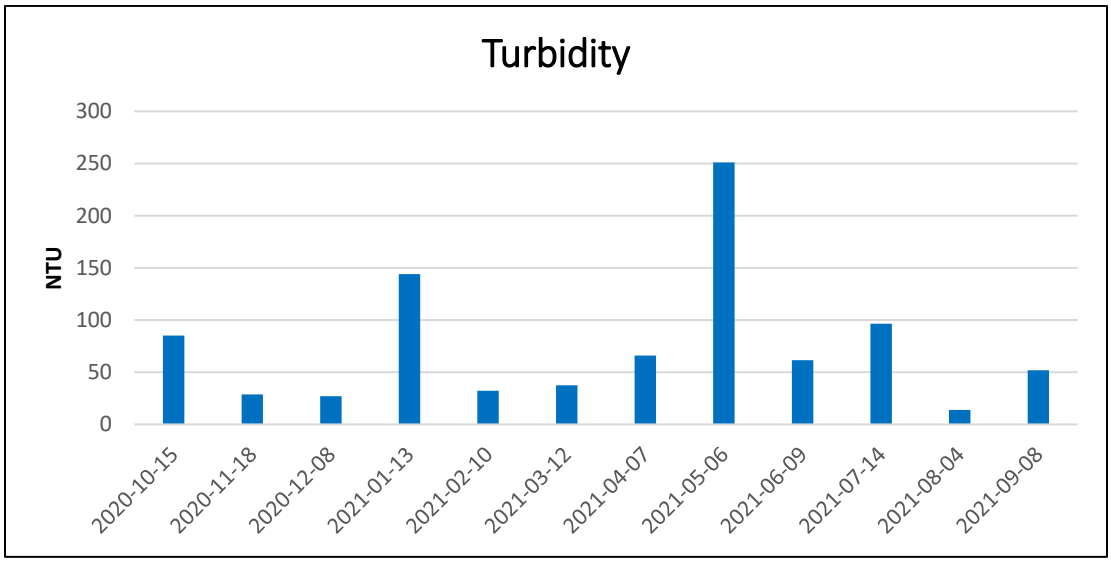

Figure 16 - Site 0665 2020-2021 Ambient Data: Turbidity

Baseline Project Data

LDEQ collects bimonthly baseline data as part of its project data collection effort at various sites throughout the watershed for at least one year prior to implementation. In addition to field and lab parameters, flow is measured at the active ambient site at every sampling event when possible. Flow measured during baseline sampling from April 2023 through April 2024 had an average value of 855 cfs.

Baseline data helps characterize baseline water quality conditions, identify potential high-runoff areas, and to prioritize subareas for BMP implementation. Table 8 shows baseline data averages by site from April 2023 through March 2024 for the primary constituents of concern.

For FC, average concentrations above 400 cfu/100 mL are shown in red. Sites 5277 and 0102 have the highest averages at 1,135 cfu/100 mL and 958 cfu/100 mL, respectively. Two extreme values of 20,000 cfu/100 mL significantly increased the average for these sample sites. This value occurred on May 2, 2023 at Site 5277 and on July 20, 2023 at Site 0102.

For DO, average levels below 5.0 mg/L are shown in red (there were no averages below 3.0 mg/L). The lowest average levels were at Sites 5248 (3.71 mg/L) and 5277 (3.77 mg/L).

For turbidity, average values above 25 NTU are shown in red. All project sites had an average value above 25 NTU. The highest values were at Sites 5246 (139.6 NTU) and 5247 (95.21 NTU).

Table 8 - Project Data Averages by Sample Site April 2023 – March 2024

Site / Parameter Average Concentration	Fecal Coliform (cfu/100 mL)	Turbidity (NTU)	Dissolved Oxygen (mg/L)
0101	85.25	26.39	7.25
0102	958	53.1	4.96
0388	230	32	7.13
0665	89	38.5	6.59
0668	127	73.7	6.19
0670	43	47.8	5.17
1260	66	46.41	4.62
1261	133	43.4	4.8
1265	143	33.3	6.92
1269	60	49.6	4.76
1270	55	40.96	4.7
1275	124	42.03	6.57
1276	205	27.6	4.99
2004	82	52.2	5.12
4223	218	31.77	6.87
4224	80	40.05	4.62
5246	497	139.6	4.07
5247	589	95.21	4.24
5248	103	29.4	3.71
5277	1,135	103	3.77

Project Data at the Ambient Location Site 0665

The turbidity threshold used for this plan is 25 NTU, and 39% of samples at 0665 exceeded the threshold. At active ambient site 0665, only 7% of DO measurements were below 5.0 mg/L from October to April. None of the DO measurements from May to September were below 3.0 mg/L. Of the turbidity values, 57% were above 25 NTU, suggesting the area immediately surrounding the active ambient site, Area 5, is a hotspot and a priority for turbidity-related BMP implementation.

Table 9 shows baseline project data at the ambient site to date for turbidity, FC, and DO. Values in red do not meet the current criteria or threshold. The bottom row shows the overall project data exceedance rate for that parameter.

Table 9 - Site 0665 Project Data

Date	Turbidity (NTU)	FC (cfu/100 mL)	DO (mg/L)
4/13/2023	72	138	5.91
4/26/2023	87.9	2	4.71
5/2/2023	58.1	4	5.21
5/23/2023	43.8	18	6.18
6/6/2023	32.5	150	6.42
6/20/2023	28	12	6.67
7/6/2023	24.1	7	5.31
7/20/2023	23.1	44	5.97
8/10/2023	25.7	10	5.96
8/24/2023	27.2	80	6.25
9/14/2023	6.8	160	6.11
9/28/2023	10.6	120	6.41
10/10/2023	22.7	120	6.91
10/26/2023	19.3	110	7.41
11/7/2023	28.3	120	8.34
11/21/2023	17.8	240	8.85
12/7/2023	21.3	20	8.74
12/21/2023	23.3	30	10.54
1/31/2024	68.5	90	6.39
2/15/2024	83	120	7.27
2/28/2024	31.8	60	7.33
3/13/2024	58.8	100	7.06
3/26/2024	71	290	6.58
Percentage not meeting criteria/threshold	**57%**	**0%**	**4%**

Most samples (57%) at the active ambient site exceeded the threshold of 25 NTU for turbidity. Only one DO value was below 5.0 mg/L (4.71 mg/L) for the Oct-Apr 3.0 mg/L threshold. The highest FC concentration from April 2023 through March 2024 was 290 cfu/100 mL. No samples exceeded the criteria for PCR and SCR.

TMDLs

TMDLs have been developed for Subsegment 060204 for DO, FC, and turbidity. However, the conditions at the time the TMDLs were developed are not representative of current state of the waterbody. Since that time, ambient sites have been relocated, there is more than a 20-year timespan between the time the TMDLs were developed and the development of this WIP, and some water quality criteria have changed. For these reasons, TMDL target values will not be used to estimate current reduction targets. Summaries of the TMDLs are provided to offer a historical perspective of this waterbody.

A TMDL for DO was developed in January 2000 based on data from Sites 0101 and 0102. The standard at that time was 5.0 mg/L year-round. A use attainability analysis (UAA) had been proposed to change the standard to 4.0 mg/L June through August, and 5.0 mg/L September through May. In April of 2000, another UAA was submitted to USEPA which proposed a standards reduction to the proposed standards mentioned in the TMDL. In August of 2001, a revision was submitted to reduce the standard to 3.0 mg/L from May through September and 5.0 mg/L from October through April. This was approved by USEPA in February 2002.

A TMDL for TSS, turbidity, and siltation was developed in May 2001 for 21 subsegments in the Bayou Teche watershed. For Bayou Courtableau, data from Sites 0101, 0102, and 0665 were used to establish the reduction target. The reduction target for Bayou Courtableau was identified as 150 NTU, with an explicit margin of safety (MOS) of 20%. The TMDL identified suspended solids in wet weather runoff from the upland areas of the watershed with agricultural uses as the most significant source of TSS and turbidity. In the lower reaches of the watershed where the predominant land use is marsh or wetland, pollutant sources come from waves and wind that keep solids suspended. Wasteload allocations from point sources were set to zero in this TMDL, and flow used for load reduction calculations was 662 cfs.

The TMDL for FC was developed in April 2003. The suspected nonpoint pollution sources mentioned are rural residences with septic tanks or fields for wastewater treatment. OSDS locations are shown in the permitted OSDS map in Figure 11. This TMDL used an implicit MOS, which means that it uses conservative assumptions in the calculations. The TMDL stated that a 43% reduction in FC nonpoint source pollutant loading during the PCR season is needed to meet the standard.

Element B: Load Reductions

Targeted load reductions were established on a watershed scale using data at the AWQMN location. Subareas were prioritized for BMP implementation based on project monitoring site data collected as part of baseline monitoring throughout the watershed. Subsegment 060204 is primarily comprised of five 12-digit HUCs, but there are small areas of other 12-digit HUCs within the Subsegment. This WIP will employ subareas made up of primary HUC-12s combined with adjacent partial HUCs for prioritization. The locations of sample sites by 12-digit HUC and area numbers are shown in Table 10. This also will aid in determining which BMPs will be most effective in each area.

Table 10 - Subarea HUCs and Sample Sites

Area	12-digit HUC	Sample Sites (LEAU #s)
1	080801020504	5247
2	080801020509	5249
3	080801020511	5246, 5248, 5277, 1269
4	080801020605	0668, 0102, 1260, 1261, 0670, 1270
5	080801020606	2004, 4224, 0665, 4223, 1275, 1276, 0388, 1265, 0101

Dissolved Oxygen

Because there have been a number of significant changes in Subsegment 060204 since the TMDL was developed, load reductions for this project will not be based on the TMDL. Nutrient reductions targeting high DO concentrations will be based on current DO standards and AWQMN data. AWQMN data and project data are used to identify hotspots in the watershed.

AWQNM data at Site 0665 from the October 2020 through September 2021 sampling year shows two exceedances for DO. This is more than the 10% allowed in order for Subsegment 060204 to be fully supporting its FWP designated use. In order to remove the DO impairment, there can only be one exceedance when there are 12 measurements. The concentration was 2.2 mg/L in October 2020, and it was 3.7 mg/L in November 2020. The concentration would need to be greater than 5.0 mg/L to meet the standard in both cases. To raise 3.7 mg/L to 5.0 mg/L there would need to be a 27% increase, and to raise 2.2 mg/L to 5.0 mg/L there would need to be a 56% increase.

Use support would be restored if one of the AWQMN DO exceedances were eliminated. LDEQ will use 27% as the initial target for reduction of input of oxygen-demanding nutrients. Once

the 27% reduction is achieved, LDEQ may then target an additional reduction of 29% to reach the total 56% reduction needed to address the highest exceedance concentration observed and achieve in effect a MOS for water quality improvement. While a 1:1 relationship between nutrient loading and DO is not established, the 27% target is in excess of the TMDL's 15% target, which would have been required to meet more stringent criteria. Water quality progress will be assessed at the 15% reduction point, and further at the 27% reduction point to determine how DO is responding. Note that a lag of up to a decade between load reductions and DO response may occur due to bedload oxygen demand.

The TMDL (LDEQ 2000) was generated in anticipation of a DO standard change from year-round 5 mg/L to a seasonal standard of 4.0 mg/L June-August and 5.0 mg/L September-May. After a use attainability analysis was completed, the standard was ultimately changed to 3.0 mg/L May-September and 5.0 mg/L October-April. The TMDL specified a 15% reduction in manmade loads would be required to meet the 4.0/5.0 standard. Because the adopted standard was changed slightly in seasonality and concentration, and because land use has changed in the 25 years since the TMDL was completed, 15% is likely no longer applicable. An initial reduction target of 27% man-made inputs in the form of TKN, nitrate-nitrite, and total phosphorus will be employed in this plan. If a 15% reduction is achieved and the DO standard is not met, that information will be shared with TMDL staff for consideration, and this WIP implementation will proceed toward the 27% target. On reaching that target, if the standard is not met, reassessment of the target will be made and the WIP adjusted as necessary to evaluate whether increased or different practices, such as stream buffers, conservation easements, etc., would be appropriate.

In order to address the impairment (which was determined by data at one site), LDEQ collects and analyzes data at multiple project sites to prioritize areas for implementation. Table 11 shows baseline project data DO averages at each site. Values in red show priority sites (chosen based on the lowest average concentrations) for DO-related BMP implementation. Site 5248 had the lowest average at 3.71 mg/L, which made Area 3 the highest priority for implementation.

Table 11 - Project Data DO Averages by Site

Dissolved Oxygen (mg/L)	
4/2023-3/2024	
Site	**Average**
0101	7.25
0102	4.96
0388	7.13
0665	6.59
0668	6.19
0670	5.17
1260	4.62
1261	4.8
1265	6.92
1269	4.76
1270	4.7
1275	6.57
1276	4.99
2004	5.12
4223	6.87
4224	4.62
5246	4.07
5247	4.24
5248	3.71
5277	3.77

Area 4, with Sites 0102, 1260, 1261, 1269, and 1270, has an average for DO below the standard at almost every site in that HUC. This makes Area 4 mid-priority for implementation. The land use in the HUC is mixed, with crops, wetlands, and grassland/pasture areas. Sites 1276 and 4224 are located in Area 5, and their DO averages make the area a lower priority.

Site 5247 is in Area 1, the northernmost 12-digit HUC in the watershed. Its distance from the active ambient site makes it less of a priority for BMP implementation, but implementation to reduce pollutants from cropland, the dominant land use immediately surrounding the sample site, will occur in Area 1 as well. Figure 17 shows priority areas for nutrient reduction efforts to increase DO.

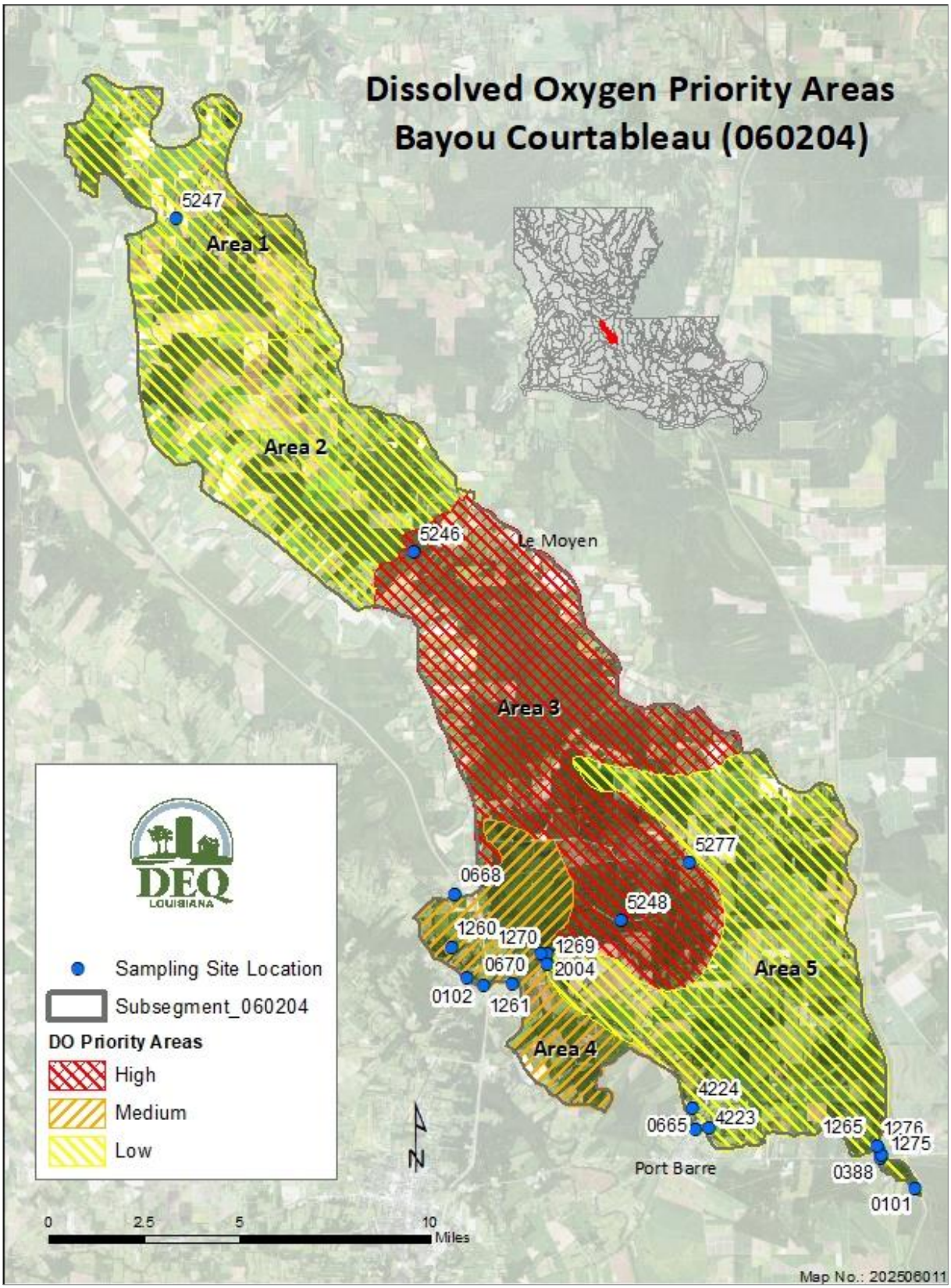

Figure 17 - DO Priority Areas

Fecal Coliform Bacteria

AWQMN data at Site 0665 from the October 2020 through September 2021 sampling year shows that there was one exceedance for SCR (January 2021 - 3000 cfu/100 mL) and one exceedance during PCR season (May 2021 - 700 cfu/100 mL). Baseline project data from all sites shows that only 6% of samples exceeded the PCR criterion, and only 2% of samples exceeded the SCR criterion.

The 2024 IR no longer lists Subsegment 060204 as impaired for its designated use of PCR due to FC. Because the Subsegment was recently impaired for PCR due to FC, FC monitoring is occurring throughout the watershed. Inspections, OSDS pumpouts, and pasture BMPs may also be used to address localized areas of high FC and prevent a future FC-related impairment. LDAF will partner with LDEQ for OSDS pumpouts. One strategy may involve contacting municipalities for public awareness outreach, and to request authority to access private property for inspections/OSDS pumpouts.

FC-related BMP implementation may be focused in Area 1 (estimated 64 OSDSs) and in Area 3 (estimated 95 OSDSs) to maintain healthy waters and address local pollutant sources to help this waterbody maintain its PCR designated use. Figure 18 shows priority areas for bacteria reduction efforts to maintain contact recreation use support. There are more than 400 OSDSs in this subsegment.

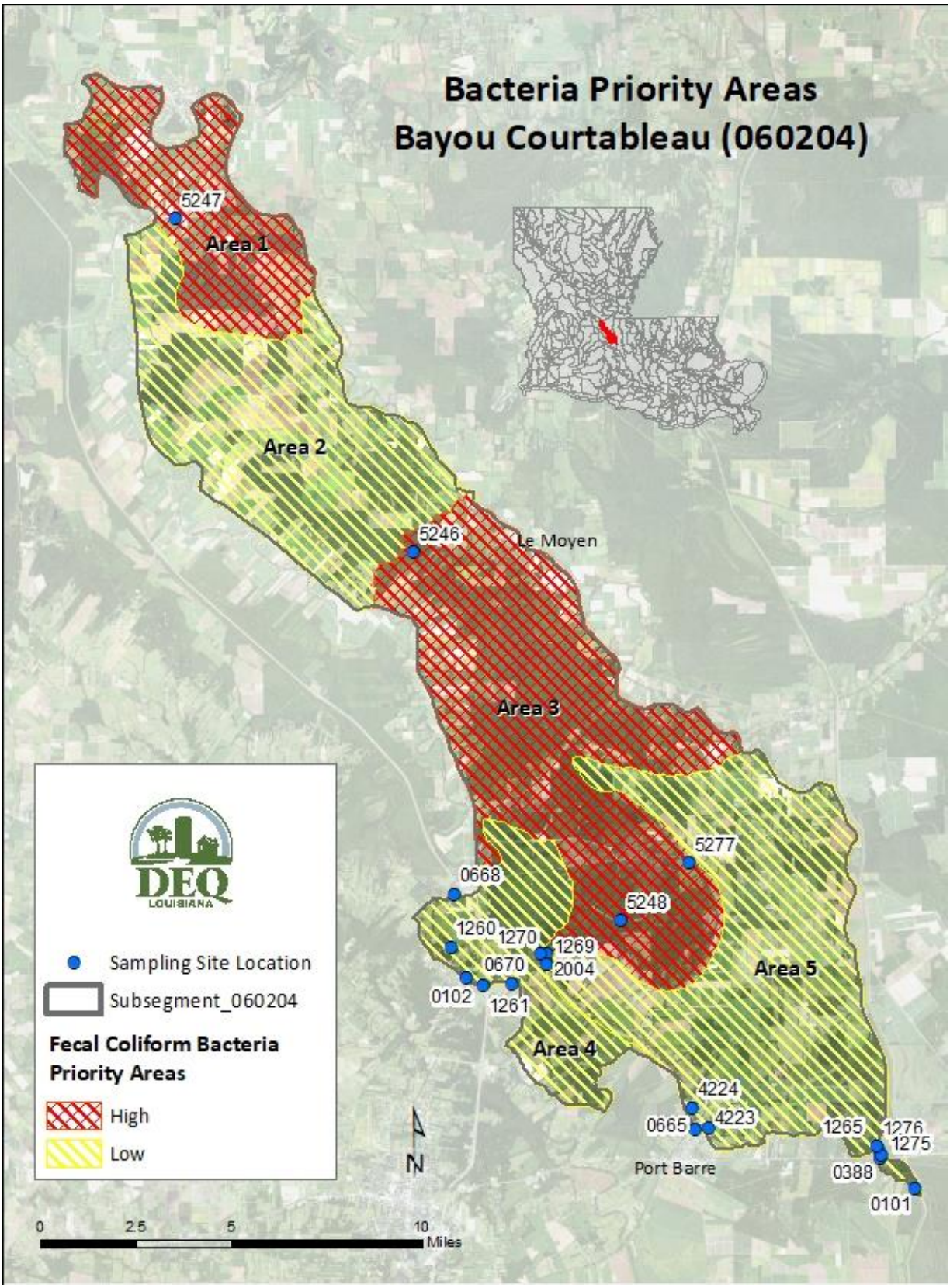

Figure 18 - FC Priority Areas

Turbidity

Although the TMDL identified 150 NTU as a target value for turbidity, there is no numeric criterion for turbidity for Bayou Courtableau. The narrative standard allows for 10% above a natural background level, which is currently not established for Subsegment 060204. As a result, use support cannot be established unless it meets the 25 NTU criterion for scenic streams and lakes. This is the most restrictive criterion for turbidity in the LDEQ water quality regulations.

The LDEQ water quality Standards and Assessment Group is working to develop standards that are more appropriate for subsegments that have never had specific criteria, including Bayou Courtableau. LDEQ Standards and Assessment data analyses used for the proposed criteria show a moderate-to-high positive correlation (both linear and non-linear) between suspended sediment and turbidity (Pearson's r = 0.8; Kendall's Tau = 0.5 to 0.6 varying with site) in Bayou Courtableau, as did the turbidity TMDL (LDEQ 2001). However, additional factors impact turbidity such as type of sediment, dissolved solids, and color, among others. A draft proposal has been sent to EPA although LDEQ is revising the approach for standard development in the Gulf Coast Prairie ecoregion, which includes this subsegment (LDEQ 2025a). Until a new standard is developed (expected within 3 years), 25 NTU will be the turbidity target for Subsegment 060204, the most stringent criteria for turbidity in Louisiana. Should the criterion change, this WIP will be revised.

Table 12 shows averages for turbidity project data at all sites. Values in red represent an average above 25 NTU. All sites exceeded the 25 NTU average from April 2023 through March 2024. Sites 5246, 5277, 5247, 0668, 0102, and 2004 had the highest averages in the watershed, so Areas 3, 4, and 5 are the highest priority areas for turbidity-related BMP implementation. These areas are closest to the Site 0665 and have the highest averages. Area 1 (with Site 5247) is medium priority for implementation.

Table 12 - Project Data Turbidity Averages by Site

Turbidity (NTU)	
4/2023-3/2024	
Site	**Average**
0101	26.39
0102	53.1
0388	32
0665	38.5
0668	73.7
0670	47.8
1260	46.41
1261	43.4
1265	33.3
1269	49.6
1270	40.96
1275	42.03
1276	27.6
2004	52.2
4223	31.77
4224	40.05
5246	139.6
5247	95.21
5248	29.4
5277	103

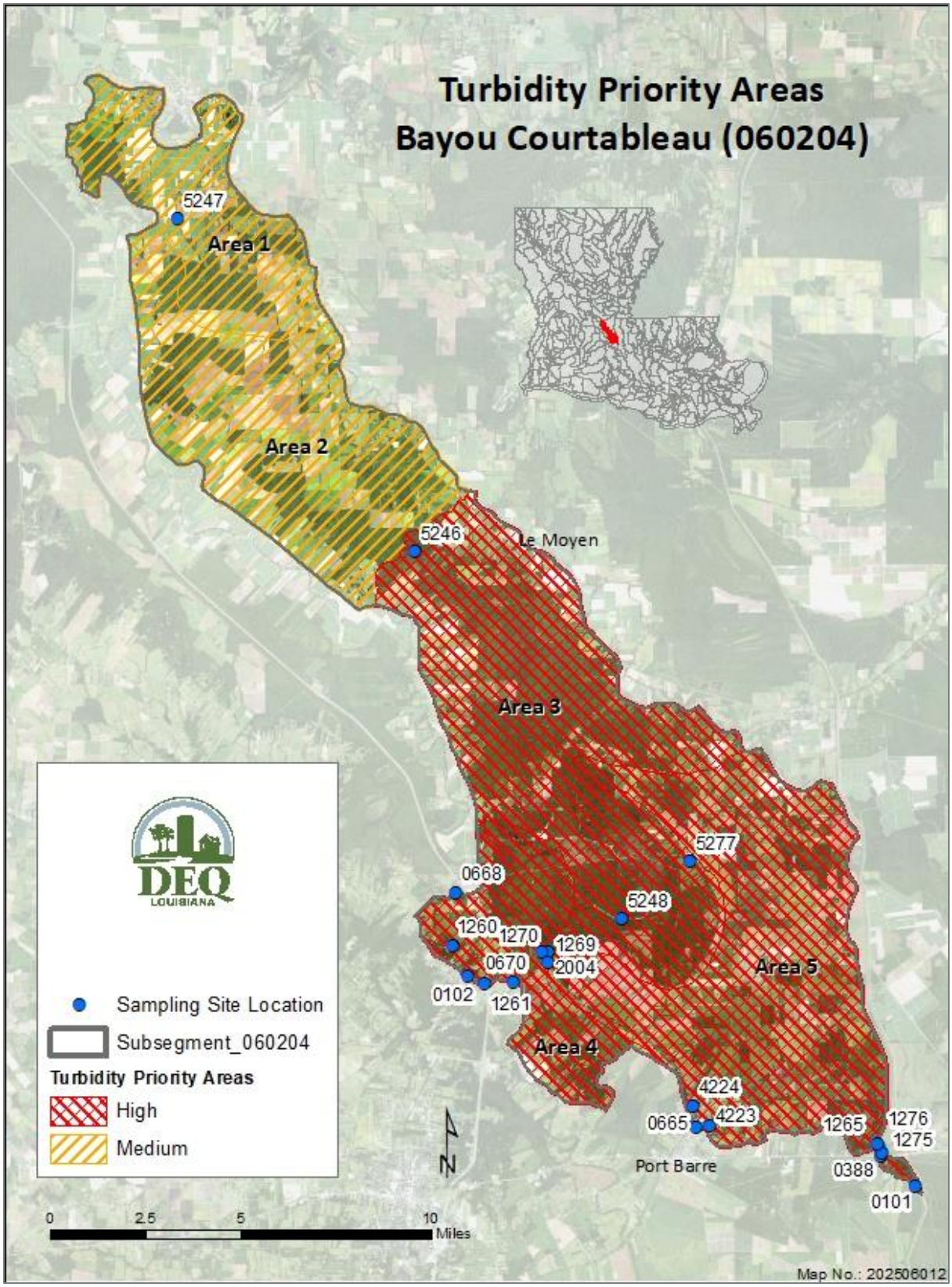

Figure 19 - Turbidity Priority Areas

Project data at the active ambient site shows that 57% of the values exceed 25 NTU, which is the target for Bayou Courtableau. In order to remove the impairment for turbidity, no more than 10% of samples year-round can exceed 25 NTU (most conservative criterion). Therefore, the target load reduction for turbidity is 48%. This would lower the AWQNM data exceedance percentage to below 10%. This reduction target will be applied to sediment load given the sediment-turbidity correlation in this subsegment. However, the parameters are not 100% correlated, and the degree to which sediment load reductions will impact turbidity reductions is only partially explained via correlation. This reduction will be set as a milestone to be revisited after either three years of implementation or when the sediment reduction target is reached, whichever comes sooner. At that time, if the turbidity standard is not met, the sediment-turbidity relationship will be re-evaluated, reduction targets may be revised, and other approaches may be adopted to address turbidity. A new numeric standard may be in place at that time and will be used to determine any new target.

Table 13 is a table of the hotspot sites for each parameter, along with the associated subarea and HUC12, discussed in this element. A checkmark under the parameter indicates that the site shows higher concentrations of FC or turbidity and lower for DO.

Table 13 - Priority Sites

Site	Area	HUC	DO	FC	Turbidity
0102	4	080801020605	✓		✓
0668	4	080801020605			✓
1260	4	080801020605	✓		
1261	4	080801020605	✓		
1269	4	080801020605	✓		
1270	4	080801020605	✓		
1276	5	080801020606	✓		
2004	5	080801020606			✓
4224	5	080801020606	✓		
5246	3	080801020511	✓	✓	✓
5247	1	080801020504	✓	✓	✓
5248	3	080801020511	✓		
5277	3	080801020511	✓		✓

Spreadsheet Tool for Estimating Pollutant Loads (STEP-L)

BMPs to achieve load reductions are based on the STEP-L model, and BMPs are typically implemented by LDAF. LDEQ is unable to determine exactly where each BMP will be implemented, but this document makes recommendations on locations where each BMP would be most effective in this watershed.

STEPL inputs include land use acreage, soil erodibility and dominant hydrologic group, and precipitation, among others (USEPA 2018). LDEQ calculated these reductions using USDA Cropland Data Layer (CDL) data, NRCS Soil Survey Geographic Database (SSURGO) data, STEPL precipitation data from the Lafayette, LA, weather station, and previously customized BMP efficiencies developed for LDEQ by Tetra Tech, the STEPL developer. Table 14 shows land use acreage for each subarea.

Table 14 – Subarea Land Use

Subarea	Cropland Acres	Pasture Acres	Developed Acres
1	8,762	997	820
2	15,658	2,664	501
3	8,930	3,203	1,295
4	3,311	1,921	539
5	19,355	5,201	1,542
Total*	56,016	13,986	4,697

The BMPs and acreages applied to the watershed were selected as one of many possible sets of BMPs that if implemented would meet the load reduction targets. Although previous commitments from producers were not obtained in development of this plan, this selection was influenced by LDAF's reporting of practices producers in similar areas growing the same crops have been willing to implement, and those commonly implemented within the Vermilion-Teche Basin and in the adjacent Mermentau Basin. Some BMPs were selected due to their desirability and effectiveness, such as field borders. Note that this set of BMPs is only one of many possible scenarios that would theoretically meet the targeted reductions.

LDEQ used the watershed scale reductions and proportionally assigned them to the subarea scale based on percent cropland and percent pasture in each of the top priority subareas. LDEQ will address data gaps as they relate to load reductions. These targets are considered milestones. If future data does not reflect improvement, a few strategies may be employed: new sampling sites may be added, LDAF may increase outreach to stakeholders in the watershed to participate in BMP implementation, and LDEQ may model new scenarios with STEP-L.

STEP-L models potential reductions for nitrogen, phosphorus, and sediment. Total reductions given by the model are 161,271 lbs./year of nitrogen, 33,259 lbs./year of phosphorus, and 6,396 lbs./year of sediment. These values and potential reduction values for the watershed, and are assigned to each of the five subareas as listed in Table 15 based on land use distribution.

Table 15 - Subarea Load Reductions

Area	1	2	3	4	5	Total
N reduction (lbs./yr.)	24,187	43,993	26,559	10,487	56,045	161,271
P reduction (lbs./yr.)	5,053	9,141	5,424	2,103	11,538	33,259
Sediment reduction (tons/yr.)	988	1,774	1,030	390	2,214	6,396

Table 16 shows potential reductions that were calculated by the STEP-L model for individual BMPs. The modeled scenario did not generate reductions for all BMPs listed in Table 16. The modeled scenario cannot capture actual on-the-ground BMPs in advance of implementation due nature of voluntary participation and privacy concerns. This data gap can be addressed over time as information about implemented BMPs is provided by LDAF, and data is provided in regular reporting to EPA.

Table 16 - Projected BMPs and Associated Load Reductions

BMP	Acres	N reduction (lbs./yr.)	N reduction % load	P reduction (lbs./yr.)	P reduction % load	Sediment reduction (tons/year)	Sediment reduction % load
Cover Crops	10,000	31,845	5.2	4,031	4	337	2.5
Field Borders	1,000	2,650	0.4	533	0.5	157	1.2
Critical Area Planting	10,000	26,500	4.3	5,328	5.3	1,574	11.6
Nutrient Management	10,000	13,594	2.2	3,163	3.2	0	0
Residue/Till Management							
Conservation Crop Rotation	10,000	8,965	1.5	6,042	6.1	1,236	9.1
Prescribed Grazing							
Fence	1,000	1,014	0.2	213	0.2	17	0.1
Reduced Till	10,000	44,747	7.3	7,161	7.2	1,686	12.5
Irrigation Land Leveling	5,000	3,761	0.6	1,193	1.2	281	2.1
Irrigation Management	5,000	3,761	0.6	1,193	1.2	281	2.1
Residue Management	5,000	3,941	0.6	1,658	1.7	337	2.5
Grade Stabilization Structures (67 count)	5,000	8,234	1.3	980	1	337	2.5
Forage Planting	1,000	2,204	0.4	268	0.3	23	0.2

Heavy Use Area Protection	1,000	3,288	0.5	275	0.3	29	0.2
Prescribed Grazing	5,000	5,601	0.9	1,064	1.1	86	0.6
Watering Facility	2,000	1,102	0.2	142	0.1	11	0.1
Wetland Wildlife Habitat (cover crop per LDAF)	5,000		2.6		2		1.2
TOTAL		**161,207**	**29**	**33,245**	**35.4**	**6,393**	**48.5**

Element C: Best Management Practices (BMPs)

LDAF's role during the planning phase included research on land uses and crop types, selection of BMPs, development of a cost list, gathering landowner input and communication with LDEQ from selection of WIP site to final submission of the WIP. LDAF plans to increase its partnership with LDEQ in gathering landowner input.

LDAF consulted with producers within the watershed to identify BMPs that will have the most significant impact on water quality improvements. This process included direct engagement with landowners, the local Soil and Water Conservation District, and conservation partners such as the St. Landry NRCS office. These consultations helped ensure that selected BMPs were appropriate for the predominant agricultural land uses in the project area, are locally supported, are aligned with conservation needs and water quality goals, and will furnish clear non-federal match opportunities.

BMPs were selected as optimum practices to address soil erosion, nutrient loading, coliform bacteria loading and other impairments emanating from the principal agronomic land uses within the project watershed that are most geographically adjacent to the affected waterbody. The beneficial conservation effects and the implementation standards are listed in the NRCS field office technical guide for each BMP, and the conservation effects are well known among the local-state-federal conservation partners via these accredited technical standards and references, as well as through generational colloquial knowledge passed down through farming families. LDAF and the SWCD work with NRCS in the selection of BMPs and alternative practices for targeted implementation.

Potential BMPs to be implemented in Bayou Courtableau and the specific effects for each BMP are shown in Table 17. A checkmark in one of the "Reduce" columns indicates that the BMP is expected to reduce that particular pollutant source. The costs of BMPs that may be implemented in Bayou Courtableau are shown in Table 17. The information in Tables 16, 17, and 18 was provided by LDAF.

Table 17 - BMP Effects

NRCS Code	Practice	Selected Impacts	Reduce Nutrients	Reduce Bacteria	Reduce Sediment
102	Comprehensive Nutrient Management Plan	Reduce nutrients	✓		✓
104	Nutrient Management Plan	Reduce nutrients	✓		✓
216	Soil Testing	Reduce nutrients	✓		

315	Herbaceous Weed Treatment	Increase health and vigor of desirable plant species increases ground cover decreasing sheet and rill erosion			✓
318	Short Term Storage of Animal Waste and Byproducts	Improved nutrient utilization and conservation, flexibility in rate, timing and location causes slight reduction in pathogens	✓	✓	
327	Conservation Cover	Reduce sheet, rill, and wind erosion and sedimentation, Reduce ground and surface water quality degradation by nutrients and surface water quality degradation by sediment, Improve soil health, and slight reduction in pathogens	✓	✓	✓
328	Conservation Crop Rotation	Reduce erosion, reduce water quality degradation due to excess nutrients, maintain or improve soil health, reduced runoff causes slight reduction in pathogens	✓	✓	✓
329	Residue and Tillage Management, No-Till/Strip Till/Direct Seed	Reduce erosion, prevent soil disturbance, and reduce nutrient and pathogen runoff	✓	✓	✓
340	Cover Crop	Increased vegetation reduces soil detachment and erosion, captures and recycles nutrients, increased organic matter promoting microbial activity and reduced erosion and runoff reduces pathogen delivery	✓	✓	✓
342	Critical Area Planting	Increased vegetation and cover stabilizes streambanks, reduces erosion, slightly increases microbial activity/competes with pathogens, and increases nutrient uptake	✓	✓	✓
345	Residue and Tillage Management, Reduced Till	Reduce erosion, improve soil health, less runoff reduces transport of nutrients and pathogens	✓	✓	✓
382	Fence	Reduce erosion and nutrient/pathogen runoff, and reduces access of animals/people to stream areas	✓	✓	✓
386	Field Border	Reduce erosion, compaction, and excess nutrients and pathogen transport	✓	✓	✓
410	Grade Stabilization Structure	Slightly reduce erosion			✓
430	Irrigation Pipeline	Reduces energy use and slightly reduces erosion, nutrient and pathogen transport as part of a complete irrigation system	✓	✓	✓

449	Irrigation Water Management	Minimize irrigation-induced soil erosion, reduces total runoff including nutrients and pathogens	✓	✓	✓
462	Precision Land Forming	Slightly reduces transport of nutrients and infiltration of pathogens	✓		
464	Irrigation Land Leveling	Reduce excess irrigation-induced runoff and transport of nutrients and pathogens	✓	✓	
472	Access Control	Reduce erosion and slightly reduces nutrient and pathogen transport	✓	✓	✓
512	Forage and Biomass Planting	Reduce erosion, and added vegetation increases nutrient and pathogen uptake reducing runoff transport	✓	✓	✓
516	Livestock Pipeline	Reduce bank erosion and nutrient loading by reducing access			
528	Prescribed Grazing	Reduces erosion by enhancing vegetative cover, increased vegetation increases nutrient uptake and reduces transport of pathogens and overall runoff	✓	✓	✓
561	Heavy Use Area Protection	Reduce erosion by increasing vegetative cover, allows collection of manure which reduces nutrient and pathogen runoff	✓	✓	✓
576	Livestock Shelter Structure	Provide protection for livestock from heat/cold. Reduces excess pathogens and nutrients in the water	✓		
578	Stream Crossing	Reduces traffic on streambanks, sediment and nutrient loading, reduce streambank and streambed erosion but could increase pathogens by allowing animal access to the stream			✓
590	Nutrient Management	Amount, source, placement, and timing provides nutrients when plants need them most. Proper application of manure reduces pathogen transport to surface water	✓	✓	
595	Integrated Pest Management	Prevent and mitigate pest suppression impacts and reduce risks to soil			
614	Watering Facility	Introducing alternate water source reduces animal traffic on streambanks therefore reducing erosion, manure deposition near the stream		✓	✓
642	Water Well	increased vegetative cover increases water distribution and decreases erosion			✓

644	Wetland Wildlife Habitat Management	slight improvement due to pathogens/nutrients trapped in the wetland and reduces transport to water	✓	✓	
646	Shallow Water Development and Management	Slight improvement in nutrient/pathogen transport by trapping them in the wetland	✓	✓	
748	Record Keeping			✓	✓

Table 18 - BMP Costs

NRCS Code	Practice	Cost
328	Conservation Crop Rotation	$9.70/ac.
329	Residue and Tillage Management, No-Till/Strip Till/Direct Seed	$14.78/ac.
340	Cover Crop	$48.60/ac.
342	Critical Area Planting	$157.24/ac.
345	Residue and Tillage Management, Reduced Till	$11.32/ac.
382	Fence	$1.14/ft.
386	Field Border	$93.26/ac.
410	Grade Stabilization Structure	$1.29/dia. in ft.
430	Irrigation Pipeline	$14.40/ft.
449	Irrigation Water Management	$9.30/ac.
462	Precision Land Forming	$176.10/ac.
464	Irrigation Land Leveling	$226.22/ac.
472	Access Control	$419.10/each
512	Forage and Biomass Planting	$199.69/ac.
516	Livestock Pipeline	$3.57/ft.
528	Prescribed Grazing	$30.71/ac.
561	Heavy Use Area Protection	$2.84/sq. ft.
576	Livestock Shelter Structure	$3.14/sq. ft.
578	Stream Crossing	$9.65/sq. ft.
590	Nutrient Management	$6.41/ac.
595	Integrated Pest Management	$13.11/ac.
614	Watering Facility	$2.45/gal.
642	Water Well	$28.74/ft.
644	Wetland Wildlife Habitat Management	$8.52/ac.

Element D: Technical and Financial Assistance

LDEQ is the lead agency for the state's 319 program. LDEQ is responsible for coordinating data collection with partners, data management, data analysis, data sharing, modeling, requested education and outreach activities, and coordinating other state and local partner activities.

LDEQ and LDAF work together to ensure that all aspects of this project are completed based on guidelines from USEPA, and the water quality data and information in this document. LDAF will take the lead in education and outreach associated with BMP implementation, and provide technical assistance. United States Department of Agriculture-Natural Resources Conservation Service (USDA-NRCS) staff will assist with local outreach and education activities to ensure that landowners and stakeholders are aware of available assistance. Other organizations such as Soil and Water Conservation Districts (SWCDs) may be able to provide assistance.

Table 19 shows funds and funding sources associated with the project. Funding covers sampling, staff salaries, and laboratory analyses. If the project extends beyond this timeframe, additional funding can be sought.

Table 19 - Total Funding for Bayou Courtableau

Total Combined Funding for Bayou Courtableau Watershed Restoration			
	2022 - 2024	**2025 - 2031**	**Total Dedicated Funds**
LDEQ 319(h) Water Quality Sampling LDEQ Water Surveys (Federal & Match)	$85,500.00	$99,750.00	$185,250.00
LDEQ 319(h) NPS Staff (Federal & Match)	$120,000.00	$210,000.00	$330,000.00
LDEQ 319(h) Analysis Pace Analytical-Gulf Coast	$25,344.00	$46,992.00	$72,336.00
Total	**$230,844.00**	**$356,742.00**	**$587,586.00**

Table 20 shows an estimate for anticipated implementation costs by year.

Table 20 – LDAF Estimated Implementation Costs

	Year 1	Year 2	Year 3	Year 4	Year 5
Salaries	$23,040	$23,040	$23,040	$23,040	$23,040
BMPs	$25,000	$59,342	$59,342	$59,342	$93,686
Supplies	$1,000	$500	$500	$500	$500
Other	$800	$800	$800	$800	$800
Travel	$200	$200	$200	$200	$200
Total	**$50,040**	**$83,882**	**$83,882**	**$83,882**	**$118,226**

Source: LDAF. Implementation depends on available budget. Implementation may continue beyond year 5 if targets have not been met.

Element E: Education and Outreach

LDEQ engages in both general NPS education activities, as well as watershed-specific stakeholder outreach activities. The LDEQ NPS unit frequently takes the Enviroscape model to schools, Earth Day events, and STEM Festivals to educate the public on NPS pollution, its effects, how it travels, and how it can be prevented. In addition, LDEQ presents at local meetings on project progress when available and as requested. Information presented at meetings and outreach activities often references the Louisiana's water quality standards and how the state's NPS program helps meet and maintain these standards.

LDAF's outreach strategy will focus on engaging local producers through a combination of in-person workshops, producer-targeted mailings, and participation in local agricultural events. Metrics to assess outreach effectiveness will include:

- A baseline count of producer operations within the watershed
- Attendance numbers at each outreach event
- Number and geographic distribution of producer-focused events

- The LDAF/OSWC conservation outreach rationale is that BMP Field Days are essential to maintaining producers' knowledge of the economics, logistics, and many environmental benefits of conservation planning, of available conservation programs and related opportunities, first hand observation and discussion of the proper management and protection of all natural resources on private land, and are an integral component of the SWCD's and OSWC's mission to encourage conservation planning.

- 319 NPS educational programs significantly enhance agricultural NPS reduction efforts by providing an opportunity to link NPS pollution reduction and other environmental benefits to all available conservation programs as necessary to achieving acceptable surface water quality standards in agricultural environments, and to an understanding of the effects of off-site NPS pollution impairments

- Project WET (Water Education Today) is an interdisciplinary water science and education program for educators of students grades K-12, Project WET addresses a wide range of water-related descriptions, including the natural and social sciences, and topics covered include atmospheric, surface, and ground water resources, water quality and quantity, management and conservation.

- Soil & Water Stewardship Programs have been instrumental in creating a community-wide awareness of everyone's responsibility to conserve and properly manage natural resources.

- SWCDs have been active in the delivery of the Soil and Water Stewardship Program and related events and activities throughout communities and urban areas.

- Soil and Water Stewardship efforts have been enhanced by incorporating this outreach program into various school and community-oriented awareness events such as water festivals, which reinforce all aspects of the hydrologic cycle with a special emphasis on NPS concerns.

Outcomes

Producer BMP workshops

- Provide a heightened awareness and understanding of local water quality problems and agriculture's potential to contribute to them through improper natural resource management

- Give an understanding of the basis of soil stability / erosion control and maintenance of vegetative cover in relation to agricultural processes within a given proximity to potentially affected watercourses or waterbodies

- Increase conservation practice installation resulting in improved surface water quality.

Project WET Workshops/Trainings and outreach events

- Will help to provide young people with the knowledge and skills needed to make informed decisions regarding water resource management, at home and throughout their adult lives.

Soil & Water Stewardship

- Schools, communities and individuals, especially in rural or isolated subdivisions, may become more active in NPS prevention in their areas.

Outreach to local producers did not occur specifically for the development of this WIP. However, the outcomes of and lessons learned from years of prior SWCD-led stakeholder information gathering meetings are built into these plans, and, recognizing the importance of producer input in identifying practical and adoptable BMPs, future WIPs will prioritize early and consistent engagement with producers. This will help ensure that implementation strategies are aligned with producer needs and that baseline milestones are more accurately defined.

Partners

The LDEQ NPS project manager oversees baseline water quality monitoring and watershed planning in Bayou Courtableau. The LDEQ Water Surveys group is conducting sampling throughout the watershed. Watershed planning includes watershed characterization, modeling, data analysis and mapping, and sampling plan design, among other activities. The LDEQ project manager analyzes monitoring results for sharing with partners. As the project progresses, LDEQ provides updated data and maps to stakeholders twice yearly and as requested. LDEQ staff assists in prioritizing areas for implementation. LDEQ Source Water Protection staff may

conduct educational activities in the watershed that will focus on home treatment system proper operation and maintenance, preventing runoff, and communicating pollution risk and prevention to local residents and landowners. The LDEQ Source Water Protection group reaches out to local organizations such as the Louisiana Rural Water Association (LRWA) to hold local meetings relating to drinking water quality and education of the public relating to OSDSs and the importance of maintaining their systems.

LDAF and LDEQ work together to ensure that the project stays focused in hotspot areas to reduce FC and turbidity and increase DO. LDEQ will ensure that the project continues to move forward as scheduled. LDAF will primarily focus on BMPs, sign-ups, technical assistance, and implementation and provide education and outreach related to the Bayou Courtableau Watershed Project.

LDAF will take the lead in providing information and resources to landowners and stakeholders through flyers, BMP workshops, and field days in conjunction with the local SWCDs and USDA-NRCS.

The St. Landry SWCD plays a key role in coordinating local outreach, assisting with producer engagement, and supporting implementation of conservation practices. The NRCS field office provides technical assistance, conservation planning, and cost-share program support to landowners. LDAF-OSWC oversees statewide conservation programs and ensures alignment with state-level priorities. A more detailed breakdown of partner roles and activities can be found in Element F.

The Teche-Vermilion Freshwater District - https://teche-vermilion.org/ - manages projects within Bayou Courtableau and the Courtableau Borrow Pit Control Structure areas. These structures are operated by the USACE with participation by the District to supply fresh water to and improve water quality in the Vermilion-Teche Basin. The District has met with LDEQ NPS on general water quality issues and shares its monitoring data with LDEQ. While the District does not have a formal role in the agricultural activities in this WIP, it is a potential partner for education-outreach activities.

LDEQ also welcomes participation of new groups, stakeholders, and agencies during the timeline of this project, and hopes to inspire the start of new watershed activities and increase participation beyond the scope of this project.

Element F: Implementation Schedule

All partners in the project are committed to keeping this project on schedule (Table 19), though all partners are aware that unforeseen circumstances and the unpredictable nature of voluntary participation could cause this project schedule to change. As appropriate, this WIP may be updated to reflect timeline changes. Table 21 shows the project schedule, with a checkmark under the year indicating that the activity should occur in that year.

Table 21 - Bayou Courtableau Timeline

Activity/Goal			2023	2024	2025	2026	2027	2028	2029	2030	2031
	1	Project Term	✓	✓	✓	✓	✓	✓	✓	✓	✓
	2	Ambient Monitoring		✓	✓			✓	✓		
	3	IR Assessment		✓		✓		✓		✓	
	4	Designated Uses Restored							✓		✓
	5	Success Story									✓
LDEQ	1	Assessment, Reconnaissance, Site Selection	✓								
	2	Sampling Plan and Yearly Updates	✓		✓		✓		✓		
	3	Baseline Sampling and Assessment	✓	✓	✓						
	4	NPS Outreach/Education		✓	✓	✓	✓	✓	✓	✓	
	5	Stakeholder Meetings			✓	✓	✓	✓	✓	✓	✓
	6	WIP Development and Submittal		✓	✓						
	7	Long-term Monitoring/Data Analysis					✓	✓	✓	✓	✓
	8	Home System Education				✓	✓	✓	✓		✓
	9	WIP Revisions (as needed)			✓	✓	✓	✓	✓	✓	✓
LDAF/Partners	1	Planning Phase		✓	✓						
	2	Ranking Criteria/Select BMPs			✓	✓	✓				
	3	BMP Sign-ups/Outreach				✓	✓	✓			
	4	Prepare RMS Plans				✓	✓	✓	✓		
	5	BMP Implementation				✓	✓	✓	✓	✓	✓
	6	OSDS Pump-outs/Education (optional pivot strategy)				✓	✓	✓	✓	✓	

LDEQ is responsible for keeping track of sampling, ambient monitoring, IR assessments, data and data analysis, WIP development, agency outreach including stakeholder meetings requested by local groups and organizations, and OSDS inspections and education handled by the source water assessment group, along with any success stories that arise from activities. LDAF will take the lead in sign-ups, local outreach, resource management system (RMS) plans, BMP implementation, and detailed scheduling for those activities. Local SWCDs will assist LDAF.

The possible partners in a SWCD-led home septic system pump-out program are typically the local LDEQ, State Rural Development, and/or parish or municipal public works staff. In some cases, representatives of a local, trusted conservation non-government organization may assist. Assistance is typically in the form of outreach assistance and logistics.

The outreach for this element of the WIP includes flyers at local businesses in the project area, booths set up at local events, and communication with landowners who walk into the local NRCS office. Once a landowner signs up for the pump-out program, participating home septic services complete the pump-out with LDAF/SWCD approval before work is completed. Reimbursement for previous projects has been $350.00 per pump-out, but this is subject to change in the area depending on current cost when project implementation begins. Using this reimbursement, if 60% of the 400 OSDSs are pumped out, the total cost for this activity could reach about $84,000.

Traditional partners implementing the work plan outlined in the WIP include the St. Landry SWCD, St. Landry NRCS field office staff, the LDAF-OSWC, and producers/landowners. More information regarding these organizations and their roles/activities follows:

St. Landry SWCD

- Role:
    - Serve as the primary local liaison for conservation efforts.
    - Coordinate outreach and education for producers on BMP adoption.
    - Assist with enrollment in cost-share programs and provide technical guidance.
- Activities:
    - Host producer meetings and workshops.
    - Support implementation of structural and non-structural BMPs such as cover crops, nutrient management, and erosion control practices.
    - Review and approve conservation plans and participant contracts.

St. Landry NRCS Field Office Staff

- Role:
    - Provide technical assistance and conservation planning services.
    - Administer federal programs such as EQIP and CSP to fund BMP implementation.
- Activities:
    - Conduct site assessments and develop conservation plans tailored to individual farms.

    - Oversee installation of practices like grade stabilization structures, filter strips, and riparian buffers.

LDAF-OSWC

- Role:
    - Ensure alignment with state conservation priorities and provide oversight for WIP implementation.
    - Manage state-level funding and reporting requirements.
- Activities:
    - Facilitate coordination between local SWCDs and state agencies.
    - Monitor progress and compliance with WIP objectives.

Agricultural Producers and Landowners

- Role:
    - Implement BMPs on their operations to reduce nutrient and sediment runoff.
    - Participate in cost-share and incentive programs.
- Activities:
    - Adopt practices such as precision nutrient management, conservation tillage, and livestock exclusion from streams.
    - Maintain installed BMPs and provide feedback on effectiveness.

Milestones for the project are discussed in Element G.

Element G: Milestones Identified

This section provides information on milestones used to track project progress.

Phase 1 is the foundation for the project. It includes securing funding, background and watershed characterization including mapping the watershed, land use evaluation, and collecting baseline data to help identify hotspots. Modeling is used to prepare for implementation, and education and outreach occurs to inform local landowners and stakeholders of opportunities available to them. This information is important because it is used to develop the WIP and determine current conditions of the watershed.
Phase 2 involves continuing baseline sampling, transitioning to long-term sampling, continued outreach, sign-ups for BMP implementation, and BMP implementation. Data analysis is ongoing throughout the project to identify water quality changes in the watershed as a result of implementation. LDEQ evaluates both ambient and NPS project data to track impairment status and relative loading throughout the watershed. High loading areas are communicated to LDAF regularly for consideration when ranking signups so priority is given to areas with high loading.
Phase 3 is post-implementation analysis and final reporting. This includes comparing modeled predictions to results, and evaluating data for water quality improvements. Impairment status is assessed for the IR every other year. LDEQ and LDAF evaluate acres in implementation on a subsegment basis annually. At this time, LDEQ and LDAF can discuss any obstacles to implementation, and develop strategies to overcome those obstacles as needed where targets are unmet. Strategy changes may include increasing outreach to producers in priority areas, one-on-one contact, and hosting more field days.
Phase 4 is the success phase of the project. By 2030, visible water quality improvements toward designated use restoration are expected and will trigger development of a success story by 2031 based on the 2030 IR.

It is important to note that similar watershed improvement projects have typically displayed a "lag time" between BMP implementation and water quality improvement. Often there is a period where the water quality displays negative impacts before a positive response can be seen as a result of the disruption of the existing state of the waterbody. It is important to consider this information when planning the schedule for a project of this magnitude. Ensuring that there is time allotted for the BMPs to be implemented, the waterbody to adjust to changes, and then observe the effects is a crucial component to overall project success. In addition, because of previous bacteria issues and to ascertain Bayou Courtableau continues to support its contact recreation uses, if funding allows BMPs to reduce bacteria inputs – including pasture and OSDS – will occur in the watershed especially in areas indicated by project data.

If the project deviates from the schedule, any potential changes will be discussed with partners to determine any course adjustments. At that time, the plan will be reevaluated and updated to reflect decisions made to keep the project moving forward. Table 22 shows project milestones.

Table 22 - Bayou Courtableau Milestones

	2023	2024	2025	2026	2027	2028	2029	2030	2031
Phase 1: Project Foundation									
Secure Funding	✓	✓							
Watershed Characterization		✓	✓						
Establish Data Baseline	✓	✓	✓	✓					
Modeling (STEP-L)		✓	✓						
Identify Hotspots		✓	✓	✓					
Education and Outreach		✓	✓	✓	✓	✓	✓	✓	
Watershed Implementation Plan Development and Submittal		✓	✓						
Phase 2: Implementation									
Sampling Continues					✓	✓	✓		
Education and Outreach			✓	✓	✓	✓	✓	✓	
Sign-ups				✓	✓	✓	✓		
BMP Implementation				✓	✓	✓	✓	✓	
Nutrient Reduction BMPs				✓	✓	✓			
Turbidity BMPs				✓	✓	✓			
Fecal Coliform BMPs (optional pivot strategy)					✓	✓	✓	✓	
Data Analysis (Ambient/Project)				✓	✓	✓	✓	✓	
Partner WIP Progress Meeting*				✓	✓	✓	✓	✓	
Phase 3: Post-Implementation Analysis									
Turbidity/Nutrient Reductions (Predicted vs. Actual)							✓	✓	✓
STEP-L Reductions (Annual and post-implementation)							✓	✓	✓
Phase 4: Success									
Water Quality Improvements						✓	✓	✓	✓
Use Support Restored								✓	✓
Success Story									✓

* Partners will meet informally twice yearly to evaluate progress, and will meet formally once per year to evaluate implementation targets based on criteria in Element H

Element H: Evaluation Criteria

Load reduction targets are a 27% reduction in DO-reducing nutrient loads and a reduction of 48% sediment loading for turbidity. A load reduction of FC is not required at this time.

Progress toward these goals will be measured by percent completion of BMP implementation, ambient and project data improvement, comparison of data to STEP-L load reduction estimations, IR assessments, and restoration of designated uses.

LDEQ shares monitoring data results with LDAF twice yearly. LDEQ and LDAF evaluate acres implemented in specific BMPs annually, and estimate resulting load reductions at that time. The overall impairment status of the Bayou is determined biennially in the IR. Each of these intervals can serve as a progress assessment.

Annual review of acres implemented is a milestone where course correction may be identified (see Element G). The biennial IR is the determination of whether the water quality has been restored. The primary drivers of any pivot strategy or course correction will be acres implemented, as determined annually, or water quality restoration, as determined in the IR.

Data analysis: This includes several components. Project data will be analyzed twice yearly to share with partners for informational purposes. Monitoring data will show if/when localized changes in water quality can be discerned, and this usually is seen after a substantial lag post implementation. Course correcting based on this data would be premature but this data guides LDAF in ranking applications based on areas of highest loading. The water quality assessment comes out every two years and will be examined to determine any impairments removed. If BMP implementation targets are achieved and long-term data/IR show insufficient response, implementation targets may be increased.

Implementation outreach success: Evaluated annually based on implementation acreages/types reported each year and associated load reductions. LDAF outreach outcomes are specified in Element E.

Sampling site changes: Site changes occur typically after one year of baseline data, when several sites may be removed for the transition to long-term sampling. If a partner requests additional areas be sampled, or if sites become inaccessible, locations may change or be removed.

WIP effectiveness: Progress is assessed by tracking BMP implementation acres, the biannual water quality assessment, and reassessing of targets using monitoring data at the following trigger points: establishment of a turbidity standard, establishment of a nutrient assessment threshold, once targeted BMPs/reductions are reached. Note: a DO response may not be fully seen for a decade or more due to bedload oxygen demand.

Effective planning can be an iterative process where lessons learned over the course of implementing the plan can be used to modify the plan, so it is expected that changes will be made throughout the life of the project. Updates will also be made to this document to acknowledge those changes. Additionally, NPS implementation depends on voluntary participation, an often unpredictable metric.

Changes that could warrant updates to the WIP include, but are not limited to:

1. Significant land use changes
2. New impairments identified by the assessment in the IR
3. Criteria/standards adjustments
4. When additional BMPs become necessary
5. Funding sources change or are reduced/increased
6. Waterbody isn't responding to BMP implementation
7. Response from partners and stakeholders
8. Data gaps as a result of unforeseen circumstances

If the load reductions are not consistent with estimates, LDEQ will meet with partners to discuss a path forward, update the WIP, and proceed as required.

Monitoring data will be collected throughout the project and at for least one year post-implementation. Post-implementation monitoring is discussed further in Element I. Data from this project will be shared with partners in order to ensure the project continues towards the goal of water quality improvement in Bayou Courtableau.

Element I: Monitoring

LDEQ's AWQMN is the source of the historical data used in this project. The AWQMN program will continue to collect surface water quality data at Site 0665 on a four-year rotating monitoring schedule. Bayou Courtableau's current AWQMN sampling season runs from November 2024 through October 2025. AWQMN data is used to determine if impairments will be removed from the state's IR, which is published every two years. The next IR is scheduled for 2026.

Baseline sampling is measuring turbidity, nutrients, in-situ parameters, and FC as detailed in the sampling plan, which is updated yearly. This may change as needed based on the condition of the watershed and selected sites.

Baseline sampling is usually performed twice monthly planned for a year prior to implementation and can be extended as needed to account for data gaps and unforeseen circumstances. During baseline sampling, LDEQ's Water Surveys group collects samples at all sites as specified in Table 23. Measurements are made for in-situ parameters as well as samples taken for parameters including FC, nutrients, and turbidity. This monitoring data is analyzed to determine sites with highest NPS pollutant concentrations and thus identify areas which contribute more pollutant loading.

Long-term monitoring is usually monthly and begins after sufficient baseline data has been collected to develop a watershed plan. Sites selected for long-term monitoring (often 1/2 to 1/3 of the number of baseline sites) will depend on data collected during baseline sampling. Long-term sites typically represent areas with significant pollutant input, and data from these sites will be used to identify changes in water quality during implementation and after implementation. LDEQ will analyze sampling results to quantify water quality changes. This analysis will inform LDEQ and partners on the status of the watershed, possible effects from BMP implementation, and may guide steps forward as a result. Post-implementation monitoring includes long-term monitoring sites and parameters and is also usually monthly.

LDEQ monitoring quality assurance project plans and sampling plans provide specific information on sites, parameters, methods, quality checks, and data uses.

All data for the project will be stored in LDEQ's database and uploaded to USEPA's Water Quality Exchange (WQX) database. Water quality data collected may be used for water quality assessment purposes.

Table 23 - Monitoring Sites

LEAU Site No.	Waterbody Name	Site Description	Latitude	Longitude	Parish	Sample Frequency
0101	Bayou Courtableau East-Southeast of Port Barre, Louisiana	0.2 miles northwest of Bayou Courtableau drainage structure, 5.9 miles east-southeast of Port Barre, 1.5 miles southeast of Courtableau, 6.4 miles west of Krotz Springs	30.53572	-91.85957	St. Landry	Twice per month
0102	Bayou Courtableau Northeast of Washington, Louisiana	At LA-10 bridge, 0.1 miles northeast of Washington, 6.1 miles north of Opelousas, 14.0 miles east-southeast of Ville Platte	30.61763	-92.05552	St. Landry	Twice per month
0388	Bayou Courtableau east of Port Barre, Louisiana	At US Highway 190, in Courtableau, Louisiana	30.54742	-91.87457	St. Landry	Twice per month
0665	Bayou Courtableau in Port Barre, Louisiana	At LA-103 bridge, 1.0 mile north-northeast of US-190 and LA-103 intersection, 6.6 miles south east of I-49 Exit 25, 7.7 miles east-northeast of Opelousas	30.55887	-91.95543	St. Landry	Twice per month
0668	Bayou Boeuf North of Washington, Louisiana	At LA-746 bridge, 0.26 mile south of I-49 and LA-745 intersection, 2.6 miles north of Washington, 2.1 miles south-southwest of Beggs	30.64940	-92.06072	St. Landry	Twice per month
0670	Bayou Carron East of Washington, Louisiana	At LA-103 bridge (no. 3800301451), 0.7 miles east of I-49 Exit 25, 1.3 miles east of Washington, 6.2 miles northwest of Port Barre	30.61529	-92.03549	St. Landry	Only when flowing into Bayou Courtableau
1260	Bayou Courtableau-Cross Section (03xs) North-Northwest of Washington, Louisiana	0.9 mile north-northwest of LA-182 bridge	30.62929	-92.06235	St. Landry	Twice per month
1261	Bayou Courtableau-Cross Section (04xs) East of Washington, Louisiana	150 yards west (upstream) of I-49 bridge	30.61458	-92.04810	St. Landry	Twice per month
1265	Bayou Courtableau-Cross Section (11xs) East-Southeast of Port Barre, Louisiana	Approximately 75 yards south (downstream) of Little Darbonne Bayou, approximately 0.2 mile north of US-190 bridge	30.55068	-91.87551	St. Landry	Twice per month
1269	Bayou Wauksha-at confluence with Bayou Courtableau	Site is approximately 50 yards upstream of confluence.	30.62644	-92.02022	St. Landry	Twice per month
1270	Unnamed Tributary	Approximately 100 yards upstream of confluence of Bayou Wauksha	30.62643	-92.02327	St. Landry	Twice per month
1275	Darbonne Bay	Bayou des Glaises Diversion Channel confluence Bayou Courtableau, north Hwy 190 on PR 4-15. Long Wooden Bridge	30.54884	-91.87428	St. Landry	Twice per month
1276	Little Darbonne Bayou-at confluence of Bayou Courtableau	Site is located north of Hwy 190 on PR 4-15	30.55191	-91.87592	St. Landry	Twice per month
2004	Bayou Courtableau upstream of Hwy 103	Located approximately 200 yards upstream of Hwy 103 bridge	30.62217	-92.02009	St. Landry	Twice per month

4223	Bayou Courtableau East	At Port Barre, 8.1 miles northeast of Opelousas, 10.4 miles west of Krotz Springs, 11.3 miles north of Arnaudville	30.55948	-91.94966	St. Landry	Twice per month
4224	Bayou Courtableau West	At Port Barre, 7.9 miles northeast of Opelousas, 12.3 miles west of Krotz Springs, 11.2 miles north of Arnaudville	30.56742	-91.95669	St. Landry	Twice per month
5246	Bayou Wauksha West of Le Moyen, Louisiana	At Horecky Road bridge, 1.6 miles southwest of intersection with Lee Richard Loop, 2.2 miles west of Le Moyen, 3.5 miles south of Morrow, 4.2 miles east of Whiteville	30.77959	-92.07776	St. Landry	Twice per month
5247	Turner Canal South of Bunkie, Louisiana	At LA-1176 bridge, 0.7 miles west of intersection with Bear Corner Road, 3.2 miles south of Bunkie, 6.3 miles northeast of Saint Landry-, 8.0 miles northwest of Morrow	30.90689	-92.18081	Avoyelles	Twice per month
5248	Little Wauksha Bayou Northeast of Washington, Louisiana	At Rice Field Road bridge, 2.7 miles southeast of intersection with Plant Road, 4.9 miles southeast of Beggs, 4.4 miles east-northeast of Washington, 5.7 miles north-northwest of Port Barre.	30.63852	-31.98738	St. Landry	Twice per month
5277	Bayou Wauksha, South of Waxia, Louisiana	At Dewey Marks Lane bridge, 25 yards northeast of the intersection of Waxia Road and Dewey Marks Lane, 310 yards southwest of LA-359, 6.8 miles northeast of Washington	30.66027	-91.95737	St. Landry	Twice per month

References

Field Office Technical Guide – LA. Available at: https://efotg.sc.egov.usda.gov/#/state/LA/documents/section=5&folder=5959

Louisiana Department of Environmental Quality. 1996. “Water Quality Inventory”. State of Louisiana Water Quality Management Plan, Volume 5, Part B. LA DEQ Office of Water Resources, Water Quality Management Division, Baton Rouge, Louisiana, p. A-32.

Louisiana Department of Environmental Quality. 2000. “Bayou Courtableau Watershed TMDL For Dissolved Oxygen”. Available at: https://deq.louisiana.gov/assets/docs/Water/TMDL/Bayou-Courtableau.pdf

Louisiana Department of Environmental Quality. 2001. “Total Maximum Daily Load for TSS, Turbidity, and Siltation for the Bayou Teche Watershed”. Available at: https://attains.epa.gov/attains-public/api/documents/actions/LADEQWPD/2309/100612

Louisiana Department of Environmental Quality. 2014. “Water Quality Management Plan: Volume 4 – Basin and Subsegment Boundaries”. Office of Environmental Services, Water Permits Division, Baton Rouge, Louisiana, p. 16.

Louisiana Department of Environmental Quality. 2024 Water Quality Inventory: Integrated Report (305(b)/303(d)). Available at: https://deq.louisiana.gov/page/2024-Water-Quality-Integrated-Report

Louisiana Department of Environmental Quality. 2025a. “Development of Numeric Turbidity Criteria for Louisiana Waterbodies”. Available at: https://edms.deq.louisiana.gov/app/doc/view?doc=14986295&key=785c25f2-64d3-4b92-b51f-1d40363217fd

Louisiana Department of Environmental Quality. 2025b. Louisiana's Nonpoint Source (NPS) Pollution Program. Available at: https://deq.louisiana.gov/page/nonpoint-source

National Weather Service – Lafayette Regional Airport Station - https://www.weather.gov/lch/KLFT

U.S. Environmental Protection Agency. 2018. “User’s Guide, Spreadsheet Tool for the Estimation of Pollutant Load (STEPL)”. Available at: https://www.epa.gov/sites/default/files/2021-01/documents/steplguide404.pdf