Water Resources of Pointe Coupee Parish, Louisiana

The primary freshwater-bearing aquifers in Pointe Coupee Parish are the alluvial aquifer and the Chicot, Evangeline, and Jasper equivalent aquifer systems (fig. 3). In most of the parish, the base of fresh groundwater (water with a chloride concentration of 250 milligrams per liter [mg/L] or less) is present in the Jasper equivalent aquifer system at depths ranging from about 300 feet (ft) below the National Geodetic Vertical Datum of 1929 (NGVD 29) in the northern tip of the parish to greater than 2,500 ft below NGVD 29 in the southern part of the parish (fig. 1). In the west-central and southwestern parts of the parish, the base of fresh groundwater is present in the Evangeline equivalent aquifer system at depths ranging from less than 700 ft below NGVD 29 to greater than 2,000 ft below NGVD 29 with some intermediate layers containing saltwater (fig. 1) (Smoot, 1988).

Table 1. Water withdrawals, in million gallons per day, by source in Pointe Coupee Parish, Louisiana, 2014 (Collier, 2018).

Aquifer or surface-water body	Groundwater	Surface water
Alluvial aquifer	28.41	
Chicot equivalent aquifer system	2.25	
Evangeline equivalent aquifer system	5.22	
Jasper equivalent aquifer system	4.00	
Mississippi River		322.12
Miscellaneous surface-water bodies		1.59
Total	39.87	323.72

Table 2. Water withdrawals, in million gallons per day, by use category in Pointe Coupee Parish, Louisiana, 2014 (Collier, 2018).

Use category	Groundwater	Surface water	Total
Aquaculture	6.35	1.59	7.94
Public supply	3.49	0.00	3.49
Rural domestic	0.23	0.00	0.23
Industrial	6.59	0.00	6.59
Power generation	1.86	322.12	323.98
Livestock	0.01	0.01	0.01
Rice irrigation	3.47	0.00	3.47
General irrigation	17.88	0.00	17.88
Total	39.87	323.72	363.58

and clay at land surface (Winner and others, 1968). The base of the alluvial aquifer ranges from about 125 ft below NGVD 29 in the northern part of the parish to greater than 400 ft below NGVD 29 in the southern part of the parish. Aquifer thickness ranges from about 100 ft in the northern part of the parish to almost 400 ft near the southern border of the parish (Winner and others, 1968).

Water levels in the alluvial aquifer have fluctuated historically with Mississippi River stage (Winner and others, 1968). Water levels at well PC-49 (USGS site number 304645091434901) screened in the Mississippi River alluvial aquifer have fluctuated from 1955 to 2017 due at least in part to fluctuations in Mississippi River levels and declined less than about 10 ft during that time (fig. 4).

State well-registration records listed 192 active water wells screened in the alluvial aquifers in Pointe Coupee Parish in 2017: 126 irrigation wells, 43 domestic wells, 20 industrial wells, 2 public-supply wells, and 1 power-generation well. Well depths ranged from 56 to 325 ft below land surface, and reported yields ranged from 8 to 5,400 gal/min (Louisiana Department of Natural Resources, 2017). In 2014, 28.41 Mgal/d were withdrawn from the alluvial aquifers: 15.73 Mgal/d for general irrigation, 6.35 Mgal/d for aquaculture, 3.29 Mgal/d for rice irrigation, 2.94 Mgal/d for industry, 0.08 Mgal/d for rural domestic, less than 0.01 Mgal/d for livestock (Collier, 2018).

The Chicot equivalent aquifer system comprises the “400-foot” and “600-foot” sands of the Baton Rouge area (Griffith, 2003; fig. 3). In the northern part of the parish, the aquifer system merges with the overlying alluvial aquifer and is in direct hydraulic connection or has been eroded away and replaced by alluvial deposits. State well-registration records listed only one industrial well screened in the “600-foot” sand in 2017. The well had a depth of 360 ft and a yield of 535 gallons per minute (gal/min) (Louisiana Department of Natural Resources, 2017). In 2014, 2.25 Mgal/d were withdrawn from the Chicot equivalent aquifer system for industry.

Evangeline Equivalent Aquifer System

The Evangeline equivalent aquifer system is present and contains freshwater in various parishes of southeastern Louisiana and comprises the “800-foot,” “1,000-foot,” “1,200-foot,” “1,500-foot,” and “1,700-foot” sands of the Baton Rouge area (Griffith, 2003). The aquifer system dips to the south and as a result progressively subcrops into the alluvial aquifer (fig. 3). This progression results in the deeper sands, such as the “1,700-foot” sand, being present in the furthest north. The base of the aquifer system extends to about 1,600 ft below NGVD 29 in the southern part of Pointe Coupee Parish (Winner and others, 1968).

In 2001, water levels in the “1,200-foot” sand ranged from about 20 ft above NGVD 29 in the central part of the parish to about 10 ft below NGVD 29 in the southeastern part of the parish with a groundwater-flow direction towards the southeast (Griffith and Lovelace, 2003). Water levels at well PC-155 (USGS site number 303250091365001) screened in the “1,200-foot” sand have declined about 20 ft from the 1970s to the 2010s (fig. 4). Water levels at well PC-39 (USGS site number 304939091422101) screened in the “1,500-foot” sand have fluctuated seasonally and, overall, remained stable from the 1950s to the 2010s (fig. 4).

State well-registration records listed 81 active water wells screened in the Evangeline equivalent aquifer system in Pointe Coupee Parish in 2017: 36 public-supply wells, 29 domestic wells, 7 irrigation wells, 4 industrial wells, and 5 power-generation wells. Well depths ranged from 290 to 1,482 ft below land surface, and reported yields ranged from 2 to 2,500 gal/min (Louisiana Department of Natural Resources, 2017). In 2014, about 5.22 Mgal/d were withdrawn from the Evangeline equivalent aquifer system in Pointe Coupee Parish: 2.15 Mgal/d for general irrigation, 1.86 Mgal/d for power generation, 0.86 Mgal/d for public supply, 0.17 Mgal/d for rice irrigation, 0.12 Mgal/d for industry, 0.05 Mgal/d for rural domestic, and less than 0.01 Mgal/d for livestock (Collier, 2018).

Figure 2. Water withdrawals in Pointe Coupee Parish, Louisiana, 1960–2014 (U.S. Geological Survey, 2017a; Collier, 2018).

Alluvial Aquifer and Chicot Equivalent Aquifer System

The alluvial aquifer is the shallowest aquifer in the parish and comprises the Mississippi River alluvial and Atchafalaya River alluvial aquifers. Although referred to by different names in different locations, the alluvial aquifer is a single interconnected aquifer that stretches across all of Pointe Coupee Parish (fig. 3). The aquifer grades from gravel and coarse sand near the base to fine sand, silt,

Figure 3. Idealized north-to-south hydrogeologic section through Pointe Coupee Parish, Louisiana, showing aquifer and confining unit intervals. Modified from Griffith (2003). Trace of section shown on figure 1.

Figure 4. Water levels in wells PC-49 screened in the Mississippi River alluvial aquifer, PC-155 screened in the "1,200-foot" sand, PC-39 screened in the "1,500-foot" sand, PC-66 screened in the "2,000-foot" sand, and PC-70 screened in the "2,400-foot" sand in Pointe Coupee Parish, Louisiana (see fig. 1 for well locations; U.S. Geological Survey, 2017b).

Jasper Equivalent Aquifer System

The Jasper equivalent aquifer system comprises the “2,000-foot,” “2,400-foot,” and “2,800-foot,” sands of the Baton Rouge area (Griffith, 2003). The “2,000-foot” sand is generally present throughout Pointe Coupee Parish with the altitude of the base present from about 500 ft below NGVD 29 in the northern part of the parish to 1,900 ft below NGVD 29 near the southern border and with thicknesses from less than 50 ft to about 200 ft. The “2,400-foot” sand is also generally present throughout the parish with the aquifer top present from an altitude of about 500 ft below NGVD 29 in the northern part of the parish to 2,400 ft below NGVD 29 near the southern border. Thickness of the freshwater-bearing area ranges from 0 to 300 ft (Winner and others, 1968).

Water levels at well PC-66 (USGS site number 303556091234001) screened in the “2,000-foot” sand and at well PC-70 (USGS site number 303402091325501) screened in the “2,400-foot” sand (fig. 4) have declined about 80 ft or more from the early 1960s to the 2010s when levels stabilized and began to increase slightly.

State well-registration records listed 105 active water wells screened in the Jasper equivalent aquifer system in Pointe Coupee Parish in 2017: 58 public-supply wells, 39 domestic wells, 4 industrial wells, and 4 irrigation wells. Well depths ranged from 469 to 2,343 ft below land surface, and reported yields ranged from 15 to 1,064 gal/min (Louisiana Department of Natural Resources, 2017). In 2014, about 4.00 Mgal/d were withdrawn from the Jasper equivalent aquifer system in Pointe Coupee Parish: 2.62 Mgal/d

for public supply, 1.28 Mgal/d for industry, 0.10 Mgal/d for rural domestic, and less than 0.01 Mgal/d for livestock (Collier, 2018).

Groundwater Quality

Groundwater samples were collected from 37 wells screened in the Evangeline equivalent aquifer system during 1940–2006 and 71 wells screened in the Jasper equivalent aquifer system during 1942–87 as part of a long-term monitoring program for the State’s groundwater resources (table 3) (USGS, 2017b). Median values for hardness were within the soft² range for both aquifer systems. Sulfate and chloride concentrations were below the U.S. Environmental Protection Agency’s Secondary Maximum Contaminant Levels (SMCLs)³ for 100 percent of samples from both aquifers. Iron and dissolved-solids concentrations were within SMCLs for at least 88 percent of samples. The median value for color was at the SMCL of 15 platinum cobalt units for the Jasper equivalent aquifer system and below the SMCL for the Evangeline equivalent aquifer system.

²Hardness ranges, expressed as milligrams per liter of calcium carbonate, are as follows: 0–60, soft; 61–120, moderately hard; 121–180, hard; greater than 180, very hard (Hem, 1985).

³The SMCLs are Federal guidelines regarding cosmetic effects (such as tooth or skin discoloration), aesthetic effects (such as taste, odor, or color), or technical effects (such as damage to water equipment or reduced effectiveness of treatment for other contaminants) of potential constituents of drinking water. SMCLs were established as guidelines by the U.S. Environmental Protection Agency (2016).

Table 3. Summary of selected water-quality characteristics for 37 wells screened in the Evangeline equivalent aquifer system and 71 wells screened in the Jasper equivalent aquifer system in Pointe Coupee Parish, Louisiana (U.S. Geological Survey, 2017b).

[Values are in milligrams per liter, except as noted. °C, degrees Celsius; µS/cm, microsiemens per centimeter; SU, standard unit; CaCO₃, calcium carbonate; µg/L, micrograms per liter; <, less than; SMCL, Secondary Maximum Contaminant Level established by the U.S. Environmental Protection Agency (2016); NA, not applicable]

	Temperature (°C)	Color (platinum cobalt units)	Specific conductance, pH, field (µS/cm at 25 °C)	pH, field (SU)	Hardness (as CaCO ₃)	Calcium, filtered (as Ca)	Magnesium, filtered (as Mg)	Sodium, filtered (as Na)	Chloride, filtered (as Cl)	Sulfate, filtered (as SO ₄)	Iron, filtered, in µg/L (as Fe)	Manganese, filtered, in µg/L (as Mn)	Dissolved solids, filtered
Evangeline equivalent aquifer system (1940–2006)													
Median	24	5	339	8.2	9	1.9	0.2	69	4.3	10	80	61	225
10th percentile	20.7	0	237	7.2	<1.2	0.3	<0.02	30	2.6	7	14.3	<7.1	183
90th percentile	26	14.5	462	9.0	64.4	12.5	3.9	96	21.2	12	700	118	292
Number of samples	23	22	36	28	43	26	26	26	43	31	16	14	22
Percentage of samples that do not exceed SMCLs	NA	95	NA	71	NA	NA	NA	NA	100	100	88	43	100
Jasper equivalent aquifer system (1942–87)													
Median	29	15	414	8.8	5	1.2	0.2	97	6	7	70	10	261
10th percentile	23.5	5	283	7.7	1.6	<0.1	0	74	3.0	<0.3	20	<10	215
90th percentile	31.5	80	842	9.2	12.2	4	0.8	185	58.7	12	344	90	484
Number of samples	58	82	82	98	99	57	56	56	90	62	57	35	48
Percentage of samples that do not exceed SMCLs	NA	54	NA	33	NA	NA	NA	NA	100	100	88	77	94
SMCLs	NA	15	NA	6.5–8.5	NA	NA	NA	NA	250	250	300	50	500

Surface-Water Resources

Numerous surface-water resources in Pointe Coupee Parish are present in four regional drainage subbasins: the Atchafalaya subbasin (Hydrologic Unit Code [HUC] 08080101) in the western part of the parish, the Lower Red subbasin (HUC 08040301) in the northern extremity of the parish, the Lower Mississippi-Baton Rouge subbasin (HUC 08070100) along the eastern border, and the Lower Grand subbasin (HUC 08070300) in the southeastern corner of the parish (fig. 1; USGS, 2017b). As a result of extensive levees, little water flows into the parish by way of streams; however, the parish is flanked by the Atchafalaya and Mississippi Rivers on its western and eastern borders, respectively. In 2014, 1.59 Mgal/d were withdrawn from miscellaneous surface waters in Pointe Coupee Parish (table 1): 1.59 Mgal/d for aquaculture and less than 0.01 Mgal/d for livestock (table 2) (Collier, 2018).

Lower Red and Atchafalaya Subbasins

The Atchafalaya River begins near the northern border of the parish where the Red River merges with water diverted from the Mississippi River. This merge point begins the Atchafalaya subbasin. The average streamflow, upstream from Pointe Coupee Parish, for the Red River at Alexandria (USGS site number 07355500; fig. 1 index map) was 30,770 cubic feet per second (ft³/s) during 1928–82 (Carlson and others, 1983). The annual average streamflow for the Atchafalaya River at Simmesport (USGS site number 07381490) was 218,400 ft³/s during 2009–15. During this period, the highest

monthly average streamflow at Simmesport occurred during May (354,300 ft³/s) and the lowest during November (105,600 ft³/s) (USGS, 2017b).

Lower Mississippi-Baton Rouge Subbasin

The Mississippi River is sustained by drainage from more than 40 percent of the conterminous United States but drains little land area in Pointe Coupee Parish because of levees along the river (Demcheck and others, 2004). The average streamflow of the Mississippi River near Red River Landing near the north end of Pointe Coupee Parish (USGS site number 07373291; fig. 1) was about 460,000 ft³/s for the period 1928–76 (Wells, 1980). In 2014, 322.12 Mgal/d were withdrawn from the Mississippi River for power generation (table 2) (Collier, 2018).

Lower Grand Subbasin

Water bodies of the Lower Grand subbasin include Bayou Grosse Tete, Bayou Tommy, Cholpe Bayou, Bayou Poydras, Bayou Fordoche, other small streams, and the False River oxbow lake. Little streamflow data for these streams are available. False River is a former channel of the Mississippi River that was formed around 300 years ago or more. The lake is about 22 miles long, is about 3,212 acres, and has an average depth of 21 ft and a maximum depth of 65 ft (Louisiana Department of Wildlife and Fisheries, 2016). The lake is used for various recreational activities.

Table 4. Summary of selected water-quality characteristics for samples from the Mississippi River near Saint Francisville and the Atchafalaya River at Simmesport near Pointe Coupee Parish, Louisiana (U.S. Geological Survey, 2017b).

[Values are in milligrams per liter, except as noted. µS/cm, microsiemens per centimeter; °C, degrees Celsius; SU, standard unit; CaCO₃, calcium carbonate; µg/L, micrograms per liter; <, less than; SMCL, Secondary Maximum Contaminant Level established by the U.S. Environmental Protection Agency (2016); NA, not applicable]

	Specific conduc- tance, field (µS/cm at 25 °C)	Dis- solved oxygen	pH, field (SU)	Hard- ness (as CaCO ₃)	Calcium, filtered (as Ca)	Mag- nesium, filtered (as Mg)	Sodium, filtered (as Na)	Chlo- ride, filtered (as Cl)	Sulfate, filtered (as SO ₄)	Iron, filtered, in µg/L (as Fe)	Dis- solved solids, filtered
Mississippi River near Saint Francisville (1954–2013) ¹											
Median	378	8.6	7.7	140	39	11.7	18	20	47	12.6	230
10th percentile	290	6.5	7.2	110	31.7	8.6	11.4	14	33.7	<6	178
90th percentile	470	11.3	8	178	46.5	15.7	27.3	30	68	58	286
Number of samples	841	529	982	966	666	670	584	976	974	511	1,231
Percentage of samples that do not exceed SMCLs	NA	NA	100	NA	NA	NA	NA	100	100	100	100
Atchafalaya River at Simmesport (1952–77) ²											
Median	325	8.0	7.6	110	32	9.3	19.5	23.5	36	30	197
10th percentile	258	6.5	6.9	93	25.7	6.8	12	14.1	28	<10	161
90th percentile	471	10.4	8.1	160	42.3	13	33.3	42	59	75	279
Number of samples	60	55	62	61	58	59	58	62	62	16	61
Percentage of samples that do not exceed SMCLs	NA	NA	98	NA	NA	NA	NA	100	100	100	100
SMCLs	NA	NA	6.5–8.5	NA	NA	NA	NA	250	250	300	500

¹U.S. Geological Survey site number 07373420 (see fig. 1).

²U.S. Geological Survey site number 07381490 (see fig. 1).

Surface-Water Quality

Water samples were collected from the Atchafalaya River at Simmesport (USGS site number 07381490) during 1952–77 and the Mississippi River near Saint Francisville (USGS site number 07373420) during 1954–2013 as part a long-term program to monitor the State's surface-water resources (fig. 1; table 4) (USGS, 2017b). Nearly all concentrations in samples from both rivers were below SMCLs. Median values for pH and for calcium, magnesium, sodium, and chloride concentrations were similar for both rivers. However, there were larger differences in median values for sulfate, iron, and dissolved-solids concentrations between the two rivers. The median value for hardness in Atchafalaya River samples was in the moderately hard range, whereas the median value for hardness in Mississippi River samples was in the hard range. Median values for dissolved-oxygen concentrations were at least 8.0 mg/L for both rivers; 5 mg/L is generally considered a minimum value for a diverse population of fresh, warmwater biota, including sport fish (Louisiana Department of Environmental Quality, 2008).

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This fact sheet has been prepared by the USGS, in cooperation with the Louisiana Department of Transportation and Development (DOTD), as part of a program to document water use, availability, and quality in the parishes of Louisiana. Information on the availability, past and current water use, use trends, and water quality from groundwater and surface-water sources in the parish is presented here. Previously published reports (see References Cited section) and data stored in the USGS National Water Information System (USGS, 2017b) are the primary sources of the information presented here. Special thanks are given to Doug Taylor, Director, and Zahir "Bo" Bolourchi (retired), DOTD Cooperative Program with the USGS.

By Vincent E. White

For additional information, contact:

Director, USGS Lower Mississippi-Gulf Water Science Center
3535 S. Sherwood Forest Blvd., Suite 120
Baton Rouge, LA 70816
E-mail: gs-w-lmg_center_director@usgs.gov
Fax: (225) 298–5490
Telephone: (225) 298–5481
Home Page: <https://www.usgs.gov/centers/lmg-water/>